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Taxation in Crisis

Tax Policy and the Quest for Economic Growth

Edited by Dimitrios D. Thomakos
and Konstantinos I. Nikolopoulos

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Editors

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To my children, Olympia and George, who patiently tolerate my daily grumping (albeit and unfortunately true) about how high taxes and excessive regulation today stand in the way of their own future.

–Dimitris

To my children, Ilias, Polyanna, and Spyros for the tax-free love they give me every day.

— Kostas

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Disclaimers

The Editorial team emphasizes that the contributor's views expressed in their respective chapters are their personal views and do not express the views of any of their previous or current employers.

Disclaimer from Otto Brøns-Petersen

While I have benefitted from discussions with colleagues at CEPOS and other Danish economists, I alone am responsible for the views and errors of this chapter.

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A lot of people contributed to this volume, and we would like to acknowledge the efforts and time of our contributing authors that resulted in original work and new results on the impact of taxation and growth. We thank you all for being part of this book.

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Introduction

The Great Oxymoron

If we were to concede on assuming that the current era is one of global rebellion against economics and economists, against the financial system and competitive enterprise, against the rich and (significantly) against our neighbor who happens to be more industrious and thus richer than we are, then this book would be forbidden. It would be hunted down by the government agencies responsible for guarding the new-founded revolution against the return to global growth. It would, possibly, be burned and ridiculed by erudite professors of great social compassion, albeit of little and (surely) ideologically distorted knowledge of undergraduate economics. It would, however, make the contributors of this volume the new resistance to the latest corpus of legitimized oppression: unnecessary taxation, impossibly high tax rates, a witch hunt of supposedly hidden incomes, and a state of public affairs already on regulatory failure, fueled by innumerable and economically unfounded laws.

Is this what the global economy is coming to? Not yet. However, we are treading on dangerous waters already. The great recession of 2008 and its global consequences on growth, fiscal, and monetary policies did not only change our perspectives on how the economy works, they have created an alarming situation, whereas common sense and sound economic

logic have been replaced by virtuous calls of destruction of a system that, although not without problems, has created the fastest growth, a reduction in poverty, and most widely distributed benefits known after the Middle Ages. We stress the word "virtuous" here: the many who have been speaking as economists with a sentiment of moral advantage and self-imposed but fake social compassion on the problems of others can be completely misleading—not on their intentions but on their anticipated results.[1]

The calls for increased taxation, global redistribution, higher regulation, more laws on how the economy should work, the war on global innovation, the proposed perpetuation of the failed welfare state cannot make and have not made a difference in the lives of those in need. What they have done, and will continue to do with force if these calls succeed, is to create powerful global monopolies, to reduce competition, to increase the size of the government, to promote corruption, to increase the chances that crises create a stream of new working poor.

There is where the Great Oxymoron lies: those that have been pretending to champion the needs of the many are actually those that are guarding the privileges of the few. Those that are willing to increase tax rates can only widen the income gap and not close it; those that are in favor of more regulation are protecting the monopolies already in power and are making sure that the many cannot rise beyond what the wage that these monopolies pay them. It is time that we address this oxymoron and return to common economic sense. It is time that we shattered the vanity mirror of those that by fooling themselves want to fool the rest of us. If this book is part of the new resistance, its intent then is to take another strike on this mirror.

The problems associated with taxation and growth are not new and neither are the economically viable and socially responsible solutions. The current state of global economic affairs is, however, in urgent need to address these problems and to do so by providing solutions within the post-crisis constraints. That is, without resorting to increased, debt-driven government spending or by a perpetuation of non-conventional monetary policy or (worse) by a return to isolationist policies and trade wars. Enter taxation: the only remaining viable instrument of policymaking not yet used but, unfortunately, already abused. In this volume, we make

the argument that taxation can and should be used constructively in the only way possible: by lowering the tax and regulatory burden with a solid understanding on the purpose of taxation and the methods it should use. Not only the reduction in regulations and tax rates is conducive to growth, it is also the only possible method of creating the appropriate motives for more work, more innovation, more investment, higher transparency, and less waste of public resources. The contributors' work amply illustrates these points and, in accord with history and the literature, makes the argument even more forceful: you cannot generate growth by dividing the existing pie into smaller and smaller pieces. This is the recipe for poverty and wider inequality.

Taxation Is Distortion and Regulation

Is taxation necessary? Obviously. Beyond the ideological strife that surrounds the issue we all agree that, despite the problems that it creates, it is the only way that public necessities can be satisfied. However, raising taxes and spending them on these public necessities are not necessarily linked. For once, we may all agree on the necessity of taxation, but we may not all agree on what these public necessities should be and how the public funds obtained from taxation should be spent. Alternatively, we may not all agree on the way that taxation is to be implemented. However, we hope that there could be no disagreement that, however implemented, a tax system should serve the economy and not the other way around. That is, a tax system should first and foremost promote economic growth, with the rest of its potential functions following. So, what does a roadmap look like in addressing taxation in crisis? Here are some vital points:

– The tax system should be structured so that it minimizes distortions in the economy: it should not impede people from working more, it should not impede the transaction of business, it should not create incentives for tax evasion, it should promote competition and not protect monopolies, it should be transparent, and it should have the least possible impact on the allocation of public resources to maintain it.

- A country's tax system does not exist in isolation: we cannot address global growth problems if we do not allow, in fact if we do not actively promote, tax competition. This stands to reason for attracting domestic and foreign direct investment. The tax system should be able to not only maintain investment levels in the economy but it should be able to provide incentives to attract new, productive investments as well.
- The tax system is not a class-based system. Penalizing parts of society for their efforts in the economic playfield should not be embedded in any system that collects private money for public use. The tax system should promote fairness in the collection of tax revenues but, at the same time, should promote fairness to access in the public goods that are funded by these revenues.
- The tax system cannot be structured around the concept of redistribution. Beyond the historical failures of any government-controlled attempts of direct income redistribution, we cannot provide fuel for growth by the mere transferring of resources when we cannot know whether these transferred resources will be used to generate new employment and added value to the economy.
- Taxation is regulation and as such is possibly the most fail-prone regulatory framework that a government has. By its very nature, the tax system will have to deal both with lack of transparency, corruption, and tax evasion. A tax system that is overly complicated and guided by many rules can only serve the vested interests of the policymakers, certainly not those of entrepreneurs or the consumers.
- The treatment of personal income tax is of paramount importance for growth. While there is heated debate on how to treat corporate income and corporate profits, there can be no debate that high levels of personal income tax are detrimental for growth: one has only to take a look at the recent growth paths of economies with relatively low top marginal tax rates on personal income.
- A tax system cannot be structured around the, sure-to-fail, assumption of "more or higher tax rates mean higher revenues". The experience, especially from these countries that had problems with tax collection and high tax evasion, shows that the focus should be on collecting revenues by higher economic turnover and business, and consumption activity not be higher rates—but then again, the concept of a tax elasticity may not be easy to grasp by regulators.

It is potentially instructive for the reader, before going into the rest of this volume, to remember that the problems associated with the collection of public revenue and the methods of doing it are not new. We close this section with two characteristic historical excerpts, one from long ago and the other from not that long ago. You will clearly see that the problem is perennial, but the ideas presented in both excerpts are much in line with our times.

> Moreover, I observe that already the state is exacting heavy contributions from you: you must needs keep horses, pay for choruses and gymnastic competitions, and accept presidencies; and if war breaks out, I know they will require you to maintain a ship and pay taxes that will nearly crush you. Whenever you seem to fall short of what is expected of you, the Athenians will certainly punish you as though they had caught you robbing them. (Socrates to Critobulus—Xenophon, *Oeconomicus*)

We can clearly see in this first excerpt that the method of taxing wealthy Athenians was that of direct taxation: what the state needed, the citizens provided directly, certainly not just in a central government pool of funds to be administered as the government pleased. Furthermore, note a significant view on taxation that relates to tax evasion: it was not to be tolerated. However, nowhere in the classic literature do we find that the creation of wealth was to be penalized, for the creation of wealth is useful—the problem lies with its use (e.g., Aristotle, Book IV, *Nicomachean Ethics*). The excerpt, put in the wider context of Xenophon's work, just says the obvious: allow people to prosper freely and when the need for raising public revenue arises, let them contribute based on their ability. Is this far from contemporary ideas? Not really, as we can see below.

> The method of raising revenue ought not to impede the transaction of business; it ought to encourage it. I am opposed to extremely high rates, because they produce little or no revenue, because they are bad for the country, and, finally, because they are wrong. We cannot finance the country, we cannot improve social conditions, through any system of injustice, even if we attempt to inflict it upon the rich. Those who suffer the most harm will be the poor. This country believes in prosperity. It is absurd to suppose that it is envious of those who are already prosperous. The wise

> and correct course to follow in taxation and all other economic legislation is not to destroy those who have already secured success but to create conditions under which everyone will have a better chance to be successful. (Calvin Coolidge, 30th President of the United States)

This is another statement of growth and progress: encourage economic activity and tax so as to raise revenue not to make class war—for they are the poor that will suffer the most in such a case. It is far better to create more opportunities so that more in the economy will become prosperous. By the way, during Coolidge's presidency, one-fourth of the federal debt was retired during a period of low taxation and with the growth of state and local governments rising and not falling. Maybe this is a historical example to reconsider for our times?

The Contributions of This Volume

There are four sections in the book that cover many aspects of taxation and contain a wealth of review material and many new theoretical and empirical results. Emphasis has been placed in covering the international aspects of taxation but also the popular "lab rat" economy of our days, Greece. There are chapters that deal with the historical and theoretical foundations of taxation, chapters on taxation and growth in an international context, chapters on tax evasion and the cost of enforcement, chapters on banking and energy taxation, and taxes on the complete regulatory and growth failure in reviving the Greek economy. When viewed as the sum total of these contributions, we believe that this volume will give the reader a fairly complete perspective on taxation in crisis, taxation as it stands today.

In the first section of the book, we start with five chapters that focus on taxation as regulation and regulatory failure. The chapters cover issues ranging from a historical and philosophical overview of taxation ("Taxation and rebellion—a historical and philosophical perspective" from Jane Frecknall-Hughes), the implications of majority rules on taxation, the interaction of inequality ("Majority rule, rights and taxation" from Zacharias Dermatis, Panagiotis Evangelopoulos, and Panagiotis

Liargovas), democracy and progressive taxation ("Inequality in landownership, democracy and progressive taxation: evidence from historical data" from Pantelis Kammas and Maria Poulima), the transparency issue and tax havens ("Tax havens: the crisis of transparency" from Mayya Konovalova, Penelope Tuck, and Rodrigo Ormeno Perez) and, finally, the problems associated with the global treatment of corporate taxes, with a focus in the case of Ireland ("Corporate profit's tax avoidance: how the 'double Irish' impedes global social progress and removes the prosperity base needed for future generations". from Hanqing Yang, Dermot Cahill, and Edwin T. Wood)

In the second section of the book, we have four chapters that focus on taxation and growth. These include two chapters on the impact of taxation on the growth of the Danish economy ("30 years of tax reforms—how much impact on Danish growth?" from Otto Brøns-Petersen) and on tax shocks and macroeconomic performance on the enlarged European Union ("Convergence of tax shocks and macroeconomic performance in the enlarged European Union" from Athanasion Anastasiou). Then, come another two chapters that discuss the impact of the cost of tax administration and enforcement on economic growth ("Tax evasion, tax administration and the impact of growth: tax enforcement as regulatory failure in a high tax rates, high tax evasion and low-growth economic environment" from Yiolanda Vasilopoulou and Dimitrios D. Thomakos) and the interactions of tax evasion, tax morale, and economic growth ("Tax evasion, tax morale and the case of growth" from Andreas Tsalas and Platon Monokrousos).

The third section of the book, although smaller in size, covers two particular aspects of non-income-based taxation as, what we consider, pure political leverage. In the first of the chapters in this section, we have a very interesting presentation about the implications of bank transaction taxes ("Bank transaction taxes: international evidence and their implications" from Hiona Balfoussia, Dimitris Malliaropoulos, Dimitris Papageorgiou, and Athanasios Tagkalakis), while in the second of the chapters, we have a review on taxation in energy—a widely used alternative for covering revenue losses from income tax evasion ("Taxing energy: why, how and how much?" from Thomas Alexopoulos).

Finally, in the fourth and last section of the book, we end the volume with a characteristic example of high tax rates and regulatory failure: Greece. In five chapters ("Over-taxation of private sector salaried employment as a key impediment to the recovery of Greece" double-chapter from Michael Mitsopoulos, "The double trap: taxes and subsidies as determinants of economic growth and the downward growth spiral in Greece" from Christos K. Tsenes and Dimitrios D. Thomakos, "Taxes as barriers to sustainable economic prosperity: the case of Greece" from Panagiotis Liargovas and Nikolaos Apostolopoulos, and "The impact of tax policy on the economic growth of Greece" from Grigorios Spyrakis and Antonios Sarantidis"), and with a number of new results, it becomes clear that the tax policies of the past and present coupled with the problems that the Greek economy is facing today are just plain wrong. The over-taxation in all aspects of the Greek economy proves to be a major barrier to growth revival, and the data fully support this assertion and the need for a complete overhaul of the Greek tax system.

Dimitrios D. Thomakos
Konstantinos I. Nikolopoulos

Notes

1. The problem with virtue on matters of economics and taxation is not new. The following myth by Aesop illustrates the point made in the text. *A certain Lion, who reigned the absolute tyrant of the forest, on a time arbitrarily proposed to exact from his slavish subjects a sufficient part of their daily prey for his own maintenance, that he might not himself toil for his subsistence; and that every beast should contribute according to his means in the form of a tax; but how to adjust this impost was the difficulty. The Tiger was the first who gave his opinion on this knotty point, saying that the properest and justest way would be to lay a tax on vice, and that each Beast should settle the quantity for his neighbor, as by that means it would prevent any selfish partiality. "No, no," said the Elephant, "that will never be just, as it will give*

power to ill-will and oppression. The best manner, in my judgment, would be to lay the tax on virtues, and leave it to everyone to give in a catalogue of his own, and then there is very little doubt but it would prove the means of raising a most ample and rich exchequer. If only those that are making these virtuous calls were the first to comply with them. Unfortunately, global practice has shown that they do not.

Part I

Taxation as Regulation & Regulatory Failure

1

Taxation and Rebellion: A Historical and Philosophical Perspective

Jane Frecknall-Hughes

1.1 Introduction

The extent to which a state has the right to tax its citizens and the benefits a citizen has the right to expect from the state if he/she pays tax are topics that have been hotly debated for a long time. Questions about why governments should raise tax, how much, and from whom and the use to which taxes should be put attract increasing attention in a globalised economy and gain especial relevance in straitened economic times. However, less emphasis nowadays is placed on the philosophical underpinnings on which the answers to these questions might (or, perhaps, should) be based: practical or political considerations often outweigh any philosophical ones.

In general, people do not like paying tax and often do so rather unwillingly. Taxation, after all, takes away income and/or personal property in a manner that would be unacceptable if done by other than a recognised authority (e.g., a government). Some writers, for example, Rothbard and

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Hoppe (2003) and Chodorov (1962), consider taxation to be theft—an idea which can be traced back to the works of Thomas Aquinas in the thirteenth century, if not before. It is thus not difficult to understand why taxes are often unpopular and their imposition resented—emotions exacerbated by the all-pervading presence of taxation in people's daily lives, the complexity of taxes, the level of tax rates, issues of fairness, and so on.

Such attention as has been paid to tax philosophy or ideology commonly takes as its starting point the concepts (or canons) of equity/proportionality, certainty, convenience, and efficiency propounded by Adam Smith in Book 5 of his work, *An Inquiry into the Nature and Causes of the Wealth of Nations*. Considerable amounts of ink have been expended in the past by Smith and other theorists, often vituperatively, in considering the principles which should ideally underpin a tax system—and taxes generally—not least in the period leading up to the war between Great Britain and the American colonies in the late 1700s. This chapter looks at the debate which raged in Great Britain in that period between writers and philosophers, particularly Samuel Johnson, Edmund Burke, and Thomas Paine, about a state's right to tax its citizens who live permanently overseas, and with particular reference to America—a topic on which they had strong views to express. The influences on them of two specific predecessors, namely John Locke and David Hume, are also considered in some depth, as Johnson's, Burke's, and Paine's ideas cannot be appreciated without considering them.[1] The ideas that emerged from these very public debates in Great Britain are of continuing relevance to the current debate in the USA about how and whether the state has the right to tax the US citizen regardless of where he or she lives (see Mason 2015).

Citizenship is, at root, a rather nebulous—and, indeed, contested—concept. Most definitions agree that it implies some kind of membership of a specific sovereign state and that rights and duties are attached, but the precise nature of those rights and duties is unclear and is complicated by (especially for tax purposes) issues of residence and domicile (see Zelinsky 2016). Are rights and duties in some way "natural", independent of any state, or are they granted in their entirety by a state and, so, are jurisdiction-specific? This is especially relevant in regard to taxation. Are the rights and duties the same for all citizens in a given state, or do they differ

depending on specific circumstances—for example, if the citizen decides to live in another sovereign state? How do citizenship rights relate to human rights—if at all? These are difficult questions even to try to answer.

Richard Murphy, in his 2007 *A Code of Conduct for Taxation*, develops a voluntary code of behaviour for taxation, based on the United Nations' *Universal Declaration of Human Rights* (although the latter document makes no reference to taxation). He does this to address "organised tax avoidance" (p. 2) on a global scale and deems Adam Smith's maxims "outmoded" (p. 8), as they (p. 9):

> ...fail to recognise the obligation of the State to the citizen with regard to the provision of public goods, and relate primarily to the practice of taxation rather than the principles that underpin it.

Murphy sets out a series of principles (pp. 9–10), namely that the state should: protect its citizens; provide public goods; not discriminate in protection/provision; democratically determine its provision; be unconstrained by the action of another state; and levy taxation, which must respect the right to hold private property; must be imposed by law; must not be arbitrary; and must apply to all citizens. Citizens must pay the tax they owe, but can appeal against it, although they must disclose all relevant data to the state. They do have the right to leave, in which case they lose their right to state protection provision, but equally are not obliged to contribute to its maintenance.

However, how exactly a state should tax its citizens, the extent of its "reach" and what citizens might expect in return for paying taxes are difficult issues to address. Nowadays, it is taken for granted that tax revenues are expended for the public benefit, on things like defence, policing, public health, welfare programmes, civil engineering projects, and so on, but this was not always the case: in medieval times, tax was levied for two basic reasons—for fighting wars and to support the monarch—and it has been perennially unpopular, as David Burg's book, entitled *A World History of Tax Rebellions*, shows in its coverage of a multitude of rebellions across many different time periods and countries. He comments that "[m]any major historic events, such as the Magna Carta, the American Revolution, and the French Revolution of 1789 originated largely as tax

revolts" (p. ix) and that tax revolts often "subsume larger economic, political, social and even religious issues" as tax provides a focus for concerted opposition. Tax imposition and collection, to be successful, must be accepted by those who are obligated or asked to pay, and this might involve a fine balance between the quantum and complexity of the impost, the power of the authority involved, the means of imposition and/or collection, and so on, and what is perceived is provided in return.[2]

1.2 Going Back to John Locke and David Hume[3]

The English state had long considered that only Parliament had the right to impose taxation. This is evident as far back as the Magna Carta (Clause 12, 1215 version—see Frecknall-Hughes 2014c). Locke, in his own lifetime (1632–1704), had witnessed the strife caused by Charles I's attempts to raise taxes without Parliamentary authority; the English Civil War; the Protectorate of Oliver Cromwell, which had abolished the House of Lords and the Anglican Church; the demise of the Protectorate; and the restoration of the English monarchy in the person of Charles II. Locke had also been personally involved in the so-called Glorious Revolution of 1688, when Charles II's brother and successor, the Catholic James II, was replaced by William III and Mary II—a period which also saw the *Bill of Rights* place constraints on monarchical powers. Locke had experienced extremely radical political and constitutional changes, as a result of which the English state appeared to make a completely new start, with a blank slate (a *tabula rasa*), so it is not surprising to find this idea reflected within the spectrum of his philosophical works, where he considered that he was "clearing the ground a little, and removing some of the rubbish that lies in the way to knowledge" (*An Essay Concerning Human Understanding, Epistle to the Reader*, 1690a, pp. 9–10). Locke was also a leading thinker at the start of the Enlightenment (c. 1688–1800), commonly referred to as the "long" eighteenth century—a period which witnessed radical changes in thinking, ideas, and beliefs generally about a wide variety of subjects, including taxation. However, to understand Locke's views on taxation, one must first take account of his views on private property and government.

Locke's theory of private property is outlined in *The Second Treatise of Government* (1690b), where (at II.2.26) he uses natural law principles to justify man's right to own the product of his own labours, including land which he has worked.[4] Despite there being sufficient resources for everyone's needs, avarice and the use of money created friction, which was exacerbated by increased numbers of people, such that government was required to achieve harmonious coexistence.

> Men being, as has been said, by nature free, equal, and independent, no one can be put out of this estate and subjected to the political power of another without his own consent, which is done by agreeing with other men, to join and unite into a community for their comfortable, safe and peaceable living, one amongst another, in a secure enjoyment of their properties, and a greater security against any that are not of it. This any number of men may do, because it injures not the freedom of the rest; they are left, as they were, in the liberty of the state of Nature. When any number of men have so consented to make one community or government, they are thereby presently incorporated, and make one body politic, wherein the majority have a right to act and conclude the rest.
>
> Locke (1690b, II.8.95)

> Political power, then, I take to be a right of making laws with penalties of death, and consequently all less penalties, for the regulating and preserving of property, and of employing the force of the community, in the execution of such laws, and in defence of the common-wealth from foreign injury; and all this only for the public good.
>
> Locke (1690b, II.1.3)

Locke emphasises elsewhere (1690b, II.8.99) that living in a community entails the surrender of individual power to the will of the majority in exchange for the benefits provided to the communal body, in terms of protection of property, life, liberty, and health. This is a form of social contract theory. These benefits, however, must be supported by taxes, which community members must be willing to pay.

> It is true that governments cannot be supported without great charge, and it is fit every one who enjoys his share of the protection should pay out of his estate his proportion for the maintenance of it. But still it must be with

> his own consent—i.e., the consent of the majority, giving it either by themselves or their representatives chosen by them; for if any one shall claim a power to lay and levy taxes on the people by his own authority, and without such consent of the people, he thereby invades the fundamental law of property, and subverts the end of government. For what property have I in that which another may by right take when he pleases himself?
>
> Locke (1690b, II.11.140)

The consent to pay tax automatically accompanies an individual's decision to be part of a community: there is no choice about this. However, there is an inherent contradiction between a government's function to protect property and, at the same time, possessing a right to take it away by means of taxation. Locke acknowledges this, to a degree, and his solution is that the government must be at the will of the majority.

> [T]he supreme power cannot take from any man any part of his property without his own consent. For the preservation of property being the end of government, and that for which men enter into society, it necessarily supposes and requires that the people should have property, without which they must be supposed to lose that by entering into society which was the end for which they entered into it; too gross an absurdity for any man to own … For I truly have no property in that which another can by right take from me when he pleases against my consent. Hence it is a mistake to think that the supreme or legislative power of any common-wealth can do what it will, and dispose of the estates of the subject arbitrarily, or take any part of them at pleasure.
>
> Locke (1690b, II.11.138)

Locke's comments in *The Second Treatise of Government* (1690b, II.11.140) are his only direct comments about taxation, and are tantalisingly brief. Their exact meaning is unclear and gives rise to much scholarly debate. For example, what does the phrase "share of the protection" mean? In the context of Locke's writing, it is hard to divorce this from the idea of protection of individual property,[5] but it might be difficult at first glance to envisage how an individual "share" might be calculated. Payment is to be made out of a person's "estate"—where "estate" may also carry the

meaning of property generally (assets a person might own) or, more specifically, land. Some have thus suggested that Locke envisaged only landowners paying tax, as the ownership of land carried with it then the right to vote (see Cohen 1986, p. 301). Locke does suggest elsewhere, for instance, that the "publick charge" of government could not be borne by merchants and labourers, but rather by landowners.[6] In England, taxes on land had a very long history, and it is interesting to note that, in 1692, a national land tax was introduced by an Act of Parliament. Initially, it was calculated on "the actual rental values of land, and individual tax assessments were made, but in 1697/98 fixed quotas for each county were established" (Pearsall 2011, p. 16), with quotas being apportioned by Land Tax Commissioners appointed for each county. The extent to which Locke's thinking may have influenced the development of the Land Tax or vice versa is unclear, but the ways in which such a tax might be shared out would, possibly, have been the subject of widespread discussion before it was introduced.

Locke's comments also include the phrase "proportion for the maintenance of it" ("it" referring to protection), which gives rise to further debate. The word "proportion" might suggest some idea of fairness, equity or comparison with some kind of benchmark, but the link to this being paid out of a man's "estate" and the benefit enjoyed ("share of protection") leaves it unclear whether a form of progressive or proportional tax is being considered (see Byrne 1999), payable in respect of income/assets acquired or enjoyed under state protection or on some kind of consumption basis. Possibly, Locke, who was acutely aware of the power of words,[7] was simply aiming to establish a general, philosophical framework, which would allow the potential for a tax system to be developed in one of several different ways.

The tension implicit in the idea of an individual voluntarily alienating his (property) rights—by agreeing to pay tax in return for the benefits/protection provided by living in a community[8]—remains with us today, and is no doubt at the root of much tax avoidance and/or evasion. The scholar Richard Epstein, when considering the US tax system from a Lockean standpoint, also comments on this contradiction. Taxation is (1986, p. 49):

> …the power to coerce other individuals to surrender their property *without* their consent. In a world—a Lockean world—in which liberty is regarded as good and coercion an evil, then taxation authorizes the sovereign to commit acts of aggression against the very citizens it is supposed to protect.

Taxation is "institutionalized coercion", and the dilemma is "how to preserve the power of taxation while curbing its abuse" (Epstein 1986, p. 50).[9] Locke was all too aware of this, hence his emphasis on the need for a majority decision—although in practice that might mean that a sizeable minority could disagree—a situation that still pertains.

Locke's ideas continued to have currency long after his death, despite David Hume (1711–1776), another key Enlightenment (Scottish) thinker, being credited with the destruction of Locke's version of social contract theory (see Werner 1972). Hume's views are difficult to track down precisely, as they are scattered across several different works. Moreover, the sequence of his work—and thus the development of his ideas—are unclear, a situation exacerbated by the fact that he revised and re-published some of his major works under different titles. Hume's lifetime, like Locke's, was characterised by massive upheaval, especially financial. Per Frecknall-Hughes (2014b, p. 93):

> Scotland had been involved in the disastrous Darien schemes, to set up colonies in the late 1690s on the Isthmus of Panama, which had lessened resistance to its formal political union with England in 1707, though there was still protest against this; there were the various Jacobite rebellions (1689–1692, 1715, 1719 and 1745); the South Sea Bubble had burst in 1720; the Bank of England had been established (1694) and the National Debt to fund Britain's wars, notably the War of the Spanish Succession (1702–1713) and the War of the Austrian Succession (1740–1748).

Hume felt that government borrowing could lead to the state becoming bankrupt (see *Of Public Credit*, 1742). Although this was another way to raise government revenue, tax was still required to fund interest payments. Moreover, Hume suggests (in *Of the Original Contract*, 1748a) that governments are founded in violence (driven by scarcity of resources)—not

tacit consent, as Locke theorised, arguing in *Of the First Principles of Government* (1741a) that they are established to protect the public interest and rights to power and property and to maintain justice.[10] Thus, having undermined Locke's social contract theory, Hume is left without a basis for the legitimate imposition of taxes, leaving this theoretical and philosophical dilemma unresolved (see Dome 2004, p. 3 and p. 5), despite his concern about the burden of taxation needed to service the National Debt.

There are, however, some hints throughout the body of Hume's work as to what his ideas on taxation might be.

In Book 3 of the *Treatise of Human Nature* (1739–1740) and in *An Inquiry Concerning the Principles of Morals* (1751), he argues that justice is an artificial concept developed to protect property ownership, which government authority is needed to enforce, with rules being required to promote a harmonious society. Thus, paying taxes may be a civil obligation to support this kind of society.

In *An Enquiry Concerning Human Understanding* (1748b), Hume supports custom and the acceptance of things as they exist over reasoning from first principles. Conceivably, one thus might accept taxation on this basis because it has been brought about by custom. He makes this clear in *Of the Original Contract* (1748a, pp. 275–276) when discussing how new governments or rulers can gradually be accepted. However, his discussion embodies the idea that customs can result in abuses and, in *Of Civil Liberty* (1741b, p. 54), he cites taxation as an example of "ancient customs", which need to be "remedied".

> The greatest abuses, which arise in France, the most perfect model of pure monarchy, proceed not from the number or weight of taxes, beyond what are to be met with in free countries; but from the expensive, unequal, arbitrary, and intricate method of levying them, by which the industry of the poor, especially of peasants and farmers, is, in great measure, discouraged, and agriculture rendered as beggarly and slavish employment.
>
> Hume, *Of Civil Liberty* (1741b, p. 54)

Such customs ruin estates and tenants alike.

In his essay *Of Taxes* (1752), Hume also displays a practical streak. He suggests that workers may cope best with an increase in taxes by working harder and earning more, rather than by receiving increased wages for the same amount of work. This is, he says, rather like having to work harder to cope with a harsh climate in another country. His essay does not discuss taxation theory, but he does make clear that he opposes taxing the necessities of life,[11] arguing that tax should fall on luxury items, as people have a choice about whether or not to buy them. He was also opposed to land tax, thinking it arbitrary in imposition, which he disliked.

1.3 Samuel Johnson

Johnson (1709–1784) is best remembered for his famous *Dictionary* (1755), but, in the 1770s, he wrote two pamphlets directly related to taxation, namely, *The Patriot* (1774) and *Taxation No Tyranny* (1775), which concerned the burning question of the day—taxation of the American colonies and representation. Given the ideas prevalent at the time (Johnson was a contemporary of Hume), it might be expected that Johnson would be more influenced by Hume's ideas—but he chose to use Locke's social contract theory to defend Great Britain's right to tax the American colonies. He did this in terms of the benefits of protection provided to the colonies by British armed forces: this is what the colonists gained as a return for paying tax.

> That man, therefore, is no patriot, who justifies the ridiculous claims of American usurpation; who endeavours to deprive the nation of lawful authority over its own colonies, which were settled under English protection; were constituted by an English charter; and have been defended by English arms.
>
> To suppose, that by sending out a colony, the nation established an independent power; that when, by indulgence and favour, emigrants are become rich, they shall not contribute to their own defence, but at their pleasure; and that they shall not be included, like millions of their fellow subjects, in the general system of representation; involves such an accumulations of absurdity, as nothing but the show of patriotism could palliate.

> He that accepts protection stipulates obedience. We have always protected the Americans; we may, therefore, subject them to government.
>
> Johnson, *The Patriot* (1774, pp. 8–9)

Johnson returns to the same ideas in *Taxation No Tyranny*.

> [T]hey who flourish under the protection of our government, should contribute something towards its expense.
>
> Johnson, *Taxation No Tyranny* (1775, p. 2)

> A tax is a payment, exacted by authority, from part of the community, for the benefit of the whole. From whom, and in what proportion such payment shall be required, and to what uses it shall be applied, those only are to judge to whom government is intrusted. In the British dominions taxes are apportioned, levied and appropriated by the states assembled in parliament.
>
> Of every empire, all the subordinate communities are liable to taxation, because they all share the benefits of government, and, therefore ought all to furnish their proportion of the expense.
>
> Johnson, *Taxation No Tyranny* (1775, p. 4)

There could not be a clearer application of Locke's ideas. On p. 7 of *Taxation No Tyranny*, Johnson refers specifically to English law providing "security of property". The colonists cannot pick and choose which bits of English law they want: it is all or nothing, and this also affects their rights.

> As man can be but in one place, at once, he cannot have the advantages of multiplied residence. He that will enjoy the brightness of sunshine, must quit the coolness of shade. He who goes voluntarily to America, cannot complain of losing what he leaves in Europe. He, perhaps, had a right to vote for a knight or burgess; by crossing the Atlantick, he has not nullified his right; but he has made its exertion no longer possible. By his own choice he has left a country, where he had a vote and little property, for another, where he has great property, but no vote.
>
> Johnson, *Taxation No Tyranny* (1775, p. 10)

> They have not, by abandoning their part of one legislature, obtained the power of constituting another, exclusive and independent, any more than the multitudes, who are now debarred from voting, have a right to erect a separate parliament for themselves.
>
> Johnson, *Taxation No Tyranny* (1775, p. 11)

There is nothing here that would have been unfamiliar to John Locke. However, the basic question is: at what point might a colony become an independent state—or, in more modern times, the point at which a citizen of one country living outside that country might become a citizen of another state? It would, perhaps, have been more difficult for Johnson to use Hume's ideas to defend taxing the colonies, but not impossible.

1.4 Edmund Burke and Thomas Paine

Burke (1729–1797) and Paine (1737–1809) were contemporaries who were often ideologically opposed. As an MP and political writer, Burke embraced five main causes:

> the emancipation of the House of Commons from the control of George III and the 'King's friends'; the emancipation of the American colonies; the emancipation of Ireland; the emancipation of India from the misgovernment of the East India Company; and opposition to the atheistical Jacobinism displayed in the French Revolution.
>
> Drabble (1998, p. 146)

Although a member of Johnson's circle, Burke's opposition to aspects of the revolution in France brought criticism from his former friends, who considered that he had abandoned his belief in political freedom. Thomas Paine wrote the *The Rights of Man*, in direct response to Burke's views. Burke published many of his speeches, two of particular relevance being *On American Taxation* (delivered 19 April 1774) and *On Moving His Resolutions for Conciliations with the Colonies* (delivered 22 March 1775). Unusually, Burke did not, like many of his contemporaries, consider the American problem in the light of Britain's right to tax the colonies. He did

not object to this right per se, but did object to the extent to which Britain was prepared to go to enforce it. Ideally, he would have restored the former relationship between Great Britain and the colonies—by removing the taxes on tea that were perceived to be so unjust. Burke did not object to the colonies having the right to levy taxes themselves internally, if they so wished. He felt, however, that more revenue would be raised by free and open trade than by imposing taxes.

Thomas Paine holds a unique place in the history of ideas in that he actively took part in the revolutionary movements in France and the American colonies that he helped foster. His reputation as a polemicist has resulted in a tendency by commentators "to ignore the theoretical aspects of his work" (Christian 1973, p. 367). His major innovation was to attempt to subordinate economics to morality, pushing to reform oppressive and corrupt governments. Like Locke, his organisation of society was founded on the idea of natural rights:

> …man is all of one degree, and consequently ... all men are born equal and with natural rights.
>
> Paine (1791) *The Rights of Man, Part the First*, p. 18

Also, like Locke, Paine theorised a type of social contract:

> …that individuals themselves, each in his own personal and sovereign right, entered into a compact with each other to produce a government: and this is the only mode in which governments have a right to arise, and the only principle on which they have a right to exist.
>
> Paine (1791) *The Rights of Man, Part the First*, p. 21

Paine saw men as needing the protection of the state to control their economic aggression against one another (1791, *The Rights of Man, Part the First*, p. 22). However, the fact that men paid tax made them morally entitled to a share in government. Paine comments that "every man who pays a tax of sixty sous [under the new French constitution] is an elector" (1792, *The Rights of Man, Part the Second*, p. 22). Thus, Paine's contract is a socio-economic one, whereby taxation gives the right to representation and to influence public affairs.

In the second part of *The Rights of Man*, Paine displays an extraordinary interest in the collection and use of taxation monies (see Frecknall-Hughes 2007, pp. 277–280). Ayer (1988) summarises these details. By 1791, Paine estimates that the total tax revenue raised by the British government would be £17,000,000 (though there are no real indications of whence these figures were derived). Of particular interest is that Paine then goes into considerable detail about the use of tax revenue—to pay interest on the National Debt, to pay for the army and navy and for the expenses of government, including individuals' salaries. In addition, he proposes a system of financial relief for the poor, graduated (state) pensions for those over 50 and 60, respectively, financial support for educating children, birth and marriage "grants", grants for funeral expenses and travel to work, and allowances for disbanded military personnel. To raise the necessary money, he would abolish poor rates, the tax on windows and the commutation tax, and introduce a graduated income tax. An astonishing number of statistics and figures accompanies all this (see Frecknall-Hughes 2007, pp. 277–280). This was all light years ahead of its time. Here, Paine not only specifies paying for protection (e.g., paying for the army and navy), but outlines the benefits that taxation might provide.

1.5 Conclusion

The early development by Paine of benefit theory is a substantial step forward in thinking from that of Locke, but the seeds of benefit theory may arguably be found in Locke's idea of protection. However, Paine's background was that of a revolutionary who was prepared to follow Hume in doing away with abusive customs and practices. He was also revolutionary in taking Locke's idea of protection much further—in that he did not advocate any matching between what someone might pay and what he/she might receive. Implicit in Paine's model is provision for those who do not earn, are less fortunate, or deserving of state assistance from taxes for various reasons. This chapter has been but a brief look at the historical evolution of ideas in a limited, albeit significant, time period, showing how they developed and might be applied. Some of Paine's ideas

were not realised until the twentieth century. Modern taxpayers' charters encapsulate some of the rights and duties of both taxpayers and revenue authorities that have emerged over time, but as Murphy (2007) makes clear, there is no universal acceptance of these rights and duties, although they are of considerable importance because of the increased erosion of jurisdictional boundaries in an increasingly globalised world. It is ironic that the USA, which rebelled at the concept of Great Britain's imposition of tax on the colonies, now itself seeks to tax its own overseas-resident citizens. Much more work remains to be done here, both in terms of theoretical and empirical work.

Notes

1. The process by which ideas about taxation spread and developed is fascinating in its own right, and there are many writers, especially from Europe, who had considerable influence before, during, and after the Enlightenment period on the philosophers considered here (see, e.g., Frecknall-Hughes 2007, 2014a; Snape 2012).
2. For example, in Israel in 1948, a tax system was enthusiastically welcomed. Likhovsky (2007, p. 672) cites the recollection of a tax official, during the first months following independence, of a willingness to pay higher taxes than would have been paid to the British Mandate, and refers to an argument between two well-known citizens of Haifa as to who was the first to pay income tax to the provisional government. Likhovsky also comments on the different attitudes to paying tax held by Israel's influx of new citizens post-1948, dependent on their national origin. For many, non-payment of tax was the norm, as part of a lifestyle or culture which kept them out of sight of government authority.
3. Much of the material in this chapter is also discussed and explored in Frecknall-Hughes (2014b), but from the point of view, predominantly, of the continuing importance of taxation history.
4. It should be acknowledged that scholars have different interpretations of Locke's theory of property (see Arneil 1996; Buckle 2001; Tully 1980, 1993a, b, 1994). For a recent review, see Snape and Frecknall-Hughes (2017).
5. Possibly also the concept extends to the protection of Great Britain's growing international activities (see O'Brien and Hunt 1993, p. 170).

6. In his pamphlet, *Some Consideration of the Consequences of the Lowering of Interest, and Raising the Value of Money* (1691), cited by Dome, 2004, p. 12, Note 6.
7. Although *The Second Treatise of Government* was published while Locke was alive, he thought it too dangerous to acknowledge his authorship of the work.
8. This idea of tax being justified as the price paid for protection was also espoused by Locke's predecessor, Thomas Hobbes (see Jackson 1973, pp 176–177).
9. The extent to which power affects taxpayer compliance has now been extensively examined (see, e.g., Kirchler et al. 2008, 2010; Kogler et al. 2013; Muehlbacher and Kirchler 2010; Muehlbacher et al. 2011; and Wahl et al. 2010).
10. The latter in the posthumously published *Of the Origin of Government* (1777).
11. This would be in the context of excise duties.

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2

Majority Rule, Rights, and Taxation

Zacharias Dermatis, Panagiotis Evangelopoulos, and Panagiotis Liargovas

2.1 The Problem

In developed democratic societies, the majority rule is the basic mechanism of management and the hard-core institutional structure of their political organization. The majority rule is the key for the application of the governmental policies and the state intervention in the society as a whole. But, the majority rule is also the mechanism for making decisions for all other entities, whether they pertain to the public organization of society or whether they have to do with representation and management of those fundamental business entities like corporations, firms, and social associations. The majority rule, in short, plays a particularly crucial role in society as a whole, in respect of both the public and the private sectors.

On the other hand, it is established by all institutions of developed democratic societies that the individuals who together constitute the community possess rights which they are entitled to exercise freely, in that way activating their personal role and personal involvement in social development

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and social cooperation. In modern developed democratic societies, in principle, both the majority rule and the rights of the individual enjoy full constitutional protection and, as a secondary consideration, play—de facto—the most important role in the shaping and organization of communities, in development, and in social cooperation.

We propose, in this chapter, to examine the relationship that exists between individual rights and the majority rule—both fundamental elements of contemporary democracies—and to investigate whether they truly comprise the most suitable basis for the proper functioning of modern societies that crucially affects the taxation, economic performance, and social welfare.

The primary reason for raising this question is that developments are taking place in contemporary democratic societies whereby, with ever greater frequency and in relation to ever more fundamental questions of social organization, decisions emanating from the majority rule come into a head-on collision with the rights accorded to individuals in society. It is evident that, in contemporary democracies, the majority rule dictates the individual rights and it is becoming increasingly less adequate to the task of constituting societies. The resulting erosion of the credibility of the representative system opens a Pandora's Box of challenges to democracy and social stability. It is in no way surprising that the failures of democracy are being turned to advantage by extremist and xenophobic political movements, while those who certainly support democracy are unable to reform its weakness and imperfections. Having presented an overall description of the problem, we shall tentatively venture onto the difficult terrain of analysis, with a view ultimately to arriving at a tangible mode of confronting the weakness and imperfections in social organization generated by the majority rule.

2.2 The Latent Role of the Majority Rule

Kenneth Arrow (1951) made a well-known critique of the majority rule that it is incapable of maximizing social well-being. But on what basis has the majority rule been incorporated into social organization? The answer to this question must be sought in the repercussions for contemporary

democratic societies of liberal revolutions and reforms in the USA, France, and England throughout the entire modern period and particularly in the eighteenth century. The majority rule provided dynamic solutions that made the new emerging democracies functional, simultaneously incorporating them on account of principles and values that were in the front line of reforms of Western democratic societies.

The majority rule possessed the advantage of being rationally grounded, with a potential to embody and illustrate ethical values and the power to underwrite, institutionally and practically, whatever variant of the general will of the society.

The majority rule epitomized all the traditions of rationalism, utilitarianism, and the then modern-sounding ethics of participation by all in determining both the general will and the general well-being of the society. In this way, and under this point of view, that was then predominant, the majority rule was invested with that aura of sanctity with which we are all familiar in our contemporary democratic societies.

It is true that the majority rule is quintessentially rationalistic. If we were to opt for the rule of a single individual, we would be leading society into a regime of autocratic rule by that person. The options to be chosen would be determined by his unfettered will. On the other hand, if the choice were for rule by the minority, we would end up on a deviant path whereby each person would adopt the most extreme and unreasonable positions so as to have as few as possible agreeing with him. The majority rule, by contrast, makes it a prerequisite that the support of most people be secured—so injecting rationality into the proposal submitted.

In ethical terms, the majority rule bestows upon each member of society the right to share in decision-making and to take part as an individual equal to—and the equivalent of—every other participant, each counting and being counted separately. The equality and the equivalence of each individual vote to that of all the others imparts to each member of the community the same proportion of the overall power as that possessed by everyone else, irrespective of the factors determining his political, economic, and social status.

In utilitarian terms, the rule of the majority is closer to Rousseau's (1997) conception of the general will for the good of the whole. By this conception, irrespective of whether society as such is an entity, from the

moment that people work together, their collaboration raises the question of what, in terms of its desired form, the will of the members of society should be, insofar as there is a necessity for decision-making that has a bearing on each and every member of the society. Any provision other than the majority rule would be much less suitable as an indicator of the general will—given that its first consideration would be to try to render proportionate service to the vested interests that are best satisfied by the type of decisions, contrary to the general interest, that will emanate from collectives whose members are not each other's equals.

Nevertheless, notwithstanding the above-mentioned virtues of the majority rule, it has many weak points, in terms both of theoretical structure and of potential for practical application. As against the rationalism of the majority stands the wisdom of the enlightened and benevolent despot, or the competence and skill of minorities, or the sound judgement of the solitary thinker. Counterpoised to the ethic of the majority is the peculiar weight of the viewpoint of individuals with special virtues or talent, or withdrawal of the franchise from untrained or venal individuals and/or from those innocent of the complexity of issues in public life. Counterpoised to the "general will" approach for the promotion of the general good by the majority is the lack of definition in the conception of the general good, the indeterminacy of the general will, and the incapacity of the majority to avoid harming a whole host of individual goods in its attempt to realize its in every way "legitimate" aspirations.

It appears, then, that however many problems of social organization it may attempt to solve, the majority rule on the other hand generates a similar number of insuperable obstacles. In contemporary societies, these insuperable obstacles assume gargantuan proportions by virtue of their own evolution and the complexity of the processes involved—situations and conditions with which the relatively simplistic majority rule cannot cope.

The best example to illustrate all this is the development of the bureaucracy. The bureaucracy was established as an intermediate organizational stratum between the electoral body and its representatives. The aim of the bureaucracy is nothing more or less than to give executive effect to the decisions of a democratically elected majority political leadership. Instead of this, the bureaucracy not only makes executive decisions but also, and above all, legislates. The direct result is a reversal of essential roles, leading to de facto annulment of the law of the majority.

On the other hand, subject specialization, diminution of representatives' vested interest in having problems solved, augmentation of the vested interest of the bureaucracy in achieving settlements that will maximize benefits to itself, not to mention the particular diligence of directly interested parties to intervene with a view to securing from the bureaucracy a favourable resolution of their differences, all of these are factors tending retrospectively to negate, and, indeed, totally rescind, all the relative advantages theoretically enjoyed by the rule of the majority.

These are the factors that render the rule of the majority ineffective. It neither generates the most competent leadership nor produces the best solutions. It is precisely this phenomenon that exists in contemporary democracy, for the rule of the majority is distorted through bureaucratic practice, stripping representative processes of the participatory element, the transparency, the achievement of optimum results.

Democracy has devised two significant means of defence against these quite basic weaknesses and imperfections. The first is reaffirmation, continually and at regular intervals, of the identity of the majority, and the second is the reinforcement, protection, and defence of rights, irrespective of the will of the majority. The former method, despite its potency in the longer time frame, with the indisputable efficacy of a withdrawal of mandate from individuals generally acknowledged to be lacking the requisite competence, is today proving ever less effective as a means of dealing with the above-mentioned situations of political immobility, given that the concatenation of vested interests acting against the majority rule of the majority is evidently going from strength to strength, overriding changes in leadership structures, policies, administrative methods, and day-today tactics. This is so because whatever new form of power emerges out of reaffirmation of the majority rule, it must necessarily be implemented within the existing and now entrenched system of interests, which does not allow either any modification of its own rules or any shifting of whatever outcome is generated by them. This defensive process of democracy thus proves inefficacious.

The second method is the role of rights in safeguarding individual action and its defence in the face of the usurpation activity and mechanisms of political leaders ostensibly concerned with promoting the public interest and the welfare of the community as a whole in the sense described

above, following the logic and employing the procedures that have been outlined. The extent to which this line of defence, too, is adequate in the face of the majority rule and the distortions it introduces into the management of contemporary societies will be examined in the chapter, immediately following.

2.3 The Position of Rights

As emphasized at the beginning of this article, the constitutional protection afforded to rights in contemporary democracies creates the conditions for defence of the private sphere of the individual from any decisions to its detriment that may happen to be generated by the rule of the majority. In other words, rights are the essential, fundamental, and final line of defence of the individual, against the majority, the minority, and any such other person as may choose to behave with malice and ill-will against him/her. The special and explicit protection enjoyed by rights in contemporary constitutions is a result of the now well-established principle in the developed world that rights have an absolute and universal significance irrespective of the collective will of society and the means by which this is exercised through the majority rule. But, as we shall demonstrate below, the stance becomes particularly problematic to the extent that rights are defended only rhetorically by the constitution while in practice being distorted—first, from the formal viewpoint and, then, from that of the integrity of the support extended to them.

The basic reason that rights, and their function, are eroded in real political, economic, and social activity while, at the level of declaration, enjoying acceptance even in the most authoritarian regimes, is their non-autonomous ethical basis, being determined as they are by extraneous factors. On the other hand, all theories of rights develop their argumentation precisely in this direction. So as to enable theories of rights to give an answer to the nihilistic assertion that there is no such thing as rights, they confine their analyses within strictly moralistic terms of reference. Doing this, they fail to examine the positive manner in which rights are to be defined and are thus unable to explain that, despite the rhetoric, rights today do not enjoy widespread application in the development of political, economic, and social action.

Thus, while on the one hand contemporary theories of rights—to a large extent, and without any particular internal contradictions—demonstrate the existence of rights, describing their content with precision, on the other hand, they are unable to explain why they are not implemented on the basis of the ethical prescriptions of their theory, leaving a great void in the place of implementation. Contemporary supporters of natural rights (Machan 1978), maintaining and developing the weighty heritage of the great thinkers of classical liberalism and of natural law, reach the point of asserting that rights are basic and objective (Sumner 1987, 164).

They thus uphold the provision of clear and inviolable constitutional guarantees and constitutional exclusion of any form of social action that might contravene them. Contractual Theory accepts that rights are subjective and relative and in the final analysis that their structure is determined by a general contractual agreement that includes rights projected with quasi unanimity (Buchanan 1975). Finally, Consequentialist Theory (Parfit 1984) accepts that rights are most likely objective, providing a full explanation for the broad acceptance of conventional rights and supporting the legal rules that underwrite them.

We note that all three theories of rights have one basic characteristic in common. All three provide autonomous ethical grounding for rights. Despite this, their approaches are fundamentally different in the explanations, the content, and the political proposals they put forward. In the following chapter, we shall attempt to show how these three different approaches, through a new rule we ourselves shall propose, can converge, overcoming their mutual isolation and the compartmentalizing that separates them from each other. Before formulating the new rule, however, we shall reiterate our critique of the autonomy of theories of rights and the serious lack of correspondence between rhetoric and political practice when it comes to trying to enforce rights in real life.

The reason that rights become differentiated during implementation is that that they are not self-determined as maintained in theories of rights but are predicated on the majority rule. The very fact that theories of rights completely overlook the majority rule in their explanatory framework, whether as a variable or as a parameter or as a limitation in the form of an upper or lower limit, depending on the structure and concept of rights, shows how far from reality they stand, both in terms of explaining

it and of attempting to transform it. On the one hand, the autonomous explanation of rights leads to cultivation and development of rhetoric while on the other hand ignoring the specific fact that the majority rule determines rights leads to their being de facto undermined and, in the end, downgraded in the development of social life.

To understand how manipulatively the majority rule treats the issue of rights, we must understand how rights are linked to liberties, how improper it is for the majority to elevate to the status of rights those goods whose acquisition and enjoyment belong exclusively to the province of the individual. Rights and freedom have always been inseparable. My freedom to do something emanated from my inalienable rights in respect of it. My right to do something emanated from absolute freedom in respect of it. Freedom and right were in every way equivalent. Hobbes wrote that "RIGHT, consistent in LIBERTY to do, or to forbear;" (Hobbes 1968, 189). But in contemporary societies, the concepts both of freedom and of right have been eroded. The splitting of freedom into negative and positive, so clearly and precisely analysed by Isaiah Berlin (1969), is essentially a product of the hegemonic role of the majority in determining what freedoms are to be recognized as such, introducing a basic distortion into its content, so much so indeed that the coercion imposed by the community on the individual via the legitimating of the majority rule is described as positive liberty and sanctified through being designated the right to equality.

It is an indisputable fact that in contemporary societies the rights enjoyed by individuals are determined in practice by the majority rule, leaving at the level of rhetoric their defence by theories of rights. Theories of rights were elaborated and anchored in moral theory—a realm very remote from reality. In their endeavour, firstly, to prove the existence of rights and, secondly, to concretize the form of rights at the level of deontology, theories of rights lost their orientation towards what actually happens, becoming unable either to explain reality or to posit a framework of applied politics of rights, of which present-day societies are so much in need.

In the following chapter, we shall attempt to put forward a positive analysis of the formation and implementation on of rights, irrespective of ethical grounding. The objective is to employ the prism of positive analysis, with rational choice as the key criterion: to examine what types of political proposals can be generated.

2.4 Rights to Freedom Versus Rights to Equality

Rights emerge from a direct functional need for social collaboration. The form they take is a product of the necessary rational behaviour developed by the individual in society and in the interaction between people, first, concerning the limits of individual action and, secondly, concerning the collective restrictions all together except when confronting collective problems. Individuals form communities and seek within them to institute collaboration because they aspire to, and indeed achieve, private benefits.

The creation and consolidation of communities, and their mode of development, are all predicated on individual rational behaviour, and insofar as social organization proceeds in step with individual rational behaviour, societies develop and flourish, while insofar as social organization moves away from the core principle around which communities are constructed, which is indisputably the individual, societies disintegrate, decline, and disappear. Rights are the corollary of rational individual behaviour and to the extent that they are adulterated by the addition of rights to equality, which are foreign to individual rational behaviour, the organization of society will follow a deviant path at variance with individual rational behaviour, resulting in impoverishment of the community: politically, economically, and socially. Let us look at some details.

Within the framework of social organization, so as to secure the fruit of their labours, which is a product both of individual effort and of the potentialities for cooperation made available by the community, individuals have formulated the first, primordial, and fundamental right—the right to property—from which every other right derives. Even the human rights, to which such supreme importance is attributed in the related contemporary rhetoric, are in reality a subcategory of property rights (Barzel 1989, 2). It is through the right to property that the human being, the individual, the subject who acts in society, recognizes and secures his liberty and on that basis survives, creates, aspires to realization of his needs and desires. The right to property emerges directly out of the principle of individual action. It forges a direct link between rights and

freedom, as perceived with the utmost clarity by Hobbes, and it provides eloquent justification for John Locke's calling it a natural right, so as to convey an appreciation of its strength.

From an institutional viewpoint, then, the community is comprised of the totality of property rights, the form and the content they take, and relationships they generate in order to secure their own observance and its policing. Two basic processes work in parallel in the community. The first is the economic process and, the second, the political. The economic process regulates the totality of practices put into effect by individuals acting of their own accord for the securing of mutual benefit and with full confidence in, and respect for, each other's property rights.

The evolution of the economic process is underpinned by the market, which on the basis of the price system performs all transactions within a framework of property rights that enjoys absolute respect from all parties. It should nevertheless be emphasized that by virtue of its own activity the market is constantly transmuting and restructuring the content and the type of property rights in accordance with the wishes and desires of acting subjects and on the basis of considerations they themselves introduce through the shaping of contracts and agreements and the manner in which they are brought to realization.

The form and the configuration of property rights changes continually, with the degree of respect shown by all participants predicated on a maximizing the potential for each to participate and contribute to change and on an optimizing of his own position in the new distribution of property rights. In this way, property rights are shaped and reshaped through the economic process, bringing individual rational behaviour into full correspondence with maximization of individual self-interest and optimization of social distribution. The rights articulated through this process are rights to freedom—entailing both rational individual behaviour and optimization of both individual prosperity and social wealth. These rights have no deontological basis or ethical derivation. They are exactly as we described them previously: a positive entity in the most literal sense.

The political process on the other hand undertakes the immensely difficult task of confronting all the problems that arise from the probably deliberate behaviour of individuals who in pursuit of their own vested interests have every reason either to infringe property rights or to shirk

the responsibility such rights place on every member of society to observe them and police them. In developed democratic societies, the political process evolves on the basis of the representative system and the mechanism of the majority. It is, first and foremost, because of these that political authorities are able to emerge that with the virtue, wisdom, and capacity effectively to ensure the protection of property rights.

But, in today's developed democratic states, as we showed in the second chapter, the mechanism of the majority acquires the profoundly improper function of dominating society and the individuals comprising it, with the result that instead of protecting property rights it attempts to water them down, above all creating rights of a new kind: rights to equality, with a view to distributing wealth through taxation, in accordance with whatever concept of social justice is being expressed at a given time by the social majority.

It is easy for individuals to become trapped in this logic, reproducing majorities whose aspirations are to enjoy the benefit of wealth they have not productively contributed to earning. The result of this is a deviation from the task of maximizing individual welfare, to the advantage of the social, with all the attendant destructive consequences for the structure of societies, with the emergence of insoluble social problems in present-day reality to which we are all witnesses.

The rights to equality promoted by the rule of the majority radically negate individual and rational maximizing behaviour, at the same time contributing to production of a disproportionately great burden for community administration. On the other hand, the majority rule becomes implicated in a process of producing rights for which it is inappropriate. Neither was it invented and implemented for that purpose. The majority rule is foreign to the production of rights; to the extent it serves such an objective, it will do so at a high cost in societal management, at the same time diminishing individual incentives for being inventive, resourceful, creative, and productive.

So, on the basis of the positive analysis of the formation and transformations of rights, we conclude that two distinct conceptions of rights are generated by contemporary societies: rights to freedom and rights to equality. The former is generated by the market and the economic process, while the latter is shaped by the majority rule and the political process.

Both categories together comprise the totality of property rights in the community and it is the specific weight of each of them separately that decides whether the community develops or stagnates.

When it is rights to freedom that predominate, the society prospers and flourishes, demonstrating unprecedented dynamism, generating continual technological revolution, and dramatically boosting living standards. When it is rights to equality that predominate, society stagnates, with ever greater inertia and inactivity, dispensing to citizens misery, impoverishment, and scarcity up until their final demise and disappearance from history.

2.5 Rights to Equality and Taxation

The main mechanism of the enforcement of the rights to equality in a democratic society is the taxation. As long as taxation is becoming more and more progressive, the rights to freedom are becoming weaker and the rights to equality are becoming stronger. Through the political process of a democratic society and the function of the majority rule, the state as the supreme political authority of the society is organizing the collection of the taxes for financing and realizing the necessary collective goods and services for the society. But under the dominance of the rights to equality, the state goes beyond its traditional classical role for the production of the necessary collective goods and services. Actually the modern state based on the rights to equality and the progressive taxation, redistributes the wealth of the society as a whole, from the more productive and wealthier individuals to the less productive and poorer individuals.

This procedure attenuates the rights to freedom and undermines the role of the property rights as safeguard mechanism of the talent and the charismatic properties of the individual, as long as of the effort that individuals undertake for improving their own life and that of their families, increasing their income, their wealth, and the conditions and the comfort of their life generally. On the other side, the poorer individuals—based on the dominance of the rights to equality, progressive taxation, and the redistribution both of the wealth and the income that takes place under the redistribution mechanism established by the state—are becoming less

productive and less innovative, actually totally dependent, working less, and receiving wages higher than their productivity because of the strength of the collective agreements and when they are not at all working, receiving subsidies and social grants for enjoying their idleness.

The role of the progressive taxation in this procedure is dramatic. Actually, it does not work, because the enforcement of the doctrine of progressive taxation that higher incomes face progressively higher and higher tax rates reverses the rationality of the production of the system as a whole. It destroys totally the incentives and the motivations for production and innovation and it reallocates the use of resources to the most inefficient way. The consequences of such a process are very negative for the progress of the society but always on the name of the progressiveness of the taxation and the prevalence of the rights to equality in the society. For this reason in the modern, Western, democratic societies, we remark and monitor in the real sector of the economy, low productivity, low level of investment, remarkable unemployment, accompanied in public finances with high public debt and high public deficit. The irrational basis of the progressive taxation undermines the function of the real sector of the economy while it is eroding the revenues of the taxation—it is dramatically worsening the public finances and, more than ever in the history of the Western civilization, it is imposing a tremendous tax burden on the most successful members of the society.

Another very negative characteristic of the progressive taxation is the emergence and the expansion of the power and the role of the bureaucracy of the state. The state generates new bureaucratic administrative structures for collecting the revenues of the progressive taxation, and new bureaucratic mechanisms for monitoring, supervising, enforcement, and policing both the members of the society and the controllers of them. The transaction cost is increasing remarkably if not dramatically for the whole economic system while the individuals of the society are restricted more from their liberties and their rights to freedom. An intermediate class—what we call governmental bureaucracy—is emerging between the wealthier and the poorer, and it undertakes the high task of the redistribution of the wealth and the income. As a result, the intermediate class—the state bureaucracy—is expanding itself, taking a critical share of the total revenues of the progressive taxation. This intermediate class, the

state bureaucracy, in its efforts to find the most effective ways of distributing these revenues from the progressive taxation, is forced to expand its base. This dramatic expansion of bureaucracy develops under a pretext of better collecting of information, for the processing thereof, and of the creation and application of mechanisms that will implement the entire task—the redistribution of income. This results not only in the expansion of the intermediate class, the state bureaucracy, but also in its progression, using criteria that do not often have any upper limit determining the increase in size of this intermediate management group. This happens because the redistribution mechanism does not obey the laws of economic rationality.

Thus, an upper limit that could rationalize the procedure as being a problem of maximization under restriction does not exist. From this point on, the state bureaucracy follows the logic of self-gigantism and slowly turns into a large mass. Modern bureaucracy takes an increasingly larger share of the revenues of the progressive taxation that should have been destined to serve the needs of the poorer. It operates as an absorber that retains almost the entire critical mass of the revenues of the progressive taxation; as a result, the revenues from the progressive taxation are spent to the expansion of the state bureaucracy and not for the needs for the poorer. Thus, the state intervention paradox occurs—where state intervention increases, the social problems become more acute. This is the statist paradox. The unlimited and irrational expansion of the size and the power of the state bureaucracy for applying better solutions on the social problems through more complicated intervention and heavier tax burden, is finally entailing total worsening of the conditions and the comfort both of the wealthier and the poorer of the society and remarkably lower level of the social welfare.

On the obvious and the acute problems that arise from the dominance of the rights to equality and the progressive taxation, we recommend two strategic reforms. The first is the reformation of the progressive taxation to analogical, with a fixed at low-level tax rate, where the flat tax is the most appropriate solution, and the second is the restoration of fiscal control on the line of the classical liberal tradition. If we turn our thought to the origins of the Political Economy, the guidance we receive from David Ricardo is invaluable. The term Political Economy was emphatically

marked by David Ricardo in his celebrated work "Principles of Political Economy and Taxation" (1953 in P. Sraffa & M. Dobb, eds., *The Works and Correspondence of David Ricardo*) at the beginning of the nineteenth century. The value of the definition of Political Economy put forward by this great exponent of classical liberal economics may be judged from the guidance it provided, by virtue of its theoretical analysis of the laws of economics, to the then fledgling science. It helped economists to formulate policy clearly derived from economic criteria. Hence the term Political Economy, whose objective was to promote enterprise profits through reduction of taxation while at the same time achieving improvement of the wages to labour on the basis of the economic progress of the system.

So, the very strong claim for the reduction of the taxation is one of the hard-core issues of the Political Economy from its origin. In our times, the dramatic expansion of the state, the worsening of the public finances of the contemporary democracies, and the entailed overtaxation of the firms and the households led to the reappearance and rebirth of the Classical Political Economy under the name New Political Economy or Public Choice School, organized by a circle of economists, among them the Nobel Laureate and eminent economist James Buchanan and his faithful colleague and co-author Gordon Tullock. James Buchanan, with his prophetic books, the first with Gordon Tullock, *The Calculus of Consent* (1962), and the second with Richard Wagner, *Democracy in Deficit*, warned as early as 1977 that fiscal deficits not only represent a clearly ineffective long-term policy but are also the key ideological lever for undermining the integrity of the supreme social contract, the Constitution, and ultimately the self-sufficiency, autonomy, and independence of the Republic.

James Buchanan argued that fiscal control must therefore be brought back as a last line of defence for contemporary democracy and for the individual, who is its prime subject. Within such a context, fiscal policy would rediscover its authentic role and its relevance to the overall logic of a prudent macroeconomic policy. For this to be achieved, there must be a revaluation of the virtues of the nineteenth-century Liberal State of classical fiscal tradition, where government is limited in size and effective in the quality of its action. Fiscal control can be made possible through introduction of the balanced budget, statically, but with provision for its dynamic implementation over time through permanent offsetting of deficits and surpluses, depending on the rising or falling momentum of the economic cycle.

Accompanied with the fiscal control is emerging the second necessary and sufficient reform—the revision of the progressive taxation to analogical, fixed at a low-level tax rate. Since we apply and achieve the transformation of the fiscal policy from wasteful expansive to rational controlled under the principle of the balanced budget, the next step in the formation of the economic policy is the reduction of the tax burden both to the firms and to the households through the application of the flat tax. The flat tax connects strongly the two major schools of contemporary economics that follow the long classical liberal tradition from its origin with the contribution of David Ricardo. The old and very powerful argument and doctrine of the classical political economy that low taxation releases the forces of production and causes exponential economic growth. So the flat tax brings together the school of New Political Economy and the school of Supply Side Economics. The healthy and strong public finances of a limited but efficient government open the road for low taxation, economic growth, and higher level of social welfare. This was the meaning of the presidential address to the American Economic Association, declared in 2003, by the Nobel Laureate economist Robert Lucas. A well-functioning economy is rapid growth, the benefits of which are shared widely, with low taxation and high employment. But Robert Lucas goes beyond comparing the poor results of the redistribution of income with the magnificent results of the released forces of the production in his work in 2004. He emphasizes "The potential for improving the lives of poor people by finding different ways of distributing current production is nothing compared to the apparently limitless potential of increasing production".

So the flat tax is in the heart of a major reforms program for the taxation and the release of the forces of production from the ties of the bureaucracy of the state and from the preoccupied redistribution ethics that dominate the contemporary democracies. The flat tax was supported passionately and explicitly by all the modern economic schools that follow the classical liberal tradition. Above and beyond the symbolic dimension of its uncompromisingly free market content, flat tax is an extremely effective economic measure, as succinctly illustrated by Arthur Laffer (2004) and his famous curve. The reason that the flat tax is so effective is that it possesses the quality of increasing altogether both production and productivity of labour and the return of capital. It is the tax which, single-handed, represents the total taxation revolution in our times which drives the economies to growth and prosperity.

2.6 Conclusions

Two basic conclusions can be drawn from this argumentation. The first is theoretical and the second a political proposal supported by positive analysis and not deontological preferences or viewpoints. Our theoretical conclusion is that, following on the preceding analysis, we can, on the basis of reality, examine which ethical theory of rights is retrospectively vindicated. This enables us to assign positive proof while at the same time allowing our methodological stance to be inferred from the necessary introduction of positive analysis into the development of ethical theory. It is thus the synthesis of the theory of natural rights with the theory of contractual rights that yields the ascendancy of freedom and the maximization of social well-being. But this conclusion, I reiterate, is based not on the ethical superiority of the theories in question or the supremacy of the ethic of freedom but on the indisputable fact that the societies rewarded by history with high economic performance and strong social stability are those based on rights of freedom that are designated spontaneously in a free institutional social environment.

The second conclusion we may draw is that for revival of societies suffering from stagnation, social retrogression, or an increase in social problems what must be implemented is a comprehensive but also incisive set of proposals that would consolidate the rights to freedom and abolish the rights to equality—whatever form they might take and whatever protection they might enjoy from the status quo. These are the most essential and difficult reforms that contemporary democracies must undertake in our times. Economic flourishing and social harmonization would perpetually characterize the picture of democracy in the future if we only re-established the central constitutional role of the rights to freedom against the rights to equality. Such is the dynamic and the force that is acquired by society with the implementation of such reforms that they would very soon become embedded in public opinion, so much so, in fact, that they would generate majorities for an anchoring and retention of the majority rule as a functional democratic parameter for the protection of rights to freedom, analogical taxation, and economic growth, and not as a forceful fundamental factor that expands widespread rights to equality, progressive taxation, bureaucracy, and economic stagnation that degrade democracy and finally erode its institutional superiority.

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3

Inequality in Landownership, Democracy, and Progressive Taxation: Evidence from Historical Data

Pantelis Kammas and Maria Poulima

3.1 Introduction

The interplay between economic factors and political institutions affects the distribution of political power among agents within a country and, consequently, the implemented government's policies. Following the rationale developed by Acemoglu et al. (2005), political power comprises two major components. The first one is the so-called *de facto political power*, which is mainly affected by economic factors, such as the distribution of the economic resources and the technology of production, and the other is the so-called *de jure political power* which comes as a result of the political institutions in a society. Focusing on the big issue of fiscal redistribution, a number of theoretical papers—building on the pioneering work of Meltzer and Richard (1981)—conclude that fiscal redistribution is affected by both the distribution of *de facto power* and *de jure power* within a country. More precisely, these papers suggest that both the

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distribution of income as well as the political institutions affect the demand for fiscal expansion and redistribution (see, e.g., Boix 2003; Acemoglu and Robinson 2000, 2006).[1]

The relationship between *de jure political power* and fiscal redistribution has been extensively investigated by a large number of empirical studies. This literature mostly explores how the development of democratic institutions characterized by universal suffrage as well as the presence of political parties that mobilize lower income groups may affect government spending (see, e.g., Aidt et al. 2006; Aidt and Jensen 2013; Boix 2003; Lindert 1994, 2004) and taxation (see, e.g., Acemoglu et al. 2015; Aidt and Jensen 2009a, b; Mulligan et al. 2004; Profeta et al. 2013). Most of these studies provide some weak evidence in favor of the general conclusions of the Meltzer and Richard (1981) model, although they also highlight that the relationship between democracy and implemented fiscal policy is by far more complicated.[2]

On the other hand, the potential impact of the *de facto political power* on fiscal redistribution has been explored less elaborately. In particular, several empirical studies investigate the impact of income distribution on the level and the pattern of government spending (see, e.g. Alesina and Rodrik 1994; Persson and Tabellini 1994; Perrotti 1996; Rodriguez 1999; Milanovic 2000), but most of these studies focus on "median voter equilibrium", which is based on the assumption that political influence is equally distributed among agents independently of income (i.e. this is the so called one person, one vote hypothesis).[3] To the best of our knowledge, only a small number of studies (see, e.g. Karabarbounis 2011; Ramcharan 2010) recognize that political influence is not distributed uniformly across agents and that economic powerful groups may exert increased impact on decisions related to fiscal redistribution. In other words, these studies recognize that political power does not always coincide with *de jure political power* and, thus, special interest politics exert significant influence on policy decisions even in pure democratic regimes. Along the same lines, Acemoglu et al. (2015) provide evidence in favor of the so-called captured democracy hypothesis, according to which, even though democratic institutions reallocate *de jure power* to poorer agents, powerful elites usually take actions to offset this by increasing their *de facto power* (these are actions aiming to influence parties' platforms via lobbying

or repression through control of local law enforcement). Similarly, Adam et al. (2015) conclude that the distribution of income appears to be an important determinant of the tax structure, whereas the political regime and the quality of democracy do not exert significant impact on the design of the tax system.

The present chapter seeks to investigate the relationship between *de facto political power* and fiscal redistribution, by exploring the effect of landownership inequality on the development of the tax system and, more specifically, on progressive taxation. Historical narratives suggest that inequality in the distribution of landownership is an important determinant of the *de facto power* which affected a large number of economic and political outcomes and exerted vital and enduring impact on the pattern of economic development in many countries (see, e.g. Mokyr 1990). This is because powerful landed aristocracy in many historical cases blocked the introduction of new technologies and growth-promoting institutions in order to protect its own political power and the prospects of rent extraction (see, e.g. Olson 1982; Mokyr 1990). Starting from Engerman and Sokoloff (1997), a number of scholars provide empirical evidence in favor of the abovementioned hypothesis. In particular, these studies suggest that inequality in land holdings, and the consequent concentration of political power to landed elites, led to active repression of human capital-promoting democratic institutions (see, e.g. Galor et al. 2009; Cinnirella and Hornung 2016; Easterly 2007; Ziblatt 2008).[4]

Building on a panel of 20 countries—located principally in North America and Western Europe—over the 1815–2000 period, this chapter suggests that concentration of the political power to landed aristocracy exerts an enduring impact on the design of the tax system and affects negatively the extent of tax progressivity. In particular, our analysis suggests that countries which experienced more unequal distribution of land—and, therefore, more powerful landed elites—did not implement heavily redistributive tax policies. This relationship remains robust across a number of alternative empirical specifications and, most importantly, through alternative political regimes. In other words, our empirical findings suggest that the impact of the *de facto political power* on the progressive taxation is not affected by domestic political institutions and, therefore, is equally present in both democratic and autocratic political regimes.

To the best of our knowledge, our research is novel in the following two aspects. First, it extends the pioneer work of Scheve and Stasavage (2010, 2016) on the historical roots of progressive taxation by providing a clear-cut political economy channel that affected the design of the tax system. Second, this is the first study that explores the impact of the *de facto political power* of landed aristocracy on the structure of taxation in 20 countries—located principally in North America and Western Europe—over a period of two centuries. Our analysis could be viewed as complementary to the pioneer work of Ramcharan (2010) who explores the impact of land inequality on the pattern of government spending. Moreover, our empirical results are in line with Mulligan et al. (2004, 2010) who scale down the importance of *de jure political power* (which is allocated by the political institutions) in the design of public policy and emphasize specific demographic and economic factors (mostly related to the distribution of economic resources) as major determinants of the implemented fiscal policy.[5]

The remainder of the chapter is organized as follows: Section 3.2 reviews the literature on the historical determinants of progressive taxation and formalizes the relevant testable implications. Section 3.3 illustrates the data and the econometric techniques employed, and Sect. 3.4 discusses the empirical results. Finally, Sect. 3.5 summarizes the main points.

3.2 Historical Determinants of Progressive Taxation: A Brief Review of the Literature

Taxation of the high-income agents is a hotly debated topic. So, it should come as no surprise that there are several theories trying to explain why some societies tax the rich heavily. The received wisdom is that progressive taxation is natural in a democracy because, in democratic regimes, it is the number of voters that counts, and the poor and middle classes outnumber the rich. Since democratization provides voting rights to the poorer segments of the population, it shifts the median voter towards low-income agents of the society and therefore increases the demand for fiscal redistribution (see, e.g. Meltzer and Richard 1981). Following this rationale, a large number of political scientists and economists suggest

that democracies are more likely to redistribute income from the rich to the rest, and progressive taxation is one means of doing that (see Boix 2003; Acemoglu and Robinson 2006, 2015).

However, empirical evidence shows that the effect of democratic institutions on progressive taxation has been overstated. In particular, although there is support of the idea that the introduction of income taxation was associated with the extension of the suffrage (see, e.g. Aidt and Jensen 2009a), most of the empirical studies fail to provide clear-cut evidence that democratic governments implement higher marginal tax rates to high incomes compared to autocracies (see Scheve and Stasavage 2016).[6] This is because, even though expansion of the suffrage and adoption of progressive taxation happened around the same epoch in many countries, it took a very long time before a high, top statutory tax rate would be implemented.

Along the same lines, a parallel strand of the political economy literature investigates potential partisan motives behind the choice of the tax policy (see, e.g. Winer and Hettich 2003, for a review). Most of the theoretical studies in this literature predict that left governments will enact higher tax burdens fallen on capital (relatively to labor) and more progressive personal income taxation (see, e.g. Drazen 2000; Persson and Tabellini 2000, for reviews of this literature). This is because parties of the left usually mobilize lower income groups of voters and, therefore, their political agendas are in favor of larger fiscal redistribution. However, empirical evidence on the effect of cabinet's political ideology on implemented tax policy is again rather mixed. Using modern data from 16 developed countries over the period 1970–2000, Angelopoulos et al. (2012) conclude that left governments rely more on capital, relative to labor, income taxation and that they tend to increase consumption taxes. In contrast, Scheve and Stasavage (2010, 2016) employing historical data from 20 countries—located principally in North America and Western Europe—over a period of two centuries fail to provide any evidence in favor of partisan effects on implemented tax policy and in particular on progressive taxation.

Finally, Scheve and Stasavage (2010, 2016) suggest that the mass wars of the twentieth century—and in particular the First World War—played a critical role in the development of redistributive policy.[7] This is mainly due to two reasons. First, during a period of warfare, national governments face increased needs for fiscal revenues in order to finance the required military

expenditures. Second, during a period of mass mobilization for war, the government demands sacrifices from their citizens on the battlefield and, consequently, numerous individuals sacrifice time, forgone income, and potentially their own lives for a collective purpose. Obviously, these sacrifices are not borne equally in society. In the mass wars of the twentieth century (even under universal conscription), the young and the less wealthy were more likely to find themselves in the front lines of the battlefield. At the same time, other individuals remained home and, in addition, earned higher incomes as a result of increased demand for certain products during war time. According to Scheve and Stasavage (2010), this unequal distribution of the war's costs led to increased demand for redistribution and, in particular, for more progressive taxation so as to enable the sacrifices in the war efforts to be more equally distributed among the members of the society.

In the empirical part of our analysis, we take into account all the abovementioned historical determinants of progressive taxation. In addition, we employ a measure of inequality in the distribution of the land in order to explore the effect of landownership inequality on the development of the tax system and more precisely on progressive taxation. According to our theoretical priors, higher land inequality—and consequently heavier concentration of the political power to landed elites—is expected to be associated with a less progressive taxation. This is due to historical reasons that may exert an enduring impact on the development of the tax system within a country.

3.3 Data and Empirical Specification

Dependent Variable: How Do We Measure Tax Progressivity?

In this chapter, we are mainly interested in exploring the economic and political determinants of progressive taxation. A first major concern is how to approximate tax progressivity in a satisfactory way. Statutory top marginal tax rate may measure the tax burden fallen on high-income individuals, but fails to reflect the complexity of the tax system and, therefore, it may not be a satisfactory proxy of the overall progressivity.[8]

However, since countries do not often tax individuals with low incomes (through a large number of allowances enacted by the tax legislation), top marginal tax rate is a good linear approximation of tax progressivity. Scheve and Stasavage (2016) provide evidence that statutory top marginal tax rate appears to be an extremely good proxy for the effective income taxes paid by the very high earners during the nineteenth century.[9] Therefore, the relevant literature concludes that employing top marginal tax rate as a proxy of the overall progressivity does not present serious shortcomings.

Our analysis uses as dependent variable the *Top Income Tax Rate* obtained by the Comparative Income Taxation Database (CITD) developed by Scheve and Stasavage (2016) and Genovese et al. (2016). *Top Income Tax Rate* is the marginal income tax rate levied by the national governments on individuals in the highest income category. Obviously, when the governments enact a more progressive taxation scheme, this variable takes larger values.

One second potential concern is whether focusing on national-level statutory rates provides an informative picture of the implemented tax policy. This is because many countries adopted local income taxes levied by municipalities and other levels of subnational governments. In order to address this concern, our analysis employs a number of specifications for the *Top Income Tax Rate (Local & National)* as a robustness check. *Top Income Tax Rate (Local & National)* is also obtained by the CITD and is defined as the combined marginal income tax rate levied by national and subnational governments on individuals in the highest income category.

Explanatory Variables: How Do We Measure *De Facto* and *De Jure* Political Power?

In order to proxy inequality in landownership, we employ the measure *Family Farms* from the *Democratization and Power Resources 1850–2000* dataset developed by Vanhanen (2003). *Family Farms* measures the percentage of total cultivated area belonging to family farms and, therefore, constitutes a measure of resources' distribution which affects the *de facto political power*. The rationale behind the use of *Family Farms* as our key

explanatory variable is as follows: higher levels of *Family Farms* indicate lower landownership inequality and, therefore, less powerful landed elites (alternatively, a more powerful middle class of peasants). Obviously, this more equal distribution of resources leads to a more progressive taxation since landed elites are less powerful and, therefore, unable to block the demands for fiscal redistribution.

In addition to this, our analysis employs alternative measures of the political regime in order to capture the *de jure political power* within a country. Specifically, we employ four alternative measures of democratic institutions: (1) the competitive elections measure developed by Scheve and Stasavage (2016) which is based on the definitions and data of Boix and Rosato (2001) (denoted as *Competitive Elections*); (2) the dichotomous democracy measure developed by Boix et al. (2013) (denoted as *Democracy Boix*); (3) the POLITY IV democracy indicator by Marshall and Jaggers (2010) (denoted as *Democracy POLITY IV*); and (4) the universal male suffrage developed by Scheve and Stasavage (2016) (denoted as *Universal Suffrage*).

Competitive Elections is a binary variable that is set equal to one if the legislature is elected in free multi-party elections, if the executive is directly or indirectly elected in popular elections and is responsible either directly to voters or to a legislature elected according to the first condition, and, finally, if at least 50% of adult males have the right to vote. *Democracy Boix* is also a dichotomous measure which takes the value one if a country is categorized as democratic and the value zero if the country is non-democratic according to their definition as described in Boix et al. (2013). *Democracy POLITY IV* is the democracy indicator developed by Marshall and Jaggers (2010) and ranges from zero to ten, with higher values denoting a more democratic regime within the country. Finally, *Universal Suffrage* is a dummy variable which is set equal to one for years in which all adult males are eligible to vote in national elections and zero otherwise. This variable has been developed by Scheve and Stasavage (2016) based on the primary sources of Caramani (2000).

Our core set of controls also includes the real *GDP per capita* which captures the real gross domestic product (GDP) per capita in 1990 Geary-Khamis (international) dollars obtained by Bolt and van Zanden (2014), the *War Mobilization* measure developed by Scheve and Stasavage (2010,

2016) that equals to one if a country participates in an interstate war, with at least 2% of the population involved, and zero otherwise and the *Left Executive* measure which is also constructed by Scheve and Stasavage (2016) based on the primary sources of Flora et al. (1983). *Left Executive* equals to one during the years that the head of state (President, Prime Minister, etc.) is member of a socialist, social democratic, or labor party, and zero otherwise. Finally, our core set of controls contains a measure of tax revenues as a share of GDP obtained by the IMF (denoted as *Revenues to GDP*).

Furthermore, in a number of empirical specifications, we extend our core set of explanatory variables by including a number of additional controls. In particular, we employ the share of pre-tax income earned by the top 1% individuals of the income distribution (denoted as *Income Share of Top 1%*), the share of pre-tax income earned by the top 0.01% individuals of the income distribution (denoted as *Income Share of Top 0.01%*), both obtained by the *World Wealth and Income Database,* and the share of wealth held by the top 1% individuals of the wealth distribution *(*denoted as *Wealth Share of Top 1%*) as in Ohlsson et al. (2007) and Roine and Waldenstrom (2014). Finally, we employ several alternative measures of economic crises and crashes (i.e. Domestic Debt Crises, External Debt Crises, Stock Market Crash, Banking Crises, Currency Crises), which are all obtained by CITD of Scheve and Stasavage (2016) and Genovese et al. (2016).[10]

Empirical Specification

Our analysis seeks to investigate the relationship between *de facto political power* and fiscal redistribution by exploring the effect of landownership inequality on the development of the tax system and, more precisely, on progressive taxation. Moreover, we explore whether *de jure political power* matters by investigating how the democratic political institutions may influence the enactment of progressive taxation. To this end, we estimate the following equation by employing data for 20 countries over the period 1815–2000:

$$Top\ Rate_{it} = \alpha_0 + \alpha_1 Top\ Rate_{it-1} + \alpha_2 Family\ Farms_{it-1} + \beta X_{it-1} + \gamma_t + \delta_i + \varepsilon_{it}, \quad (3.1)$$

where $Top\ Rate_{it}$ stands for tax progressivity as described in Sect. 3.3.1; $Family\ Farms_{it}$ is a proxy for inequality in the distribution of the landownership, and X_{it-1} includes the additional covariates that are expected to affect tax progressivity. Also, the standard assumptions for the error term hold. We note that X_{it-1} always contains a proxy for the political regime in order to take into account the effect of political institutions. We also include country and time fixed effects (denoted by δ_i and γ_t, respectively) in all specifications. Consequently, all our estimates are exploiting within-country variations around a common trend. They are, therefore, not confounded by time invariant country-specific factors or by aggregate shocks common to all countries in the relevant sample. We also note that, in this specification, t represents the mean of each five-year sub-period (i.e. 1820, 1825, ..., 2000) of our sample, whereas $t-1$ represents the mean of the previous sub-period (i.e. 1815, 1820, ..., 1995).

Since fiscal commitments and institutions exhibit a high degree of persistence, we estimate a partial adjustment model. However, the partial adjustment model raises a number of econometric issues that should be further discussed. First, one potential concern is the Nickell bias (Nickell 1981) in our estimates. However, we must notice that our dataset consists of 20 countries and roughly 25 half-decade periods (i.e. 125 observations on average for each country). Therefore, Nickell bias is not an issue of great concern[11]. Then, another potential concern is the problem of autocorrelation and spatial correlation in the structure of the error term. To deal with this issue, we always present estimates with robust standard errors as suggested by Beck and Katz (1995).

In order to investigate whether the relationship between *de facto political power* and tax progressivity is affected by *de jure political power* within the country, in Eq. (3.2) we introduce a multiplicative term which allows us to investigate potential interactions between inequality in landownership and the type of political regime. In particular, we estimate the following equation which extends Eq. (3.1) by including an additional interaction term:

$$Top\ Rate_{it} = \alpha_1 Top\ Rate_{it-1} + \alpha_2 Democracy_{it} + \alpha_3 Family\ Farms_{it} + \alpha_4 Democracy_{it}^{*} Family\ Farms_{it} + \beta X_{it} + \gamma_t + \delta_i + \varepsilon_{it}. \quad (3.2)$$

In Tables 3.3 and 3.4, we report the results from Eq. (3.2), employing four alternative proxies for the democratic political institutions. In particular, we include: (1) the democracy measure developed by Boix et al. (2013); (2) the *POLITY IV* measure of democracy (see Marshall and Jaggers 2010); (3) the competitive elections; and (4) the universal suffrage measure developed by Scheve and Stasavage (2016)[12]. As before, our dataset consists of the 20 countries over the period 1815–2000.

3.4 Empirical Results

In this section, we examine if the data implies a relationship between the inequality in landownership and progressive taxation. First, we present the results using a core set of explanatory variables (Table 3.1) and then we examine the robustness of our empirical findings to outliers and additional control variables (Table 3.2). Finally, we investigate how the abovementioned relationship might be affected by potential interactions between inequality in landownership and the political institutions within a country (Tables 3.3 and 3.4).

The Effect of Inequality in Landownership on Progressive Taxation: Baseline Results

We start by examining whether inequality in landownership (*Family Farms*) matters for the progressivity of taxation, as approximated by the top marginal income tax rate levied by national governments on individuals in the highest income category (*Top Income Tax Rate*). We estimate Eq. (3.1) using a dataset of 20 countries—located principally in North America and Western Europe—over the 1815–2000 period, by using the means of each five-year sub-period (i.e. 1820, 1825, ..., 2000). We also include country and half-decade fixed effects in all specifications. Table 3.1 presents our benchmark empirical findings.

Table 3.1 Equality in land distribution ownership and progressive taxation 1815–2000, benchmark results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Top Income Tax Rate$_{t-1}$					0.751***	0.740***	0.726***	0.703***
					(17.594)	(17.213)	(16.658)	(14.995)
Family Farms$_{t-1}$	0.226***	0.217***	0.190***	0.226***	0.078**	0.077**	0.073**	0.088**
	(5.085)	(4.933)	(4.061)	(4.640)	(2.585)	(2.533)	(2.326)	(2.508)
GDP per capita$_{t-1}$		−0.002***	−0.002***	−0.001***		−0.001***	−0.001***	−0.001***
		(−3.812)	(−4.253)	(−3.428)		(−2.888)	(−3.210)	(−2.814)
War Mobilization$_{t-1}$			19.538***	16.934***			10.605**	10.135**
			(4.053)	(3.504)			(2.370)	(2.250)
Left Executive$_{t-1}$			0.820	0.688			0.999	0.987
			(0.430)	(0.368)			(0.687)	(0.683)
Competitive Elections$_{t-1}$			4.676**	2.361			0.606	−0.027
			(2.362)	(1.143)			(0.443)	(−0.019)
Revenues to GDP$_{t-1}$				0.080				−0.001
				(0.736)				(−0.020)
Half-Decade Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	507	504	504	481	507	504	504	481
R-squared	0.84	0.84	0.85	0.85	0.93	0.93	0.93	0.93

Notes: The table presents estimated coefficients and *t-statistics* in parentheses. All regressions are estimated with half-decade and country fixed effects and robust standard errors (except otherwise noted). The *, **, and *** marks denote statistical significance at the 10%, 5%, and 1% respectively

Table 3.2 Equality in land distribution ownership and progressive taxation 1815–2000, robustness

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Top Income Tax Rate$_{t-1}$	0.703***	0.696***	0.535***	0.654***	0.565***	0.538***	0.715***	0.701***	0.709***
	(14.995)	(11.629)	(6.393)	(9.656)	(6.680)	(6.036)	(6.335)	(14.567)	(15.194)
Family Farms$_{t-1}$	0.088**	0.104***	0.249**	0.165**	0.294***	0.349***	0.273**	0.089**	0.091**
	(2.508)	(2.754)	(2.256)	(2.513)	(3.583)	(3.191)	(2.162)	(2.479)	(2.547)
GDP per capita$_{t-1}$	−0.001***	−0.001***	0.004	−0.001***	−0.001***	−0.003***	−0.000	−0.001***	−0.001**
	(−2.814)	(−2.744)	(1.458)	(−2.848)	(−2.702)	(−3.267)	(−0.223)	(−2.830)	(−2.392)
War Mobilization$_{t-1}$	10.135**	20.172***	26.596***	4.376	12.298**	14.617**	18.928**	9.842**	9.789**
	(2.250)	(2.770)	(3.201)	(0.989)	(2.371)	(2.536)	(2.532)	(2.176)	(2.188)
Left Executive$_{t-1}$	0.987	1.743	14.095**	1.395	0.143	0.229	−0.273	1.108	1.063
	(0.683)	(1.184)	(2.203)	(0.826)	(0.083)	(0.090)	(−0.121)	(0.743)	(0.729)
Competitive Elections$_{t-1}$	−0.027	0.356	−0.778	1.594	3.158	3.310	−0.742	0.011	0.057
	(−0.019)	(0.250)	(−0.383)	(0.483)	(1.242)	(1.030)	(−0.140)	(0.008)	(0.041)
Revenues to GDP$_{t-1}$	−0.001	−0.047	0.251	−0.014	0.112	−0.162	−0.092	−0.000	−0.008
	(−0.020)	(−0.611)	(0.769)	(−0.173)	(1.237)	(−1.178)	(−0.834)	(−0.004)	(−0.109)
Income Share of Top 1%$_{t-1}$					0.647**				
					(1.986)				
Income Share of Top 0.01%$_{t-1}$						5.433**			
						(2.262)			
Wealth Share of Top 1%$_{t-1}$							0.223*		
							(1.667)		
Domestic Debt Crises$_{t-1}$								−2.172	
								(−0.372)	
External Debt Crises$_{t-1}$								1.767	
								(0.373)	
Banking Crises$_{t-1}$									−0.190
									(−0.091)

(*continued*)

Table 3.2 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Stock Market Crash$_{t-1}$									0.437
									(0.205)
Currency Crises$_{t-1}$									4.180
									(1.112)
Half-Decade Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	481	433	178	303	268	179	140	481	481
R-squared	0.93	0.92	0.85	0.87	0.91	0.91	0.94	0.93	0.93

Notes: The table presents estimated coefficients and *t-statistics* in parentheses. All regressions are estimated with half-decade and country-fixed effects and robust standard errors (except otherwise noted). The *, **, and *** marks denote statistical significance at 10%, 5%, and 1%, respectively

Table 3.3 Equality in land distribution ownership and progressive taxation 1815–2000 (Interactions with the political regime)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Top Income Tax Rate$_{t-1}$	0.726***	0.724***	0.726***	0.725***	0.725***	0.722***	0.729***	0.729***
	(16.695)	(16.588)	(16.720)	(16.626)	(16.633)	(16.370)	(16.868)	(16.848)
Family Farms$_{t-1}$	0.076**	0.127***	0.076**	0.124**	0.071**	0.138*	0.079***	0.074
	(2.402)	(2.600)	(2.420)	(2.531)	(2.326)	(1.797)	(2.631)	(1.583)
GDP per capita$_{t-1}$	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***	−0.001***
	(−3.202)	(−2.846)	(−3.207)	(−2.863)	(−3.446)	(−3.068)	(−3.287)	(−3.101)
War Mobilization$_{t-1}$	10.743**	10.530**	10.706**	10.501**	10.828**	10.845**	10.589**	10.621**
	(2.405)	(2.350)	(2.395)	(2.340)	(2.425)	(2.422)	(2.366)	(2.360)
Competitive Elections$_{t-1}$	0.767	2.582						
	(0.589)	(1.139)						
Competitive Elections$_{t-1}$ x Family Farms$_{t-1}$		−0.056						
		(−1.138)						
Democracy Boix$_{t-1}$			0.630	2.303				
			(0.480)	(1.009)				
Democracy Boix$_{t-1}$ x Family Farms$_{t-1}$				−0.051				
				(−1.041)				
Democracy Polity IV$_{t-1}$					0.156	0.419		
					(0.842)	(1.084)		
Democracy Polity IV$_{t-1}$ x Family Farms$_{t-1}$						−0.008		
						(−0.876)		
Universal Suffrage t–1							−0.406	−0.622
							(−0.275)	(−0.282)
Universal Suffrage t–1 x Family Farms$_{t-1}$								0.006
								(0.115)

(*continued*)

Table 3.3 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Half-Decade Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	504	504	504	504	499	499	504	504
R-squared	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93

Notes: The table presents estimated coefficients and *t-statistics* in parentheses. All regressions are estimated with half-decade and country-fixed effects and robust standard errors (except otherwise noted). The *, **, and *** marks denote statistical significance at 10%, 5%, and 1%, respectively

Table 3.4 Equality in land distribution ownership and progressive taxation 1815–2000, national and local tax rate data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Top Income Tax Rate$_{t-1}$	0.725***	0.712***	0.711***	0.715***	0.712***	0.712***	0.711***	0.709***	0.709***
	(16.416)	(16.223)	(16.178)	(16.217)	(16.056)	(16.250)	(16.214)	(16.164)	(16.146)
Family Farms$_{t-1}$	0.109***	0.105***	0.145***	0.107***	0.063	0.105***	0.140***	0.103***	0.117
	(3.321)	(3.137)	(2.971)	(3.297)	(1.362)	(3.152)	(2.891)	(3.165)	(1.550)
GDP per capita$_{t-1}$		−0.001*	−0.001	−0.001*	−0.001**	−0.001*	−0.001	−0.001*	−0.001
		(−1.726)	(−1.435)	(−1.849)	(−2.092)	(−1.741)	(−1.470)	(−1.783)	(−1.619)
War Mobilization$_{t-1}$		10.653**	10.494**	10.539**	10.856**	10.617**	10.471**	10.609**	10.610**
		(2.411)	(2.366)	(2.384)	(2.435)	(2.403)	(2.359)	(2.402)	(2.399)
Competitive Elections$_{t-1}$		0.813	2.200						
		(0.627)	(0.981)						
Competitive Elections$_{t-1}$ x Family Farms$_{t-1}$			−0.043						
			(−0.904)						
Democracy Boix$_{t-1}$				0.645	1.872				
				(0.495)	(0.829)				
Democracy Boix$_{t-1}$ x Family Farms$_{t-1}$					−0.038				
					(−0.792)				
Democracy Polity IV$_{t-1}$						0.178	0.231		
						(0.965)	(0.620)		
Democracy Polity IV$_{t-1}$ x Family Farms$_{t-1}$							−0.002		
							(−0.185)		
Universal Suffrage t–1								−0.563	−2.605
								(−0.380)	(−1.224)
Universal Suffrage t–1 x Family Farms$_{t-1}$									0.060
									(1.088)
Half-Decade Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	487	484	484	484	484	484	484	479	479
R-squared	0.94	0.94	0.93	0.94	0.93	0.94	0.94	0.93	0.93

Notes: The table presents estimated coefficients and *t-statistics* in parentheses. All regressions are estimated with half-decade and country-fixed effects and robust standard errors (except otherwise noted). The *, **, and *** marks denote statistical significance at 10%, 5%, and 1%, respectively

We clearly see that, equality in landownership bears a positive and highly significant coefficient, which remains qualitatively intact across all alternative specifications. This result indicates that economies characterized by more equal concentration of land (and, therefore, less powerful landed elites) enact more progressive taxation schemes. This finding appears to be in accordance with our theoretical priors, suggesting that powerful landed elites may block tax reforms that implemented progressive taxation and, consequently, increased the tax burdens fallen on them. Looking into the rest of explanatory variables, we observe that *War Mobilization* enters with a positive and highly significant coefficient as suggested by Scheve and Stasavage (2010) and *GDP per capita* bears negative and significant coefficients, indicating that richer countries tend to enact less progressive tax structures. Finally, we observe that *Competitive Elections* and *Left Executive* enter with non-significant coefficients in most of the specifications, highlighting that democratic political institutions do not matter for tax progressivity and, moreover, the absence of partisan motives concerning the tax structure. This empirical finding appears to be in contrast with the standard Meltzer and Richard (1981) theoretical argument—according to which democracy is expected to affect positively tax progressivity—but is in line with previous empirical studies investigating similar issues (see, e.g., Scheve and Stasavage 2016).

The Effect of Inequality in Landownership on Progressive Taxation: Sensitivity Analysis

In Table 3.2, we check the robustness of our baseline results by investigating whether the effect of landownership's inequality on the progressivity of taxation survives under alternative sets of controls or when a number of outliers are controlled in our analysis.

To facilitate the comparison, Column (1) of Table 3.2 reports the empirical findings as presented in Column (8) of Table 3.1. Then, Column (2) presents the estimation results of Eq. (3.1) but now excluding 10% of outliers in the data. The evidence suggests that *Family Farms* enters again with a positive coefficient, whereas its statistical significance, as expected,

increases. In turn, Columns (3) and (4) present the estimation output using Eq. (3.1) when we split our sample into two sub-periods: 1815–1930, in Column (3), and 1930–2000 in Column (4). Splitting the sample in these two sub-periods allows us to investigate whether specific historical determinants exert an enduring effect on the development of the tax system.[13] Our empirical findings suggest that in both cases *Family Farms* bears a positive and highly significant coefficient, although in Column (4) the magnitude of the coefficient is apparently smaller compared to that of Column (3).

Then, columns (5) to (7) present the estimation output when we include alternative income inequality [see columns (5) and (6)) and wealth inequality (see Column (7)] in our set of controls. This allows us to investigate whether the observed relationship is driven by some omitted inequality measures. Clearly, our empirical findings still remain qualitatively intact. Specifically, *Family Farms* enters again with a positive and significant coefficient in all alternative specifications, whereas income and wealth inequality proxies also bear positive and significant coefficients. The latter implies that increased income and wealth inequality leads to demand for fiscal redistribution through taxes which is in line with our theoretical priors. Finally, in our last two specifications, we take into consideration the effect of economic crises on the design of the tax system [see Columns (8) and (9) in Table 3.2)]. Obviously, our analysis suggests that economic crises do not exert a statistically significant impact on the progressivity of taxation. Regarding the rest of the explanatory variables, our results remain qualitatively identical to those presented in Table 3.1.

Potential Interactions Between Inequality in Landownership and Political Institutions

In Tables 3.3 and 3.4, we focus on the potential differential effect of the political institutions on the nexus between inequality in the landownership and progressive taxation. To identify this channel, we estimate Eq. (3.2) using the same dataset of 20 countries over the period 1815–2000 by using the five-year means. Specifically, we introduce four alternative

interaction terms (*Family Farms*Democracy*) that allow us to investigate whether the relationship between inequality in the landownership and progressive taxation is affected by the existing political institutions. Table 3.3 presents the empirical findings when we employ the top marginal income tax rate levied by national governments on individuals in the highest income category (*Top Income Tax Rate*) as the dependent variable.

As we can see in Table 3.3, *Family Farms* enters with a positive and significant coefficient in most of the empirical specifications whereas none of the four alternative interactive terms bear a statistically significant coefficient. This empirical finding highlights that the relationship between inequality in the landownership and progressive taxation is not affected by the political institutions within the country. In other words, inequality in land holdings and the consequent concentration of political power to landed elites exert a negative impact on tax progressivity in democratic as well as in autocratic regimes. Therefore, our empirical findings suggest that it is the *de facto power* of the agents (that comes from the distribution of the economic resources) and not the *de jure power* (which is mainly driven by the political institutions) that determines the implementation of a redistributive tax policy. Our empirical findings are in line with previous empirical studies, suggesting that political regime does not affect the design of the tax policy (see, e.g., Mulligan et al. 2004; Profeta et al. 2013; Adam et al. 2015) and emphasizing the important specific demographic and economic factors (mostly related to the distribution of economic resources) as major determinants of the implemented fiscal policy (see, e.g. Mulligan et al. 2004, 2010). Regarding the rest of the explanatory variables, our results remain qualitatively identical to those presented in Tables 3.1 and 3.2.

Finally, in Table 3.4, we check the robustness of our results using the top marginal income tax rate levied by national and sub-national governments (denoted as *top-income tax rate (national and local)*) as the dependent variable. Our set of controls still remains the same. Our empirical findings are qualitatively identical to those presented in Table 3.3. In particular, *Family Farms* enters a positive and significant coefficient in most of the empirical specifications, whereas none of the four alternative

interactive terms bear a statistically significant coefficient. Therefore, once again we confirm that it is the *de facto power* of the agents (that comes from the distribution of the economic resources) and not the *de jure power* (which is mainly driven by the political institutions) that determines the implementation of a redistributive tax policy.

3.5 Conclusions

The present chapter places the spotlight on the relationship between *de facto political power* and fiscal redistribution. More specifically, we explore: (1) the effect of landownership inequality on the development of the tax system and, more precisely, on progressive taxation, and (2) whether this relationship is affected by the domestic political institutions. Building on a dataset of 20 countries—located principally in North America and Western Europe—over the period 1815–2000, our analysis suggests that inequality in land holdings exerts a negative and statistically significant impact on progressive taxation. Particularly, countries characterized by larger concentration of land—and, consequently, powerful landed elites—do not implement redistributive tax. This relationship remains robust across a number of alternative specifications and, most importantly, through alternative political regimes.

Our empirical findings could be viewed as complementary to the pioneer work of Ramcharan (2010) that explores the impact of land inequality on the pattern of government spending. Furthermore, our results are in accordance with previous empirical studies suggesting that political regime does not affect the design of the tax policy (see, e.g., Mulligan et al. 2004; Profeta et al. 2013; Adam et al. 2015) as well as the general conclusions of the so-called Chicago political economy school who scale down the importance of the *de jure political power* (which is allocated by the political institutions) and emphasizes the importance of specific demographic and economic factors (mostly related to the distribution of economic resources) as major determinants of the implemented fiscal policy (see Mulligan et al. 2004, 2010).

Appendix: Summary Statistics of Variables

Variable	Description	Obs.	Mean	SD	Min	Max	Source
Top income tax rate	Top marginal income tax rate levied by national governments on individuals in the highest income category	637	28.752	28.230	0	97.5	Comparative Income Taxation Database (CITD)
Top income tax rate (national and local)	Top marginal income tax rate levied by national and subnational governments on individuals in the highest income category	601	35.172	29.934	0	98	Comparative Income Taxation Database (CITD)
Family farms	Variable that measures resource distribution as a percentage of total cultivated area or of total area of holdings (%)	527	52.722	24.219	0	98	Vanhanen (2003)
Democracy	Binary variable which equals 1 whenever a political regime is characterized as democratic and 0 otherwise	633	0.670	0.465	0	1	Boix et al. (2013)
Democracy Polity IV	Index variable which ranges from −10 (extreme autocracy) to +10 (perfect democracy)	626	7.147	3.725	0	10	Marshall and Jaggers (2010)
GDP per capita	Real GDP per capita in 1990 US dollars	607	7407	6718	681	30930	Bolt and van Zanden (2014)
War mobilization	Binary variable that takes the value 1 if a country was engaged in an interstate war and at least 2% of the population was serving in the military and 0 otherwise	640	0.033	0.147	0	1	Scheve and Stasavage (2010, 2016)
Left executive	Binary variable that takes the value 1 during the years that the head of state is member of a left-wing party and 0 otherwise	640	0.174	0.328	0	1	Comparative Income Taxation Database (CITD)
Competitive elections	Binary variable that takes the value 1 if a country runs free multi-party elections with voting rights to at least 50% of adult males	640	0.661	0.468	0	1	Comparative Income Taxation Database (CITD)

Revenues to GDP	Continuous variable that indicates tax revenues as a percent of GDP with interpolated missing data	538	20.679	15.192	0.971	59.171	IMF
Income share of top 1%	Continuous variable that measures the share of pre-tax income earned by the top 1% individuals of the income distribution	293	10.530	4.358	3.828	26.990	World Wealth and Income database
Income share of top 0.01%	Continuous variable that measures the share of pre-tax income earned by the top 0.01% individuals of the income distribution	196	1.303	1.015	0.186	4.205	World Wealth and Income database
Wealth share of top 1%	Continuous variable that indicates the share of wealth held by the top 1% individuals of the wealth distribution	154	31.758	13.594	6.913	69	Ohlsson et al. (2007), Roine and Waldstrom (2014)
Domestic debt crises	Binary variable that takes the value 1 during the years that a country faces a domestic debt crisis and 0 otherwise	640	0.010	0.816	0	1	Comparative Income Taxation Database (CITD)
External debt crises	Binary variable that takes the value 1 during the years that a country faces an external debt crisis and 0 otherwise	640	0.037	0.171	0	1	Comparative Income Taxation Database (CITD)
Banking crises	Binary variable that takes the value 1 during the years that a country faces a banking crisis and 0 otherwise	640	0.086	0.198	0	1	Comparative Income Taxation Database (CITD)
Stock market crash	Binary variable that takes the value 1 during the years that a country faces a stock market crash and 0 otherwise	640	0.188	0.254	0	1	Comparative Income Taxation Database (CITD)
Currency crises	Binary variable that takes the value 1 during the years that a country faces a currency crisis and 0 otherwise	640	0.076	0.158	0	1	Comparative Income Taxation Database (CITD)
Universal male suffrage	Binary variable that takes the value 1 during the years that all adult males are eligible to vote in national elections and 0 otherwise	640	0.664	0.467	0	1	Comparative Income Taxation Database (CITD)

Notes

1. This is because franchise extension shifts the median voter towards the poorer segments of the society.
2. Specifically, Aidt et al. (2010) provide evidence of a U-shaped relationship between spending on urban amenities and extension of local voting franchise in a panel of municipal boroughs in England and Wales. This non-linear relationship is attributed to a retrenchment effect that comes as a result of enfranchisement of the middle class. Likewise, Aidt and Jensen (2013) suggest that franchise extension exhibits a U-shaped association with revenue per capita and a positive association with spending per capita in a panel of European countries over the period 1820–1913. Moreover, Aidt and Jensen (2009b) conclude that the impact of franchise extension on the composition of taxation in nine Western economies during the period 1860–1938 is conditional on the state of the tax-collection technology. Thus, a large strand of the relevant literature concludes that the relationship under investigation is not straightforward, and variations in institutional details in time and space may crucially affect the consequences of democracy on fiscal policy.
3. This type of study implicitly assumes that political power always coincides with the *de jure political power* and, therefore, concludes that the median voter is the decisive agent for any political outcome (see the Appendix in Acemoglu and Robinson 2006, for more details on this).
4. Galor et al. (2009), using a dataset of US states in the twentieth century, conclude that inequality in landownership affected adversely the emergence of human capital-promoting institutions (public schooling and child labor regulation) and, thus, the pace and nature of the transition from an agriculture to an industrial economy. Similarly, Cinnirella and Hornung (2016) provide evidence of a negative association between large ownership concentration and the expansion of mass education in nineteenth-century Prussia. Finally, Ziblatt (2008) demonstrates that land-holding inequality did affect negatively the prospect of democratization in Prussia, whereas income inequality did not have any significant effect.
5. Stigler (1971), Peltzman (1976) and Becker (1983) emphasize economic and demographic variables such as interest group size, group cohesion, and the technology of tax collection as basic determinants of public policies via their effects on both the public interest and the

political success of special-interest groups. To their view, conflicts over policy are mediated by the political leader (whether democratically elected or not), but it is the economic and demographic factors that lead policy decisions.

6. In contrast, Muligan et al. (2004) and Kammas and Sarantides (2016) provide evidence that autocratic regimes redistribute more through taxes.
7. Scheve and Stasavage (2010, 2016) define as "mass warfare" any interstate war that at least 2% of the population was serving in the military. A more strict definition comprises interstate wars that at least 5% of the population was serving in the military.
8. This is because the overall tax burden does not depend solely on the statutory tax rate, but also on what is defined—by the tax legislation—as tax base. Therefore, we are in need of some more sophisticated tax measures that would take into account changes in the tax base (i.e. changes in allowances, deductions, etc.). For these reasons, a large number of empirical studies exploring issues related to the tax structure rely on effective tax rates rather than statutory tax rates [for more details on the methodology of effective tax rates, see Mendoza et al. (1994) and Volkerink and de Haan (2001)].
9. In particular, they show that statutory top marginal tax rate is highly correlated with the effective income tax rate on incomes—in the top 0.01% of income distributions—for most of North America and Western European countries.
10. For detailed definitions and summary statistics of the control variables, see the Appendix.
11. Based on a large number of simulations, Judson and Owen (1999) suggest that Nickell bias (Nickell 1981) decreases as the number of time periods increases and becomes negligible in panels with more than 20 time periods.
12. For more details about these variables, see Sect. 3.3.2.
13. According to Mokyr (1990), the power of the landed elites mitigated substantially in most Western European countries after the second phase of Industrial Revolution and especially after 1930. However, since implemented fiscal policy is affected by fiscal commitments and institutions—that exhibit a high degree of persistence—the power of the landed elites in the past may exert significant influence on contemporaneous fiscal policy.

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4

Tax Havens: The Crisis of Transparency

Mayya Konovalova, Penelope Tuck,
and Rodrigo Ormeño-Pérez

4.1 Introduction: The Crisis of Transparency

An unprecedented hype over international tax law over the past decade has been explained by the dynamic evolution of the international tax regime, allegedly spurred by new advantages created through globalisation, whereby new conditions are created for corporations to maximise the inherent advantages in tax planning. The political momentum for the renewed international regulatory initiatives in taxation emerged on the intersection of the highly politicised mainstream public debate on whether multinational companies are paying their "fair share" of taxes with a longer-standing policy debate about the adequacy of current international tax standards (Corwin 2014). This state of affairs, where the

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questions of tax avoidance and evasion[1] became especially pertinent for both governments and the wider public, has been largely attributed to the Financial Crisis in 2008 and the consequent years of recession (Alexander 2013; Perrow 2010; Sikka and Willmott 2013). Arguably, the advantages that corporates derive from such tax planning techniques have crossed the line beyond which these practices became publicly visible and, thus, objectionable; hence, the media exposure took precedence over the substantive rules of the international tax regime (Brauner 2014).

The crisis of transparency for tax purposes has been reaching its maturity in recent years, as the international tax debate has become increasingly mainstream, aided by NGOs like Tax Justice Network, social media, and academics. In his book, *The Hidden Wealth of Nations: The Scourge of Tax Havens* (2015), Zucman estimated the global cost of offshore tax evasion at the level of $190 billion in 2014 only (Fig. 4.1). In addition, Zucman argues that this eye-catching annual loss figure is the result of the wealth hidden offshore, an estimated $7.6 trillion, or 8 per cent of global household financial wealth (Zucman 2015).

Although the process of arriving at such conspicuous figures involved a number of assumptions,[2] which may not inspire much confidence among some academics (Clarke 2016; Shevlin 2016), these estimates helped Zucman to revive the political, academic, and public debates

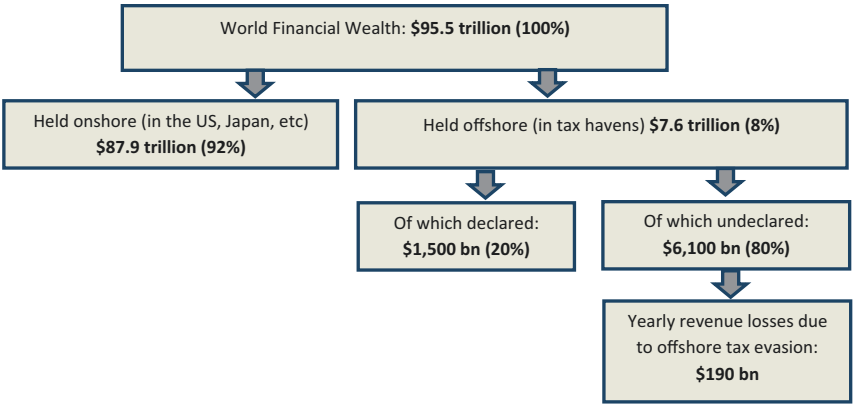

Fig. 4.1 Financial Wealth Held in Tax Havens (2014)
Adapted from: Gabriel Zucman, The Hidden Wealth of Nations: The Scourge Of Tax Havens (2015), University Of Chicago Press

around tax havens, tax avoidance, and tax evasion. Under the pressure of the public outcry, powerful national and international actors got involved into much sabre-rattling in the form of ambitious statements of intention to implement regulatory changes.

In this context of increasing scrutiny towards corporate tax practices, the exposure of apparently very successful and allegedly permissible tax-planning techniques of multinational corporations changed the perception and treatment of business taxes. From simply an accounting cost to be minimised, corporate tax transformed into an area of core business risk, as has been shown by recent cases of shareholder activism like the Domini Social Equity Fund—a group of Google shareholders who proposed that Google should adopt more responsible tax policy principles.[3] It is in this controversial circumstance that the OECD was tasked with designing international tax rules, which ideally need to address the dynamics of public outrage, while at the same time, contribute positively to the adequacy of the current international tax standards. The most recent and comprehensive OECD initiative in improving international tax standards is the Base Erosion and Profit Shifting (BEPS) project, while the transparency for tax purposes is also being addressed through the Common Reporting Standard (CRS), also referred to as the Standard for Automatic Exchange of Information (AEOI). The structure of the chapter proceeds as follows. First we present an overview of the "tax haven" and "secrecy haven" concept, and the role thereof in obscuring the beneficial ownership through anonymous legal structures. The next section looks at the existing international tax regime, followed by an overview of both the OECD initiatives—CRS and BEPS—highlighting some of the challenges that the organisation is facing. The chapter ends with the discussion of the potential effectiveness of the OECD initiatives within the international tax regulations, with a focus on the transparency of beneficial ownership.

4.2 Challenges

Inability to draw a clear line between acceptable and unacceptable tax practices,[4] however, remains a major predicament in the design of recommendations from different actor groups, with significant differences of

opinion as to what constitutes "bad" and "good" practice (ActionAid, March 2015; Freedman 2007; Self 2008). The BEPS project is no exception, as the OECD only declares general standards without clearly specifying which practices are acceptable and which are not (Brauner 2014). For example, the use of tax expenditures,[5] such as tax holidays favoured by developing countries, has been a matter of considerable debate due to their role in terms of tax competition, as tax expenditures can be an important factor in the location decision of a business (Fuest and Riedel 2009). The general lack of agreement does not prevent the pressure growing on tax administrations to endeavour to close the "tax gap" in the years following the financial crisis, with some governments undertaking initiatives to evaluate and measure the perceived difference between the theoretical amount of tax that should be collected against the actual amount collected.[6]

It has been suggested that investment strategies and financial policies are linked through taxes, where the role of taxes needs to be considered in order to organise effective tax planning and avoid operating at a competitive disadvantage (Scholes 2015). A perceived decline in tax morality, or "moral termites", has been identified as one of the major problems that tax authorities need to deal with, as well as one of the reasons there is a greater need for cooperation between tax authorities (Braithwaite 2005). Indeed, a number of corporations do not hesitate to relocate their businesses to more convivial tax jurisdictions if this allows them to minimise expenditures and remain competitive in the market. Such tax-planning techniques, resulting in avoidance or evasion, often include the use of tax havens, along with specially targeted tax regimes introduced by non-havens and manipulation of internal transfer pricing (Gravelle 2015; Palan 2010; Slemrod and Wilson 2009; Sullivan 2004; Zucman 2015).

Notwithstanding the attention towards the use of offshore subsidiaries for tax evasion and money-laundering purposes, the understanding of offshore foreign direct investment remains fragmentary in nature (Haberly and Wójcik 2015). The recent case of the Panama Papers leak, dubbed the "biggest leak of the century" (Leaders 2016), has made headlines globally, selectively revealing certain customers of the Panama-based law-firm. What seems to be the result of it is the reinforcement of the preconceived notion of reality within societies globally (Hines 1988); a

reality, where countries labelled as "tax havens" are associated with higher taxes imposed on the tax-paying population of non-havens, and the wealthy minority and corrupted leaders becoming richer.

Since taxation of the worldwide income of individuals and corporations is largely based on the tax residency (in a particular territory) principle, the lack of transparency, be it in financial matters or company ownership, presents a considerable threat to the integrity of the international tax system (Eccleston et al. 2015). There is a clear economic incentive to provide misleading information for taxing purposes, leaving the national tax enforcement agencies heavily dependent on the intense information exchange with foreign tax authorities (Rixen 2008, p.61). The focus of this chapter is the opaque corporate structures—namely, shell companies—and potential effects of the proposed OECD initiatives on improving the transparency thereof. Without robust mechanisms of being able to look through the legal veil, all other tax initiatives can be undermined due to the difficulty, or even impossibility, associated with determining which shell company belongs to a particular corporate taxpayer within complex interconnecting legal structures. We argue that both the OECD initiatives—BEPS and exchange of information—are intertwined and vital for the overall success of objectives aiming to improve the international tax system. In the next section, we try to define and explain the concept of tax havens.

4.3 Tax Havens

In the absence of any legal or universally agreed-upon definition, the answer to the fundamental question of what the term "tax haven" means remains elusive in both political and public debate, which has been equally acknowledged in academia (Gravelle 2015; Keen and Konrad 2014; Orlov 2004; Sharman 2006). There have been attempts to clarify the semantic confusion and draw an analytical distinction between the terms "offshore financial centre" and "tax haven" in academic parlance (Hampton 1996; Palan 2010), although these do not appear satisfactory due to inconsistencies and varieties of typologies and descriptions. A number of scholars seem to agree on a rough definition that tax havens are countries

that design their financial, tax, or corporate laws with the primary aim of attracting foreign capital (Findley et al. 2014; Palan 2003, 2010; Shaxson 2012). The first official examinations of "tax havens" was provided by Richard Gordon,[7] who, after summarising the characteristics of a tax haven, acknowledged that the term was broad enough to include developed countries like the USA; therefore, he suggested applying a reputation test: if a country is considered a tax haven by those who care, it is a tax haven (Gordon 1981). Bearing in mind this first official definition, it seems logical to assume that the term "tax haven" is the label carrying primarily a derogatory connotation, which can be applied to any country by the official communicators of reality—that is, the powerful states and institutions. This view is consistent with the opinion expressed by Sharman (2006), who argues that what counts as a tax haven has more to do with a country's reputation and the motives of the observer, rather than with the objective features of the tax regime or financial regulations of that country (Sharman 2006).

The divergent opinions precipitate variations in the features used to characterize tax havens, with economists generally inclined to consider any country with low or non-existent taxes to be a tax haven, while more restrictive definitions bring to the fore other necessary characteristics such as the lack of transparency, reluctance to share information, and requiring no economic activity for an entity to obtain legal status (Gravelle 2015). The latter broad approach to defining tax havens have been adopted and promoted by the OECD (1998). The compounding factors that the OECD has identified as key features of a tax haven in their 1998 Report on Harmful Tax Competition are as follows:

(a) no or only nominal taxes (generally or in special circumstances) and offers itself, or is perceived to offer itself, as a place to be used by non-residents to escape tax in their country of residence;
(b) laws or administrative practices which prevent the effective exchange of relevant information with other governments on taxpayers benefiting from the low or no tax jurisdiction;
(c) lack of transparency; and
(d) the absence of a requirement that the activity be substantial, since it would suggest that a jurisdiction may be attempting to attract investment or transactions that are purely tax driven (transactions may be

> booked there without the requirement of adding value so that there is little real activity, i.e. these jurisdictions are essentially "booking centres").
>
> (OECD 1998, p.22–23)

The lack of transparency [point (c) above] is a particularly controversial feature, since it can be understood as an essential element of the secretive nature of financial off shoring. Indeed, as one Swiss banker allegedly suggested in March 2009, half of all funds deposited in Switzerland would have left the country should beneficial ownership secrecy be completely abolished, thus implying that these funds are either derived from or otherwise associated with tax evasion, which is not a secret for bankers and advisers, as quoted in the *Financial Times*.[8] As an illustration, the scandalous money-laundering and tax evasion case involving the leading Moldovan banks and the jurisdiction of Scotland surfaced as a shocking revelation in 2015, highlighting the lack of transparency of ultimate owners as an enabling tool employed in the schemes (Whewell 2015). However, the Limited Partnership Act of Scotland, under provisions of which the ownership of entities is often opaque, was introduced back in 1907, and consequently amended in response to introduction or modernisation of similar legislations in Bermuda, the Cayman Islands, Delaware, Guernsey, Ireland, and Jersey (The Scottish Law Commission 2001). This would suggest that Scotland became a tax haven more than a century ago, when the term "tax haven" did not exist yet. Scotland was neither a tax haven, nor an offshore financial centre at the time of introduction of the legislation allowing the enabling tools for money laundering and tax evasion. Notably, Scotland has not been featured in any of the numerous lists of tax havens produced up to date by such supranational institution as the FATF, the EU, or the OECD.

In this chapter, we focus on this controversial tax haven feature—the lack of transparency of beneficial ownership of legal structures. As illustrated above, this feature is present to some degree in countries not generally perceived as tax havens; therefore, we will refer to these countries as secrecy havens hereafter. The next section turns to the definition of beneficial ownership and elaborates on the facilitation of concealing the fact of ownership associated with the misuse of corporate vehicles.

4.4 Secrecy of Beneficial Ownership

In recent years, the ownership concept became prominent in the area of international tax regime—namely, how it is allocated across countries and how it impacts productivity (Desai and Hines Jr 2003). In their study, Desai and Hines (2003) examined patterns of US multinationals' ownership, including corporate inversions, and found that corporate decisions are significantly affected by home country tax incentives. The concept of "beneficial ownership" has its roots in the English common law concept of trust.[9] Trusts were already in high demand in twelfth-century Britain, when historical circumstances made it necessary to distinguish between legal and beneficial ownership. In other words, the function of a trust is to enable more than one person to have rights over a property simultaneously (Hudson 2014). Taken outside of the common law trust concept, this seemingly innocuous basic principle gave rise to enormously complex legal entities that inhabit today's realm of international business.[10] Not only can the forms of ownership be complicated by layers of corporate structures, nominee owners, or instruments that are difficult to categorise, but the concept also became fluid, where some entities can actually have varied ownership depending on the legal system of a particular jurisdiction. Under these circumstances, disclosing the act of ownership cannot be viewed as a logistical establishment of a brute fact and, therefore, the definition of a beneficial owner varies widely as well.

The various legal interpretations of the concept of beneficial ownership mentioned above is beyond the scope of this chapter. Therefore, we use the widely accepted working definition provided by the Financial Action Task Force (FATF), which defines beneficial owner as "the natural person(s) who ultimately owns or controls a customer and/or the person on whose behalf a transaction is being conducted. It also incorporates those persons who exercise ultimate effective control over a legal person or arrangement".[11] Consequently, the OECD adopted this definition as authoritative in the multilateral framework in the area of tax transparency and exchange of information undertaken by the Global Forum on Transparency and Exchange of Information for Tax Purposes.[12]

The crux of the secrecy of beneficial ownership matter is the impossibility of tracing the ultimate individual or corporate entity that owns, controls, or benefits from an anonymous legal structure. There is a great variety of ways to achieve this effect, for instance, by having legal protection of confidentiality of beneficial ownership such as professional privilege, where service providers are obliged to hide the identity of ownership by law; or, alternatively, service providers are unable to provide information on ultimate ownership as they do not collect this information from their clients (de Willebois, Emile van der Does et al. 2011). While the former can be overcome by applying the enforcement pressure of various shapes and forms, the latter represents a much more serious predicament, as the information sought simply does not exist in the registered agent's files.

The anonymous legal structures are typically constructed through the use of shell companies, defined by the World Bank Report as legal entities with no significant operations or related assets, which makes it difficult to find out much information about them (FATF, October 2014). The ease of setting up such companies has been promoted due to the general tendency of the OECD countries to deliberately simplify the process as part of reforms to help small businesses and in line with broader efforts at deregulation; these processes are likewise reflected in the World Bank's *Doing Business Survey*, where allocation of higher marks correlates with the jurisdictions facilitating fast and easy incorporation (Findley et al. 2014). The legitimate business uses aside (Burns and McConvill 2011; Sharman 2012a), shell companies constitute an enabling tool for obscuring the illegal nature of one's financial affairs, including tax evasion and tax avoidance, as the case of UBS and Wegelin demonstrated (Sheppard 2009).

Although being associated with offshore tax havens in popular opinion, the clear majority of shell companies are being registered in "onshore" non-havens.[13] Furthermore, as the innovative comprehensive field experiment of beneficial ownership transparency standards implementation has shown, shell company providers located in the OECD countries (and the USA, in particular) exhibit significantly less diligent behaviour when it comes to collecting information on beneficial ownership of the legal structures they provide (Findley et al. 2014). Figure 4.2 below illustrates this point, where "Dodgy shopping count" measures the average number of service providers in a country that a customer would need to approach

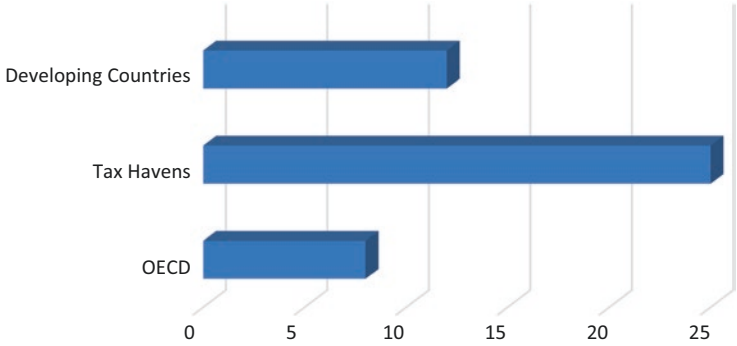

Fig. 4.2 "Dodgy Shopping Count": OECD, Tax Haven, and Developing Nation Adapted from: Findley, M.G. Nielson, D.L. and Sharman, J.C. (2014) Global shell games: experiments in transnational relations, crime, and terrorism. Vol. 128 Cambridge University Press

in order to be offered an anonymous shell company, with no requirements to provide details of a beneficial owner. The higher the count, the more compliant the country would appear, as more service providers would refuse to provide anonymous legal entity for incorporation.

As can be seen from the above illustration (Fig. 4.2), the findings of the study confound the conventional public opinion that tax havens are the most recalcitrant of the countries when it comes to compliance with international transparency standards. In fact, these countries performed the best, followed by developing countries, and with the OECD countries lagging behind, with the lowest dodgy shopping count index. From this perspective, the "tax haven" labelling does not appear to be an objective practice on the part of the more powerful states, shifting the regulatory limelight to the small states in the context of international taxation. It is this international tax regime that we are turning to in the next section.

4.5 International Tax System

International tax regime is a debatable phenomenon, with some academics casting doubts as to the very existence thereof, maintaining that, instead, there is a multiplicity of different national tax laws, where each

country's domestic laws determine how its tax system is organised (Brauner 2014; Rosenbloom 2000). On the other side of the debate, it has been argued that the current international tax regime exists (Avi-Yonah 2007), albeit it has been constructed around the network of bilateral tax treaties, based on the OECD Model Tax Convention, and in most countries, including the United States, the treaties constrain domestic tax jurisdiction as they are often given a higher status than domestic law (Avi-Yonah 1999–2000). Arguably, the international tax regime is approaching the point of becoming customary international law (Avi-Yonah 2007), although there seem to be not enough evidence of its evolution into a supranational form (Brauner 2014).

International tax law is said to consist of customary international law and international agreements, covering the right of states to tax, tax treaties, and dispute settlement (Qureshi and Qureshi 1994). Public international law, however, is subject to acceptance and interpretation by different countries: a few international agreements[14] aside, what we have is a worldwide network of bilateral double tax treaties and a few multilateral ones, and the rest constitutes the customary part. Dubbed "a triumph of international law" (Rosenbloom 2000), such an international tax regime instigates competition for investment and revenue among jurisdictions (Brauner 2014). Indeed, the current international tax system has been operating to date under the common law principle of the revenue rule,[15] whereby a country will not assist in the collection of taxes charged by another country. Such a state of affairs does not seem to be conducive to creating a cooperative atmosphere; rather, it naturally evokes a competitive approach towards peer nation-states within the international tax system.

The global nature of the international taxation issues suggests the necessity for a supranational regulator, the most active and well-known in the area being the OECD (Sharman 2012b), boasting a long history of promoting the adoption of double tax treaties. Another supranational body is the EU, aiming primarily to bring coordination and harmonisation of the tax systems of its member states. The United Nations (UN) is primarily concerned with measures designed to promote the welfare of developing countries through collecting fair share of tax on profit of multinational companies, offering alternatives to the OECD model tax treaty to protect the interests of developing countries. The International Monetary Fund (IMF) in the

meantime contributes to the international tax regime construction by providing technical assistance in designing low and middle-income countries' tax policies and practices. The Group of 20 (G20) and the Group of 8 (G8) organise a forum for international cooperation in economic and financial matters that member countries need to deal with. The complex interrelationships between these organisations have been recently becoming increasingly interlinked. Thus, in 2013 the OECD have been reporting to G20 leaders on the progress of the Global Forum on Transparency and Information Exchange, as well as the BEPS. Apart from playing the key role in developing an international taxation regime, the OECD also represents a connection point of parallel efforts with other supranational organisations (Sharman 2012b). Jointly with the IMF, the World Bank, and United Nations, the OECD formed the International Taxation Dialogue, while its projects on fiscal transparency are often coordinated with complementary programmes of other organisations, such as Basel Committee on Banking Supervision and the Financial Action Task Force.

Having a larger secretariat and significant resources at its disposal, the OECD often takes the leadership role in transnational initiatives within its remit (Sharman 2012b). Not surprisingly, therefore, the OECD was charged with the unenvious task of reconsidering the key elements of the international tax system with the aim of improving the taxation of multinational companies. Thus, the BEPS Project came into being to disassemble the malfunctioning international tax machine, refashion its parts, and the reassemble these parts in the hope of its overall improvement (Picciotto 2013). Expanding the concept of tax onto a global context involves a number of conceptual issues, and the OECD's work on BEPS is perceived as a catalyst for changes, particularly in the area of corporate profits (Moscovici 2016). The next section presents a general overview of this initiative, its effectiveness, and consequences.

4.6 Regulating Tax Havens

Although the demand for jurisdictions that exploit lax regulation and offer generous tax concessions to attract non-resident firms is almost as old as taxation itself, sufficient political will to initiate large-scale coordinated

action against tax havens did not reach its maturity until the mid-1990s (Palan 2010; Rixen 2008; Sharman 2006). At the request of G7 in 1996, the OECD published its seminal report, *Harmful Tax Competition: An Emerging Global Issue*, where the expert community elaborated on the measures designed to counter the distorting effects of harmful tax competition (OECD 1998).

Instead of providing a detailed cost and benefit analysis of the proposed measures against tax competition, the OECD tried to chart a middle course where the "harmfulness" of competition materialised through special tax provisions or administrative practices designed predominantly to facilitate aggressive bidding for the tax bases of other jurisdictions (Englisch and Yevgenyeva 2013; OECD 1998). As a consequence, the ambitious plan to address both tax competition and tax secrecy was heavily criticised for not providing any clear definition of "tax competition", and for the very assumption that the neoliberal concept of competition itself can be harmful, which stood in direct contradiction to the OECD's core values (Sharman 2006). The unfortunate word combination had been chasing the OECD throughout the campaign like a gremlin, as no economist, in their right state of mind, would be expected to say anything negative about competition. Furthermore, the public denunciation of the initiative by the two OECD member states, Switzerland and Luxembourg, has thwarted the legitimacy of the "harmful tax competition" aspect even further (Eccleston 2012). The legitimacy of the Global Forum itself was undermined in the international context as the OECD set out to regulate the activities of countries excluded from its deliberations, and therefore breaching basic principles of deliberative equality (Baker 2009). Hence, starting from 2000, the OECD had to concentrate almost exclusively on addressing illegal international tax evasion facilitated by bank secrecy and a lack of international tax information exchange (Eccleston et al. 2015). The OECD established Forum on Harmful Tax Practices, followed by blacklisting of 35 tax havens in the report, and the listed states had to comply with the OECD recommendations under the pressure of "coordinated defensive measures", ranging from abrogating tax treaties to cutting aid payments and imposing special fees upon transactions with noncompliant countries (Sharman 2006).

As if those predicaments were not enough, in 2001 the OECD reform ran into an unexpected staunch resistance from the newly elected Bush administration, depriving the OECD of the historically driving US support behind multilateral tax initiatives, as the OECD tax agenda was too broad and could potentially limit the sovereign right of the USA to manage their own tax system (Anderson 2001; Palan 2010; Sharman 2006). After being watered down beyond recognition, the OECD laboriously pursued establishing a relatively weak framework for the bilateral exchange of tax information between national tax authorities for nearly a decade (Picciotto 2013). By 2006, however, it became painfully apparent that national governments had no serious intentions of committing to the implementation of the OECD's standard, with only 11 Tax Information Exchange Agreements (TIEAs) having been signed (Eccleston et al. 2015). The perceived problem associated with the identified "rogue players" was handled by invitation of tax havens to subscribe to the rules of (competition) game, or to abide by a "code of conduct", with no further action directed to exclusion (Brauner 2014).

Several technical limitations of the OECD campaign have been pointed out as well, such as excessive focus on geographically mobile activities, ambiguously leaving manufacturing and other less mobile investments for future consideration (Englisch and Yevgenyeva 2013). The OECD distinguished between the "tax havens" located worldwide, and "preferential tax regimes" primarily adopted in the OECD member countries, while non-members were encouraged to associate themselves with the latter (OECD 1998, pp. 58–59). Furthermore, the OECD's initiative arguably shifted towards personal income tax evasion in the absence of sufficient attention to the "no real economic activity" requirement, which suggests that even if the initiative is fully implemented, it would have limited impact on corporate uses of tax havens (Dharmapala 2008). Furthermore, there seem to be a lack of evidence of effectiveness of the anti-tax haven measures, as was demonstrated on the example of Cayman Islands, where, despite formal success, no significant impact on tax evasion was achieved (Kudrle 2008).

The OECD's international tax transparency initiative gained renewed vitality after the financial crisis. In his analysis of G20 endorsement as an emerging form of authority in post-crisis global governance, Richard Eccleston and colleagues argue that, at that time, it was the G20 endorsement that helped enhance the legitimacy of the OECD as the specialist technical agency to promote its tax transparency agenda (Eccleston et al. 2015). Significant achievement of the newly established Global Forum on Transparency and Exchange of Information for Tax Purposes was the extension of the membership to non-OECD countries, as well as designing a more robust two-stage peer-review process based on the ten essential elements established by the OECD.[16]

Various subsidiaries in different countries within one multinational group constitute separate legal entities; yet, in operational practice they are run as a single organisation, which the OECD BEPS report describes as "unprecedented interconnectedness at all levels" (OECD 2013b). While the rights to information of a national tax authority is usually limited to the subsidiaries located in that country, constrained by the need for a medium of tax information exchange agreement. In this context, the Global Forum standard of information exchange on request, as opposed to automatic data transfer, has been subjected to much criticism (Eccleston 2012; Neslund 2009; Spencer 2010). Hence, after the USA introduced their new automatic tax transparency regime, the OECD, supported by the G20, initiated its Automatic Exchange of Information (AEOI) in an attempt to coordinate the transparency actions across the countries (Eccleston 2012). With its 139 members, the Global Forum on Transparency and Exchange of information for Tax Purposes (Global Forum) claims to be "the premier international body for ensuring the implementation of the internationally agreed standards of transparency and exchange of information in the tax area", while transparency is presented as a means to better tax collection and, in general, associated with a better world, the use of a secrecy veil presents a threat to integrity of societies (OECD, April 2016). The next section will provide a general overview of the BEPS initiative and its role within a wider international agenda of increasing transparency.

4.7 BEPS Project: Critical Overview

The OECD's BEPS project is concerned with just what the title suggests—the problems of base erosion and profit shifting by multinational enterprises. These challenges, namely, the sharp reduction or complete elimination of domestic and foreign tax liabilities by corporates through elaborate arrangements of corporate structures, are not new in the international system. As it has been asserted by the OECD itself, the issues that the BEPS Project is aiming to tackle have previously been raised by President Kennedy in 1961 (Saint-Amans and Russo 2013). The OECD has been given an opportunity to solve the challenges it had been facing for a long time and, undoubtedly, generated vast expertise in the area; however, the sense of urgency in the presence of a threat of unilateral actions by nation-states created a perhaps uncomfortably short deadline for the organisation to design and implement a robust new regime (Brauner 2014). There is an additional pressure on the OECD to make a successful and meaningful reform through the BEPS project, as otherwise the OECD's continuing dominance over the international tax system, by consensus, can be seriously undermined (Baker 2013).

The OECD hails the BEPS projects as the first substantial renovation of the international tax laws and regulations in almost a century (OECD 2013b), although, as has been shown above, doubts have been cast over the very existence of such an international system in the first place. The question then arises whether renovation and revamping of an arguably dysfunctional regime can bring significant benefits to the overall system. One of the three main principles established by the BEPS project is the necessity of paradigm shift—from a competitive towards a more collaboration-based approach—reflecting the desirability of tax policies coordination. Due to the nature of the current international tax system, however (as discussed above), such collaborative approach actions are predominantly limited to removing market failures and facilitating free trade with a broader aim of perfecting competition (Brauner 2014; Keen and Konrad 2014; Roin 2001). Such a competition-based collaborative paradigm, rooted in the brick-and-mortar economies of immobile income production, has proved untenable in the face of increasingly mobile labour and capital and the rise of intangible assets, leaving both

developed and developing countries with a revenue-collection predicament (Avi-Yonah 2000). Whether the BEPS project will effectively make the paradigm shift from competition towards cooperation still remains to be seen, but concerns have been expressed as to the inherently competitive nature of the OECD's approach. One example is the persistence with the source-residence binary[17] as one of the underlying principles of the BEPS project, which does not seem to be conducive to harmonization or coordination of the entire system (Brauner 2014). The validity of the OECD research and data used for this global initiative has been subject to criticism (Dharmapala 2014). The uncertainty and unreliability of the quantitative BEPS measurement, indeed, have been acknowledged by the OECD itself, when in 2015, the Committee of Fiscal Affairs released a discussion draft in regards to currently available data (OECD 2015a).

Furthermore, doubts have been expressed as to whether the OECD is the ideal candidate to promote fairness among a diverse group of countries. Although a greater focus is given to inclusion and equal footing, the language of the OECD hints to the opposite. Thus, the categorisation of states into the OECD countries, tax havens, and non-OECD economies automatically identifies OECD countries as not tax havens but those just offering a preferential regime. This also suggests an us-versus-them approach (OECD 2015b). In the context of increasing power accumulation as the caretaker of the international tax regime, somewhat ambivalently, the OECD has always viewed itself as the representative of its members' interests—the rich countries club (Brauner 2014). These inconsistencies have been reflected throughout the project actions, including Action 5, which deals with "harmful tax practices", including transparency of beneficial ownership, preferential regimes, and tax havens. It is this action of the BEPS project that we turn to in the next section.

4.8 Action 5: Improving Transparency?

In the glossary of statistical terms, the OECD refers to the general definition spelled out by the IMF, which states that "transparency refers to an environment in which the objectives of policy, its legal, institutional, and

economic framework, policy decisions and their rationale, data and information related to monetary and financial policies, and the terms of agencies' accountability, are provided to the public in a comprehensible, accessible, and timely manner".[18] Put simply, the economic definition of transparency refers to the presence of symmetric information, whereby opacity refers to asymmetric information (Geraats 2002). Often associated with the virtues of the rule of law, such as openness and clearness of regulation (Raz 2009), the idea of transparency may serve as an attractive political target in its own right (Englisch and Yevgenyeva 2013). Indeed, the concept of transparency metamorphosed into a pervasive cliché in the context of modern governance, and as such often invokes "uncritical reverence" (Hood 2006).

When it comes to transparency of tax regimes, the OECD is primarily concerned with transparency between governments to prevent "harmful" administration, giving priority to "compulsory spontaneous exchange on rulings related to preferential regimes" (OECD 2013a). Thus, certain information is expected to be exchanged unconditionally and without a prior request by tax authorities if considered to be of relevance. Ultimately, the decision as to the spontaneous exchange of information depends on the tax administrations' capacity to identify the relevance of such information and willingness to share it with foreign tax authorities (Englisch and Yevgenyeva 2013).

The definition employed by the OECD implies bureaucratic transparency, which—when coupled with strong motivations for blame avoidance—can arguably result in the mixture of jeopardy, futility, and perversity (Hood 2007). It has been observed that transparency involves removing certain facts out of context and distorting the world complexities into simplistic abstractions (Strathern 2004). It has also been argued that transparency encourages deception, as it aims to make possible a complete visibility, which in reality is unachievable (O'Neill 2006). Furthermore, although seeking to improve trust, transparency has been argued to undermine it: we tend to distance ourselves from the world's complexities as we accumulate more and more information about it, and the information becomes surrogate for the world, where the indicators and images take precedence over the actual events (Tsoukas 1997).

These criticisms notwithstanding, transparency remains the Holy Grail within the political rhetoric: highly sought after and yet appearing unattainable. Hence, with every failure of governance, the policymakers rush to invest in yet further transparency as the assumed remedy for all failures (Roberts 2009). The demand for new forms of transparency has been explained by aspirational desire, or fantasy, to reach the state of total control (O'Neill 2006). Transparency creates the possibility of local presence to the interests of distant others (regulators like the OECD), offering the opportunity to compare the regulated entities or countries with each other, evaluate their compliance with established standards, challenge past conduct, and set demanding targets. Effectively, it can be said that transparency makes being a regulator possible.

One of the key ambitions of the BEPS initiative is to address the availability of "harmful preferential regimes", provided by recognised tax havens and other countries acting as tax havens in certain respects, such as Luxembourg (Brauner 2014; Englisch and Yevgenyeva 2013; Saint-Amans and Russo 2013). Most of the BEPS Actions on "source" are based on the principle of substance as a minimum economic requirement (Stewart 2015). Action 5 is no exception, requiring "substantial activity for any preferential regime" to ensure alignment of taxation with the location of value creation (OECD 2015b). Implicitly, this discourse ignores the existence of legal structures with no significant economic activities in the country of registration by design, such as shell companies.

With the overall goal of enhancing transparency, surprisingly little attention is dedicated to the ability of linking corporate vehicles to beneficial owners. The OECD mentions the transparency of beneficial ownership in passing in Action 5, when describing the application of substance requirement to the holding companies regimes. Even here, the OECD does not propose any particular measures, but suggests that monitoring of this standard is carried out by the Global Forum on Transparency and Exchange of Information for Tax Purposes, relying on the already established transparency of beneficial ownership standards established by the FATF.

In a way, the issue of anonymous legal structures is limited, as per Action 5 wording, to the equity-holding companies, and the BEPS project seeks to "preclude the possibility of letter box and brass plate companies

from benefiting from holding company regimes" (OECD 2015b, p. 40). Having presented an elaborate list of criteria for identifying preferential regimes, it seems that the existence of shell companies, or paper companies with no geographical presence whatsoever, has escaped the unfaltering gaze of the international tax regime watchdog. So the existence of ownership secrecy provision is not considered a primary issue for BEPS, and dismissively delegated to the Global Forum, who in turn relies on the FATF standards of beneficial ownership for the purposes of anti-money laundering (OECD 2015b). In its April 2016 report to G20 Finance Ministers, the OECD says:

> The standard for beneficial ownership information is quite stringent and does not need to be strengthened at this stage. Its implementation has, however, been insufficient. It is likely that the focus on CRS implementation by financial institutions will give more weight to the beneficial ownership standard and will be an occasion to further strengthen the 2012 FATF recommendations and its implementation.... Since its creation, the work of the Oslo Dialogue has significantly improved the co-operation between government agencies in tackling tax and other financial crime, including through the establishment of a dedicated training academy.
>
> (OECD, April 2016)

As can be seen in the wording of the OECD, the issue of implementation of standards of beneficial ownership transparency have not been addressed, and it is only hoped that the CRS implementation will enhance the standards enforced by the FATF. Here, the OECD brings forward the cooperation paradigm discourse, which yet again needs to coexist with the overall competitive strand of the BEPS project. The promotion of the idea of a whole government approach towards the challenges posed by the opacity of beneficial ownership is a laudable effort. The report goes on to praise the synergies that can be achieved through effective inter-agency and cross-border approaches by combining expertise and resources. However, these ideas might be difficult to achieve in practice. In another report, *Improving Co-operation Between Tax and Anti-Money Laundering Authorities (year)*, the OECD advocates the benefits of access by tax administrations to information held by financial intelligence units—specifically,

the Suspicious Transaction Reports (STRs)—as it is not a universally accepted norm for tax authorities to have access to STRs (OECD, September 2015a). As highlighted in the report by the OECD itself, there are still significant legislative and non-legislative barriers for such cooperation, which undermines the OECD's assurance expressed in BEPS Action 5 that the issue of transparency of beneficial ownership has already been dealt with through cooperation with the anti-money laundering authority, the FATF, and associated regional bodies. The OECD might officially cooperate with the FATF on a global level, but there are no signs of improvement and cooperation when it comes to implementing and following the transparency standards on national levels.

4.9 Discussion

In this chapter, we outlined the regulatory initiatives introduced by the OECD within international taxation, namely, the BEPS project and the separate automatic exchange initiative, and how the crisis of tax havens is being shaped and addressed through these initiatives within the international discourse. A triple challenge has been identified and thrown down to the OECD and the wider international community. Firstly, the "tax haven" label does not seem to be helpful in the coordinated international campaign for increasing beneficial ownership transparency, as it artificially shifts the regulatory attention to small countries, whereas the more significant providers of anonymous corporate structures, the powerful states (Findley et al. 2014), are positioned as not "tax havens", and, consequently, are off the public radar. Such an approach is not conducive to a global cooperative action needed for the success of the initiatives. The ambiguity of the paradigm shift from competition to cooperation within the OECD rhetoric adds another layer of controversy to the aims and potential effectiveness of its initiatives to improve the international tax regime (Brauner 2014; Keen and Konrad 2014).

Secondly, and perhaps more importantly, the neutrality of the OECD as an objective transnational regulator is questionable, as its primary purpose is to represent the interests of its members (Brauner 2014; Sharman 2006). The OECD's ambition to create a coordinated global action on

beneficial ownership transparency is perhaps further undermined by its own members, the interests of which the OECD pledges to represent. The OECD's AEOI was introduced in response to the unilateral initiative of the major OECD member, the USA, who decided not to support the global initiative, considering its own initiative, the FATCA, to satisfy the needs of the national tax authorities (Eccleston 2012). Other member countries have undertaken separate initiatives to enhance beneficial ownership transparency after the OECD's initiative. Following the then UK Prime Minister David Cameron's efforts to introduce corporate transparency through publicly accessible central registers of ownership in July 2015, the Persons with Significant Control was introduced in Britain. In April 2016, the UK announced an agreement with Germany, France, Italy, and Spain, under which authorities of these countries would share information on company beneficial ownership registers and registers of trust. On the EU level, the fourth EU Money Laundering Directive was adopted in June 2015 aiming to strengthen member states' obligations on beneficial ownership. Such policies clearly highlight a certain degree of scepticism that OECD members entertain in regards to the OECD's global efforts of coordinated action.

Thirdly, neither of the OECD initiatives directly addresses the problems associated with opaqueness of beneficial ownership, which has the potential to defeat the purpose of all other international tax regulations due to the impossibility of tracking the owners behind corporate structures. There are a number of legitimate ways of concealing the true identity of the beneficial owner, and the transparency on beneficial ownership standards remain subject to legal interpretation, largely dependent on the scope and definition of ownership and control in a variety of national contexts (Vermeulen 2013). Even though the OECD recognised the FATF-established ownership transparency standards as authoritative and vouched its support in enforcing these standards through its Global Forum, the organisation itself admitted the lack of cooperation between tax authorities and financial intelligence units (OECD, September 2015a). This suggests that, notwithstanding the possible cooperation of the OECD and FATF at the level of establishing and promoting the transparency standards, the implementation thereof in the national contexts will not necessarily be influenced in any meaningful way.

At the same time, the yearned-for ideal of transparency remains elusive, and the jury is still out as to whether efforts to approach this ideal is worth powder and shot (Hood 2006; Hood 2007; O'Neill 2006; Strathern 2004; Tsoukas 1997). International standard is as effective as its weakest link, and since the exchange of information standards are subject to considerable interpretation (Englisch and Yevgenyeva 2013), much scepticism has been expressed as to the overall effectiveness of the OECD initiatives. These challenges are indicative of the potential downfalls and weaknesses of the current regulatory approach towards transparency of beneficial ownership. Clearly, the action needs to be well coordinated in order to generate a global reach and effect. The current state of affairs, however, leaves much to be desired, and a failure to implement robust policy changes can potentially undermine the overall objectives and international legitimacy of the OECD as the transnational tax regulator.

Notes

1. Tax avoidance is sometimes used to refer to a legal reduction in taxes, while evasion refers to tax reductions that are illegal. In general, both tax avoidance and tax evasion are alternative methods of reducing taxes that differ in their lawfulness (Blaufus et al. 2016). For a general distinction see Gravelle, J.G., 2009. Tax havens: International tax avoidance and evasion. National Tax Journal, pp. 727–753.
2. For instance, in order to arrive at the total amount of missing wealth, Zucman subtracts global liabilities from global assets. This ignores a number of factors, such as that national accounts do not use the same methods for measuring assets and liabilities, nor do they have an obligation to report these data accurately. Another example is that Zucman includes stocks and bonds, without assets like yachts, art, and other luxuries. For a more detailed review see Clarke, C., 2016. What Are Tax Havens and Why Are They Bad?
3. For more details see Notice of Exemption, Proposal No. 7 on Tax Policy Principles by Domini Social Equity Fund: Washington DC: U.S. Securities and Exchange Commission available at https://www.sec.gov/Archives/edgar/data/851680/000119312514178926/d718969dpx14a6g.htm last accessed March 2017.

4. The distinction between acceptable and unacceptable tax practices is not drawn hard and fast. Generally, tax evasion is considered illegal, while tax avoidance is more of a grey area. It has been argued that HMRC tends to decide whether tax avoidance is acceptable simply on grounds of cost. Self (2008) provides an authoritative opinion on the matter, suggesting that acceptable tax avoidance must necessarily relate to a business transaction and have a commercial aspect, although the latter component of a tax-planning scheme can be difficult to define (Self 2008). For a more detailed academic discussion, see the article by Judith Freedman (2007), who suggests introducing a general anti-avoidance principle, distinct from GAAP (Freedman 2007).
5. Tax expenditures can be defined as deviations from a benchmark tax system, which deliberately reduce the tax burden on certain economic activities or taxpayers, giving rise to national tax revenue losses.
6. For instance, HMRC estimated that the tax gap for 2014–2015 stood at £36 billion, or 6.5 per cent of theoretical tax liabilities (HM Revenue & Customs 2016).
7. Richard Gordon, Special Counsel for International Taxation Enclosure, was tasked by the Commissioner of Internal revenue to prepare a report on tax havens and their use by US taxpayers. This was the first official report on the topic, which has ever since been referred to as the Gordon Report, 1981. Tax Havens and Their Use by United States Taxpayers—An Overview. U.S. Treasury.
8. http://www.ft.com/cms/s/0/2ed5ef86-17e3-11de-8c9d-0000779fd2ac.html accessed 17-4-09.
9. During the time of Crusades in the twelfth century, trusts were in use by warriors who often left their properties behind while being away from England. The person left in charge of the property needed to have the powers of legal ownership in order to tend the land in the absence of the real owner. The idea of split ownership emerged as a mechanism to ensure that, upon return, the crusaders could recover their rights of ownership. For more detailed discussion see Alastair Hudson, *Equity and Trusts*, 3rd ed. (Routledge-Cavendish 2014), p. 31–32.
10. For a good illustration of the complexity of legitimate corporate structures see de Willebois, Emile van der Does Sharman, J. Harrison, R. et al. (2011) *The Puppet Masters: How The Corrupt Use Legal Structures To Hide Stolen Assets and What To Do About It*, World Bank Publications (p. 56) and Vermeulen, E. (2013), *Beneficial Ownership and Control: A Comparative*

Study - Disclosure, Information and Enforcement, OECD Corporate Governance Working Papers No. 7, OECD Publishing (p. 12).

11. See Financial Action Task Force on Money Laundering, "FATF 40 Recommendations," p. 15, available online at http://www.fatf-gafi.org/dataoecd/7/40/34849567.pdf
12. See Exchange of Information on Request: Handbook for Peer Reviews 2016–2020, OECD 2016, available at http://www.oecd.org/tax/transparency/global-forum-handbook-2016.pdf
13. The approximate annual incorporation rate of shell companies in the leading "tax havens", the British Virgin Islands and Panama, is 40,000 and 70,000, respectively, while the corresponding annual statistics in the UK is 300,000, and in the USA it is around two million (de Willebois, Emile van der Does et al. 2011).
14. Such widely accepted international agreements include Vienna Convention on the Law of Treaties and the Treaty of Rome.
15. It has been argued that the "revenue principle" has arisen due to the general perception of tax collection to be an act of sovereignty, resulting in the reluctance of states to allow exercising foreign sovereignty on their territory (Baker 2002).
16. The Global Forum standard on exchange of information is broken down into ten essential elements, divided into three parts: A, availability of information; B, access to information; and C, exchange of information. The standard stipulates that each jurisdiction should have appropriate international instruments in place with all relevant partners for the effective exchange of information, and it is important to ensure that the information sought is available and accessible.
17. The binary of source-residency implies an international tax system where only one state will necessarily win the right to the revenue—either the country of source of profit or the country of residency.
18. See https://stats.oecd.org/glossary/detail.asp?ID=4474

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5

Corporate Profits' Tax Avoidance: How the "Double Irish" Impedes Global Social Progress and Removes the Prosperity Base Needed for Future Generations

Harry (Hanqing) Yang, Dermot Cahill, and Edwin T. Hood

5.1 An Overview of the Problem: the US Regime[1]

A. US International Tax Law Regime: Tax Residency Rules and the Check-the-Box Regulations

In this chapter, the authors examine the way in which modern countries such as the US and Ireland have devised their tax systems to effectively allow major corporations to largely exempt themselves from tax liability on immense corporate profits. In this race to the bottom, it will become

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apparent that corporations are using the variances between the different national systems to effectively exempt themselves from contributing their fair share to the well-being of society. The authors look at the case of Ireland in particular, and its role in facilitating wide-scale legal tax avoidance by US corporations. This raises the question, why should global corporations be excessively favoured in this fashion, what role does tax law play, how it is responsible for this widespread phenomenon, and demonstrates how, as one door is closed, Ireland opens another one to allow this whole-scale diminution of the wealth of future generations to be continued.

The United States international taxation regime is known for its complexity and comprehensiveness.

The US federal income tax treatment of a corporation depends on whether the corporation is domestic or foreign. For US federal income tax purposes, a corporation is a domestic corporation if it is incorporated in the United States. A corporation is a foreign corporation if it is incorporated outside the United States. A domestic corporation is subject to federal income tax on its worldwide income, no matter where it is earned. In contrast, a foreign corporation is taxed by the U.S. on its income received from sources within the United States (I.R.C. 881) or income that is effectively connected with the conduct of a trade or business within the United States (I.R.C. 882). The worldwide taxation regime imposes a substantial tax burden on US multinational corporations because their foreign source income is likely subject to taxation by both foreign taxing authorities and the United States. To mitigate the potential double taxation that may result from such a system, a foreign tax credit (FTC) is allowed for income taxes paid to foreign countries to reduce or eliminate the US tax liability imposed on foreign-source income, subject to certain limitations.

Darby and Lemaster,[2] commenting on the US entity classification regime, which became part of US federal tax regulations in 1997,[3] observe that "Under those rules, many foreign entities have the ability to elect whether to be treated as a corporation, partnership or disregarded entity for U.S. federal tax purposes by filing a form with the IRS."[4] A foreign eligible entity may elect to be classified as either a corporation or a partnership if it has two or more members, or as either a corporation or an entity that is completely disregarded as separate from its owner if the entity is wholly owned by a single member.[5] A "disregarded entity" owned by a US corporation is the equivalent of a branch for US federal tax purposes.[6]

Filing a so-called "check-the-box election" typically has no effect on a company's tax or legal status for foreign tax purposes.[7] Thus, for example, a Bermuda limited company that has a single owner could elect to be a disregarded entity for US federal tax purposes but would be treated under the tax laws of most other countries around the world as a separate corporation.[8] Such "hybrid" entities are often utilised aggressively at the present time by tax planners in order to obtain favourable results, particularly since US and foreign tax laws have not been significantly modified as yet to cope with the monumental changes introduced by the US entity classification regulations.[9]

B. §482 Transfer Pricing Rule

Under the principles of §482 (Internal Revenue Code of 1986), a US party must transfer property or provide services to a related person at a price equal to the fair market value (FMV) of such property or services—that is, the price at which the transaction would occur between unrelated persons. If the related party price does not reflect the property's FMV, then the IRS has broad authority to make corrective adjustments to the taxpayer's income or deductions. Section 482 is the IRS' principal weapon to challenge artificially high or low transfer prices (low outbound, high inbound) that could otherwise be used to transfer property or income offshore. However, the transfer pricing rules are of limited effect when dealing with the complex nature of international transactions structured by tax professionals to circumvent the international tax rules of the United States.

C. The Controlled Foreign Corporation & Subpart F Income Rules

Generally, a US person that conducts business or invests abroad through a foreign corporation pays no US income tax on the foreign corporation's foreign-source earnings *unless and until* such earnings are distributed to the US person or the US person disposes of the foreign corporation's stock. US tax law generally respects the foreign corporation as a separate entity and the foreign corporation itself is seldom subject to US tax on its foreign-source income. Thus, the foreign corporation's foreign earnings enjoy "deferral" of US taxes until they are repatriated to the United States by distributions, or otherwise. However, the US Congress has determined that certain deferral methods used by US corporations are abusive and can cause unfairness to other United States taxpayers and has invented several anti-deferral mechanisms to counter those deferral strategies. The

"controlled foreign corporation" mechanism (hereafter "CFC", Internal Revenue Code of 1986, Subtitle A, Chapter 1, Subchapter N, Part III, Subpart F) is one of the key weapons that the US Congress uses to fight against what Congress thinks of as being inappropriate tax deferrals.

In general, a US shareholder is required to include in gross income for US tax purposes his, her, or its pro rata share of the "*controlled foreign corporation*'s *Subpart F income*", whether or not such income is actually distributed to such US shareholder. Section 957(a) (Internal Revenue Code of 1986, Subtitle A, Chapter 1, Subchapter N, Part III, Subpart F) defines a "controlled foreign corporation" as a foreign corporation, of which more than 50% of either the value of all of the outstanding stock, or the total combined voting power, is owned by US shareholders. Section 951(b) defines a US shareholder as a US citizen, resident alien, corporation, partnership, trust or estate owning, directly, indirectly, constructively, 10% or more of the total combined voting power of all classes of stock of a foreign corporation. Thus, only those US shareholders owning 10% or more of the voting power are to be taken into account in determining whether a foreign corporation is a controlled foreign corporation, and a foreign corporation would fall within the definition only if more than 50% of the total combined voting power of all classes of its stock were owned directly, indirectly, or constructively by such 10% US shareholders.

The definition of Subpart F income has five components. The most important component is "*foreign base company income*."[10] Under current law, the "foreign base company income" of Subpart F income has four components: (1) "foreign personal holding company income, (2) foreign base company sales income, (3) foreign base company services income, and (4) foreign base company oil-related income (Section 954(a)). In determining the amount of each component of foreign base company income, the gross amount of income in each is reduced by the deductions properly allocable to such income.

Foreign personal holding company income (hereafter "FPHCI") is elaborately defined in §954(c). It includes such items of passive income as dividends, interest, royalties, rents, annuities, certain gains from commodity transactions, income from notional principal contracts, gains from sales of property producing passive income or no income, and foreign currency gains. It also includes amounts received under certain personal service contracts involving a 25%-or-more shareholder. Congress recognised that

passive investments typically are easily movable from one country to another, and that a taxpayer's decision concerning the location of such investments is often highly responsive to tax considerations. Thus, it viewed ending deferral on passive income as necessary to remove an incentive for US shareholders to transfer such investments to controlled foreign corporations, located in tax haven countries. Excluded from FPHCI, however, are royalties received by a CFC from a related corporation for the use of, or the privilege of using, property within the country under the laws of which the CFC is created or organised (the "same-country" exception). It should be noted that under the same-country exception, it is ***irrelevant*** whether the CFC is actually considered a tax resident under local laws in its country of incorporation.

The primary target of the foreign base company sales income (FBCSI) and foreign base company services income is business income from transactions in which the controlled foreign corporation is being used by its US shareholders largely as a conduit for diverting income from the United States to a low-tax foreign country, in which the foreign corporation is organised. These provisions are designed to reach US shareholders who divert sales income to a foreign base company located in a low-tax foreign country that is neither the origin nor destination of the products sold, and who deflect services income to a foreign base company located in a low-tax foreign country, that is not the place where the services are performed. Accordingly, most types of active business income deriving from substantial business activities of the controlled foreign corporation in the country in which it is organised, do not fall within the definition of Subpart F income.

Example: let us assume that a US software company sells or licenses software products at retail through one or more CFC subsidiaries: the concern is that the software revenues will constitute foreign base company sales income, as described in the following illustrative example.

Megasoft (a fictitious US corporation) sells the popular computer operating system, "Doors," to customers around the world. In an effort to reduce its US tax on income from sales outside of the United States, Megasoft establishes "foreign Sub," a 100%-owned subsidiary organised in a jurisdiction outside the United States, that will sell Doors to non-US customers in accordance with the following uninformed and ill-considered structure: foreign Sub will purchase pre-packaged Doors operating systems from Megasoft and resell these systems without modification or enhancement to customers

in Europe, Asia, and Africa. Under Subpart F, foreign Sub is classified as a CFC, and foreign Sub's sales income is foreign base company sales income, since foreign Sub is purchasing and reselling a product from a related party that is both produced and sold for consumption outside the jurisdiction in which foreign Sub is organised. Therefore, Megasoft annually must include this Subpart F income in its US federal gross income.

There is an important exception to the FBCSI—the manufacturing exception. Foreign base company sales income does not include income derived in connection with the purchase and sale of personal property by a CFC (or the purchase or sale of personal property on behalf of another person) if the property is ***manufactured, produced, constructed, grown, or extracted in the country under the laws of which the CFC … is created or organized***. (§954(d)(1)(A)). It is where the property is manufactured, produced, constructed, grown, or extracted that matters, and not the location of the person from whom the CFC acquires the property. For example, income from the sale of property purchased from a local supplier would not qualify for this exclusion if the property was actually manufactured, produced, constructed, grown or extracted outside of the CFC's country of organisation. Nevertheless, if the local supplier alters the property such that it is considered to have "manufactured" the property within the CFC's country of organisation, the property will qualify for this exclusion.

Example: Assume ABC organises a foreign subsidiary in Ireland, ABC FC, then causes its products to be manufactured in Ireland. It then sells the products to customers in France. Since the product was manufactured in Ireland, the manufacturing exception applicable to the CFC's country of incorporation is satisfied. A CFC will qualify for the manufacturing exception if the property it sells is "in effect not the property which it purchased." That standard is satisfied if either (1) the CFC "substantially transforms" its input materials into the final product, or (2) in the case of property constructed from purchased components, the operations conducted by the CFC in connection with the components are "substantial in nature and are generally considered to constitute the manufacture, production, or construction of property."

Treasury Regulations provide a limited safe harbour under the second test for a CFC whose direct labour and factory costs with respect to the final product account for at least 20% of the total costs of goods sold. The IRS has asserted that imprinting computer software onto blank disks and

packaging those disks for retail sales do not, by themselves, constitute substantial transformation of the underlying software for purposes of the manufacturing exception. Consequently, due to the uncertainty in this area, software companies are reluctant to rely on the manufacturing exception when structuring software sales by a CFC.

Four other provisions relating to the determination of a controlled foreign corporation's Subpart F income should be mentioned here. First, §954(b)(3)(A) contains a *de minimis* rule under which a controlled foreign corporation with relatively little foreign base company income is treated as having no such income. Second §954(b)(3)(B) contains a full-inclusion rule under which all of the gross income of a CFC is treated as foreign base company income if the corporation has actual gross foreign base company income in excess of 70% of its total gross income. Third, §952(c)(1) generally limits a CFC's Subpart F income for a tax year to its earnings and profits for that year. Fourth, §952(b) excludes from Subpart F income any US-source income that is effectively connected with a US trade or business and subject to full US income tax.[11]

D. §367 Rules and Cost-Sharing Agreements

Under §367 (Internal Revenue Code of 1986), a US company that transfers intangible property to a foreign corporation (whether or not a subsidiary) is deemed to have sold such property in exchange for payments that are contingent upon the productivity, use, or disposition of such property. Such deemed payments are required to be "commensurate with the income attributable to the intangible," regardless of the actual amount of consideration, if any, received for the property, and they are taxable as ordinary income to the US transferor. For example, in the case of a transfer of software rights, this means that the deemed payments must be commensurate with the foreign subsidiary's income from sales of that software. Thus, a significant portion of the sales income recognised by a foreign software subsidiary would be taxable to the US software company through this mechanism of deemed payments under §367(d), whether or not the sales in question generated subpart F income.

However, the impact of §367 on software sales can be largely mitigated through careful planning. Software is a unique asset in that the existing version of a software program becomes largely obsolete upon the development of a new version. While §367 applies to cross-border transfers of the intangible

property embedded within a software program, it does not apply if the intangible property is developed by a foreign affiliate outside of the United States. Moreover, joint development of a software product by a domestic corporation and its foreign subsidiary can be structured through the use of a so-called "cost sharing arrangement," so that the rights to use the underlying intangible property in the United States are retained by the US parent company while the rights to use the underlying intangible property outside the United States are transferred, over time and through the use of "buy in" payments, to a subsidiary CFC. The non-US rights in the intellectual property developed under the cost-sharing arrangement will be treated as created in the jurisdiction where the intellectual property is intended to be utilised by the foreign subsidiary, and therefore, will not be subject to §367.

5.2 An Overview of the Irish Tax Regime

Responding to pressure from the European Union to remove certain discriminatory tax incentives under its prior tax regime, Ireland enacted a uniform corporate income tax in 1999 (the Finance Act 1999, "1999 regime"). Under the 1999 regime, taxable income of a corporation is divided into two broad categories: trading income and non-trading income. Trading income includes income from active businesses and is subject to a flat tax of 12.5%; non-trading income includes income from passive activities and is subject to a flat tax of 25%. Ireland's flat tax rate of 12.5% on trading income is one of the lowest in the world and, when coupled with the extensive network of Irish tax treaties, creates a strong tax incentive to conduct business operations in Ireland.

In addition to offering low corporate tax rates, Ireland is attractive because it has yet to implement (or enforce aggressively) some of the more familiar "anti-abuse" mechanisms that are present in the tax regimes of most other advanced countries. For examples, the Irish tax laws do not contain detailed transfer pricing rules, which many other countries implement to ensure that arm's-length principles apply in related-party transactions. Such transfer-pricing rules are normally a priority for a country that hosts substantial economic activity because they help to protect that country's tax revenues by preventing the diversion of profits to low-tax jurisdictions.

5.3 The Double Irish Structure[12]

Each domestic corporation organised in the United States (i.e., a US corporation), is taxed on its worldwide income, wherever it occurs. This is in contrast with a country such as France, which uses a "*territorial system*" whereby the corporate income "stops at the border." If the business income is generated in France, then the French authorities will tax it; France will generally not tax corporate income that is generated extra-territorially. (The territorial rule is subject to certain anti-avoidance mechanisms. First, French companies remain taxable on any assets transferred out of France via trust. Next, French companies are taxed on profits of certain subsidiaries incorporated in tax-privileged countries unless certain requirements are met. Finally transactions with non-cooperative states or territories. As of last year, the list included Botswana, Brunei, Guatemala, the Marshall Islands, Nauru, Niue, and Panama.)

What is the difference between the two systems? Every country is worried about their corporations being subject to more than one tax when they go beyond their borders. For example, the US concern is that US companies might be involved in double-taxation arrangements. To mitigate double taxation, the US offsets the taxes paid in a foreign country, such as the UK, against the taxes paid in the US—what is referred to as a foreign tax credit, a "dollar for dollar" credit. It is distinguished from a deduction, because a deduction erodes the tax base, so, for example, where a corporate is in the US 35% tax bracket, the deduction is only worth 35 cents in the dollar, whereas a credit is worth a dollar for dollar against the tax. France, on the other hand mitigates double taxation by using the "*exemption method*": France generally does not tax income outside of its borders, instead allowing that other (foreign) government tax the foreign-sourced income. These are the two basic regimes used to mitigate duplicate taxation around the globe today.

Here's what happens when a jurisdiction like Ireland enters the arena: taking the example of a French company operating in Ireland—Ireland's corporate profits tax rate is 12.5%—the French company in that case will not be taxed by the French authorities, and only taxed by the Irish authorities at this very favourable rate. With respect to a US company, taxed on its worldwide income, its Irish trading activity will be

taxed at 12.5%, but back in the United States, that same income (if it operates as a branch) would be taxed at 35%. This means that there is no significant advantage for the US corporation; in fact, it would be a disadvantage with respect to the French company, because the French company operating in Ireland would be paying 12.5% on its Ireland-derived income, whereas a US branch of a US company would be paying 35%, albeit with a 12.5% offset against the Irish tax.

To alleviate this, the US corporation will establish an Irish foreign subsidiary, and as a foreign corporation, the United States does not have jurisdiction to tax that income. So the subsidiary in Ireland, and its income would be taxed at 12.5%—that is, what we call a deferral—because in that case, the Irish subsidiary pays 12.5% (and the French company operating in Ireland is also paying 12.5%). If that income is repatriated back to the United States by the US corporation's Irish subsidiary, then it will be subject to tax in the United States, tantamount to 35% of the profits repatriated, with an offsetting deemed foreign tax credit for the 12.5% tax paid to Ireland. So instead, what happens in a case like this is that the profits generated by the foreign subsidiary generally are not repatriated; instead, the foreign subsidiary keeps that income offshore, a typical methodology used by most of the US companies operating in Ireland, and other "tax haven" jurisdictions.

In the United States, one talks about "US corporations" and "foreign corporations". In countries like Ireland and the UK, one talks about "resident companies" and "non-resident companies", and technically Ireland does have a methodology of worldwide taxation too, but it is basically based on the Residency vs Non-Residency concept. Typically, both the UK and Ireland have used the Residency concept, which is that the location at which the management and control of the corporation occur, is what determines whether the company is "resident" or "non-resident." It is because of these two systems that US companies like Apple, Google, Facebook, etc., take advantage of the differences between "foreign corporations" and "US corporations": namely, one asks whether the corporation is "organised in the US", or outside; hence in jurisdictions where tax residency is paramount, the location of the management and control of the organisation is a paramount determinant.

Therefore, corporations frequently establish an Irish foreign subsidiary, which is subject to a 12.5% tax rate on its income in Ireland, but then it would create another subsidiary whose purpose is to drain off the profits

of the Irish operating subsidiary in the form of royalty payments made to a related subsidiary company. This erodes the tax base for the Irish company in such a way that it is then passed into another jurisdiction—for example, a Caribbean country with no income tax, such as Bermuda or the Bahamas. That is essentially the methodology that is being used: to insert another subsidiary in there, that may be a resident or non-resident subsidiary, and then cause deductions in the form of royalty payments made from the Irish resident company to a non-resident company located in a "zero tax" jurisdiction: this is known as the "Double Irish Sandwich".

This combination of the Irish "tax residency" concept, with the "organisational structure" rules of the United States, is the so-called Double Irish, used by major global corporations. In the past, this Double Irish structure calls for a US parent corporation to form two Irish subsidiaries, Sub 1 and Sub 2. Sub 1 is a first-tier Irish subsidiary of the US parent, organised under Irish Law, but managed and controlled from Bermuda, or some other low-tax jurisdiction. Sub 2 is wholly owned by Sub 1 and is organised, managed, and controlled in Ireland; therefore, it is tax resident in Ireland, whereas Sub 1 is not. Unlike the US rules, which generally determine whether a corporation is US-based according to the location of its jurisdictional incorporation, tax residency under the Irish rules in many cases turns on the location of where that company is managed and organised.

In effect, Sub 1, a company incorporated in Ireland, but whose management control activity occurs in another country, will be treated as an Irish corporation for US tax purposes, and until recently as a non-resident for Irish tax purposes (it is a foreign corporation and, while it may be managed and controlled in Bermuda, it is organised in Ireland): this was recognised with the enactment of the Ireland Tax Consolidation Act 1997, §23A(3), as amended by the Ireland Finance Act 1999, §82 (the "1999 Regime": Prior to 1999, Ireland adopted the UK's "management and control" test to determine corporate residency. The Finance Act of 1999 continued this test, but added certain anti-abuse measures, treating those incorporated in Ireland as deemed residents unless its parent company was part of a treaty network to which Ireland was a party.).

Therefore, Sub 1, an Irish non-resident corporation, incorporated in Ireland, whose management and control activities occur in another country, will be treated as an Irish corporation for US tax purposes, but until recently as a non-resident for Irish tax purposes provided that corporation

(Sub 1) is controlled by a corporation that is controlled by residents of a country with which Ireland has a double taxation treaty. In effect, therefore, we have a company in Ireland that is non-resident for Irish purposes, meaning that its income is also non-resident in Ireland.

The key point here is that, for US tax purposes, the tax strategy is to create a hybrid structure: in particular, Sub 2 will follow US "*check the box election*" and be a "disregarded entity" separate from Sub 1 as a result of this election. Sub 1 and Sub 2 will be combined and treated as a single Irish corporation for US federal tax purposes, but will be continued to be treated for Irish tax purposes as two different corporations—namely, as a Bermuda resident corporation and its Irish subsidiary. Significantly, the transaction between Sub 1 and Sub 2 will have no effect for US tax purposes, and the income activities of Sub 1 and Sub 2 will be combined to determine whether any sales made by either company are going to follow the foreign-based company sales rules for US tax purposes. However, the key point here is that while the United States will disregard the license payments from Sub 2 to Sub 1, Ireland will treat such payments as royalties paid by an Irish corporation to a Bermuda corporation for the use of the Bermuda corporation's intellectual property in Ireland. The effect of that is to give Sub 2 (the Irish resident company) a deduction, which then passes that income away from the tax base of Ireland, and out to Bermuda, where it is taxed at a zero tax rate.

The US parent is deemed to own one foreign corporation consiting of Sub 1, an Irish Non-resident (Bermuda company), and Sub 2, an Irish Resident company. Sub 1 holds intellectual property, Sub 2 has to pay a royalty payment in order to use the intellectual property: this is how the money leaves Ireland. Most of the operations will be going through the Irish resident company (with an initial tax exposure of 12.5%), but now the US parent is not going to have to pay any tax in the US (unless it repatriates) or unless a constructive dividend arises. One of the concerns with constructive dividends is that Sub 1 could be regarded as being akin to a foreign corporation (Sub 1), and if it receives a royalty payment, that could be construed as being "personal holding company income," passive in nature, and so could potentially cause a constructive dividend back to the parent, which is the so-called *Sub Part F Rule*.

This too can be circumvented: although Sub 2 is really paying a royalty payment to Sub 1, the so-called US *check the box rules* that President

Clinton introduced during the 1990s means that Sub 1 can elect to treat Sub 2 as if it does not exist for tax purposes. This is possible if Sub 2 is not a publicly-held company: if it is a privately held company in Ireland that is also organised in Ireland, you can elect to treat it as if it is a "disregarded entity" under US law. Therefore, payments made by Sub 2 are disregarded for US tax purposes, although not for Irish tax purposes, but by this stage the "bird has already flown": most of the money is already gone to Bermuda as Sub 2 will deduct its royalty payments to Sub 1 as a deductible expense, and so minimises the income left in it to subject to the Irish 12.5% regime: moreover, such income will only ever be subject to US tax if, and when(ever), it is repatriated back to the United States.

5.4 Conclusion

Several factors are facilitating this wholescale avoidance of tax in either jurisdiction: first, the Ireland methodology of residency vs. non-residency; and second, the US system of classifying corporations as either "foreign" or "domestic". In the United States, the hybrid "*check the box rules*", where Sub 1 can elect to treat Sub 2 as a disregarded entity, allows royalty payments made for US purposes to be disregarded entirely, thereby not allowing any personal holding company income to arise for US tax purposes, with this amount reducing the tax base by putting it through an Irish non-resident corporation.

To compound matters, the "Dutch Sandwich" emerged[13]: in certain circumstances, royalty payments made from Sub 2 to Sub 1 via the Double Irish could be subject to withholding tax: to avoid this possibility, an EU company, typically incorporated in the Netherlands, is interposed between Sub 2 and Sub 1—its purpose being to take a licence of IP from Sub 1, which in turn sublicenses the IP to Sub 2. The Netherlands corporation "checks the box" for US disregarded entity purposes, and payments from Sub 2 to Sub 1 (via the Netherlands corporation) are not subjected to withholding tax because withholding tax is not permitted between EU resident companies, thereby ensuring that tax is greatly minimised by this device (as Dutch law allows the outgoing royalty payment to Sub 1 minimise the income subject to Dutch (low) tax because the income represented by the royalty income received from Sub 2 is offset (under Dutch law)

by the outgoing royalty payment to Sub 1!). Google has been a major user of this Double Irish/Dutch arrangement. So neither the European countries nor the United States is able to effectively tax the massive multinational's corporate profits sloshing around in such structures.[14]

In response to international criticism by major nations such as France and Germany, and the G20 in recent years, the Irish Government announced in 2014, that from 2015, any new corporation set up in Ireland on a non-resident basis would henceforth be treated as tax resident in Ireland, thereby closing the Double Irish/Dutch party. However, this has not been the case for two reasons.[15] First, pre-2015 arrangements were allowed continue until December 2020; and, second, although the existing arrangements were really only altered in that the "Bermuda" facility was being abandoned, the reality is that Malta has presented itself as a new partner, where intellectual property income is not taxed, so royalties paid by an Irish company to a Maltese corporation should not be subject to either tax or withholding tax.

The remaining question now is whether this is going to survive the European Commission's the 2016 Apple Decision ordering Ireland to recover taxes from Apple.[16] The Commission takes the view that arrangements, such as those described above, are effectively a form of State Aid by a member state to a favoured corporation, and so are illegal, and, therefore, tax unpaid should be recovered by the State (Ireland). The tax allowed to "escape" is estimated by the European Commission to be at least 13 billion euro. Apple contends that it is ultra vires to categorise the Irish regime as a form of State Aid; the Irish Government supports Apple in its appeal. The outcome of this appeal is eagerly anticipated.

Notes

1. This chapter draws on a number of sources, principally:
    1. Joseph B. Darby III and Kelsey Lemaster, *Double Irish More than Double the Tax Savings*, *available at*: http://www.gtlaw.com/News-Events/Publications/Published-Articles/83044/Double-Irish-More-Than-Doubles-the-Tax-Saving-Hybrid-Structure-Reduces-Irish-US-and-Worldwide-Taxation
    2. Edward D Kleinbard, *Stateless Income*; *available at*: http://www.sbs.ox.ac.uk/sites/default/files/Business_Taxation/Docs/WP1208.pdf

3. Jeffrey L. Rubinger and Summer Ayers LePree, *Death of the "Double Irish Dutch Sandwich? Not So Fast, available at*: http://www.law360.com/articles/590806/death-of-the-double-irish-dutch-sandwich-not-so-fast
4. Charles Gustafson, Robert Peroni, Richard Pugh, *Taxation of International Transactions: Materials, Texts and Problems*, 4th Edition, 2011.

2. Joseph B. Darby III and Kelsey Lemaster, Double Irish More than Double the Tax Savings.
3. *Id*. Treasury Regulations sections 301.7701-1 through 301.7701-3, effective January 1, 1997.
4. *Id*. The form is Form 8832, available at: https://www.irs.gov/pub/irs-pdf/f8832.pdf
5. *Id*. Treasury Regulations sections 301.7701-3(a), (c).
6. *Id*. Treasury Regulations sections 301.7701-3(a).
7. *Id*. Darby & Lemaster.
8. *Id*.
9. *Id*.
10. The other four components are: (1) income from certain insurance activities defined in §953, (2) certain international boycott-related income, (3) certain illegal bribes, kickbacks, or other payments to government officials, employees, or agents, and (4) income from certain ostracised foreign countries to which §901(j) applies.
11. Under Section 952(b) of the Code, subpart F income does not include any item of income from sources within the United States, which is effectively connected with the conduct by such corporation of a trade or business within the United States unless such item is exempt from taxation (or is subject to a reduced rate of tax) pursuant to a treaty obligation of the United States. It also states that "for purposes of this subsection, any exemption (or reduction) with respect to the tax imposed by Section 884 (regarding branch profits tax) shall not be taken into account."
12. For a very extensive account of the Double Irish, see Joseph B. Darby III and Kelsey Lemaster, *Double Irish More than Double the Tax Savings, which this section draws on* which this section draws on.
13. See further Edward D. Kleinbard, *Stateless Income,* and Stephen C. Loomis, *The Double Irish Sandwich: Reforming Overseas Tax Havens*, 43 St. Mary's L.J. 825.
14. Such income is referred to as "stateless income" by Prof. Edward D. Kleinbard, which is defined as income derived by a multinational group from business activities in a country other than the domicile

(however defined) of the group's ultimate parent company, but which is subject to tax only in a jurisdiction that is not the location of the customers or the factors of production through which the income was derived, and is not the domicile of the group's parent company.

15. See Rubinger & LePree at Note 1 above.
16. European Commission Decision of 30 August 2016 on State Aid Decision SA.38373 (2014/C) (ex 2014/NN) (ex 2014/CP) the "Apple" Decision currently under appeal to the EU's General Court in Luxembourg.

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Part II

Taxation, Tax Evasion and Growth

6

30 Years of Tax Reforms: How Much Impact on Danish Growth?

Otto Brøns-Petersen

The Danish tax system has undergone repeated tax reforms for three decades, affecting most aspects of it. Tax reforms have been a key element in an array of structural reforms, aimed at the labor market, the pension system, welfare programs, financial market liberalization, and regulatory reforms. The main objectives of structural reforms have been to enhance economic growth, consolidate public finances, reduce unemployment, and, at least initially, getting rid of huge current account deficits.[1] At the beginning of the 1980s, the Danish economy was burdened by a build-up of imbalances and structural problems during the preceding 15 years—from the mid-1960s and onwards when the Danish welfare state was founded.

Tax reforms to enhance growth and reduce welfare economic costs from distortions of the tax system have not been a uniquely Danish phenomenon. On the contrary, most Western countries have reformed their tax systems, following the lead of the 1981 American tax reform.

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Denmark has so far implemented nine reforms and other major changes to the personal income tax system, several reforms and tax rate cuts in its corporate tax system, as well as a number of other tax policy initiatives concerning indirect taxation. Thus, an interesting question is: How much impact has three decades of tax reforms had on economic growth?

It is extremely difficult to give a precise answer to this question, since a huge number of factors have influenced economic performance. These factors are impossible to disentangle. In this chapter, however, an attempt is made to isolate the growth effect of key elements of tax reform—namely, tax rate cuts in the income tax system, both personal and corporate. These are, judged from economic theory, the most important aspects of the tax system affecting economic growth.

The method used is a simulation of a "non-tax reform". Combining partial equilibrium tax models with empirical findings from the literature, I try to estimate the impact of bringing tax rates back to their 1986 levels. The counter-factual simulation gives an indication of the growth effect of actual tax reforms.

According to the simulations, the overall effect of growth enhancing Danish tax reforms since 1986 is equivalent to 10 percent of gross domestic product, GDP (since the simulated effect of non-reform would be a drop of 9.7 percent). That accounts for almost one sixth of total GDP growth over the three decades. According to the simulations, the deadweight welfare economic cost of taxation has been reduced by the equivalent of 6 percent of GDP. Roughly speaking, for every krone in tax rate cuts, taxpayers have earned two kroners in welfare terms.

Even if tax rates have been reduced, ample room remains for further reforms. Denmark still has high combined marginal tax rates for especially high-income earners and a medium-sized corporate tax rate within the OECD. Denmark tops the OECD tax revenue to GDP ratio list.

This chapter is organized in the following way: First, an overview of the theoretical literature on taxation and growth. Second, I provide an overview of the empirical literature on the subject. Third, I carry out an experiment in two parts, implementing 1986 corporate and personal income tax rates in today's economy. Fourth, I look into the implications for growth and welfare. Fifth, I make an indirect assessment of the implications of tax base reforms, and finally I briefly discuss some political economy caveats.

6.1 Taxes and Growth: Theory

It is well understood that taxes and tax systems influence economic growth. Principles of taxation have been a major topic in economic theory since the classics, e.g. Smith (1776) and Ricardo (1817). In neoclassical growth theory (following Solow 1956), the main focus is on the supply of factors of production, labor, and capital. In standard neoclassical production functions, total production is an increasing function in labor and capital. Labor supply is determined by after-tax wages and opportunity costs in foregone leisure and transfer income. Marginal tax rates reduce labor supply through a substitution effect, while average income taxes increase labor supply and transfer income reduce it—both through the income effect. Taxes can affect both intensive and extensive margins of labor supply, the first being the choice of how much labor to supply, while the second is the choice of whether to supply any labor at all. In the case of a fixed participation cost (such as not being eligible for transfer income, when working), the optimal supply might be zero for some individuals. The supply of capital is in principle influenced by the tax treatment of both investment and saving, since in a closed economy (such as the global economy), savings must equal investments. Actually, in the original Solow model, growth is determined by the savings rate. However, in a small open economy, the domestic savings rate is of limited importance for growth, since ample supply of global savings is available at the international rate of interest. So, even if taxation of savings do have a welfare cost, in the case of an open economy it doesn't have much impact on growth.[2]

In the Solow model, the impact of taxes are on the levels of factors of production and, thus, on the ***level*** of GDP rather than on the ***rate*** of growth. Taxes lower growth in terms of the level of GDP rather than its rate of change.[3, 4] Whereas labor is a homogeneous factor of production in the Solow model, ultimately given by the size of the (working-age) population, in human capital theory (following Becker 1964), a quality dimension is added to labor. Thus, investments in formal education can affect human capital, just as decisions about on-the-job training, mobility, choice of career, and the like. Taxes can influence labor supply in these dimensions, too, since they affect after-tax earnings. A second best case can be made for subsidizing education, if incentives are distorted by taxes.

A subsidy scheme will, however, still distort, for instance, the type of education[5] chosen, leaving a welfare loss compared to a first-best tax cut.

Endogenous growth theory (following Romer (1986, 1990), Lucas (1988, 1990), Mankiw et al. (1992) among others) introduced human capital formation into growth theory and focus on the influence on growth of making given factors of production more productive—both the productivity of individual factors and total factor productivity. Innovations can increase total factor productivity a number of ways: More productive methods of production and more valuable products. In addition, a wider range of goods and services to choose from is valuable to consumers in itself (even if some economic progress due to more variety is difficult to measure by traditional statistical means). Thus, taxes impeding human capital formation and innovation will also affect growth, just like taxes hamper the supply of factors of production in the Solow model.[6]

In traditional welfare economics, (following Pigou 1920), taxation can play an import role in correcting market prices, when externalities lead private and social costs to diverge. Thus, commodity taxes should correspond to externalities. In the case of a positive externality, the corrective tax should be a subsidy instead (a theme also cultivated by endogenous growth theory, in the case of possible growth spill overs from R&D). Atkinson and Stiglitz (1976) proved that Pigou's result stands,[7] even in general equilibrium and if policies are aimed at redistribution. An implication is that capital income[8] should be untaxed—a result also following from Mirrless (1971), Judd (1985), Chamley (1986), and Lucas (1990).

An important question related to taxation is, of course, how the revenue is spent. Government spending can be both productive and detrimental to growth. See e.g. Niskanen (2008, 139) for a simple political economy model were taxes reduce growth, while the provision of public goods is growth enhancing (and lump sum redistribution is neutral). In a more realistic, richer setting, redistribution also hampers growth, by reducing labor supply. Furthermore, if government consumption consists of private goods rather than public goods, there is an additional welfare cost compared to lump-sum transfers, if they are non-price rationed (either by restrictions on quantity and quality or by saturation). Not only does non-price rationing imply a welfare cost, GDP as measured by the

national account will overestimate the true level, since neither input- nor output-based government consumption takes this problem into account. In the Niskanen model, institutions play a role in how policies are set vis-à-vis optimal policies (which in the simple model is when marginal distortionary costs equals the marginal benefit of the public good). In a democracy with a decisive median, taxes and the supply of public goods will be higher than optimal levels.[9] Institutions play an import role for economic growth in a wide range of economic theory. North (1990), for instance, emphasizes protection of property rights, Acemoglu and Robinson (2010) competition for political power, Hayek (1945) the free operation of the price system. The choice of tax policy should not only depend on how well it supports such institutions; the institutions themselves can have implications for tax systems. Buchanan and Brennan (1980) point out that, from a constitutional perspective, distortionary taxes could be a preferred choice, if it limits the ability of rulers to overtax citizens. A progressive tax system thus could be an efficient institution in an autocracy, whereas a general flat tax is efficient in a democracy.

Another implication of the Niskanen model is the existence of an optimal supply of public goods and taxation necessary to finance it. A related concept is that of a growth-maxing mix of public goods and taxes (which are not necessarily the same). Beyond the optimal level, further taxation will impede welfare or growth by more than they will be promoted by marginal increases in public goods.

6.2 Taxation and Growth: The Empirical Literature

A large empirical literature on the impact of taxes on economic growth has accumulated over the last decades. Basically, there are two strands. One is focused on trying to measure the size of the various mechanisms involved in transmitting taxes to growth. For instance, an estimated production function is a standard ingredient in almost any macroeconomic model. The estimated impact of user cost of capital can be utilized to model the effect of taxes on capital on the supply of capital, and via the production function on growth. Obtaining similar estimates for other

relevant mechanisms makes it is possible to model the interaction between all of them. The other strand tries to estimate the growth outcome directly, usually by regressing growth on tax-related variables.

There are different pros and cons to both strands, and they are not mutually exclusive. Regressing directly will in principle capture all the channels by which a tax influences growth. It is, however, difficult to sort out which are the more important ones. Furthermore, it is usually only possible to regress on very crude measures of taxes. Modeling the ultimate growth effect by way of each individual mechanism can tell you which are more important, but obviously only if they are included. And this is true only in the case where the modeling results are tractable. In more complex models, important interactions can be lost to the naked eye.

The second strand was pioneered by Barro (1990), and is often referred to as Barro-regressions. In his original study and in many subsequent ones, growth (measured by GDP per capita) was regressed against public consumption as a percentage of GDP (as well as other variables and controls). This is indeed a crude measure, as it not only captures the possible distortionary costs of taxes raised to finance government consumption. In the end, the distortionary cost will depend not only on the size of government consumption, but also on other spending and on the overall efficiency of the tax system (since distortions as a rule of thumb grows by the square of the tax rate, e.g. see Li and Sarte (2004) on consequences of not taking account of tax progressivity). The estimated effect of government spending on growth usually has a negative sign, but in recent studies (including Barro 2015) it is insignificant.

Bergh and Henrekson (2011), in a survey of recent studies of the growth-rate effect of government consumption in rich countries, find a significant and negative relationship between the size of government and the rate of growth (on average, an increase of government size of 10 percent is associated with ½–1 percentage point lower growth rate).

A number of growth regression studies have added tax variables to government-spending variables and have found negative relationships between taxation and growth. Bassini and Scarpetta (2001) find that, if they include the government revenue to GDP ratio (and, in some regressions, the indirect to direct tax revenue ratio), it has a significant negative sign, while government consumption gets a positive sign, which is however not robust

to different specifications. Overall, the negative effect of taxes dominates the positive impact of government consumption, which could account for the negative sign in regressions including government consumption only. However, there are serious issues regarding causality and endogeneity when both taxes and spending are included at the same time.

A number of studies have explored the relationship between growth and actual tax rates rather than macro tax rates. Gemmel et al. (2013) find that marginal income tax rates for persons and corporations have robust and significant negative effects on growth in OECD countries, whereas macro tax rates perform less well in explaining growth. Interestingly, they also find the impact on factor productivity to be a more important channel to growth than factor accumulation is. Dackehag and Hansson (2012) find a negative relationship between initial statutory tax rates and subsequent four-year growth rates in a panel of 25 rich OECD countries from 1975 to 2010. The results are significant, but (as often the case) corporate tax rate results are more robust.

The first strand of research—estimating single mechanisms—is represented by a host of studies in the literature. As mentioned, estimated production functions, linking cost of capital to fixed capital formation, are standard issue in most macroeconomic models. So are labor supply functions in more recent general equilibrium models of the macro economy. Until recently, however, empirical studies of the elasticity of labor supply to after tax income have come up with quite varying estimates. In a survey of the literature, Keane (2011) found a large group of relative small quantitative elasticities for males (around 0.1), but also a "sizable minority" with large values. The average supply elasticity was 0.3. In most OECD countries, an elasticity of that magnitude will imply a large welfare cost of taxation (e.g. even at a flat tax of 50 percent, the marginal distortionary cost would equal one third of revenue raised).

In a number of important contributions, Chetty (2011, 2012) has showed that the varying estimates in labor supply elasticities can be accounted for by sluggish adjustments to changes in after-tax wage income. In fact, taking sluggish adjustment into account, it cannot be rejected that all labor supply elasticities from a survey of international studies were drawn from identical samples. Thus, he recommends using a conservative estimate of 0.3 percent of the elasticity of taxable labor

income in macroeconomic models. A number of recent Danish studies find elasticities in line with Chetty's recommendation (Brøns-Petersen 2016b).[10]

As far as corporate taxes are concerned, there is a large number of studies of real capital formation. Corporate taxes affect growth also by other channels, which are being explored to an increasing extent. Mooij and Ederveen (2008) have surveyed the literature on five different such channels: Organizational form, debt versus equity financing, investments distortion on the intensive and extensive margin, and international profit shifting. Semi-elasticities relating to the statutory tax rate range from −1.2 to −0.15, with profit shifting being[11] most sensitive.

Tax competition in statutory corporate tax rates is sometimes seen as a harmful "race to the bottom", driven by inadequate control over international profit shifting by tax authorities. The other channels affecting growth are large enough, however, to merit reducing corporate tax rates even to the point of extinction. As Fehr et al. (2013) has calculated in a simulation, abolishing the corporate tax globally would be beneficial to all[12] countries, even if tax revenues are collected by personal income taxes and consumption taxes instead.

Finally, a number of studies have tried to estimate optimal level of government spending. The welfare or growth maximizing levels are generally much lower than actual spending, especially the very high Danish level in excess of 50 percent of GDP. Vedder and Gallaway (1998) estimated an optimal level of federal spending of 17 percent of GDP in the United States, while Niskanen (2008) found an optimum at 18 percent of GDP. Chobanova and Mladenova (2009) estimated an optimal level of 25 percent of GDP in OECD countries. Pevcin (2004) found that actual spending in eight EU countries is on average 19 percentage points above the optimal level (with only one country, Ireland, below growth-optimizing spending, while the two Scandinavian countries included, Finland and Sweden, were 34 and 29 percentage points above[13]).

It should be noted, however, that these estimates refer to optimal levels, given actual tax instruments[14] and expenditures rather than efficient ones. If optimal government spending were instead to refer to optimal instruments too (excluding e.g. highly distorting taxes, growth-reducing transfer payments, and provision of private goods), optimal levels would

presumably be different, even if the direction is, in principle, uncertain. The elimination of growth-retarding spending would reduce the optimal level, while less distortionary taxation could work in the opposite direction.

No doubt, the literature suggests that present spending levels and compositions in high-tax countries such as Denmark are still far from optimal. Some of the negative effect on growth might be counteracted by an otherwise liberal market economy (see Bergh and Henrekson 2011) as well a low level of corruption, among others (see Fournier and Johansson 2016).

6.3 The Growth Effect of Danish Tax Reforms

Like many other OECD countries, Denmark embarked on a path of tax reforms in the mid-1980s. They have been part of a larger set of structural policies aimed at improving growth and labor market conditions, reforming the welfare state, and consolidating public finances. Personal income taxes have undergone nine major reforms, beginning with the 1987 reform. Corporate taxation has also been subject to major reforms. Furthermore, indirect taxation has seen numerous changes, including more extensive use of "green taxes".

Nevertheless, Denmark remains one of the countries with the highest tax burdens in the Western world, topping the list of tax revenue to GDP in OECD countries. Currently, tax revenue is 46.4 percent of GDP, almost the same as before the first tax reform (46.1 percent of GDP in 1986). The top marginal tax rate is still high by international comparison; tax rates on capital income are higher than in Norway and Sweden, who have embraced the "Scandinavian dual tax system" to a much larger extent, and indirect taxes deviate from true external costs. Thus, there is still scope for further reform. In Brøns-Petersen et al. (2014) is a blueprint for a tax reform, which would reduce the tax to GDP ratio by 3 percent and increase GDP by 3 percent, according to standard calculation methods used by Danish economic ministries.

The further scope for reform notwithstanding, the extensive reform activity during the last 30 years has not only transformed the Danish tax system, but must also be expected to have had a sizeable impact on

economic growth. The changes to the tax bases have been so comprehensive, it would be difficult to disentangle their effects. At the same time, the composition of the economy has changed substantially. In order to access the impact of tax reforms, I am instead going to make a more limited experiment.

The experiment is to simulate the GDP effect of reintroducing the personal income tax rate structure and the corporate tax rate of 1986 in the economy of today.

It is important to stress that such an experiment will only give a partial picture of growth effects, as I am disregarding growth effects of changes in tax bases and other rates than income tax rates. However, rate cuts have been a major part of reforms. And by comparing simulated and actual tax revenues, it is possible to get an idea about changes in tax bases (as well as in other economic conditions). The growth effects are ambiguous and probably small compared to tax rate cut effect.

The simulation is done in four steps. First, the "reversed tax reform" is simulated for personal income taxes on income from labor, self-employed, and income transfers. In order to do so, a model has been constructed similar to the STØV model used by the Danish Ministry of Taxation (Skatteministeriet 2008). This model is a partial structural model, suitable for estimating labor supply and human capital as well as tax revenues from these sources. Next, a capital stock response is modeled by a simple constant return aggregate Cobb-Douglas function in aggregate labor and capital.

$$Y = AK^{\alpha}L^{1-\alpha}$$

where L is aggregate labor supply (quality adjusted), and K is capital stocks, and Y is GDP.

Such a model is generally considered useful for purposes such as this. As capital taxation is unaltered at this stage, profit maximization will entail a constant capital labor ratio. Thus the stock of capital will move in tandem with labor supply, such that

$$\frac{\Delta L}{L} = \frac{\Delta K}{K} = \frac{\Delta Y}{Y}$$

The third step is simulating changes in capital stocks in the corporate sector, corporate income, and reported corporate taxes. This is done by estimating tax responses to corporate tax rate changes, using semi-elasticities from a comprehensive study of the literature (Mooij and Ederveen 2008). Finally, estimated tax base and revenue changes are translated into growth effects partly by utilizing

$$\frac{\Delta Y}{Y} = \propto \frac{\Delta K}{K}$$

(assuming negligible feedback from labor supply).

Impact on tax revenues is modeled in terms of individual items. As they are measured relative to GDP, the denominator effect of impact on GDP is included too. The tax revenue impact consists of a "mechanical" component, disregarding behavioral effects, and a behavioral component. In addition to changes by tax rates on "their own" tax bases and revenues, other tax bases will be affected too. For instance, an increase in the corporate tax rate will reduce not only earnings by capital, but also by labor and, consequently, taxes on labor, consumption, and so on, will also fall. It is assumed, however, that such derived revenue changes are equal to the overall impact on GDP, in percentage terms, leaving the tax revenue to GDP ratios unchanged. Since revenues are calculated relative to GDP, the net effect is zero.

Simulating a Corporate Tax Rate Increase to the 1986 Level

Corporate taxation has undergone major changes since 1986. The tax base has been broadened in a number of ways, including reduced depreciation rates, stricter rules for joint taxation with foreign subsidiaries, limited tax liquidity, and caps on interest-payment deductions (see Box 6.1). The corporate tax rate has been cut from 50 percent in 1986 to 22 percent in 2016.

Table 6.1 summarizes the main results of a simulated increase of the tax rate from the present to the 1986 level of 50 percent.

Box 6.1 Major Changes to the Danish Income Tax Base 1986–2016

Personal income taxation
- Semi-dual income taxation: Separate tax bases for personal income (i.e. wages, transfer income, etc.) and capital income. Capital income is taxed a lower rates, especially negative capital income.
- Deductions no longer in marginal income, but at lower, uniform rates.
- Special tax regime for personally owned businesses
- Eight percent tax on gross wage income
- Taxation of fringe benefits

Corporate income taxation
- Reduced rates for depreciation allowances
- Repeal of investments funds and indexing of inventory depreciations
- Repeal of exemption for income from foreign subsidiaries
- All-in or all-out joint international taxation
- Ceilings to interest deductions
- Transfer pricing regulation and documentation
- Increased rent taxes on North See Oil income
- Taxation of foundations

Table 6.1 GDP effects

Experiment 1:	
Corporate tax increase from 22 to 50 percent	**–3.8**
Of which:	
Higher debt/assets ratio	*–0.2*
Real investments, intensive margin	*–1.9*
Real investments, extensive margin	*–1.4*
Income transformation	*–0.4*
Experiment 2:	
1986 personal income tax structure	**–5.9**
Of which:	
Labor supply, extensive margin	*–0.2*
Labor supply, intensive margin	*–3.5*
Of which:	
Income effect	*0.8*
Substitution effect	*–4.3*
Human capital and productivity (labor quality)	*–2.3*
Total tax reform experiment	**–9.7**
Memo:	
Actual total GDP growth 1986–2016	*64.2*

The net effect is estimated as a drop in GDP of 3.8 percent. The main driver of this result is a decline in real investments, leading to a drop in GDP of 3.2 percent, stemming from both the intensive and extensive margins of real investments.[15] The intensive margin refers to the scale of investments by existing firms, while the extensive margin refers to the location of investments by international firms. Decisions on the intensive margin are guided by real marginal effective tax rates, while they are guided by real average effective tax rates on the extensive margin. Real marginal tax rates especially are highly sensitive to assumptions about interest rates, inflation, true economic depreciation rates, as well as the equity-to-debt mix and the mix of assets in investments. Typically, small changes in assumption can lead to large change in tax rates, often ranging from positive to negative values for different types of investments (equity being more heavily taxed than debt financed investments). In the simulation, the combined change on both margins are calculated as a change on the intensive margin.[16] As a robustness check, the estimated overall GDP effect can be compared to recent calculations by the Danish Ministry of Finance (Finansministeriet 2017) of the GDP impact of a change in the CIT. Even if modeled differently, the two calculations are roughly in line; in the MoF calculation, the GDP to net tax revenue change is just above 2, whereas it is marginally lower (1½) in the present simulation.[17] The corporate tax rate has a major impact on international income transformation. However, in the experiment, the CIT rate has only been raised by 5.4 percentage points, corresponding to the change in *difference* between the Danish and the OECD average from 2016 to 1986 (implicitly assuming that the OECD average increases by 22.6 percentage points in experiment 1). This is a relevant benchmark, since income transformation is driven by differences in international CIT rates. Furthermore, the GDP effect does not include the income transformation itself, even if statistically measured GDP would be reduced by it, but only in a formal statistical sense. On the other hand, the revenue effect stemming from behavioral responses would affect GDP and is therefore included. At the margin, costs and tax savings from behavioral responses are assumed to be equal. The net effect of behavioral responses in terms of income transformation is estimated to be 0.4 percent of GDP.

Finally, an increase in the CIT rate would affect financial decisions by companies, leading to a higher debt-to-assets ratio, and a reduction in tax

revenue from higher interest payments, which are deductible (as opposed to profits allocated to equity). The estimated effect is minor: 0.2 percent of GDP.[18]

In the literature, it is recognized that corporate tax rates can also affect the level of incorporation. This effect has been ignored in the experiment, however. The reason is a peculiarity of the Danish tax system, whereby the incentive to incorporate has traditionally been neutralized by keeping marginal wage income tax rates roughly equal to the combined corporate and share earnings tax rate. This neutrality is assumed to be upheld in the experiment.

Simulating a Return to the Personal Income Tax Rate Structure of 1986

In Fig. 6.1, 2016 personal income tax rates on labor income and others is reported as well as the 1986 rate structure. Tax brackets have been recalculated to fit 2016 income levels. Even if tax base definitions have changed, it is evident that rates have been reduced significantly over the

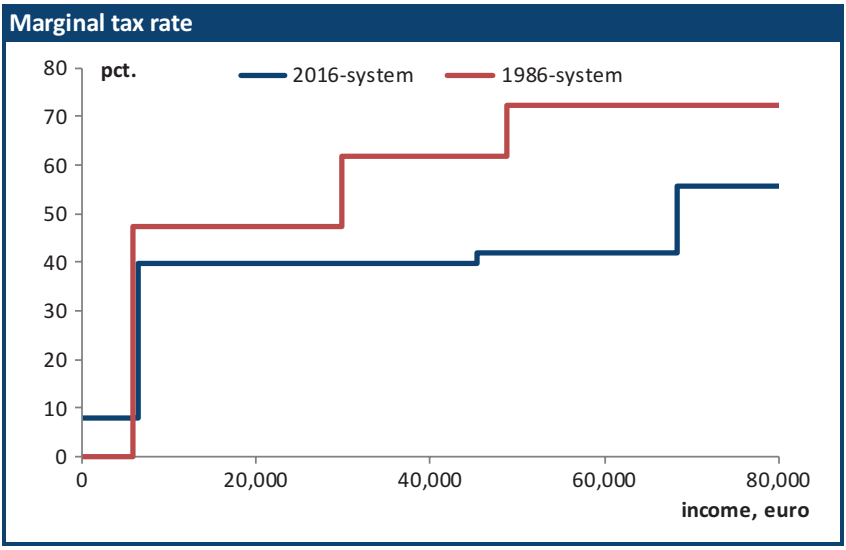

Fig. 6.1 Marginal tax rate

30-year period. Middle-income earners have seen their marginal income tax rates cut by as much as 32.6 percentage points, while the top marginal tax rate has been reduced by 16.7 percentage points.

Table 6.1 also summarizes the GDP effects of simulating a reintroduction of 1986 personal income tax rates and brackets into the Danish tax system. All in all, GDP is estimated to decline by 5.9 percent.

The main impact is from the quantitative substitution effect on the intensive margin of labor supply, which account for two thirds of the combined GDP effect in experiment 2. The income effect is of minor consequence, reflecting a small estimated income elasticity in Denmark, while the quantitative elasticity of substitution is, on average, 0.1 in the STØV model.[19] Furthermore, labor supply on the extensive margin is reduced very little. This is quite convenient, since the extensive margin response must be assumed to be more affected by tax base changes, too, which would have made a larger effect less reliable.

Finally, the effect of lower labor quality on GDP is estimated to −2.3 percent. The model includes two separate channels. First, higher marginal tax rates will reduce the incentive to be productive on the job (e.g. accepting promotions, working harder, and increasing mobility). Secondly, average tax rates will influence the education incentive, affecting long-run human capital formation. The latter changes take time; most formal educational choices are made at young ages. The present experiment is long run, however, spanning 30 years, allowing time for sluggish adjustments to take place (even if long-run equilibrium probably hasn't been fully reached yet).

All in all, the full tax reform experiment would reduce GDP by almost 10 percent. By the same token, the isolated effect of combined corporate and personal income tax rate reductions has been a growth effect of almost 10 percent over the last 30 years. The total growth of Danish GDP since 1986 has been 64 percent; so, tax (rate) reforms account for almost one sixth of total growth over the period.

Self-Financing and Welfare

Table 6.2 reports the estimated tax revenue effects of the two experiments. As can been seen, tax revenue would increase by 1.8 percent of GDP from increasing the corporate tax rate (experiment 1), whereas

Table 6.2 Revenue-change (% of GDP)

Experiment 1	
Corporate tax increase from 22 to 50 percent	**1.8**
Of which:	
Mechanical tax change	*3.2*
Higher debt/assets ratio	*–0.2*
Real investments, intensive margin	*–0.4*
Real investments, extensive margin	*–0.4*
Income transformation	*–0.4*
Experiment 2	
1986 personal income tax structure	**3.5**
Of which:	
Mechanical income tax change	*8.1*
Impact on indirect taxes	*–2.0*
Labor supply, extensive margin	*–0.1*
Labor supply, intensive margin	*–1.5*
Human capital and productivity (labor quality)	*–1.0*
Total tax reform experiment	**5.3**
memo:	
Actual change in structural corporate tax revenue (percentage of GDP) 1986–2016	*0.0*
Actual change in personal income tax revenue	*–2.1*

personal income tax rate increases (experiment 2) would bring an extra 3.5 percent of GDP into the public coffers, making total additional revenue of 5.3 percent of GDP. The "mechanical" revenue effect would have been 11.4 percent of GDP.

The so-called degree of self-financing is defined by

$$S = 1 - \frac{\Delta T_a}{\Delta T_b}$$

where ΔT_a and ΔT_b refer to the change in tax revenue after and before behavioral responses, respectively.

That implies a so-called degree of self-financing by 53.5 percent. Roughly, one in every two kroners tax increase would have been lost to behavioral responses.

Under certain conditions,[20] the degree of self-financing corresponds to the impact on economic welfare. Hence, the deadweight loss connected

to the experiment can be estimated to the equivalent of 6.1 percent of GDP. The Marginal Cost of Public Funds is defined by

$$\mathrm{MCF} = \frac{1}{1-S}$$

implying a cost of roughly 2 kroner for every additional krone of revenue.

Tax Base Changes: An Indirect Assessment

The two experiments do not capture the substantial changes to the tax base, which have also occurred over the three decades. But it is possible to get a broad picture by comparing estimated to actual revenue changes. The residual reflects changes to the tax base, but also a host of other factors characterizing the economic evolution over the time span, including a substantial drop in nominal interest rates.

Table 6.3 compares actual revenue changes from 1986 to 2016 to estimated revenue gains from experiments 1 and 2. Actual revenues are calculated at a structural level to weed out temporary influence from the business cycle stance; corporate tax revenues, in particular, are very sensitive to business cycle developments.

Interestingly, actual revenue from corporate taxation comprises almost exactly the same fraction of GDP—2.4 percent—in 2016 as it did in 1986. Since the tax rate is less than half now compared to then, the tax base as a percentage of GDP has more than doubled.

Table 6.3 Change (% of GDP)

Implicit change in tax bases	
Corporate tax	
Actual	0.0
Experiment 1	1.8
Implicit revenue from tax base changes	**–1.7**
Personal income tax	
Actual	–2.1
Experiment 2	5.5
Implicit revenue from tax base changes	**–3.3**

The estimated revenue effect of the experiment is 1.8 percent of GDP. That implies a combined tax base broadening of the same magnitude (or that behavioral responses might have been underestimated).

Looking at personal income tax revenues, the simulated loss of revenue from experiment 2 is 5.5 percent of GDP (ignoring the derived revenue from indirect taxation, as a consequence of increased disposable incomes), while the actual decline from 1986 to 2016 was only 2.1 percent. That leaves a residual of 3.3 percent of GDP.

Using this indirect method, there appears to have been base broadening and so on of approximately 5.0 percent of GDP.

The growth effects of base broadening are presumably ambiguous. In some cases, base broadening has increased neutrality—for instance, in the case of taxation of North Sea Oil, the repeal of tax exemption of corporate income from foreign subsidiaries (on top of standard Double Taxation Treaty deductions), the introduction of a special tax scheme for personally owned businesses, semi-dual taxation with a separate taxation of capital income, and taxing fringe benefits—with a positive effect on growth. In other cases, base broadening have been special provisions in order to protect the tax base—such as the ceiling on deductions of corporate interest payments—or simply to finance tax reforms and government spending, which have reduced growth. In a few cases—such as lowering depreciation rates for fixed investments, narrowing the gap to true economic depreciation—the impact on growth has been negative, while enhancing economic welfare.

Overall, in the Danish case, the growth and welfare economic effects of three decades of tax reform have undoubtedly been positive, with tax rate cuts dominating any growth-reducing impact from tax base broadening. The scope for further base broadening is probably very limited. The most promising candidate seems to be the introduction of a flat rate on all household capital income, which at 20–25 percent seems to be revenue neutral after behavioral responses (financing the rate cut for positive capital income by reducing the rate on negative capital income) (Brøns-Petersen 2016a).

6.4 Political Economy of Tax Reform

Assessing the growth effect of tax reform, two important questions remain. First, what was the impact on government spending and did that influence growth? And secondly, what were the political economy implications of tax reforms?

Taken together, tax reforms have had very limited influence on government spending directly, since revenue from base broadening has roughly matched the net loss revenue from rate cuts.

The political economy implications have probably been substantial. As pointed out by Becker and Mulligan (2003), more efficient tax systems are correlated with higher government spending. In the hypothetical situation where Denmark hadn't undertaken comprehensive tax reforms, the pressures to limit spending growth would likely have been higher. And as pointed out earlier, most government spending is reducing growth. That is especially the case in Denmark with a high overall level of government spending, generous welfare state programs, and a high level of government provision of subsidized private goods.

The Danish experience suggests that emphasis in tax reforms to enhance growth should be on cutting high marginal tax rates, while spending cuts should be considered a first best alternative, when it comes to financing them.

Notes

1. Which has subsequently been replaced by a large surplus.
2. However, capital markets can be segregated so that risky investments, for example entrepreneurial enterprises, have to be financed locally (maybe by the entrepreneur herself or himself), in which case the tax treatment of savings matters for growth too.
3. The estimations of growth effects of tax reforms in Denmark are also in terms of level, rather than rate, of change. Any policy which would increase the permanent rate of growth would, of course, ultimately outstrip policies affecting the level only, but are harder to identify. That goes for empirical findings as well. Empirical findings of policies seeming to

increase the rate of growth might very well affect levels instead in the long run. A measured higher growth rate could be the result of the economy changing from one growth path to another.

4. In fact, as the Solow economy reaches a steady state, the rate of growth declines to zero, if population growth wanes off. In steady state, gross investments equal capital depreciation, leaving the factors of production constant.
5. Since there is both an investment and a consumption element to an education, a tax-subsidy scheme will distort the investment-consumption mix.
6. However, endogenous growth theory doesn't rule out affecting the rate of change as well as the level of GDP.
7. Provided only that labor and consumption arguments are weakly separable in the utility function.
8. A capital income tax can be seen as commodity tax on future consumption goods.
9. Whereas in an authoritarian regime, taxes will be much higher, but the level of public good lower than the social optimum.
10. The estimated elasticities are elasticities of taxable (labor) income. As pointed out by Feldstein (1995), all margins should be included when estimating the welfare cost of taxation, implying that taxable income rather than mere quantitative labor supply is the relevant measure.
11. Formally, all profit shifting will affect GDP as measured by statistical authorities. In reality, only the cost of profit shifting has an effect on growth, since profit shifting is mainly just transfers. In the estimate of the growth effect of corporate tax reform in Denmark, only the cost of profit shifting is included.
12. Except China, who benefits from leading tax competition today.
13. No significant result was obtained for Denmark.
14. Niskanen (2008) is an exception on the revenue side.
15. In the experiment, the marginal effective tax rate (METR) is increased by 7.3 percentage points in the experiment, while the average effective tax rate (AETR) is increased by 6.5 percentage points. The debt-to-assets ratio is increased by 4.2 points, while the Danish CIT rate relative to the OECD average (the difference being relevant for income transformation) is increased by 5.4 points.
16. This is consistent with the assumption of constant returns to scale in the aggregate production function.

17. However, the MoF does not include additional GDP effects from income transformation nor debt-to-equity ratio.
18. The literature study does not take into account subsequent studies of the growth effect of banking crises. Since corporate taxes reduce the solidity of the banking sector, and since the solidity affects the risk of a banking crises, this channel could be quite important. According to Brøns-Petersen (2014), the corporate tax implies an expected cost of ½ percent of GDP from banking crises alone.
19. The qualitative labor supply is subject to an elasticity of similar average size. However, because of the composition of the tax rate cuts in the experiment, quantitative effects are larger than qualitative ones. Overall, the behavioral responses in the STØV model are relatively conservative compared to the empirical literature cited in Brøns-Petersen (2016b).
20. Tax changes are marginal, and the elasticities of substitution are compensated. Neither is fully fulfilled. However, income effects in the STØV model are small (reflecting empirical findings), making compensated and uncompensated elasticities numerically close. The latter implies a small, downward bias in the estimated welfare effect, while the changes not being marginal imply an upward bias.

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7

Convergence of Tax Shocks and Macroeconomic Performance in the Enlarged European Union

Athanasios Anastasiou

7.1 Introduction

The effects of European fiscal policy on economic growth and convergence has attracted considerable attention in the macroeconomic literature, especially after the financial crisis of 2007–2008—a period which has been characterized by significant economic disparities between regions and countries within the European Union (EU). The economic theory follows the Keynesian case—that is, fiscal expansion leads to higher output while fiscal strictness leads to lower output—which is opposed with the non-Keynesian view that output effects may be small and then fiscal strictness may lead to positive effects on output. Giavazzi and Pagano (1990) were the first economists that investigated the possible long-run effects of fiscal policies and whether these are following the Keynesian view. During the last decade, the long-run macroeconomic effects of fiscal policies have been estimated by using the vector auto-regression (VAR) models. But surprisingly, there are no clear conclusions about the signs and size of these effects.

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In recent years, there is considerable debate in the literature about the macroeconomic effects of fiscal policies. Fiscal policy has been considered as an important policy instrument aiming at smoothing cyclical fluctuations. A number of papers have made use of VAR models to examine the impact of fiscal shocks on macroeconomic variables. In addition, this is an important tool in the hands of individual countries when monetary policy is not available, for instance the case of Eurozone environment. None of these studies, to the best of our knowledge, has concentrated on the effects of fiscal shocks in the euro area. More specifically, few studies compare systematically the impact of fiscal shocks between member states, and there is no study, to the best of our knowledge, taking into account data that cover the period after the global financial crisis. At the same time, the existing literature pays no attention to the potential impact of several control variables, such as trade intensity and short-term interest rates, on the degree of convergence of fiscal shocks across the EU member states, which is a key issue for the successful functioning of the internal market.

In particular, from an econometric point of view, VAR models are often used in the literature to investigate the effects of monetary policy shocks. However, only in recent years have a few studies started considering the effects of fiscal policy under the environment of VAR specification. Emphasizing the effects of exogenous fiscal shocks to government defense expenditures in the USA, Edelberg et al. (1999) considered VAR methodology and concluded that defense expenditures had a hump-shaped association with real GDP and a temporary association with real interest rates. Mountford and Uhlig (2002), using an alternative approach and imposing restrictions on the impulse responses in order to establish fiscal shocks from VAR residuals, stressed that fiscal restrictions may lead to expansionary effects on output. Blanchard and Perotti (2002) considered a VAR approach which included government spending, net taxes, and private real GDP by using data for the US economy. They pointed that government shocks have positive effects on output, while tax shocks have negative effects.

Much of this literature examines the effects of fiscal policy, paying no attention to the association between several control variables, such as trade integration, budget deficits, and short-term interest rates, and the symmetry of disaggregated tax shocks (direct and indirect taxes). This means that

it would be better understood if the association between control variables and correlations of direct and indirect tax shocks is separately and explicitly examined. Moreover, the existing literature does not consider the whole sample of EU27 member states and, thus, there are no studies examining the symmetry of tax shocks in the EU common market and especially for the post-global crisis period.

This chapter explores the relation between convergence of tax shocks and macroeconomic variables using data for the EU27 countries covering the period 1999Q1–2016Q3. The purpose of this chapter is twofold. First, it attempts to add to the existing literature of the effects of fiscal policy on a set of key macroeconomic variables by directly examining convergence of alternative tax shocks (total, direct, and indirect). Second, by exploring how control variables, including trade integration, fiscal policy convergence, financial-sector convergence, and labor-market rigidities, have affected tax shock correlations, it attempts to provide evidence regarding the prospects for fiscal policy convergence in the enlarged European Union. The issue is important for the debate on the fiscal imbalances and income inequality in the EU, given that the recent debt crisis has generated many asymmetries among EU member states, and taxation remains the only tool to promote economic growth.

The rest of this chapter is organized as follows. Section 2 discusses the empirical literature on the association between fiscal policy shocks and macroeconomic outcomes. In Sect. 3, we proceed to identify total tax shocks, direct tax shocks, and indirect tax shocks in each of the EU27 economies employing a VAR methodology along the lines suggested by Blanchard and Perotti (2002). Following that, accumulated responses to different types of tax shocks by output growth and inflation rates are considered, and the correlation coefficients for the identified total tax shocks, direct tax shocks, and indirect tax shocks versus Eurozone are computed. Then, the nature of the relationship between such correlations among all possible pairs of countries and control variables is examined, by using panel data from EU27 economies and covering the three periods 2002–2006, 2007–2011, and 2012–2016. Section 4 contains concluding comments.

Our results suggest that there is heterogeneity within the enlarged European Union, regarding the stabilization effects of total tax shocks.

The European countries are split into two main and large groups according to their response patterns of output growth and inflation rates to total tax shocks. At the same time, most of the countries appear to have contractionary results when comparing the effects of output growth and inflation to total tax shocks, and those to direct and indirect tax shocks. Moreover, our results provide evidence that monetary policy convergence is found to have a negative effect on the symmetry of total tax shocks across EU27 member states while the union density convergence has a positive impact. Fiscal policy convergence appears to have led to more symmetric indirect tax shocks in EU27 but, on the other hand, it has no significant impact on symmetry of direct tax shocks. Also, trade openness symmetry and monetary policy convergence have been responsible for determining the degree of direct and indirect tax shock symmetry in European countries. As concerns the process of labor-market rigidity, it has a positive and significant impact on synchronization of direct tax shocks in EU27 area but has no impact on synchronization of indirect tax shocks.

7.2 Literature Review

There is considerable debate in the literature about the effects of tax policy on macroeconomic outcomes, with mixed results (Blanchard and Perotti 2002; Perotti 2002; Fatas and Mihov 2001; Marcellino 2006; Giordano et al. 2005). A seminal study in this literature is Blanchard and Perotti (2002). Using data from the US economy, Blanchard and Perotti (2002) examined the dynamic effects of shocks in government spending and taxes on economic activity. They considered a structural VAR model by computing impulse response functions. Their estimates suggested a positive effect of positive innovations in public spending on output and a negative effect of positive innovations in taxes on output. They also found evidence suggesting that both positive shocks in spending and taxes are strongly and negatively associated with private investment spending.

Perotti (2002), extending the analysis of Blanchard and Perotti (2002) by using a structural VAR approach and analyzing the role of fiscal policy on GDP, inflation, and interest rates in five OECD countries during

1960–2001, reported, on the one hand, results implying that there is weak association between fiscal variables and GDP and, on the other hand, unclear results that tax cuts are more efficient than increases in expenditures. He also found a weak and negative link between spending shocks and tax cuts upon product and, only in the post-1980 period Perotti (2002) presented results implying significant favorable impact of government spending on interest rates and also found a weak association between expenditure and inflation. At the same time, Marcellino (2006), following the methodology of Perotti (2002), used a structural VAR model in order to identify fiscal shocks from the estimated residuals. Here, it is worthwhile to mention that there is not a significant approach to capture the fiscal shocks in the literature, as explained by Perotti (2002). Several authors, such as Burnside et al. (2004) and Ramey and Shapiro (1999), have questioned the practical distances of fiscal policy from its normal path with the help of dummy variables which focus on exogenous moments such as the Korean War. A number of other studies indicate fiscal shocks by considering the residuals of VARs or contemporaneous models (e.g. Perotti 2002; Mountford and Uhlig 2002; Favero 2002; Fatas and Mihov 2001). Under the second methodology, there exist several approaches to step from residuals to shocks. Mountford and Uhlig (2002), for example, employ sign restrictions on the impulse responses and not contemporaneous ones. In a similar vein, Fatas and Mihov (2001), using VAR specification with respect to spending due to unfavorable impact of contemporaneous associations between taxes and economic activity, focused on the impact of government spending shocks. They have pointed the responses of private consumption, investment, employment, and wages or hours worked to shocks to disaggregated spending. Moreover, Marcellino (2006), using analogous methodology, tried to provide evidence on the flexibility of fiscal policy shocks in stabilizing the four largest countries of Eurozone (Germany, France, Italy, and Spain) and on the association of fiscal and monetary policy. He has shed doubts on the different and sizeable effects of non-systematic fiscal policy across countries and also found no sign of significant linkages between expenditure shocks and output and between tax policies and output. In addition, Marcellino (2006) provided evidence showing tendency for output to decrease as government consumption increases and a favorable impact of social benefits on output, but found no

clear relationships between higher social contributions and output losses and between indirect taxes and increased inflation.

Arin and Koray (2006), using a VAR approach for Canada, report results indicating that initially output increases in response to total taxes, but the decomposition of total taxes into four subgroups (income taxes, corporate taxes, indirect taxes, and social security taxes) implied that there is a negative link between GDP response and positive shock to any of the tax groups, except to corporate taxes. In general, economic theory indicates that there are different effects on the economy that emanate from different tax groups. Thus, Atkinson and Stiglitz (1980), using an intertemporal specification, found that different impacts on household saving behavior emerged from income taxes and consumption taxes. Based on their empirical study of 22 OECD countries, Kneller et al. (1999) report results showing, on the one hand, a negative relationship between distortionary taxation (income taxes and social security taxes) and growth, and a positive one between non-distortionary taxation (corporate taxes and indirect taxes) and, on the other hand, a positive link between productive government expenditures (expenditures on infrastructure) and growth, and a negative one between non-productive government expenditures (recreational expenditures) and growth.

Evidence in the opposite direction regarding the Keynesian paradigm are reported by Alesina and Ardagna (1998) and Aleisna et al. (1999), indicating 'non-Keynesian' impacts of fiscal policy in a panel of OECD countries during 1960–1996. They mention two mechanisms for these effects. First, on the demand side, the response on interest rates and, second, on the supply side, the relationships between labor market, investment, and entrepreneurial profits lead to 'non-Keynesian' responses. Furthermore, they provided evidence showing a positive tendency between public spending cuts and equilibrium wage, implying higher investment. Under these circumstances, their results are implying significant benefits in investment through lower interest rates and inducing private investment. In addition, they reach analogous results, with lower significance, emerging from tax cuts.

Under the Eurozone environment, the role of fiscal policy in the stabilizing process dominates absolutely. Fiscal policy constitutes the only tool on the demand side to offset asymmetric shocks. Also, the implementation of the Stability and Growth Pact has helped the member states to

improve their budget deficits. But, despite the above arguments, there is not enough evidence to support these effects. Much of the literature suggest that fiscal restrictions may control the inflationary pressures, but at the same time there are some economists that report high costs on growth and employment. Other studies, however, have reached different conclusions, stressing that fiscal restrictions may associate positively with growth medium and short term, depending on agents' behavior on consumption and investment.

An analogous study is that of Von Hagen et al. (2001) which investigated the impact of fiscal restriction in a panel of OECD countries during the period 1973–1998 and found a significant and negative link between fiscal policy and output. But this linkage was biased when the sample was restricted to EU countries for the period 1990–1998, and the above relationship was lost and monetary policy was not related to fiscal policy. Thus, these results provide evidence suggesting the existence of 'non-Keynesian' effects. De Castro (2003), using a VAR approach for the Spanish economy, presented results implying significant and small association between fiscal shocks and output, private consumption, private investment, interest rates and prices. When spending and tax shocks were considered, opposite responses were produced. In addition, the restricted period to only the decade of 1990 has shed doubts about the pattern of fiscal shocks responses, while GDP and interest rates responses had no sign of significance.

In this chapter, we seek to add to the existing literature in two ways. First, by employing data for all the member states of the enlarged European Union (EU27) within a VAR approach, we examine the responses of output and price level to innovations not only in total tax revenues but also in two different tax groups such as direct taxes and indirect, in order to evaluate whether particular taxes have different effects. Also, we check the symmetry of tax shocks for each member state of EU27 against the Eurozone. Second, we investigate the association between tax shock convergence and several macroeconomic outcomes, such as trade openness, financial sector convergence, fiscal policy convergence, and labor-market rigidity; and we use the most recent tax data (2002–2006, 2007–2011, 2012–2016) from 27 EU countries to derive policy implications regarding the success of an expanded EU.

7.3 Convergence of Tax Shocks and Macroeconomic Outcomes: Methodology and Results

Identifying Tax Shocks

To recover tax revenue shocks and then to examine the responses of output and prices, VARs specifications are considered. The basic model is a 4 × 4 vector auto-regression (VAR) for each country involving real GDP growth, GDP-deflator growth, total expenditures growth, and total tax revenues growth. More specifically, for instance, current real-output growth can be assumed to be influenced by contemporaneous inflation, total expenditure rates, and total tax revenue rates and by past real-output growth, inflation rates, total expenditures rates, and tax revenue rates:

$$\Phi_0 Y_t = \Phi_1 Y_{t-1} + \Phi_2 Y_{t-2} + \ldots + \Phi_i Y_{t-i} + \varepsilon_t \tag{7.1}$$

with

$$Y_t = \begin{bmatrix} \Delta y_t - \Delta \hat{y} \\ \Delta p_t - \Delta \hat{p} \\ \Delta g_t - \Delta \hat{g} \\ \Delta t_t - \Delta \hat{t} \end{bmatrix}, \varepsilon_t = \begin{bmatrix} \varepsilon_{yt} \\ \varepsilon_{pt} \\ \varepsilon_{gt} \\ \varepsilon_{tt} \end{bmatrix}$$

Where ε_{yt}, ε_{pt}, ε_{gt}, and ε_{tt} are output, price, total expenditures, and total tax revenues shocks, respectively; Φ_i are 4 × 4 coefficients matrices; $\Delta(.)$ is the difference operator; and y_t, p_t, g_t, and t_t are (the log of) the current real GDP, the current GDP-deflator, the current total expenditures, the current total tax revenues respectively, and $\hat{y}$, $\hat{p}$, $\hat{g}$, $\hat{t}$ represent steady-state values.Using ordinary least squares, a VAR such as Eq. (7.1) has been estimated using quarterly output growth data (GDP at constant 2010 prices, in national currency), inflation data (GDP-deflator, 2010 = 100), total expenditures growth rates (total expenditures as percentage of GDP),

and total tax revenues growth rates (total tax revenues as percentage of GDP), for each of the EU27 countries and for the Eurozone as a whole. The data (seasonally unadjusted) are from Eurostat covering the period 1999Q1–2016Q3. The Akaike and Schwarz criteria for lag structure suggested the inclusion of three to four lags for most countries and, for all the estimated VARs, the eigenvalues of the system's estimated matrix were inside the unit circle, thus ensuring stability. The impulse–response functions of the estimated VARs are shown in Fig. 7.1 (accumulated response to a positive shock) and Table 7.1 shows summary statistics for the identified total revenue shocks, indicating that they tend to be equally distributed between positive and negative values.

From Fig. 7.1, we can draw some main conclusions on the effects of a (positive) tax shock. First, the responses of output growth reveal the existence of two country-groups in the EU27. The first one consists of countries that show negative effects, as predicted by Keynesian theory. This group includes Austria, Belgium, Denmark, Estonia, Germany, Greece, Hungary, Italy, Lithuania, Luxembourg, Netherlands, Portugal, Slovenia, the UK, and EU12. In Austria, Belgium, Denmark, Germany, and EU12, the effects are temporary and, with the exception of Germany, are statistically significant for the first three quarters. The rest of the countries of this group show permanent effects and also, in Greece, Italy, Lithuania, and Luxembourg, the effects are limited. It is worth noting that the results for Eurozone as a whole, EU12, imply that the response of output growth during the first three quarters is significantly different from zero but relatively small. The second group includes Bulgaria, Denmark, Czech Republic, Finland, France, Ireland, Cyprus, Latvia, Malta, Poland, Romania, Slovakia, Spain, and Sweden. In these countries, the effects are positive, and, probably, this argument may be explained by the dynamic of government deficit and, furthermore, by fiscal solvency that makes better the expectation climate and the confidence of consumers and firms (Giavazzi and Pagano 1990, 1996). An alternative explanation, according to Marcellino (2006) could be the fact that the revenue shock might be related to tax base, which is positively correlated with output gap. The results for Finland, Malta, Latvia, Poland, Slovakia, and Bulgaria imply that the responses are temporary, while the rest of the countries have permanent responses. In addition, we should mention the special case for France and Spain that have significant and large-scale effects. Slovakia and Poland have limited effects.

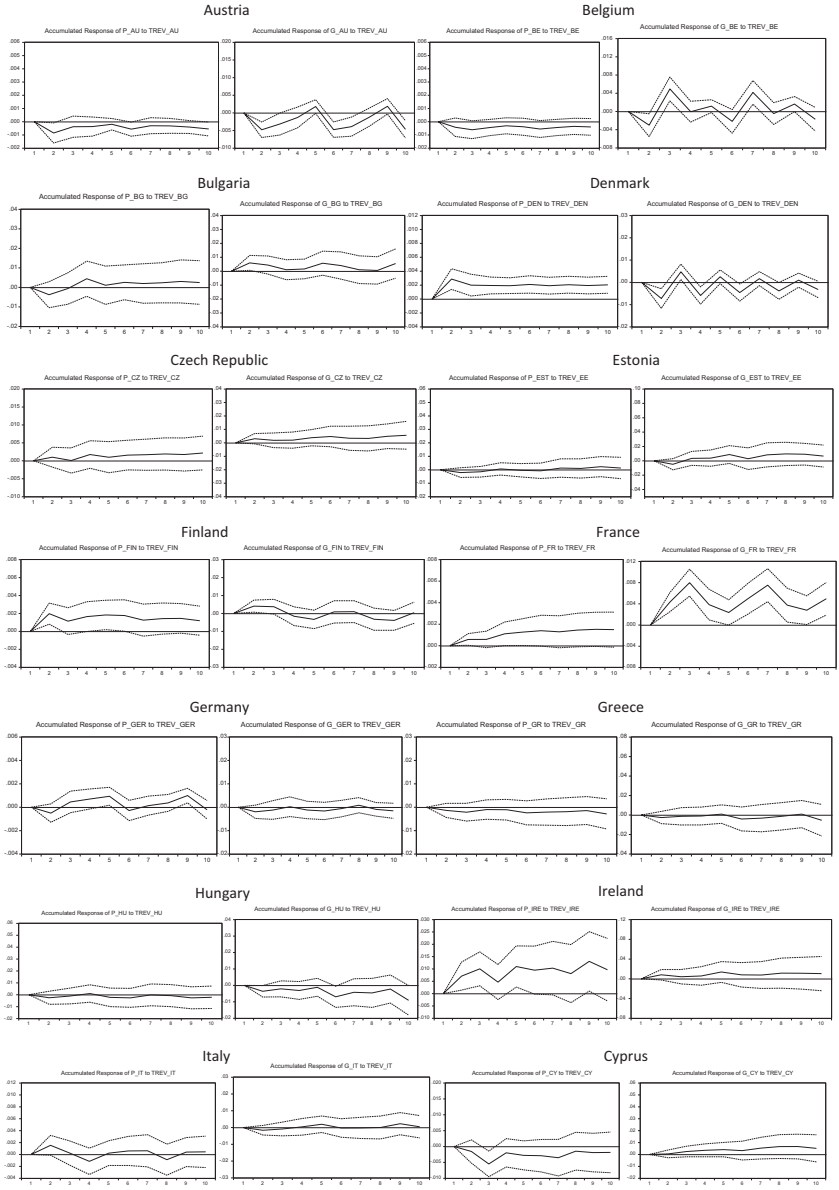

Fig. 7.1 Accumulated responses to one standard deviation innovation to total revenue

Notes: For each country, the left diagram concerns the responses of inflation rate, while the right one is of growth rates

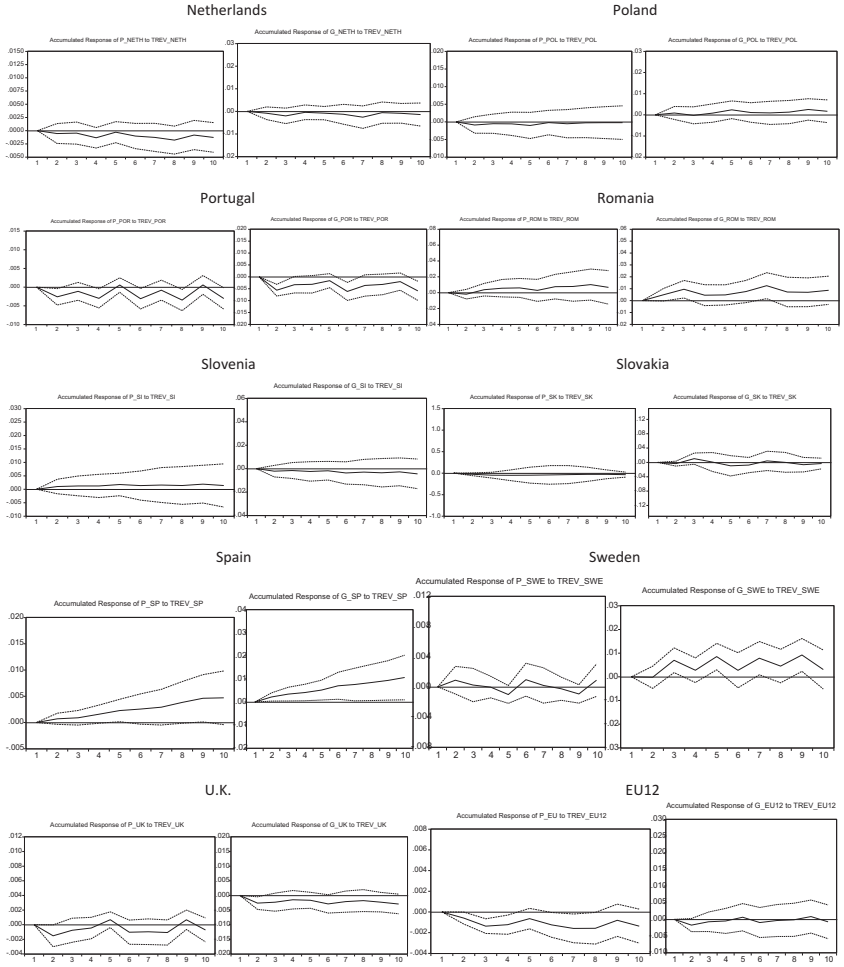

Fig. 7.1 (continued)

In what follows, we explore the consequences of the tax shock on inflation rate. Again, here we can separate the countries in two subgroups. The first one consists Austria, Belgium, Bulgaria, Estonia, Germany, Greece, Hungary, Cyprus, Malta, Netherlands, Poland, Portugal, Slovakia, the UK, and EU12. The effects of tax shocks on inflation rate are negative for all these countries. More specifically, in Austria, Belgium, Greece, Cyprus,

Table 7.1 Total revenue statistics shocks, summary

AU	−0.030	0.039	2198 (0.333)
BE	−0.053	0.039	1282 (0.527)
BG	−0.093	0.167	4355 (0.113)
CY	−0.138	0.282	7966 (0.019)
CZ	−0.075	0.079	0.586 (0.746)
DEN	−0.106	0.077	6964 (0.031)
EE	−0.085	0.128	0.480 (0.787)
FIN	−0.028	0.034	1482 (0.477)
FR	−0.060	0.039	1780 (0.411)
GER	−0.039	0.036	1612(0.447)
GR	−0.122	0.158	2300 (0.317)
HU	−0.072	0.108	3734 (0.155)
IRE	−0.145	0.184	11,948 (0.003)
IT	−0.050	0.068	3515 (0.173)
LITH	−0.063	0.064	0.392 (0.822)
LU	−0.050	0.047	2156 (0.340)
LV	−0.086	0.137	4312 (0.116)
MA	−0.133	0.096	0.646 (0.724)
NETH	−0.049	0.047	1746 (0.418)
POL	−0.042	0.050	1611 (0.447)
POR	−0.082	0.194	45,283 (0.000)
ROM	−0.187	0.145	9459 (0.009)
SI	−0.036	0.033	0.711 (0.701)
SK	−0.100	0.126	0.286 (0.867)
SP	−0.053	0.062	0.778 (0.678)
SWE	−0.031	0.055	3454 (0.178)
UK	−0.076	0.140	79,400 (0.000)
EU12	−0.016	0.016	1245 (0.537)

Netherlands, and EU12, the responses are permanent; in Bulgaria, Estonia, Germany, Hungary, Malta, Poland, Slovakia, and the UK, the effects are temporary; and only for Estonia, Greece, Hungary, Poland, and Slovakia, the effects are limited. The second group includes the rest of the countries, which reveal positive responses of a tax shock. Among these countries, only in Denmark, Finland, France, Ireland, Latvia, and Spain are the effects positive, statistically significant, and permanent.

In summary, considering the impulse–response functions of output growth and inflation rate to positive tax shocks, we provide evidence showing that there is heterogeneity within the enlarged European Union, regarding the stabilization effects of tax shocks. Furthermore, according to

the response patterns of output growth and inflation rates to tax shocks, we have reached two main country groups. The first one includes countries that have negative responses of output growth and inflation to tax shocks (Austria, Belgium, Estonia, Germany, Greece, Hungary, Netherlands, Portugal, the UK, and EU12) and the second one has countries that reveal positive effects of output growth and inflation to tax shocks (Czech Republic, Finland, France, Ireland, Latvia, Romania, Slovakia, Spain, and Sweden). In addition, there are five countries (Denmark, Luxembourg, Lithuania, Slovenia, and Italy) that show positive responses to inflation and negative responses of output and also four countries (Bulgaria, Cyprus, Malta, and Poland) that present negative responses to inflation and positive responses to output. Also, it is worth noting that Slovenia, Slovakia, and Poland are the only countries wherein impact reactions of inflation and output growth are very limited.

In what follows, we re-estimate the VAR specification of Eq. (7.1) by inserting the two types of the total tax revenue, the direct taxes (taxes on income, wealth, etc.), and the indirect taxes (taxes on production and imports). Thus, we have the following approach:

$$\Phi_0 Y_t^{'} = \Phi_1 Y_{t-1}^{'} + \Phi_2 Y_{t-1}^{'} + \ldots + \Phi_i Y_{t-i}^{'} + \varepsilon_t^{'} \tag{7.2}$$

with

$$Y_t^{'} = \begin{bmatrix} \Delta y_t - \Delta \hat{y} \\ \Delta p_t - \Delta \hat{p} \\ \Delta g_t - \Delta \hat{g} \\ \Delta d_t - \Delta \hat{d} \\ \Delta i_t - \Delta \hat{i} \end{bmatrix}, \varepsilon_t^{'} = \begin{bmatrix} \varepsilon_{yt} \\ \varepsilon_{pt} \\ \varepsilon_{gt} \\ \varepsilon_{dt} \\ \varepsilon_{it} \end{bmatrix}$$

Using ordinary least squares, a VAR such as Eq. (7.2) has been estimated using quarterly direct tax growth rates (direct taxes as percentage of GDP) and indirect tax growth rates (indirect taxes as percentage of GDP)

for each of the EU27 countries and for the Eurozone as a whole. The data (seasonally unadjusted) are from Eurostat, covering the period 1999Q1–2016Q3. The Akaike and Schwarz criteria for lag structure suggested the inclusion of three to four lags for most countries, and for all the estimated VARs, the eigenvalues of the system's estimated matrix were inside the unit circle, thus ensuring stability. The impulse-response functions of the estimated VARs are shown in Fig. 1 (see Appendix), and Table 7.2 shows summary statistics for the identified direct tax shocks and indirect tax shocks, indicating that they tend to be equally distributed between positive and negative values.

On the basis of the identified total tax shocks, direct tax shocks, and indirect tax shocks, shock-correlation coefficients for each of the EU27 countries versus the Eurozone have been computed for three sub-sample periods of equal length—namely, 2002Q1–2006Q4, 2007Q1–2011Q4, and 2012Q1–2016Q4. Pooling the three sub-sample periods yields the plot of shock-correlation coefficients shown in Fig. 7.2, while summary statistics are reported in Table 7.3.

Exploring Fig. A1, several main results emerge. First, the majority of countries imply that there are contractionary results comparing the effects of output growth and inflation to total tax shocks and those to direct and indirect taxes. But, in some countries (Austria, Bulgaria, Denmark, Estonia, Greece, Lithuania, Latvia, Malta, Slovakia, and Spain), the pattern responses of inflation and output growth to total tax shocks do not differ when direct taxes and indirect taxes are considered. Second, considering the average Eurozone area EU12, we report result indicating that, on the one hand, there are opposite effects of output growth and inflation to direct taxes shocks (negative effects) compared to those of total tax shocks (positive effects), but on the other hand, there are similar effects to indirect shocks and total tax shocks. Third, it is necessary to report three special cases regarding the pattern effects of some countries. Slovenia, while showing limited and close to zero effects of inflation and output growth to total tax innovations, reveals positive and significant effects of inflation and output growth to direct taxes and negative and significant effects of inflation and output to indirect taxes. Poland, while showing limited and close to zero effects of inflation and output growth to total tax innovations, has positive effects of output growth to direct and indirect tax shocks. Further,

Table 7.2 Direct and Indirect tax shocks, summary statistics

	Direct Tax shocks			Indirect Tax shocks		
Country	Min	Max	Jarque-Beraa	Min	Max	Jarque-Bera[a]
AU	−0.118	0.112	0.861 (0.650)	−0.039	0.038	0.616 (0.735)
BE	−0.209	0.234	0.541 (0.763)	−0.055	0.042	2734 (0.255)
BG	−0.329	0.947	756,833 (0.000)	−0.159	0.132	3908 (0.142)
CY	−0.721	0.728	4873 (0.087)	−0.221	0.507	96,874 (0.000)
CZ	−0.224	0.184	3834 (0.147)	−0.072	0.062	0.938 (0.626)
DEN	−0.155	0.125	26,748 (0.000)	−0.035	0.043	1130 (0.568)
EE	−0.16	0.144	1009 (0.604)	−0.096	0.155	4188 (0.123)
FIN	−0.121	0.145	0.950 (0.622)	−0.063	0.089	2012 (0.366)
FR	−0.085	0.079	0.385 (0.825)	−0.068	0.057	0.151 (0.927)
GER	−0.112	0.114	0.237 (0.888)	−0.057	0.071	21,424 (0.000)
GR	−0.247	0.235	1990 (0.370)	−0.121	0.172	1852 (0.396)
HU	−0.177	0.22	11,000 (0.004)	−0.113	0.137	1845 (0.397)
IRE	−0.457	0.889	31,191 (0.000)	−0.186	0.133	2973 (0.226)
IT	−0.079	0.169	3672 (0.159)	−0.058	0.062	1393 (0.498)
LITH	−0.264	0.538	21,470 (0.000)	−0.075	0.082	1148 (0.563)
LU	−0.15	0.227	4232 (0.121)	−0.068	0.086	0.776 (0.679)
LV	−0.164	0.289	70,769 (0.000)	−0.114	0.104	1176 (0.555)
MA	−0.268	0.373	2921 (0.232)	−0.114	0.187	3072 (0.215)
NETH	−0.293	0.207	14,319 (0.001)	−0.068	0.068	0.691 (0.708)
POL	−0.167	0.175	1386 (0.500)	−0.173	0.08	22,850 (0.000)
POR	−0.492	0.919	3357 (0.187)	−0.1	0.229	53,664 (0.000)
ROM	−0.643	0.789	8896 (0.012)	−0.161	0.434	113,467 (0.000)
SI	−0.138	0.211	37,053 (0.000)	−0.06	0.067	3029 (0.220)
SK	−0.16	0.122	1474 (0.478)	−0.169	0.226	8114 (0.017)
SP	−0.254	0.253	13,955 (0.001)	−0.104	0.188	3697 (0.157)
SWE	−0.065	0.061	0.399 (0.819)	−0.037	0.037	0.834 (0.659)
UK	−0.079	0.09	1047 (0.592)	−0.058	0.097	14,503 (0.001)
EU12	−0.043	0.038	1001 (0.606)	−0.017	0.021	2009 (0.366)

Notes: [a]*p*-values in parenthesis

Sweden, while showing positive effects of output growth to total tax innovations, shows negative and non-significant effects of output to both direct and indirect tax innovations.

In summary, we provide evidence showing tendency for divergent results when different tax groups are considered. It is also remarkable that, if we take as an example the case of the average Eurozone area EU12, it is very obvious that the degree of difference between its pattern effects of inflation and output growth to direct taxes and those to total tax shocks is very high.

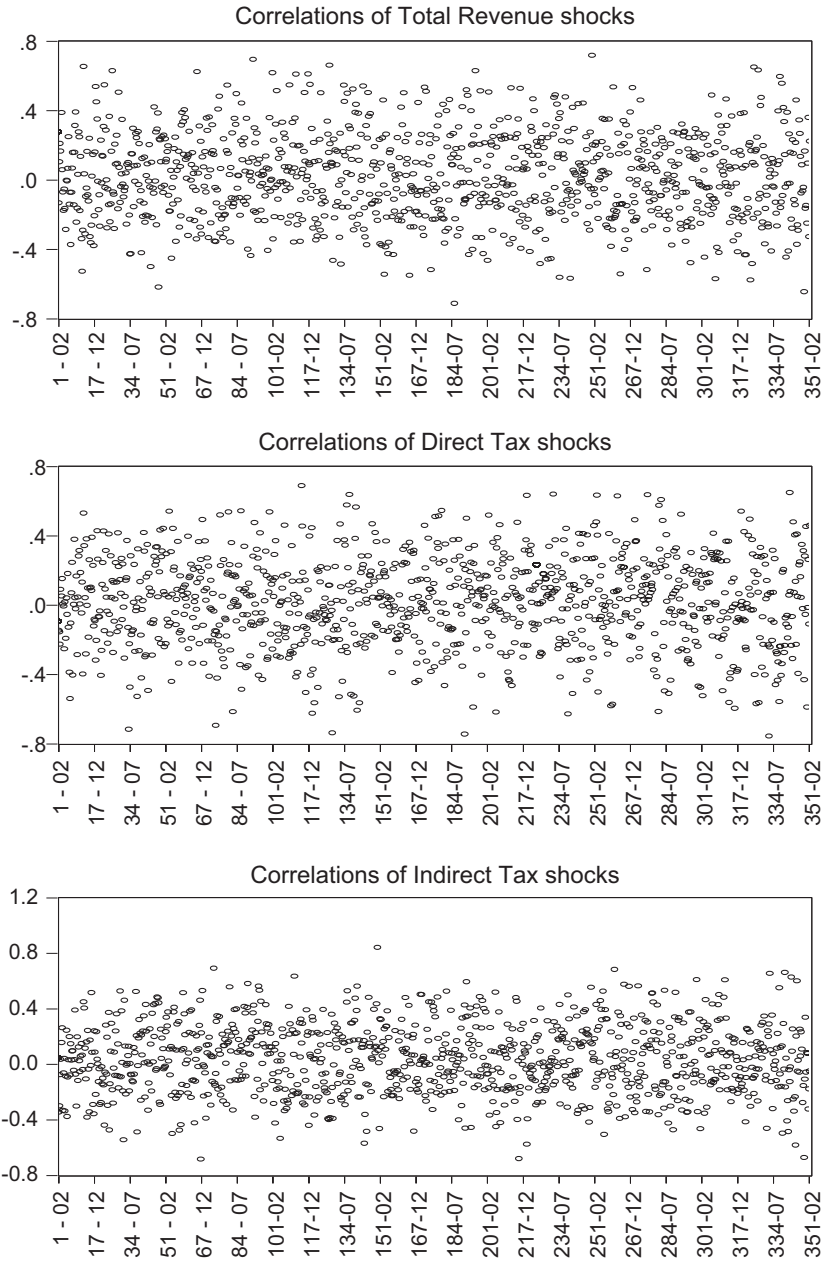

Fig. 7.2 Correlations of total revenue, direct, and indirect tax shocks, pooled EU27 sample

Table 7.3 Summary statistics for total revenues, direct and indirect shock correlations, trade openness, budget deficits, interest rates, income differences, and union density (paneled EU27 sample)

	TREV	DIR	INDIR	Budget	Open	PPP	Rates	UD
Mean	0.018	0.011	0.035	0.476	0.442	0.775	0.778	0.370
Minimum	−0.714	−0.758	−0.688	−0.964	−0.994	−0.972	−0.888	−1000
Maximum	0.714	0.685	0.839	0.998	0.999	0.998	1000	1000
Standard Deviation	0.247	0.257	0.248	0.492	0.594	0.370	0.336	0.669
Observations	1053	1052	1053	1053	1052	1053	1053	807

Symmetry of Total, Direct, and Indirect Tax Shocks

In this section, we try to describe the degree of symmetry by computing the correlation coefficients for the identified total tax shocks, direct tax shocks, and indirect tax shocks versus Eurozone EU12 for the pooled period 2003Q1–2016Q3.

From Table 7.4 and Fig. 7.3, the results reveal the existence of two country-groups of EU27. The first one consists of countries that show positive correlation coefficients for total tax shocks. This group includes Austria, Belgium, Czech Republic, Denmark, France, Germany, Hungary, Ireland, Italy, Latvia, Luxembourg, the Netherlands, Poland, Romania, Slovenia, Spain, Sweden, and the UK. Italy has the highest correlation coefficient, followed by Austria, Slovenia, and the Netherlands. But also Germany and Belgium reveal relatively high correlation coefficients. The second one consists of countries that have dealt with asymmetric shocks. It includes Bulgaria, Cyprus, Estonia, Finland, Greece, Lithuania, Malta, Portugal, and Slovakia. Lithuania and Portugal show the lowest correlation coefficients. It is worth noting that considering both groups there is evidence of almost no association with EU12 for Cyprus, Luxembourg, and Greece.

In addition, considering Table 7.4 and Fig. 7.4, there is evidence showing the existence of three country-groups. The first one consists of countries that face positive correlations coefficients not only for direct tax shocks but also for indirect tax shocks. It includes Austria, Belgium, Cyprus, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Malta,

Table 7.4 Correlation coefficients for total, direct, and indirect tax shocks, 2003Q1–2016Q3

	Direct tax shocks	Indirect tax shocks	Total tax shocks
AU	0.315	0.010	0.294
BE	0.073	0.111	0.248
BG	−0.084	0.044	−0.050
CY	0.111	0.262	−0.001
CZ	0.108	−0.267	0.217
DEN	0.008	−0.006	0.130
EE	−0.233	0.074	−0.123
FIN	−0.026	0.214	−0.064
FR	0.218	0.303	0.102
GER	0.208	0.229	0.258
GR	0.097	0.235	−0.034
HU	0.113	0.254	0.119
IRE	0.110	0.245	0.190
IT	0.233	0,325	0.471
LITH	0.028	−0.074	−0.265
LU	−0.156	−0.188	0.032
LV	0.141	0.349	0.061
MA	0.024	0.064	−0.081
NETH	−0.042	0.051	0.287
POL	−0.050	0.146	0.228
POR	−0.069	0.289	−0.172
ROM	−0.085	0.076	0.216
SI	0.002	0.066	0.307
SK	0.017	0.066	−0.109
SP	0.335	0.332	0.210
SWE	0.118	−0.159	0.043
UK	0.078	0.123	0.185

Slovenia, Slovakia, Spain, and the UK. More specifically, Germany, France, Italy, and Spain have the highest correlation coefficients for both types of tax shocks. The second group consists of countries that have faced asymmetric shocks either for direct tax shocks or for indirect tax shocks. It includes the Netherlands, Poland, Portugal, Finland, Romania, Bulgaria, Estonia, Denmark, Lithuania, Sweden, and Czech Republic. Czech Republic and Sweden show positive and relatively high correlation for direct tax shocks but have negative correlation coefficients with Eurozone for indirect tax shocks. Estonia shows symmetry with Eurozone regarding the direct tax shocks, but has negative and high correlation coefficient for

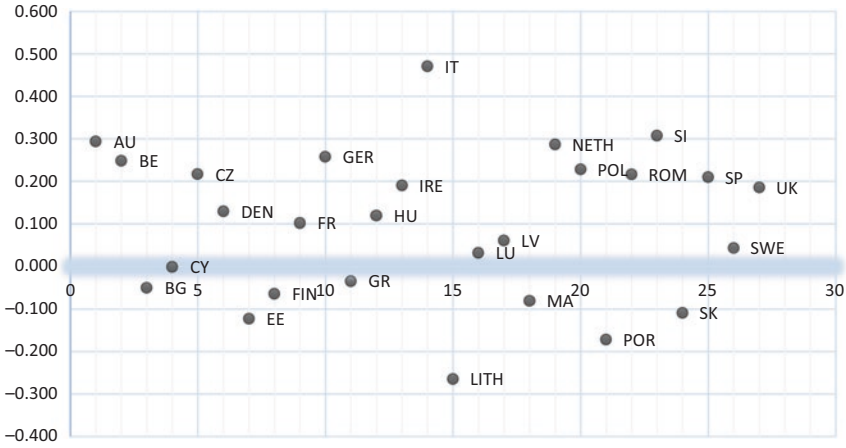

Fig. 7.3 Correlation coefficients for total tax shocks, 2003Q1–2016Q3

indirect tax shocks. The third one is only Luxembourg because it has been affected by idiosyncratic shocks. This is due to the fact that it shows negative correlation coefficients for both direct tax shocks and indirect tax shocks.

The Association Between Shock Symmetries and Macroeconomic Outcomes

In this section, we are going to develop our empirical specification to explore how control variables, including trade integration, fiscal policy convergence, financial sector convergence, and labor market rigidities, have affected tax shock correlations in the enlarged European Union. We use panel data for the 27 EU countries covering the period 2002–2016. This is split into three non-overlapping five-year periods (2002–2006, 2007–2011, and 2012–2016). To the best of our knowledge, this the first study which, primarily, takes under consideration that empirical approach and, secondary, it is the only one that analyses the most recent period, 2002–2016.

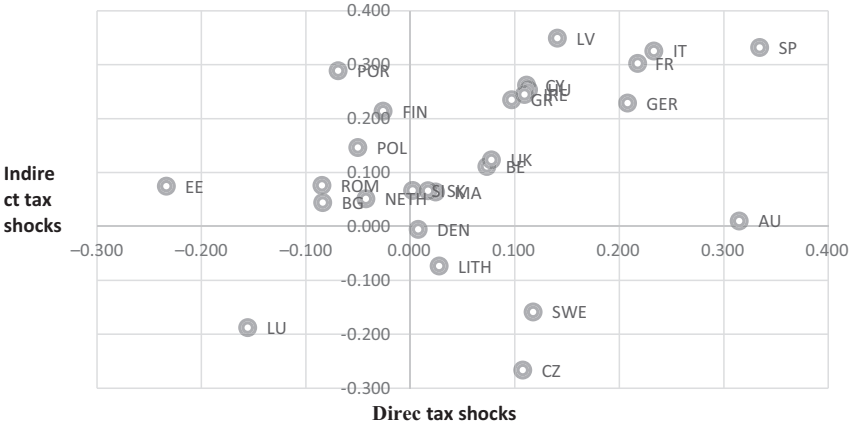

Fig. 7.4 Correlation coefficients for direct and indirect tax shocks, 2003Q1–2016Q3

To assess the relationship between convergence of total, direct, and indirect tax shocks and several macroeconomic variables among the EU27, we estimate the following equation:

$$\left(r_{ij}\right)_{\tau} = \left(\mathrm{X}_{ij}^{'}\right)_{\tau} \beta_{\kappa} + \alpha_{ij} + \gamma_{\tau} + u_{ij,\tau} \tag{7.3}$$

where the subscript *ij* denotes the country pair ($i, j = 1, \ldots, 27$) and τ indicates the average periods time. Moreover, r_{ij} is the symmetry of total revenue shocks (Table 7.5), direct tax shocks (Table 7.6), and indirect tax shocks (Table 7.7) for country pair *ij*, measured as correlations of quarterly changes. The indicator X_{ij} captures the control factors. *TRADE* is the openness index, measured by the correlation of the average of exports and imports in GDP between trading partners *i* and *j*, and *BUDGET* and *RATES*, measured as the correlation of their budget deficits and short-term interest rates are used respectively as proxies for fiscal policy and monetary policy convergence/divergence. The data for *BUDGET* and *RATES* are from Eurostat, government statistics and interest rates, respectively. Short-term interest rates refer to six-month money-market rates, while the budget data refer to annual deficits as a percentage of GDP. To account for any likely effect on tax shock symmetry of economic size, the

correlation of GDP between trading partners has also been considered as an explanatory variable. As much of the international economics literature suggests (see, for example, Fidrmuc 2004), larger economies may have a stronger influence on the shocks facing smaller economies, in which case *PPP* will enter the regressions with a positive sign. *PPP* is computed using annual per capita GDP data at PPS (purchasing power standards, 2010) from Eurostat, *National Accounts*. In addition, the labor market control variable consists of a proxy for real-wage rigidity, which is presented by trade union power, measured by the correlation of union density between trading partners *DENS* (ratio of trade union members to the labor force).

Furthermore, the proxies α_{ij} and γ_{τ} correspond to fixed-country and fixed-time effects, respectively. The summary statistics for all variables are listed in Table 7.3.

Regression results for the EU27 from paneling the three subsample periods are summarized in Tables 7.5, 7.6 and 7.7. The estimates in these tables suggest that there are important links between budget deficits and cross-country symmetry of tax shocks, although the nature of the linkages differs depending on the source of the disturbance. In column (a) of Table 7.5, there is evidence of a strong positive association between fiscal policy convergence and symmetry of total tax shocks. The estimated coefficient has a positive sign and is highly significant (1 percent). This means that the process of fiscal policy convergence has reduced asymmetries of total tax shocks across EU27 member states. In columns (b)–(j), additional explanatory variables are introduced, and the estimates suggest that factors other than fiscal policy convergence have a stronger impact on symmetry of total tax shocks. Thus, the *RATES* variable enters in the regressions (c) and (f)–(j) with a minus sign, implying that interest rate convergence (reduced discrepancies of interest rates) has had a negative impact on the cross-country symmetry of total tax shocks across the EU and the overall fit of the regressions improved compared to column (a). This effect is significant at 10 percent in columns (g)–(j) but insignificant in (c) and (f). As far as the labor market control variable is concerned, higher union density convergence, through symmetry of bargaining power of trade unions, can lead to higher impact on the cross-country symmetry of total tax shocks through the fact that more power unions may resist massive firing of workers following adverse supply-side shocks, forcing

Table 7.5 Symmetry of total revenue shocks, paneled sample EU27

	Dependent variable: correlations of total revenue shocks									
Explanatory variables	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
BUDGET	0.020***	0.016**	0.023***	0.020***	0.003	0.019***	0.006			0.006
	(–3.221)	(2.390)	(8.282)	(3.272)	(0.318)	(6.428)	(0.610)			(0.603)
TRADE		0.002				0.004			–0.006	–0.006
		(0.244)				(0.369)			(–0.397)	(–0.397)
RATES			–0.031			–0.036	–0.047*	–0.053*	–0.051*	–0.051*
			(–1.101)			(–1.141)	(–1.665)	(–1.803)	(–1.633)	(–1.662)
PPP				–0.026				–0.056	–0.057	–0.057
				(–0.500)				(–1.271)	(–1.194)	(–1.197)
DENS					0.033***		0.034***	0.029*	0.029*	0.029*
					(2.861)		(3.135)	(1.786)	(1.805)	(1.760)
No. of observations	1053	1053	1053	1053	807	1053	807	807	807	807
R-squared	0.328	0.330	0.329	0.328	0.428	0.331	0.430	0.433	0.433	0.433

Notes: Constant included, numbers in parentheses denote t-statistics. Single, double, and triple asterisks denote statistical significance at the 10, 5, and 1 percent, respectively. Robust standard errors in all specifications. Fixed-country and time effects are included in all specifications

Table 7.6 Symmetry of direct tax shocks, paneled sample EU27

	Dependent variable: correlations of direct tax shocks									
Explanatory variables	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
BUDGET	0.001	0.001	0.007	0.002	−0.100	0.056	−0.005			−0.004
	(0.258)	(0.007)	(0.759)	(0.260)	(−0.878)	(0.529)	(−0.391)			(−0.381)
TRADE		−0.021*				−0.025***			−0.019**	−0.019**
		(−1.642)				(−2.609)			(−2.187)	(−2.216)
RATES			−0.070***			−0.075***	−0.086***	−0.086***	−0.083***	−0.082***
			(−4.692)			(−5.250)	(−8.891)	(−8.970)	(−8.433)	(−7.820)
PPP				0.025				−0.001	−0.007	−0.007
				(0.682)				(−0.026)	(−0.386)	(−0.393)
DENS					0.042***		0.043***	0.043***	0.044***	0.044***
					(3.586)		(4.131)	(3.670)	(3.593)	(3.469)
No. of Observations	1053	1053	1053	1053	807	1053	807	807	807	807
R-squared	0.364	0.365	0.368	0.365	0.447	0.369	0.453	0.453	0.454	0.454

Notes: Constant included, numbers in parentheses denote t-statistics. Single, double, and triple asterisks denote statistical significance at the 10, 5, and 1 percent, respectively. Robust standard errors in all specifications. Fixed-country and time effects are included in all specifications

Table 7.7 Symmetry of indirect tax shocks, paneled sample EU27

	Dependent variable: correlations of indirect tax shocks									
Explanatory variables	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
BUDGET	0.003	0.000	0.004	0.003	0.026***	0.002	0.024***			0.022***
	(0.089)	(–0.001)	(0.127)	(0.090)	(2.828)	(0.047)	(2.670)			(2.799)
TRADE		0.016				0.017*			0.014***	0.013***
		(1.434)				(1.892)			(2.851)	(3.272)
RATES			–0.015			–0.020	0.033***	0.028**	0.026**	0.023**
			(–0.265)			(–0.359)	(2.878)	(2.155)	(2.180)	(2.001)
PPP				–0.078***				–0.076***	–0.071***	–0.071***
				(–4.686)				(–2.962)	(–2.945)	(–2.975)
DENS					0.006		0.005	–0.002	–0.003	–0.003
					(0.777)		(0.678)	(–0.164)	(–0.200)	(–0.254)
No. of observations	1053	1053	1053	1053	807	1053	807	807	807	807
R-squared	0.338	0.339	0.338	0.343	0.455	0.339	0.456	0.460	0.460	0.461

Notes: Constant included, numbers in parentheses denote t-statistics. Single, double, and triple asterisks denote statistical significance at the 10, 5, and 1 percent, respectively. Robust standard errors in all specifications. Fixed-country and time effects are included in all specifications

firms to resort to cuts in profit margins rather than cuts in employment and, thus, in production. The *DENS* coefficient is always positive and highly significant at 1 percent, while controlling for union power causes a drop in the estimated *BUDGET* coefficient, increasing at the same time the overall explanatory power of the model (see e.g. columns (e) and (j)). In addition, the variable *TRADE* does not appear to have any favorable impact on the symmetry of total tax shock and, in columns (b) and (f), has positive and insignificant signs and in columns (i) and (j) has negative and insignificant signs. Allowing for economic size (correlations of GDP per capita), the coefficients of *PPP* have minus signs and are insignificant and, for the case of total tax shock symmetry in all specifications, controlling for GDP convergence does not improve the R^2 of the regressions either. Thus, income convergences per se are revealed to play no direct role as a total tax shock-transmission mechanism in the enlarged Europe.

In the case of direct tax shock convergence, controlling for fiscal policy convergence has no significant impact on symmetry of direct tax shocks. In columns (b)–(j) of Table 7.6, these coefficients remain insignificant once other factors are included as explanatory variables. On the other hand, in columns (a)–(d) and (f) of Table 7.7, the estimated coefficients of fiscal policy convergence are positive, insignificant, and small in magnitude, but once all other factors are included in the regressions [columns (e) and (g)–(j)], these coefficients become highly significant (1 percent), large in magnitude, and increase the goodness-of-fit of the regressions. Furthermore, the estimates in Tables 7.6 and 7.7 suggest that trade openness convergence (by contrast in Table 7.5) and monetary policy convergence have been responsible for determining the degree of direct and indirect tax shock symmetry in Europe. *TRADE* is significant at 1, 5, or 10 percent in the direct tax shock convergence in Table 7.6 and is also significant at 1 or 10 percent in the indirect tax shock regressions in Table 7.7. The direction of the effect depends on the type of shock, with the estimates suggesting that the degree of trade openness has caused indirect tax shocks to become more correlated but has led to greater asymmetries of direct tax shocks. One explanation could be that, ceteris paribus, that the degree of openness is related, due to its definition, to indirect tax as these include taxes from production and imports. As far as monetary policy is concerned, in Table 7.6 the estimated coefficients of

RATES are all negative and significant at 1 percent even when controlling for the trade openness effect, suggesting that the process of monetary policy convergence has increased asymmetries of direct tax shocks across the EU27 member states. Monetary policy convergence, however, appears to have had a positive impact on symmetry of indirect tax shocks and, in columns (g)–(j) of Table 7.7, *RATES* has a positive and significant sign. The *PPP* variable enters in the regressions in Table 7.7 with a minus sign, implying that economic size symmetry has had a negative impact on the cross-country symmetry of indirect tax shocks across the EU—something opposite to the impact of *BUDGET*, *TRADE*, and *RATES*. The effect is strong and significant at 1 percent. In the case of direct tax shocks, *PPP* appears to have virtually no impact on direct tax shock symmetry (see columns (d) and (h)–(j) of Table 7.6). Allowing for union density, in Table 7.6 the estimated coefficients of *DENS* are all positive and highly significant (1 percent) even when controlling for all other control variables, suggesting that the process of real-wage rigidity convergence has reduced asymmetries of direct tax shocks across the EU27 member states. This can be explained as direct tax that includes income and wealth taxes; then, more powerful unions may resist massive firing of worker following adverse supply-side shocks, forcing firms to resort to cuts in profit margins rather than cuts in employment. Union-density convergence, however, does not appear to have any significant impact on the symmetry of indirect tax shocks and in columns (e) and (g)–(j) of Table 7.7, DENS has either positive or negative signs and is insignificant. Thus, union density symmetry per se is revealed to play no direct role as an indirect tax shock-transmission mechanism in the enlarged Europe.

7.4 Conclusions

There has been a large body of literature since the mid-1990s examining the macroeconomic effects of fiscal policy. However, despite the growing literature, the empirical evidence regarding the role of fiscal policy in macroeconomic outcomes still remains mixed: while much of the early literature follows the Keynesian case that is fiscal expansion leads to higher output while fiscal strictness leads to lower output, more recent

studies point to the non-Keynesian view, which is output effects may be small and then fiscal strictness may lead to positive effects on output.

Using both a VAR methodology and panel-estimation approach and a sample of 27 EU countries covering the period 2002–2016, our results suggest that there is heterogeneity within the enlarged European Union, regarding the stabilization effects to total tax shocks. Also, according to the response patterns of output growth and inflation rates to total tax shocks, we have reached two main and large country groups. The first one includes countries that have negative responses of output growth and inflation, and the second one has countries that reveal positive effects of output growth and inflation. At the same time, most of the countries appear to have contractionary results when comparing the effects of output growth and inflation to total tax shocks and those to direct and indirect tax shocks. It is also remarkable that when we consider the average Eurozone area EU12, it is obvious that the degree of difference between its pattern effects of inflation and output growth to direct taxes and those to total taxes is very high. Our results also suggest that there are three country groups when we examine the correlation coefficient between direct and indirect tax shocks. The first one (Austria, Belgium, Cyprus, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Malta, Slovenia, Slovakia, Spain, and the UK) includes countries that face positive coefficients for both direct and indirect tax shocks, and the second one (the Netherlands, Poland, Portugal, Finland, Romani, Bulgaria, Estonia, Denmark, Lithuania, Sweden, and the Czech Republic) has countries with positive correlation coefficients for direct tax shocks and negative coefficients for indirect tax shocks. The third one is only Luxembourg, which has been affected by idiosyncratic shocks (negative correlation coefficients for both direct and indirect tax shocks).

Moreover, there is evidence indicating that monetary-policy convergence contributes to increasing asymmetries of total tax shocks across EU27 member states while union density symmetry contributes to reducing these asymmetries. At the same time, the process of fiscal policy convergence has been associated with an increase in total tax shock symmetries in Europe but it does not remain significant once the factor of union density is included as explanatory variable. Income convergences per se are revealed to play no direct role as a total tax shock-transmission mechanism in the enlarged Europe. In addition, fiscal policy symmetry appears to have led to

more symmetric indirect tax shocks across the EU27 member states but, on the other hand, it has no significant impact on symmetry of direct tax shocks. Also, trade openness convergence and monetary policy convergence have been responsible for determining the degree of direct and indirect tax shock symmetry in Europe. The economic size convergence has had a negative impact on the cross-county symmetry of indirect tax shocks across the EU, but no impact on direct tax shock symmetry. Finally, the process of real-wage rigidity convergence has increased symmetry among direct tax shocks across the EU27 member states but plays no direct role as an indirect tax shock-transmission mechanism in the enlarged Europe.

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8

Tax Evasion, Tax Administration, and the Impact of Growth: Tax Enforcement as Regulatory Failure in a High Tax Rates, High Tax Evasion, and Low-Growth Economic Environment

Yiolanda Vasilopoulou and Dimitrios D. Thomakos

8.1 Introduction

The optimal design of a tax system is a topic that has long fascinated economic theorists and economic policymakers. It is well understood that the government's plan is to maximize the representative social welfare without creating unnecessary frictions in both the productive process and also consumer's welfare, knowing all too well that the producer and the consumer will respond to the incentives of the tax system. As early as in the time of Adam Smith (1776, Book V, Chapter II), we could find the elements of the design and purpose of a useful tax system. It is worthwhile repeating some of his suggestions at the beginning of this chapter:

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> Every tax ought to be so contrived as both to take out and to keep out of the pockets of the people as little as possible over and above what it brings into the public treasury of the state. A tax may either take out or keep out of the pockets of the people a great deal more than it brings into the public treasury, in the four following ways. First, the levying of it may require a great number of officers, whose salaries may eat up the greater part of the produce of the tax, and whose perquisites may impose another additional tax upon the people. Secondly, it may obstruct the industry the people, and discourage them from applying to certain branches of business which might give maintenance and employment to great multitudes. While it obliges the people to pay, it may thus diminish, or perhaps destroy, some of the funds which might enable them more easily to do so. Thirdly, by the forfeitures and other penalties which those unfortunate individuals incur who attempt unsuccessfully to evade the tax, it may frequently ruin them, and thereby put an end to the benefit which the community might have received from the employment of their capitals. An injudicious tax offers a great temptation to smuggling. But the penalties of smuggling must rise in proportion to the temptation. The law, contrary to all the ordinary principles of justice, first creates the temptation, and then punishes those who yield to it; and it commonly enhances the punishment, too, in proportion to the very circumstance which ought certainly to alleviate it, the temptation to commit the crime. Fourthly, by subjecting the people to the frequent visits and the odious examination of the tax-gatherers, it may expose them to much unnecessary trouble, vexation, and oppression; and though vexation is not, strictly speaking, expense, it is certainly equivalent to the expense at which every man would be willing to redeem himself from it. It is in some one or other of these four different ways that taxes are frequently so much more burdensome to the people than they are beneficial to the sovereign.

Maybe, we ought to stop here and say no more—that in the above excerpt we find all the regulatory failures of modern tax systems and the motives that accompany them. We can say that Adam Smith forewarned us, but we ignored him. As we will see later in the chapter, the issues of tax rates, tax evasion, tax administration, and—ultimately—the effect of these on economic growth are interrelated. If one does not take into account Adam Smith's recommendations in today's economic environment, it risks both the workings of the tax systems we currently use but also the future prosperity of the people that these systems claim that they serve.

8.2 Taxation and a Review of Models on Tax Evasion

The Theoretical Underpinnings of Tax Evasion

Optimal taxation theory is the basic approach to taxation, positing that a tax system should be chosen to maximize a social welfare function, subject to a set of constraints. Several models were introduced from an early stage to derive an optimal structure of tax rates. Ramsey (1927) in his seminal article "A Contribution to the Theory of Taxation" was the first to make a significant contribution to the theory of optimal taxation, and much of the literature that has followed reflects Ramsey's initial observations. In fact, the optimal taxation problem according to Ramsey could be solved only if a tax is imposed to goods according to supply and demand elasticities. Mirrlees' model (1971) examined the debate on how progressive income tax should be. The model contains several assumptions about the social welfare function, the distribution of the endowments, and the utility function. Feinstein (1991) and Mankiw et al. (2009) focused on the taxation of capital income, not the taxation of commodities like Ramsey. However, the theory of optimal taxation is incomplete as a guide to policy action, given that models exclude important features of the real world, such as uncertainty, dynamic factors, tax evasion, and tax arbitrage. The standard models of optimal taxation and their conclusions should probably be modified in light of the existence of tax evasion—an illegal practice where a person, organization, or corporation intentionally avoids paying his true tax liability—and tax avoidance, the use of legal means to lower the obligations of a taxpayer. In this way, the optimal taxation problem becomes a game of imperfect information between taxpayers and the social planner.

Today, tax evasion continues to be an affliction among societies throughout the world. All economies suffer—some to a greater while others to a lesser degree. Tax evasion constitutes a distortion in the economy as it impairs the chances of realizing the distributional or equity goals of taxation, may lead to loss of tax revenues and an increase in income inequalities, may skew the allocation of resources away from more productive

areas of the economy, and may render economic statistics misleading resulting in errors in the application of fiscal and monetary policy. From the United States to Germany, and from Italy to Greece, there will be some income earners who will, indeed, state their true income in their income tax returns as a matter of principle. There will also be others for whom an honest income tax return will be submitted only if it is "optimal" for them to do so. Although it is generally agreed that tax evasion leads to welfare loss, its exact scale is difficult to estimate, as there is no available information to measure its exact size but only indicative data. In the case of Greece, tax evasion appears to be more acute and substantially higher than in other developed countries. Schneider and Buehn (2009), using the MIMIC and Currency Demand Approach, estimated that the shadow economy in Greece accounts for around 25% of GDP, which is the highest among the 21 OECD countries examined. Although several reforms were implemented since early 2004, the efficiency of several taxes in Greece is below other countries in the euro area with similar or lower statuary rates. According to the OECD Economic Survey (2009), Greece has 31% efficiency of tax collection ratio—about 4.5 percentage points below the OECD average. On the contrary, countries with high growth like Ireland, Finland have 56% efficiency of tax collection as a percentage of GDP. The problem of tax evasion is the confluence of many factors, including the level of tax rates, the inefficiency of the tax system, the economic structure, the inefficiency of tax administration, the low likelihood of detection and punishment, the weakness of tax collection, the level of fines imposed, the complexity of the tax system, corruption, institutional weakness, the legal uncertainty for taxpayers and employees of tax administration, the structural distortions of the economy, the tax culture, and the existing bureaucracy. That is, all the factors that Adam Smith stated so long ago! The formal economic theory of tax evasion started with the publication of Allingham and Sandmo (1972) "Income tax evasion: A Theoretical Analysis", followed by the work of several other papers such as Yitzhaki (1974), Srinivasan (1973), Mayshar (1991), Crocker and Slemrod (2004), Slemrod (2001) trying to identify the variables and factors likely to affect tax evasion. In what follows, we present a review of the theoretical and empirical frameworks about tax evasion, how tax evasion links with existing tax systems and approaches, the implications of tax evasion for growth,

and, in particular, the implications of tax rates and tax evasion in the context of zero or negative growth—the relevant economic condition for many countries today.

It is easily understood that the true tax base is only known to the taxpayer and is not observable by the tax collection agency without cost. As a result, the only way an individual can be deterred from income tax evasion is when any taxable income understatement will be detected and subjected to a proportional penalty over and above payment of the true tax. In the majority of models, tax evasion is expressed as a function of marginal tax rate, true income, penalty rate, and the probability of detection application of individual choice. The framework of individual tax evasion essentially treats the decision as a portfolio selection problem. However, corporate tax evasion is much more complicated than individuals' tax evasion as it involves the strategic behavior of more than one person. Becker (1968) was the first who theorized the economics of crime by studying the relation between the optimal amount of enforcement and the cost of catching and convicting offenders—as well as the nature of punishment and the responses of offenders to changes in enforcement—from an economic perspective. Following Becker's concept, Allingham and Sandmo (1972) analyze the individual taxpayer's decision on whether and to what extent they avoid taxes by the deliberate underreporting of income. Following portfolio theory, a risk-averse taxpayer chooses between a reported and an unreported income in order to maximize expected utility. The choice on whether and how much to evade is a choice of whether and how much to gamble. The results of the proposed model indicate that absolute risk aversion decreases with income. According to Arrow "a risk averter takes no part of an unfavorable or barely fair gamble, on the other hand he always takes some part of a favorable gamble". The higher an individuals' income, the smaller the amount of undeclared income necessary to create a given gamble in terms of tax evaded. So, wealthy individuals have the motive and the resources to resort to tax evasion tools, such as the foundation of offshore companies and shell corporations, the transfer of real estate to offshore companies, and the transfer of tax domicile. Examining evasion relative to income, they observed that tax evasion will decrease, increase, or stay unchanged as a fraction of income depending on relative risk aversion. The model

does not yield any clear-cut results, both in the analysis of changes in actual income and in the tax rate and on the penalty rate and the probability of detection. Yitzhaki (1974), based on an extended version of the previous model, assumes that the penalty of discovered evasion is imposed on the tax understatement. In this case, the tax rate has no effect on the terms of the tax evasion gamble. As tax rises, the reward from a successful understatement of a dollar rises, but the cost of a detected understatement rises proportionately—note that this result implies a dual regulatory failure, that high tax rates impose an unnecessary burden on both the allocation of resources and decision to report true income but also on the cost of detecting and ultimately collecting from someone who evades. In another study, Yitzhaki (1987) uses his model in an attempt to formulate the excess burden of tax evasion, which is defined as the difference between the utility obtained under a tax system with tax evasion and that obtained under a system in which the taxpayers agree not to cheat while the government gets the same average tax. The excess burden occurs because of the uncertainty introduced into the economy by tax evasion. A government can raise tax revenues by different combinations of administrative costs and tax rates. In an optimal solution, the marginal administration cost of raising a dollar, through an increase in the probability of being caught, should be equal to the marginal excess burden caused by an increase in the tax rate enough to raise a dollar—and when this does not occur, we end up with an allocative inefficiency.

Tax evasion models, as mentioned above, address tax evasion as a gamble focusing on higher-order characteristics of utility functions while expanding on other important aspects of the issue such as tax technology and behavioral response to taxation. Slemrod (2001), examining the behavioral response of individuals, introduces a model where individuals change both their labor supply and avoidance effort to tax changes, under a linear income tax. The model shows that increasing tax rate reduces labor supply, increases the marginal cost of avoidance, and makes it less attractive. Examining taxation as a whole, Srinivasan (1973) supports that the optimum proportion of income to be understated will be derived as a function of true income, probability of detection, and the properties of the tax function. Given a progressive tax function, and a probability of detection independent of income, the richer a person, the

larger the optimal proportion is by which he will understate his income. Progressive taxes seem to be discriminatory against wealthy or high-income earners, who receive mainly their income in forms that have higher overall misreporting rate. So, they choose to understate a portion of his true income that minimizes the expected taxes and penalties since pre-tax income is given. But, on the other hand, note that it is that these individuals are usually the ones providing private investment and employment. This creates a wedge that rests on the level of tax rates, an issue we further explore later. A progressively increasing penalty multiplier, with a zero marginal and average tax rate on zero income and a probability of detection independent of level of income, yields to the same total revenue in the case of both in a progressive and proportionate tax function in the absence of understatement of income. Mayshar (1991) proposes a model that includes the concept of a tax technology and provides a unified formalization of Adam Smith's four components of tax cost. These are costs incurred by the authorities in (i) administration; and costs incurred by taxpayers in (ii) substitution away from the tax base, (iii) active noncompliance, and (iv) passive compliance. He finds out that the total effect of an increase on the tax instruments adopted by the tax authority on gross tax revenue consists of three parts. The first represents its positive direct impact on tax revenues, the second represents its indirect impact through inhibiting production effort, and the third represents the effect of its indirect impact on tax resistance through tax-sheltering activities. If the first effect cannot overcome the other two effects, the increases in tax rates and tax instruments is detrimental to the economy, leads to increased evasion, and, in the end, stifles growth and increases inequity in income distribution. Empirical evidence is consistent with theory as higher tax rates tend to stimulate tax evasion, high penalty rates discourage tax evaders, higher cost of tax administration provoke tax evasion through intensified tax inspections but eliminate tax revenues, and, finally, the level of tax evasion differ among occupations and sectors as they face different probability of detection.

While individual tax evasion seems to be based on the decisions of an individual, it is not the case with corporate tax evasion as it involves several parties. Crocker and Slemrod (2004), found that increasing either the shareholder or the CFO penalty will reduce tax evasion since, for

every level of permissible reductions, the deductions claimed by the CFO decline as the cost of legal tax evasion increases. A penalty levied on the CFO is more effective in reducing tax evasion than would be an equivalent penalty assessed on the shareholders. Chen and Cyrus (2002) supposed that the firm's optimization problem consists of two stages: first, offering a legally enforceable contract to the manager, and, secondly, the decision of how much to evade. If the manager is not liable for evasion, the owner does not have to compensate him for any risk involving evasion, only to maximize expected after-tax profit. But if the manager is liable for evasion, the owner needs to compensate him for the risk involved in order to induce him to participate in evasion. Again, we see here an increased chance of regulatory failure: for if there is sheltering on the individual for corporate tax evasion then it becomes a matter of choice between spending on enforcing the tax system or creating a different set of tax rates and tax incentives to reduce the overall level of corporate tax evasion—for otherwise there is always the ability to take into advantage international tax competition and company relocation to a more tax-friendly environment.

The Impact of the Magnitude of Tax Rates on Tax Evasion

One widely accepted explanation for the size and growth of tax evasion is high tax rates. Do higher and higher taxes drive more and more of the economy underground? Policymakers debate the nature of the tax structure they plan to implement and how they might affect individuals and businesses, using tax rates as an instrument manipulated for policy goals. To the extent that taxpayers are able to escape tax burdens through evasion and the government is aware of this, then government may be constrained from raising tax rates for fear of making evasion too attractive. The impact of marginal tax rate on tax evasion is, however, ambiguous because of a substitution and an income effect. According to the substitution effect, taxpayers evade more income because tax evasion becomes more profitable at the margin. The extent of an income effect depends on the type of risk aversion of taxpayers. These results are also influenced by whether the

income tax schedule is proportional, linearly progressive, or linearly regressive. For proportional income taxes and for an expected fine as a function of income evaded, risk-neutral taxpayers evade a lower income share relative to their total true income when true income increases. In the case of risk-averse taxpayers, the share of evaded income may decrease, stay constant, or even increase with increasing true income, as relative risk aversion is an increasing, constant, or decreasing function of income. Under this concept, Friedland et al. (1978) examined how sensitive income tax evasion is to changes in tax rates, using a simple game-simulation of tax evasion. They support that the rate of tax is the most important determinant of probability of evading, while the fraction of earned income reported becomes very elastic with respect to the tax rate, and the relation between underreporting and tax rate can be experimentally determined based on many different factors among individuals.

Clotfelter (1983) was among the first who investigated the relationship between marginal tax rates and tax evasion, suggesting that tax evasion is sensitive to marginal tax rates. Using data from IRS TCMP, concerning the reported amount vs. the corrected amount for 47,000 individual tax returns, Clotfelter finds that the marginal tax rate and the level of after-tax income have significant effects on individual underreporting. Moreover, he finds that a 10% cut in tax rate could reduce underreported income by 11–28%. As a result, tax cuts may result in sizable reductions in unreported income and tend to be less costly to the state. Crane and Nourzard (1986) presented a model that studies the difference between the adjusted gross income and the directly declared gross income, relative to the marginal tax rate, the probability of auditing, the penalty, real income, institutional variables, and a variable trend. They find out that an increase in marginal tax rates not only increase the level of evasion but also increase the portion of evaded income. So, cutting tax rates need not lead to a reduction in tax revenues. Imagine the practical significance of these results in a low-growth/high-tax-evasion environment: they can create a vicious cycle of continuously increasing rates or alternative forms of taxation, for increased revenue collection at the expense of increased evasion and permanently lower growth rates. On the contrary, tax rate cuts can influence tax revenues through affecting the tax base or affecting compliance with the tax rules. Cutting tax rates

may increase tax compliance, decrease tax evasion activity, induce greater income reporting, and broaden the tax base. In the case of Greece during the crisis, although direct and indirect taxes were increased and new taxes were also introduced, tax revenues have been more or less steadily decreasing due to tax evasion and citizens' income decreasing from the lower overall economic growth. Crane and Nourzard (1987), also, extended their previous survey, presenting two models of evasion. The first one contains only marginal tax rate and, the second, both average tax rate and marginal tax rate. Examining the impact of progressive taxes in tax compliance, the first model indicates that a higher marginal tax rate generates greater evasion, while, in the second model, the average tax rate reflects a significant and negative relationship with tax evasion, and the marginal tax rate remains positive and significant. The model indicates that both average and marginal tax rates matter. Cutting marginal tax rates may lead to greater reporting of income and, therefore, more tax revenues. Financing "revenue-neutral" cuts in marginal tax rates requires that revenues be raised from other sources, that the tax base be broadened, or that the intra-marginal tax rates be raised to offset the resulting revenue loss involving an increase in average tax rates. This is a result of practical policy significance—that is, that just raising tax rates or imposing additional taxes does not or will not work; rather, other approaches of restructuring the tax system and broadening the tax base are required.

In an econometric analysis of income tax evasion based on individual-level data drawn from the International Revenue Service 1982 and 1985 Tax Compliance Measurement Program that was presented by Feinstein (1991), he found out that the likelihood and magnitude of evasion increases with taxpayer income and marginal tax rate in both 1982 and 1985 when the data from these years are analyzed separately. However, it is difficult to separately identify the effect of the marginal tax rate from the overall income effect. Using a pooled model, he supports that the two effects can be separated; income effect exerts a very small and insignificant effect on evasion, whereas the marginal tax rate exerts a substantial negative effect. This is an additional argument in favor of an overall lower marginal tax rate policy. Using data from laboratory experiments, James et al. (1992) estimate the effect on compliance of the major fiscal instruments. Based on a sample consisting of students, they find that higher tax

rates lead to significantly lower compliance, which is consistent with the notion that the payoff to successful evasion is greater when the tax rate is larger and, therefore, our current policies are useless as they focus on new taxes and greater tax rates. Crane and Nourzard (1990), examine the effect of marginal tax rates on income tax evasion using data from the California Income Taxing Program. An increase in the tax rate induces greater evasion since it increases the marginal return to successful evasion. This results in the fact that a higher tax rate generates an additional effect which may lead to more or less evasion depending on the individual's attitude towards risk. They found that marginal tax rate variable is positive when higher tax rates lead to increased evasion. As a result, individuals with higher levels of income tend to evade more. It is interesting to note another practical problem with higher (marginal and average) tax rates: the less privileged cannot possibly evade (not in the scale of the wealthier ones, at least) but they also have smaller or zero chances in moving higher in the income scale because they cannot address the problem of high tax rates as their income increases—in fact, they have an incentive to move on to the underground economy so that they permanently stay below the tax authority's radars. Thus, all results so far provide ample evidence on the problematic nature of higher tax rates.

Empirical Evidence on the Magnitude of Tax Evasion

Although the theoretical models of tax evasion generally refer to willful understatement of tax liability, empirical analyses cannot precisely identify the taxpayers' intent and therefore cannot precisely separate the willful from the inadvertent. Nor can they, in complicated areas of the tax law, precisely distinguish the illegal from the legal tax evasion (i.e. tax avoidance). A number of different methods have been used in measuring tax evasion in different countries though the lack of reliable information is a fundamental difficulty in analyzing it. One method developed by Guttman, Feige, Tanzi measures tax evasion on the basis of changes in money holdings in the economy over time. Another approach, by MacAffee, involves using differences between the income based on tax reports and estimates of income based on household and industrial

surveys of spending. A more direct approach to measure tax evasion has been taken by the Internal Revenue Service in the United States in its Taxpayer Compliance Measurement Program (TCMP) by auditing a random sample of tax returns. A modified version of TCMP, called the National Research Program, was implemented to examine individual tax returns from the 2001 tax year. Clotfelter (1983), in the study we already mentioned before, using reported vs. the corrected tax returns of 47,000 individual for 1969 from the IRS TCMP, has found that understatement clearly rises with income, though these estimates do not indicate whether the rate of increase is more or less proportional. The presence of wages, interest, and dividend was associated with better compliance as wages in 1969 were fully reported, interest ranked in overall compliance with 98.3%, and dividends with 97.5%. Slemrod (2007) examines what is known about the magnitude, nature, and determinants of tax evasion, with an emphasis on the US income tax. Based on data from the TCMP, with information obtained from ongoing enforcement activities and special studies about particular sources of income, he reports that two thirds of underreporting of income happens in the individual income tax. Furthermore, he finds that underreporting business personal income is twice as large as underreported non-business income. In fact, a huge variation in the rate of misreporting is observed as a percentage of actual income by type as only 1% wages are unreported vs. 57% non-farm proprietor-unreported income. The self-employed and small businesses are able to hide their income because the likelihood of detection is low. In Greece, for example, self-employed, farmers, and small businesses, who can avoid taxes more easily than employees and pensioners, account for more than 30% of the population percentage, which is twice as high as the European average. The total noncompliance rate of corporations is equal to 17%, while the noncompliance rate of the larger companies is lower (14%) vs. smaller corporations (29%). Legal entities evade taxes in a series of ways. Especially, small- and medium-sized companies use means to avoid taxes—like issuing of false invoices, employing undeclared workers, avoiding tax payments, and using cash at their transactions—that large and multinational corporations cannot use. The noncompliance rate for corporations relative to their size is "U-shaped", with medium-sized businesses among the set of large companies having

the lowest compliance. Johns and Slemrod (2008) used data from the IRS' most recent comprehensive study of individual income tax noncompliance, to assess the distributional consequences of tax noncompliance in the US federal income tax year 2001. They found that the overall gross tax gap amounts to 16.3% of the estimated tax liability, where two thirds of all underreporting of income happens on the individual income tax, and 67% of the understated individual income comes from business or personal income accounts. The most striking aspect is the huge gap variation in the rate of misreporting as a percentage of true income and type of income. The net misreporting percentage of income for taxpayers with true income above $100,000 is 15.2% and 7% for those with true income below $100,000. Generally, the ratio of underreported tax to true tax is higher for lower income taxpayers, reflecting the fact that under a graduated tax schedule a given percentage reduction in taxable income corresponds to a higher percentage reduction in tax liability with respect to lower taxpayer's income.

Doerrenberg et al. (2012) explore whether differences in tax morale across different groups of taxpayers within and across countries affect the tax burden imposed on these groups, and whether policymakers exploit the fact that their citizens have different levels of tax morale when setting tax rates. The main hypothesis is that groups with a high level of tax morale are taxed more heavily because taxing them creates smaller distortions. The distortive incentives are highly linked to morale, and morale to rates. Using a simple model of optimal taxation, where the government maximizes an objective function in which each group of taxpayers has a given weight. Micro data on tax morale and other covariates from the World Values Survey (WVS) and European Values Survey (EVS) with information on tax rates from the World Tax Indicators (WTI), found a positive correlation between instrumental variable and tax morale. The positive correlation is not surprising since individuals who report high tax morale are also likely to develop a high level of "dodging-fares-morale". Similarly, if individuals view paying taxes as a service to society, then a reasonable expectation is that individuals with high tax morale who tend not to evade taxes are more likely to believe that it is especially important for their children to be unselfish. In other words, "child unselfishness" is expected to be positively correlated with tax morale as well.

Alstadsaeter and Jacob (2013a, b) use a rich administrative panel data set for Sweden to analyze sources of heterogeneity involved in the participation in observable income shifting. The Swedish tax system is characterized as progressive on labor income and as proportional on capital income. They found that the higher the education and the age, the larger the negative effect is on tax evasion. Meanwhile, a strong and positive effect is found in participation in tax avoidance, as a considerable number of individuals have tax incentives to establish tax-sheltering firms; just a few participate in a holding, shell, or low-turnover corporation. Slemrod (2004), offers an economic perspective on the issue of this corporate tax-reporting behavior. For small businesses whose owners' wealth is generally not well-diversified, one can make the same assumption as is made for individuals. On the contrary, large publicly held firms should behave as if it is risk-neutral, even if shareholders are not holding diversified portfolios. The main factor about how aggressive the shareholders want the corporation to be has to be conveyed to the managers who make such decisions.

Taxation, Tax Evasion, and Growth

Private investment and government spending are two key determinants of the growth rate. Productive government investment or nonproductive government spending financed by tax revenues enhance private production, lead to income redistribution, and reduce income inequality. Thus, the tax rates and the tax system should be determined taking into account the effectiveness of the tax policy under the existence of tax evasion.

The most common theory on economic growth derives from Solow (1956), where the output is produced with two factors of production—capital stock and labor. As investment and labor supply growth revert back to their original rates determined by long-term population growth, taxes should have no impact on long-term growth. Following Solow's theory, Barro (1990) demonstrates that, for a benevolent government, the appropriate objective in the model is to maximize the utility attained by the representative household. Actually, the growth-maximizing share of productive government spending is smaller if government spending is also smaller and is used to finance other types of spending. The growth rate thus depends on how governments behave. Scully (2003) examines the optimal

or growth-maximizing taxation, the trade-off between income inequality and economic growth, and optimal or growth-maximizing income inequality for the United States. The main impact of economic growth consists of the fact that a dollar of public expenditure ought to have five times the return of a dollar of private investment to justify the marginal dollar's worth of taxation to pay for it. The empirical evidence for the United States over the period 1960–1990 indicates that a switch from a relatively high-tax–low-growth regime to a relatively low-tax–high-growth regime is associated with a statistically significant but very small increase in income inequality.

Linking economic growth to tax evasion, Chen (2002) analyzes economic growth in models of tax evasion. He supports that the optimal statutory tax rate is bigger, and the economic growth rate is smaller in an economy with tax evasion. Specifically, increasing the unit cost of tax evasion, raising punishment and fines, and increasing the probability of detection are effective in bringing down tax evasion; however, they only have negligible effects upon economic growth, unless government externality is very large. As a result, higher enforcement will bring down tax evasion but will make nothing for growth. Celimene et al. (2014) study the impact of tax evasion and tax corruption on private investment and government spending—two key determinants of the growth rate. They found that a higher noncompliance rate does not help the economy to capitalize on public spending. Though cheating yields individual benefits to taxpayers if there exist an equity market in which the proceeds of the concealed income can be invested and which will lead to economic growth. In societies in which the share of private investment as a percentage of GDP is growing, tax cheaters usually choose to shelter the proceeds of their illegal activities from the official financial institutions, and the productivity of public spending is often low. As a result, tax evasion may contribute to the development of private capital if people find an opportunity to invest the proceeds of their illegal activities in equity markets.

Tax Evasion and the Impact of Tax Havens

Global interest in tax havens has increased recently. Scandals surrounding the Swiss bank UBS, the Liechtenstein Global Trust Group, and the Panama Papers leak focused greater attention on

international tax law issues. Tax havens are viewed with alarm in parts of the high-tax rates world as they may have the effect of eroding tax bases, eliminating government tax revenue and diverting economic activity away from countries with higher tax rates. According to the First Study of International Tax Avoidance and Evasion by OECD (1987) "a jurisdiction actively making itself available for avoidance of tax which will would otherwise paid in relatively high tax countries" is generally considered as a tax haven, though there are difficulties involved in providing an objective definition of a tax haven. This report identified the following key factors in considering whether a jurisdiction is a tax haven:

- No or only nominal taxation on the relevant income is a starting point to identify a country as a tax haven, a place where non-residents can escape tax in their country of residence. However, having no or nominal taxes is not sufficient to characterize a jurisdiction as a tax haven.
- Beyond no or only nominal taxation, lack of transparency in the operation of the jurisdiction's administrative tax practices identifies a tax haven as it prevents effective exchange of information under which businesses and individuals can benefit from strict secrecy rules and other protections against scrutiny by tax authorities, allowing investors to avoid their taxes, and facilitate illegal activities such as money "laundering" of criminally obtained funds and tax evasion. And, therefore, low tax rates can be used as an instrument for the return of capital to places where there are no problems of transparency.
- The absence of a requirement that the activity that takes place be substantial, as it suggests that the jurisdiction attempts to attract investment and transactions that are purely tax driven. So, a tax haven jurisdiction does not or cannot provide a legal or commercial environment or offer any economic advantages that would attract substantive business activities in the absence of tax-minimizing opportunities.
- A relaxed regulatory framework and the presence of a solid business infrastructure are non-tax factors of tax havens.

The OECD (2000) created an initial list of 40 tax havens, excluding some low-tax jurisdictions such as Ireland and Switzerland thought by many to be tax havens. Currently, the OECD has three lists: "a white list" of countries implementing an agreed-upon standard, a "gray list" of countries that have committed to such a standard; and a "black list" of countries that have not committed. The OECD list has changed over time as more tax havens made agreements to share information and moved from the blacklist. In May 2009, the Committee on Fiscal Affairs decided to remove all three remaining jurisdictions (Andorra, the Principality of Liechtenstein, and the Principality of Monaco) from the list of uncooperative tax havens in the light of their commitments to implement the OECD standards of transparency and effective exchange of information and the timetable they set for the implementation. As a result, no jurisdiction is currently listed as an uncooperative tax haven by the Committee on Fiscal Affairs. According to Dharmapala and Hines (2006), tax havens have a mean governance index substantially higher than non-havens, tend to have open economies, British legal origins and parliament systems, English as an official language, more homogenous population, government's level of spending relative to GDP similar to non-havens, and smaller natural resource endowments than non-havens. Countries like Greece with no or negative growth could mimic tax havens in order to deter their citizens from flying to tax havens, make investments attractive again, create growth, and increase tax revenues. This can be done without affecting the social structure, the welfare state or the functioning of the tax authorities. It will only require that a country provides a more tax-friendly environment with lower rates, a simplified overall tax system, and full transparency of operations.

Do tax havens flourish? Do tax havens divert economic activity away from high-tax countries? James and Hines' (2004) study showed that, being nearby, tax havens stimulate economic activity within a region, not resolving though the impact of tax havens on the welfare of the high-tax jurisdictions. The availability of foreign tax haven activity and nearby investment in higher-tax countries appear to be complementary (to the extent of having that 1% greater likelihood of establishing a tax haven affiliate being associated with two thirds of a percent greater investment and sales in nearby non-haven countries). Based on comparable annual

per capita real economic growth rates calculated from GDP figures by the World Bank GDP, they presented that the average annual per capita real growth for 17 tax havens was 2.6%, compared to 1.7% of the world as a whole. Moreover, they estimated that tax havens economies grew 2.3% per year faster than would be predicted on the basis of their size and wealth. These results speak for themselves and are in full agreement with the theoretical and empirical predictions presented before. Tax haven-like structures will attract economic growth, will have complementarity effects on nearby areas, will not have a problem of tax evasion and will not be distortive to economic activity.

8.3 The Cost of Tax Enforcement and Tax Compliance: What Do the Data Have to Tell Us About Enforcement and Growth?

Adam Smith (1776, Book V, Chapter II) supported that one of the demands of a good tax system is low cost of administration. On the one hand, tax collection involves enforcement costs incurred by the public tax authorities in assessing tax liabilities, auditing tax returns, and pursuing evaders. On the other hand, one of the costs of operating a tax system is the compliance cost imposed on the taxpayers themselves. The compliance costs are related to the complexity of the tax system, the tax rates, and the impact of tax evasion on the economy. Slemrod and Sorum (1984) estimated the magnitude and nature of the compliance cost of filing federal and state individual income tax returns for Minnesota taxpayers. In that case study, the cost is divided into discretionary and nondiscretionary cost and separated from the standard accounting and auditing procedures cost. Using a questionnaire that includes demographic information, information about the household's income tax return, and the household's cost of filing tax returns, they find that 45.9% of the lowest income groups hire professional tax assistance, while the fraction of households who pay for professional assistance increases with income. The compliance cost was estimated between 5% and 7%

of the revenue raised by the federal and state income tax systems combined. Slemrod and Blumenthal (1996) support that firms experience higher compliance costs as the complexity of the tax code increases. For example, in Greece, the tax code is an amended frequently, thus provoking increase to the compliance cost, incentives to tax evasion, and high incidence of bribery. Since 1975, 250 tax laws and 115,000 ministerial decisions have been voted. Within the last 12 months, 400 ministerial decisions and 137 explanatory circulars were published. The actual cost of compliance consists of human capital investments and the purchase of data-processing equipment. In their paper, Slemrod and Blumenthal (1996) provide quantitative evidence about compliance costs that can form the basis for future tax policy initiatives that simplify the income tax system without compromising its other objectives. The main finding is that the compliance cost rises less than the firm size. Slemrod and Venkatesh (2002) attempt to measure the size and composition of compliance costs and to identify firm characteristics that affect these costs. The compliance costs of small- and mid-sized businesses are larger in an absolute sense, and larger relative to size than for the biggest businesses. The total compliance cost, though, varies widely across industries. They note that 58.7% of average total compliance spending was comprised of internal personnel costs. As a result, larger firms spent a greater percentage on tax planning, while smaller firms spent on the maintenance of tax-related records. Slemrod (2006) assess the impact of compliance costs borne initially by businesses. The results show that both the administrative and compliance costs from a European-style VAT are between 3.33% and 5.33% of revenues collected. Bloomquist (2003) studies the opportunity cost of compliance, which is associated with full compliance that outweighs the possibility of detection and fines at some future date. These findings suggest that we take a closer look at the issue of enforcement and compliance and how it relates to economic growth and tax rates. That it is important to do so is easily seen: the enforcement costs are clearly associated with the tax system—that is, not only the tax rates but the overall impact it has on the taxpayer and the economy—it relates to the magnitude of tax evasion, the incentives for paying taxes, the chances of being caught and fined, and, in the end, the turnover of everyday business and growth.

As in the rest of the discussion in this chapter, the idea next is to consider the empirical by-product of tax incentives: a priori, one does not expect a high enforcement cost associated with a high growth environment, and a high growth environment is (usually) not associated with excessively high tax rates. If the economy is growing, there is less need, less incentive to cheat the taxman on a low(er) rate environment, thus saving public funds for enforcing the tax law. Therefore, the empirical exercise that follows has a twofold purpose: first, to take a close look at international data on the cost of enforcement and growth; and, second, to find whether we should be focusing in terms of policy on fighting the lost battle on tax evasion via higher enforcement (thus, more public spending) or winning the battle of growth via higher growth (thus less enforcement, less public spending) via lower tax rates.

We take our data set from OECD Tax Database and just look at two variables: the annual growth rate of real GDP (denoted GR) and the cost of enforcement (defined as the average administrative cost of the tax administration as a ratio of total revenues collected: denoted ACRC). Our sample has 23 countries, developed and developing, and spans the years 2005–2013. The countries used and the basic descriptive statistics for these two variables are given in Table 8.1. The countries are sorted by their mean enforcement cost—from lowest to highest. A first glimpse on the relationship between cost of enforcement and growth is easily obtainable by considering the mean growth rate across different groups based on their level of enforcement spending. These are given on the bottom panel of Table 8.1, and they do tell a tale. Either by a split based on the level of enforcement cost or by an equal three-way split, the mean and median growth rates decline as the level of enforcement cost increases. Maybe one will say that the differences are not large but we are taking about averages here, and even half of a percent of additional growth can be crucial if we consider times of crisis. In fact, looking at the average growth difference between the low enforcement cost group and the high enforcement cost group we see a range of additional (mean/median) growth from 0.8 to 1.88—these are not negligible numbers to consider.

But what is even more interesting to look at is whether there is an association between the cost of enforcement and tax rates, for the countries under consideration. We extracted the corporate tax rates and

Table 8.1 Growth rate and enforcement costs

	Annual growth rate (GR)			Enforcement cost (ACRC)		
Country	Mean	Median	SD	Mean	Median	SD
United States	1.42	1.78	1.87	0.54	0.52	0.08
Estonia	2.54	4.31	8.10	0.56	0.40	0.28
Chile	4.48	5.46	2.27	0.70	0.67	0.09
Austria	1.39	1.93	2.25	0.70	0.67	0.07
Spain	0.40	0.01	2.97	0.77	0.74	0.12
Korea	3.72	3.68	1.79	0.77	0.78	0.05
Mexico	2.50	3.22	3.03	0.79	0.75	0.11
Finland	0.87	2.57	4.05	0.80	0.79	0.04
Turkey	5.57	7.11	4.88	0.81	0.83	0.08
New Zealand	2.00	2.59	1.58	0.81	0.81	0.07
Slovenia	1.13	1.24	4.56	0.91	0.91	0.05
United Kingdom	1.08	1.91	2.28	0.93	0.91	0.15
Ireland	0.94	1.10	3.88	0.95	0.87	0.17
Australia	2.83	2.61	0.73	0.98	0.99	0.04
Netherlands	1.01	1.66	2.36	1.07	1.02	0.13
Hungary	0.66	0.89	3.25	1.14	1.15	0.06
France	0.93	1.61	1.70	1.17	1.19	0.11
Canada	1.82	2.48	1.93	1.26	1.31	0.08
Portugal	−0.34	0.20	2.28	1.27	1.27	0.22
Belgium	1.22	1.80	1.77	1.35	1.36	0.12
Germany	1.32	1.08	3.01	1.44	1.40	0.11
Japan	0.66	1.36	2.84	1.68	1.71	0.16
Poland	3.93	3.61	1.92	1.69	1.69	0.17
	Means based on groupings of enforcement cost					
ACRC [0.5. 0.9)	2.49	3.27	3.28	0.72	0.70	0.10
ACRC [0.9. 1.26)	1.23	1.57	2.68	1.02	1.01	0.10
ACRC [1.26. 1.7)	0.94	1.38	2.36	1.40	1.41	0.14
Low-high	1.55	1.88	0.92	−0.68	−0.71	−0.04
Lowest 1/3	2.16	2.87	3.29	0.70	0.67	0.10
Middle 1/3	1.90	2.39	2.94	0.95	0.94	0.10
Highest 1/3	1.36	1.73	2.21	1.41	1.42	0.14
Low-high	0.80	1.14	1.09	−0.71	−0.75	−0.03

three personal income tax rates: the top personal income tax rate, the all-in-one top personal income tax rate (including all other contributions like social security contributions), and the top statutory personal income tax rate (which coincides with the first in many countries). In Table 8.2, we took the average values across the 2005–2013 years of data that we have and then considered again the mean-of-means across the same

enforcement cost groupings that we had in Table 8.1. The results are consistent with prior expectations, and they tell the same tale as before: higher cost of enforcement is associated with higher rates, and the numbers can be staggering—in terms of last growth potential. For example, for the corporate tax rates, the difference between high enforcement costs and low enforcement costs gives a range of an additional 4.3–6.3 percentage points. Looking at the all-in-one top personal income tax rate,

Table 8.2 Tax rates and enforcement costs

	Tax rates, means over 2005–2013			
Country	Corporate	Top personal	All-in-one	Top statutory
United States	39.21	42.08	43.63	42.18
Estonia	21.67	21.31	22.97	21.67
Chile	18.00	39.85	39.85	40.00
Austria	25.00	44.41	44.41	44.41
Spain	31.39	45.67	45.67	45.67
Korea	25.67	36.02	39.20	39.23
Mexico	29.22	26.75	28.51	29.22
Finland	25.67	48.80	55.83	50.06
Turkey	21.11	35.66	35.66	35.64
New Zealand	30.33	36.50	36.50	36.50
Slovenia	21.22	34.28	56.38	44.00
United Kingdom	27.44	43.89	46.33	43.89
Ireland	12.50	46.80	49.06	46.80
Australia	30.00	47.06	47.06	47.06
Netherlands	26.46	50.51	53.53	52.00
Hungary	18.81	41.28	57.98	29.11
France	35.25	42.61	50.99	49.20
Canada	30.42	46.93	46.93	46.93
Portugal	28.06	40.48	51.48	45.49
Belgium	34.21	45.24	59.41	53.66
Germany	33.08	46.56	49.45	46.77
Japan	39.26	47.57	48.17	50.09
Poland	19.00	26.21	39.56	35.56
	Means based on groupings of enforcement cost			
ACRC [0.5, 0.9)	26.73	37.71	39.22	38.46
ACRC [0.9, 1.26)	24.53	43.77	51.62	44.58
ACRC [1.26, 1.7)	33.00	45.36	51.09	48.59
High-low	6.28	7.65	11.86	10.13
Lowest 1/3	26.98	38.11	40.01	39.06
Middle 1/3	23.49	41.99	47.81	41.87
Highest 1/3	31.33	42.23	49.43	46.81
High-low	4.35	4.12	9.42	7.76

the results are even larger, with a range between 9.4 and 11.9 percentage points—and this is significant because it points to a larger policy problem than just high tax rates, the point of a complete restructuring of social security in the context of lower tax rates and fiscal restraint.

These results are not inferential, but they need not be. One is constrained in discussing them by the current state of the global economy, with special emphasis on Europe and the problems associated with it right now. One cannot be unaware of the problem of tax enforcement costs in the toxic environment that combines high tax rates, fiscal restraint, high tax evasion, high government corruption, low transparency, the tyranny of a complicated tax code, and the ease that global tax competition provides for moving base to a tax haven. What is the point of enforcing what cannot possibly work and what cannot contribute to economic growth?

In order to further our understanding of the impact of enforcement costs and tax rates on growth, we estimate three simple panel-based models, now using the detailed cross-sectional/time-series data for the same countries discussed above. These models are illustrative of all our previous arguments and inferential; therefore, their results can strengthen the case for the negative impact of high taxation on growth and the positive impact of growth on lowering high taxation. Results are summarized in Table 8.3.

We first consider the model where the dependent variable is the enforcement cost and the explanatory variables are the lags of the all-in-one top rate and growth. First, we assume that the impact of a change in the top rate works with a longer lag than the impact of a change in growth; this is not a far-fetched assumption since a change in the top rate certainly affects revenues but may not affect in the short-term the spending that goes on tax enforcement (as the additional revenues may well be used up on other government spending patterns). On the other hand, higher economic growth immediately implies higher economic turnover, given existing tax rates, and thus higher revenues, given the existing enforcement costs. Thus, we anticipate that an increase in the top all-in-one rate will raise the enforcement costs in the longer term, but a higher growth rate will reduce them in the short term. This conjecture is easily seen in the estimation results, and with an explanatory power of 93%. Notice that the positive estimate in front of the top all-in-one rate implies that the enforcement cost might as well be increasing without necessarily having increased rev-

Table 8.3 Panel models estimation

	Model 1	Model 2	Model 3
	Dependent variable		
	Enforcement cost	Top all-in-one rate	Growth
3-year lag of enforcement costs		0.171	−5.736***
3-year lag of top all-in-one rate	0.004 ***		−0.352***
1-year lag of growth	−0.004 ***	−0.015***	
1-year lag of dependent variable	0.239 **	0.659***	−0.339
R-squared	93%	87%	28%

Notes
1. Table entries are estimates from fixed-effects panel estimation, with country weights and heteroscedasticity-robust covariance matrix
2. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively
3. R-squared is the usual measure of fit from the unweighted statistics

enues. Similarly, the negative estimate in front of growth implies that, either, one can lower the enforcement costs as the economy expands or, more importantly, that the revenues increase without the costs necessarily increasing. Furthermore, notice that the estimated coefficients on the top rate and growth are of the same magnitude and of opposite signs—a result of practical policy significance: it is preferable to boost growth if you want to lower enforcement costs and release productive resources for the economy and the government; if, in addition, you can lower the top tax rate, one can achieve even more—and this does not even start taking into account the feedback that lowering the top rates will have on growth itself.

Next, we consider the model where the dependent variable is the top all-in-one rate and the explanatory variables are the lags of the enforcement cost and growth. Using exactly the same set-up and assumptions as before, we find that shorter-term growth can account for about 87% of the variability of the top rates and their relationship is negative, while the impact of the enforcement costs on the top rates is not statistically significant. Therefore, growth is found—as expected—to be vital in reducing the top rates, while there is nothing that the enforcement costs appear to be doing with respect to them. This brings us to the third model, where the dependent variable is the growth rate and the explanatory variables are the lags of

the enforcement costs and the top rates. If our previous reasoning tallies with this last model the policy results are clear and profound, that high taxation is not only detrimental to the way we consider enforcing the tax law, but it creates a vicious circle of lower growth, need for higher rates, need for higher enforcement which feeds in turn in to lower growth, etc. Looking at the results of the third model, we find, rather unsurprisingly, that either an increase in the enforcement costs or an increase in the top rates or both are associated with a statistically significant drop in future growth rates. The explanatory power on this last model is lower than before, at 28%, but is not trivial. In fact, if the top rates and the enforcement costs account for one third of total growth variability, we cannot be seriously entertaining fiscal policies that are growth conducive via higher and not lower taxation.

All in all, the discussion in this section and the results presented convey one and only one possible message: irrespective of social preferences and ideologies, higher taxation and the associated higher enforcement costs make no policy sense, either in terms of the use of public resources or in terms of generating growth. It is by lowering both the rates that one can create a virtuous cycle of a motive to pay lower taxes, to increase economic turnover and thus growth and to increase revenues via higher activity and not by higher taxes.

8.4 Conclusions and Policy Recommendations

In this chapter, the theoretical and empirical frameworks about tax evasion, how tax evasion links with existing tax systems, the implications of tax evasion for growth, and, in particular, the implications of tax rates and tax evasion in the context of zero or negative growth are reviewed and discussed. Tax evasion is widespread, always has been, and probably always will be. But how does tax evasion affect growth? Does increasing the cost of tax evasion, by raising punishment and the probability of detection, boost economic growth? Or will increasing the chase of tax evasion increase the enforcement cost and reduce tax revenues? The optimal design of the tax system, finding the optimal combination of administrative cost and tax rates, while of probable value as a political tool, has little to do with growth-oriented results—what our review and results indicate is clearly a reduction of tax rates, both in terms

of growth and in terms of economic motives. Tax rates influence tax revenues, affecting both the tax base and compliance with the tax rules. But do higher and higher taxes have a positive effect on tax revenues? Mostly not, and certainly not when we are trying to revive the economy.

The problems discussed in this chapter are interlinked and ideally should be addressed simultaneously. However, there are not enough resources (or one should not be devoting now enough resources) to do this efficiently, while maintaining both the growth-oriented policies and reducing tax evasion. In addition, global tax competition creates a complex set of motives for individuals and businesses to constantly try to avoid high-tax rate areas. Thus, it only makes economic sense to proceed sequentially with a coherent set of suitable policies that are first directed in promoting growth, then, in stabilizing employment and raising the standard of living, and only after this is achieved to consider the issues of public expenses and redistribution. Otherwise, the vicious circle of low growth, when combined with existing fiscal restraint and high-tax rates, will create an uneven global growth path where only those economies that maintain a steady, low-rate tax environment can have a bright future.

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9

Tax Evasion, Tax Morale, and the Case for Growth

Andreas Tsalas and Platon Monokroussos

9.1 Introduction

The recent events of the, so-called, "Panama Papers" are yet another example of the, very much en vogue, attacks on tax evasion, tax avoidance, tax corruption, taxing the wealthy, addressing the need for more government revenues, etc. Should we not be in favor of resolving such important, economic, social, and legal, issues? Of course, we should be. While there is an underlying fundamental importance of having a properly functioning and fair tax system, one is, however, left with certain lingering questions: questions of a more deeper nature, related to the timing of the events and to the pervasively consistent global effort in pushing forward a fervent redistribution agenda. Note that taxation has reemerged into the limelight of the global economic stage only after the "sudden death" of fiscal profligacy across the world—the chronic ailment

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that is keeping many countries prisoners of their own past fiscal mismanagement. Without being able to lead a regeneration of economic growth to the pre-crisis levels, and having exhausted the instrument of public debt, policymakers are embracing the other end that can refuel massive government spending: increasing tax rates and taxes for all, not just the wealthy. Is this new fiscal path, of higher taxation, going to be the final deathblow to global economic recovery?

To understand the critical issues involved, we should understand the structure and aims of a tax system. We collect tax revenues as funding for the provision of necessary public goods—goods that the whole of society can have access to and cannot, perhaps sometimes should not, be produced by private enterprise. Tax revenues should clearly not be directed for the generation of private wealth for part of the society, as this implies a biased approach that favors tax evasion, tilts the economic playing field and puts the brunt on those that year after year accurately report their income. Marginal tax rates should be set at levels that are such so as to maximize tax revenues while minimizing allocative inefficiencies—that is, without creating distortions in both the incentives of people to work and report their earnings and in the actual economic production of output. Taxation is distortive by its very own nature so eliminating these distortions is not possible but minimizing them is.

What is important to point out is that we should be concentrating on reforming the tax systems so as to minimize revenue leakage but not by using regulatory failures as excuses for imposing higher taxes. Tax havens operate on incentives and based on these incentives attract their "customers"; however, not everyone with an offshore account is a branded criminal. The question is what kinds of incentives should the tax systems be giving to citizens and enterprises so that they find no reason to flee to tax havens. Answering this question requires that we should carefully think about taxation in times of crisis: "copy/paste" a tax system of one country into another, imposing a uniform increase in tax rates, ignoring blatant local tax evasion, and promising redistribution will not work in providing the right incentives.

It's one thing to ensure tax compliance for those that have illegally and purposefully avoided paying taxes (note that the "illegally" goes to all tax evaders, not just the big ones) and it's yet another thing to push for increased taxation, higher rates, and revenues, from a pool of low-growth

and high-unemployment economies, with enterprises and workers toiling under the burden of bad economic policies and a mountain of debt. We must not use the inability or chronic unwillingness of enforcing the, however misaligned with economic objectives, current tax law as a nice excuse for imposing greater tax burdens, under the pretense of redistribution. Continuing to fuel the spending agenda, the debt-repaying agenda, the failed social security systems by higher taxes will not work, it will only cause further depression in any attempts to re-spur economic growth: without economic growth, any kind of a tax system we can consider will not be able to sustain the revenue stream required for improving the quality of public goods (be that infrastructure or redistribution for that matter.)

If there are available opportunities for anyone to avoid taxes, they will do so now and in the future, as people have always been doing. Whether some selected few global tax evaders are righteously brought to justice, a couple billions are managed to be collected in back taxes, and assuming that debt is repaid or a new road made, not converted to subsidy paychecks—all these will not solve the main problem at work here: the tax systems, structures, and tax rates in most of the world are inordinately high for such a time of crisis and low growth. Unless a consistent effort is made to provide the right tax incentives for all, big and small, by lowering the tax burden until growth returns, we will end up butchering the tax cow rather than keep milking it.

Section 9.2 of the chapter presents the interrelation of tax evasion, shadow economy, and corruption, while Sect. 9.3 describes the determinants of tax evasion. Section 9.4 explores the relationship between the entrepreneurship, tax evasion, corruption, and growth, and Sect. 9.5 infers to the distinction between tax evasion and tax avoidance; Sect. 9.6 provides some policy implications and Sect. 9.7 concludes.

9.2 Tax Evasion: Relations with Shadow Economy and Corruption

Starting from the Allingham and Sandmo documentation (1972), a large bibliography on tax corruption and tax evasion emerged to analyze the determinants, magnitudes, and impacts of prosperity in both developed and developing economies (see Feige 1992, Jung et al. 1994, as well as

articles reviewed for discussion on tax evasion and underground economies). However, few papers analyze tax policies and tax evasion in a context of economic growth models. Roubini and Sala-i-Martin (1995), assuming a positive relationship between tax evasion and tax rates, consider that economic repression is associated with high tax evasion and low economic growth. Lin and Yang (2001) extend the portfolio selection model in the presence of tax evasion from a static to a dynamic context, indicating that the overall increase in output is convex in relation to the tax rate. However, their theoretical model neglects the foreign government, assuming that public goods and infrastructure do not affect the productivity of the private sector. Chen (2003), on the other hand, integrated tax evasion into a standard model of government finance with public capital funded by income tax. In its model, consumers first optimize their levels of tax evasion and, then, the government optimizes the statutory tax rate, tax audit costs, and fines, given the level of tax evasion that consumers decide. Unlike Barro's physical condition, his model suggests that the government must set the legal tax rate above its external cost. Finally, Dzhumashev and Gahramanov (2011) have also adopted a pattern of endogenous growth that has grown with tax evasion adapted to a dynamic portfolio. Their model is similar to that of Lin and Yang (2001) and suggests that tax evasion rates are proportionate to the external costs of public spending.

Shadow economy is defined and measured as an unofficial sector of the economy when certain activities are carried out, and income from these activities creates avoidance of government regulation or tax obligations and the large scale of the shadow economy in developing countries shows inadequacy of tax systems in these countries (Alm and Torgler 2006). In most studies, the shadow economy is assessed on the basis of the tax-gap calculation, assessing the tax differential for avoidance or concealment (Krumplyte 2007). Another important factor affecting the level of declared income is the taxpayer's satisfaction with government policy. Barth et al. (2005) explain tax evasion as a social phenomenon based on the different perception of income tax between different taxpayers and income groups. Cowell (1990) emphasizes that tax evasion requires interaction with social theory because the provision of public goods is relevant to the level of the social environment.

The unofficial economy (shadow economy) should not be linked exclusively to the image of the gray zone media (gray economy), as it would be wrong. It is a natural element of economic/social life and must be considered in such a context. From the point of view of definition, the term shadow economy can be applied to unrecognized activities designed to provide tangible benefits, either in physical or monetary form, generating given effects of value creation and/or distribution (Mróz 2002). The whole subject and subject matter of the shadow economy stems from the overall economic effort based on this review of the modified distinction of three sectors of the economy, according to the AG model. From the point of view of the shadow economy, this fourth area is of fundamental importance and is crucial to the opportunity to create value by minimizing the information gap in the decisions taken—both legal (official economy) and semi-legal (gray economy) and totally unlawful actions (shadow economy is completely illegal) (Raczkowski 2013).

The tax system plays an important role in this model, especially in relation to the gray economy. It should be noted that only the use of tax optimization and tax evasion makes this situation gray. If the taxpayer does not meet these criteria (even to the minimum extent) and pay taxes, then the taxpayer operates within the formal economy. However, in the light of extensive tax engineering by many companies, where the company has a distinct intellectual and technological advantage over the given tax jurisdiction, the fundamental question arises: when does anyone talk about tax optimization and when does this optimization imply deliberate tax evasion? There is no explanation, such as an international company operating in the given area is obviously damaging and does not pay taxes. In the vast majority of cases, this is a formal crime at the heart of the law and should be identified and characterized as such. Such an approach also represents unfair competition, eliminating legitimate businesses from the market. The tax administration of that country, which avoids initiating proceedings in such cases, acts against the State Treasury and reconciles voluntarily with reduced revenues to the entire state budget, contributing to a deficit or public debt (Raczkowski 2014).

Over 40 years have passed since M. Allingham and A. Sandmo published, in 1972, the first most robustly documented tax evasion theory where the taxpayer, as a part of the self-assessment, chooses or declares

real income or perhaps indicates a lower income than actually won. The choice of the taxpayer was dictated by the taxpayer's perception of the probability of tax audit and the potential penalty for his statement against the gain gained by maximizing the amount withheld (Allingham and Sandmo 1972). Many other tax evasion models have been formed many years later, which were considered much later than their practical application to economic turnover. As an example, we can mention the model of VAT fraud in so-called intracommunity deliveries (Fedeli and Forte 2008) where it is relatively easy to mislead the unjustified taxation by the tax authority in connection with the export of a type of goods abroad, within the EU. The practical dimension of this practice was presented descriptively and graphically to the European Commission in March. In addition, over the years, there have been many theories that have been formulated and studies carried out on the black economy in tax evasion aspects (Mróz 2012). Today, 17 research areas can be identified on this subject and are not closed systems but require mutual complementarity and study as part of an interdisciplinary approach, instead.

The permeability of the various research fields is desirable, as it can lead to the synthesis of new research examples and even more accurate estimates of the shadow economy. We have no less than 14 methods of measuring this phenomenon, and each has its advantages and disadvantages (Georgiou 2007):

1. Direct surveys/audits:
   - Microsurveys of the informal sector.
   - Tax audits.

2. Monetary measures
   - Denomination of bank notes.
   - Currency ratio/demand method.
   - Transactions method.

3. Income and expenditure measures
   - GDP income/expenditure discrepancies.
   - Household income/expenditure discrepancies.

- Consumer expenditure: single equation approach.
- Consumer expenditure: demand system approach.

4. Indirect non-monetary indicators/measures
   - Ranking method.
   - Electricity consumption.
   - Detection-controlled estimation.

5. MIMIC (latent variable models).
6. Labor market measures.

The most commonly used measurement method is based on a combination of the MIMIC and the currency demand method or, alternatively, the use of the currency demand approach alone (Schneider and Williams 2013).

Some consider the Currency Demand Approach (CDA) method as the most popular among indirect measurement methods (Ardizzi et al. 2013). Nevertheless, it seems that the MIMIC method is considered the most direct, despite its weaknesses. It should soon adapt to the constant change in tax engineering and tax evasion in an organized system. On the one hand, this requires new data to measure the black market; but, on the other hand, it is difficult to accurately determine the magnitude of the measurement error (due to the network nature of societies and final cost of services or different tax jurisdictions), which may significantly reflect the end result.

9.3 Determinants of Tax Evasion

Andreoni et al. (1998), claim that there are moral and social determinants that influence the decision to avoid taxes. These factors include the feeling of guilt and shame by participants who do not disclose all their revenues. According to the neoclassical approach to tax compliance, there is a straightforward association with significant potential penalties when trying to understand why people pay or evade taxes (Schneider and Ernste 2002).

The causes of the shadow economy are classified according to motivation into three main categories: economic, legal-administrative, and sociopsychological. These groups do not work independently, but as

different-intensity components of the set. Allingham and Sandmo (1972) proposed a microeconomic model for estimating the level of tax evasion. The idea of this model is that the taxpayer, before declaring income, must decide and choose how much revenue he/she will disclose, knowing that there is some possibility of a tax audit. The A-S model assumes that the taxpayer's utility function is linked to control risk, and that his business argument is undeclared tax revenue. The income level is selected to maximize its expected usefulness. This choice depends on the likelihood of detection, risk avoidance, and fines. Yitzhaki (1974) pointed out that with this model an increase in the tax share leads to an ambiguous effect on tax evasion. It means that the tax rate does not affect the conditions of tax evasion and the fact that the sanction is usually not imposed on hidden income, but rather, relates to the unpaid amount of tax has to be taken into account. Interaction between government and taxpayer leads to a variety of balances that depend on parameters such as cost, tax rates, and so on. The fine for not reporting actual income is not proportional to the income declared but to the unpaid part of the tax rate. With this, ambiguity would be prone to extinction (Pantojaa and Rodrigo 2014). There is a big gap between risk aversion that will guarantee such high compliance and much lower individual risk aversion (Frey and Feld 2002). Model A-S can also be rewritten, as the sum of the bribe is analogous to tax evasion (Pruzhansky 2004). This proposal is reasonable because a larger amount of tax evasion may require more financial effort to persuade the auditor to cooperate. Allingham and Sandmo also considered another factor—the influence of personal character, that is, when detected tax evasion can ruin the reputation. The level of deterrence is too low to explain the high degree of tax compliance. To solve this puzzle of tax compliance, many researchers have argued that tax ethics can help explain the high degree of tax compliance (Torgler 2007). The tax ethics—which is not a new idea but has received surprisingly little attention in the literature of tax compliance—can be defined as a moral obligation to pay taxes, a belief in contributing to society by paying taxes.

Jackson and Milliron (1986) created 14 key determinants of tax evasion. These include:

- Demographic determinants—age, gender, education, occupational status;
- Economic determinants—income level, income source, marginal tax rates, sanctions, and probability of detection;
- Behavioral determinants—complexity, fairness, revenue authority initiated contact, compliant peers, ethics, or tax morale.

A study by Riahi-Belkaou (2004) analyzes the relationship between the selected determinants of tax ethics and tax evasion and systematically explores many of the key determinants of tax evasion on a transnational basis—non-economic determinants have the strongest impact on tax evasion: education, source of income, justice, tax ethics. Empirical results show that behavioral and demographic variables have the greatest impact on tax evasion compared to economic variables. This represents an interesting empirical finding that non-economic variables are fundamental and should be explored along with economic variables in "mixed models" of tax evasion between countries (Richardson 2006). The Jackson and Milliron study (1986) examines the impact of ten key variables: age, gender, education, income level, source of income, marginal tax rates, impartiality, complexity, tax, and tax ethics. Uncertainty and the lower the level of individualism, law enforcement, trust in government, and religiosity, the higher the level of tax evasion among countries. The importance of investigating not only institutional quality or governance but also social norms or tax ethics—the inherent incentive to pay taxes—has emerged, as empirical and experimental findings show that deterrence models provide for excessive compliance and excessive tax evasion (Alm and Torgler 2006). Cummings et al. (2009) argue that the size of the underground economy can serve as a useful, if not imperfect, measure of the extent of tax evasion. Thus, the negative correlation between the size of the shadow economy and tax ethics indicates the extent to which the disclosed actions of individuals are related to their attitude toward the payment of taxes (Schneider 2012a, b). All of these analyzes examine the interactions between taxpayers, not just individual incentives to explain tax evasion. Of course, the first step against the phenomenon of tax evasion increases

the importance of combating tax evasion. Failure to act drastically against the phenomenon of tax evasion leads to the perpetuation of a genuine avoidance gene, which is transmitted from generation to generation, with long-term negative effects. Empirical studies of tax implications face many challenges. The theory suggests that tax burdens reduce economic incentives and therefore impose economic activity. Alternatively, high-quality public funds and services can boost economic activity by completing private activities.

Models aim to look at more realistic aspects of tax administration, as well as some factors that are difficult to measure, but are recognized as important—for example, social rules. Complexity is the most important determinant of tax evasion. Other determinants of tax evasion are characterized by education, source of income, justice, and tax ethics—the existence of an ethical or internal incentive to pay taxes, which has been characterized as a "tax moral", which is linked to the level of taxation policy. Cultural heritage messages about the behavior of participants in the tax system, which depends on the level of economic development in the country, the social situation of the country's citizens, and the application of tax instruments. These factors show their importance in the tax evasion process (Šimkūnienė 2009). Taxation and culture are positively linked to social capital, political participation, and migration, but are linked to dissatisfaction with basic public services and unemployment. Russo (2014) considers that self-employed, younger, and less educated people were more likely to avoid taxes and that this trend is positively linked to the crime rate and the unemployment rate but is negatively related to social capital. The determinants of tax evasion by revised writers are clearly identified in a systematic way by empirical analysis. The potential reason for some of the inconsistent conclusions in previous tax evasion studies is that researchers do not take into account the interactions between the key determinants of tax evasion. Most econometric studies are the lack of consistency with the application of the theoretical results, their integration into the analytical processes, or their comparison with the existing models with practical application experience. Often conducted research is difficult to apply because of the great difficulty of applying when such a dilemma arises.

9.4 Entrepreneurship and Tax Evasion

In this section, we discuss the theoretical relationship between entrepreneurship, tax evasion, and corruption. We start the debate with the obvious correlation between tax evasion and corruption. Several studies show that corruption affects tax administration and has a negative impact on the levels of tax revenue collected in a country (Nawaz 2010). Corruption can be manifested in various forms, such as bribery, tax evasion, embezzlement, extortion, protection/nepotism, regulation, collusion between taxpayers and tax collectors, political interventions, rotating doors, and so on (Martini 2014). As a tool to mitigate the burden of excessive taxation on the economy through better allocation of resources and investment facilitation. However, the dominant view clearly indicates that both are negative for the economy in general and for business activity in particular.

Even if the connection between entrepreneurship and tax evasion is seen rarely in the literature, the impact of taxes on business activity has been investigated extensively. Taxation can affect business entry in a number of ways, through investment, risk-taking, and career choice (Bruce and Gurley 2004, Asoni and Sanandaji 2014). Stenkula (2012) identifies three channels linking taxation and entrepreneurship, as highlighted by the theoretical literature—that is, the motivation that affects the effort of the self-employed, the phenomenon of tax evasion that affects the willingness to become self-employed, and to take advantage of opportunities reducing the tax burden and the insurance effect associated with risk taking. Therefore, significant empirical work has been done to analyze the relationship between taxes and entrepreneurship (see Bruce and Schuetze 2004). In this context, a series of documents examine the impact of income and wage taxes on the decision to become entrepreneurs (Bruce 2000; Keuschnigg and Nielsen 2002; Cullen and Gordon 2007; Henrekson, Johansson and Stenkula 2010; Robson and Wren 1999; Folster 2002). Da Rin et al. (2011) investigate how tax policy encourages the creation of new companies by using a database at country level and industries in 17 European countries between 1997 and 2004. They found a significant negative effect of corporate revenue taxation on entry rates. Ferede (2013) underlines the fact that the unfavorable impact of income taxes on entrepreneurial risk taking outweighs tax evasion opportunities

for the self-employed. In addressing the relationship between tax structure and entrepreneurship, Baliamoune-Lutz and Garello (2014) use the Global Entrepreneurship Monitor (GEM) data for business and tax database of the Organization for Economic Cooperation and Growth (OECD). Their panel data show that the progressivity of the tax on higher incomes than average has a strong negative effect on emerging entrepreneurship.

Another branch of literature explores the attitudes of entrepreneurs to tax evasion (Mickiewicz et al. 2012). The key here is the "tax ethic", which is considered as a moral obligation or an inherent motivation to pay taxes, and most of the papers (Yitzhaki 1974) underline the role of the risks collected and the severity of the punishment for Entrepreneurs' Behavior in tax evasion. Unlike tax evasion, tax ethics does not measure individual behavior, but individual attitudes (Lisi and Pugno 2011). Therefore, more recently, business knowledge literature highlights the role of the owner-manager's attitudes and intentions in shaping their behavior and business strategies, as well as the social rules agreed by businesspeople (Mickiewicz et al. 2012). Therefore, the impact of entrepreneurship on the level of tax evasion is remarkable and will be considered in this category of analyzes. The relationship between corruption and entrepreneurship is also explored in the literature. Anokhin and Schulze (2009) suggest that corruption and the quality of institutions play an important role in accounting for inequalities in entrepreneurship and innovation rates across nations. If there is corruption, decisions on entrepreneurs have become dangerous. If the opposite is true, corruption seems to disappear from the entrepreneur's calculations, communication channels are effective, and the market mechanism reduces costs (Rose-Ackerman 2001). In a much more recent document, Dove (2015) shows that judicial independence linked to the fight against corruption is important for business.

At the same time, entrepreneurs are not completely unaware of the practices of corruption. In this respect, Fadahunsi and Rosa (2002) highlight the business advantages of trading illicit goods in Nigeria. They state that, although some research has been done on illegal business activity, the literature has focused on large organizations. However, in their view, an entrepreneur is a "person who travels by the wind, constantly controls the

limits of the permissible, bends the rules and exploits any ambiguity in the law." Consequently, the link between entrepreneurship and corruption is not a one-way street. In this respect, we believe that tax evasion and corruption are among the elements that negatively affect business activity. At the same time, there are some issues of reverse causality, as entrepreneurs have, in turn, an influence on the level of tax evasion and corruption. We then state that there is a long-term relationship between these variables. However, entrepreneurs' contribution to tax evasion and bribery is intuitive and difficult to prove. Thus, our variable of interest is total business activity, while tax evasion and corruption are considered as explanatory variables. We therefore emphasize that there is a negative impact of tax evasion and corruption on entrepreneurship. Another important issue focuses on the distinction between necessity-driven entrepreneurship (NDE) and innovation-driven entrepreneurship (IDE)—permitted by GEM statistics. While IDE observes investment opportunities in the market and has a deeper knowledge of the economic environment, NDEs are forced to orient themselves toward self-employment because they have no other source of income to live. Consequently, even if the level of corruption and tax evasion adversely affects their performance, we expect a lower impact in this case than in the early-stage entrepreneurial activity (TEA).

Entrepreneurship is considered to be one of the main components of economic growth, boosting productivity, boosting employment, and leading to other possible increases in efficiency through the tax system (Cullen and Gordon 2007). In this context, the impact of taxation on attention is given to the long-term impact of tax evasion and corruption on business activity. Several scholars suggest that corruption has a significant negative impact on the levels of tax revenue collected in a country (Nawaz 2010), and that they are interrelated with tax evasion. The fact that countries with higher levels of corruption also tend to have larger shadow economies, which create tax evasion, is generally accepted. At the same time, the existence of tax evasion feeds the environment of corruption, especially in the case of tax administrators. Both phenomena have a negative impact on entrepreneurship and economic growth, discouraging the private sector initiative and boosting market uncertainty. Although a wide range of projects have examined how they affect the different institutional weaknesses in business activity, less attention was paid to tax

evasion and corruption, with few exceptions. Estrin and Mickiewicz (2012) believes that in countries with larger shadow economies people are more or less likely to start business. Similarly, Parker (2003) shows that tax evasion affects professional choice and entrepreneurial activity. Anokhin and Schulze (2009), in turn, argued that better control of corruption may be linked to an increase in the level of entrepreneurship.

However, none of these papers address the problems of inheritance, associated with the fact that entrepreneurs can also influence the level of tax evasion and corruption. On the one hand, entrepreneurs can gain the benefits of illegal transactions, while creating tax evasion (Fadahunsi and Rosa 2002). Thus, several newspapers show that entrepreneurs pay taxes only when the tax ethics are high, when tax evasion is costly, and when the risks are grasped and the severity of the punishment is also high (Allingham and Sandmo 1972, Lisi and Pugno 2011; Mickiewicz et al. 2012). But this conclusion is very simple, because the mechanism of entrepreneurs that create tax evasion is complex. On the other hand, assuming that entrepreneurs can play a role in tax evasion, they could also engage in small-scale practices.

Another important element is the distinction between different types of entrepreneurs. GEM statistics allow differentiation between business-to-business (NDE) and innovation-driven entrepreneurs (IDE). Therefore, because NDEs are forced to conduct business without any other source of income, the impact of corruption and tax evasion on NDE is expected to be less than the impact on total business activity (NDE), including both NDE and IDE. It is noted that entrepreneurship, tax evasion, and corruption are accompanying factors.

In addition, it is found that the level of corruption and tax evasion negatively affects overall business activity in Europe in the long run. In addition, tax evasion has no impact on NDE, and the level of corruption adversely affects the activity of this category of entrepreneurs.

Corruption and tax evasion are not new problems and both are major problems facing current economies. Although these issues are separate and can exist, they can easily be interconnected and strengthened. A more corrupt society can allow more tax evasion as corrupt officials seek more income through bribes. By contrast, higher levels of tax evasion can lead

to corruption by offering more bribery opportunities. Empirical tests that control the intrinsic nature of tax evasion and corruption prove that corruption leads to a large extent to higher levels of tax evasion. Governments have a natural monopoly on the provision of many goods and services provided by the public, and a dishonest and impartial government official will provide these services effectively at their marginal cost. However, it has long been recognized that civil servants often seek self-confidence, and these officials may abuse their public position for personal gain. These include behavior such as the bribery requirement for licensing, the award of contracts for money, the extension of subsidies to contributing manufacturers, stealing from the Treasury, and selling state goods at black market prices. As a whole, these actions can be described as an abusive public service for private gain or "corruption" (Shleifer and Vishny 1993). However, despite the widespread recognition of corruption, only systematic analyzes of causes and results have been made recently.

9.5 Tax Evasion Versus Tax Avoidance

The conceptual distinction between tax evasion and tax avoidance depends on the legality of the taxpayer's transactions. Tax evasion is a violation of the law: when a taxpayer avoids deciding income from work or capital that is, in principle, taxable, he practices an illegal activity that makes him responsible for the administrative or legal actions of the authorities. In tax evasion, he is concerned about the possibility of identifying his actions. Tax avoidance, on the other hand, falls within the legal framework of the tax law. It is to use gaps in the tax law to reduce the tax liability. The conversion of income from work into capital income taxed at a lower rate provides a class of examples of tax evasion. In case of tax evasion, the taxpayer has no reason to worry about possible detection. On the contrary, it is often imperative to make a detailed statement about its transactions in order to ensure that it gets the tax reduction it wants.

If tax avoidance is legal, what is the difference between avoidance and response to high taxes resulting from the impact of prices on demand and supply? Suppose a higher tax on air travel makes me travel by train or that

a higher marginal income tax on labor makes me change a few hours from work into leisure activities. Do I then participate in tax evasion? A simplified definition of tax evasion is one that focuses on the intention of legislators and says that avoidance is a kind of energy that is an unintentional but legal consequence of tax policy. By this definition, the effects of prices may not be described as avoided. However, it is often very simple to find out what the intentions of the politicians are. Formal estimates of the tax impact of revenue often assume that tax bases are stable, suggesting that political intentions are formed on the assumption that price elasticities are zero. But when a tax increase leads to a reduction in the quantity demanded and provided—and thus to lower revenues than the official estimate—one could classify it as an unpredictable result of the tax increase so that the price effect becomes a kind of avoidance. It is clear that the simple definition does not record the distinction between tax evasion as a specific type of activity and effects on demand and supply through the relative effects of prices. Slemrod and Yitzhaki (2002) argue that avoidance consists of actions that do not change the person's drinking basket (which probably includes recreational consumption) and that this distinguishes it from the actual substitution responses. This definition focuses on the absence of relative price changes for consumer goods, but neglects the effects of disposable income increases. Perhaps the boundary between tax evasion and "normal" demand and supply impacts must necessarily remain somewhat vague.

There would not be many reasons to worry about these discriminations if there was not the fact that many people have difficulty seeing the difference between tax evasion and moral avoidance. The house painter who does a little extra work in the black economy violates the law, while the wealthy investor who hires a tax lawyer to look for tax havens does not. However, from a moral point of view, their behavior does not seem to be different. It is obvious that the boundary between what seems to be right and rational does not always coincide with the boundaries between the legal and the illegal. This should be taken into account when considering the theoretical bibliography on tax evasion, where the underlying assumption is that the taxpayer wishes to hide his actions from the tax collector.

9.6 Policy Implications

The behavioral approach for optimal tax policy introduces distinct conclusions and recommendations for the tax authority.

Actually, in terms of social welfare, two different optimal rules are taken:

- In case of tax evaders, the tax authority should impose higher taxation and penalties and increased monitoring.
- While, in the case of honest taxpayers, a mix of tax cuts and increased monitoring is the winning strategy.

This tax policy is in line with the Ayres and Braithwaite (1992) Response Approach, and is consistent with Compensatory Justice. In addition, the different treatment of taxpayers by the tax authority may also be useful in the process of disseminating the tax ethics (thus creating a virtuous circle). In this case, when taxpayers consider that the tax authority acts and decides procedurally, they develop a positive attitude toward taxation (Hartner et al. 2008). On the contrary, if taxpayers believe that they are living in a situation where corruption is unstable and confidence in power is low, the desire to comply with their tax obligations will be reduced (Bird et al. 2008).

This analysis also suggests that in any case an increase in the monitoring rate is recommended. For honest taxpayers, the increase in monitoring is offset by tax relief (i.e. tax and penalty). While for scoundrel-ling taxpayers, the increase in follow-up is also accompanied by higher penalties. One might wonder whether tighter monitoring is the right way to deal with honest taxpayers. A stricter monitoring can be seen as an indication of mistrust, as it is based on power, which is often seen as a contradiction of trust. In fact, power can boost confidence and facilitate cooperation, as power encourages contributions to public goods in societies of high confidence and low confidence (Balliet and Van Lange 2013). Also, low levels of controls and penalties may raise doubts about the authority of the tax authority, and mistrust the effectiveness and credibility of the work of this tax authority (Muehlbacher and Kirchler 2010). In summary, the

authority of the tax authority is an effective way of building confidence in it. In addition, the enhanced monitoring measure should be analyzed along with tax reductions if they act simultaneously on the model. In short, they should not be considered as interrelated policies. Therefore, as regards justice, the "honest taxpayer" strategy is not counterproductive or, at least, it should not have significant negative psychological effects on honest taxpayers.

In short, optimal tax policy should be different between honest and dishonest taxpayers. Unfortunately, such a policy is difficult to apply in a perfect way, since the work of the tax authority focuses on the overall treatment of taxpayers instead of working individually. In this respect, a simple way to implement this double taxation policy is to: examine a country (like Italy) with different tax evasion (or shadow economy) shares between regions. Given the average share of tax evasion (or shadow economy) in the country, the "honest taxpayer" strategy could be applied to regions with a lower rate of tax evasion, and a "tax evasion" policy could be applied to regions with a higher share of tax evasion. Such a strategy, however, does not ensure complete equality and fairness. In fact, in a region of honest taxpayers, a dishonest taxpayer will enjoy a reduction in tax penalties. While an honest taxpayer in an area of dishonest taxpayers will not be able to enjoy tax breaks. However, the key role of monitoring that emerges from the analysis could give this general strategy greater equality and equity at the individual level. Indeed, the use of enhanced monitoring will allow for the detection of many unfair situations, thus punishing the dishonest taxpayer in a frank taxpayer area and rewarding the honest taxpayer in an area of dishonest taxpayers. In addition, honest taxpayers in a region of dishonest taxpayers are likely to have an incentive to show their honesty within the region, thereby facilitating the work of the tax authority and creating a fair interaction between the tax authority and taxpayers (Muehlbacher and Kirchler 2010). Increasing tracking is obviously costly, but it could eventually be funded by an increase in tax revenues stemming from a more coordinated tax evasion effort. In some cases, what is lacking is the willingness to implement this monitoring and not its applicability. Tax evasion is in fact often seen in some countries as a minor crime and tax evasion is considered to be intelligent (Hofmann et al. 2008).

Optimal tax theory puts a very low emphasis on the inherent motives as to why people pay taxes—that is to say, tax ethics. This is a non-negligible void, since the tax ethic is able to explain the high degree of tax compliance in many countries where the level of deterrence is too low.

Following this line of conduct of tax compliance literature, this document studies the correct behavior of the tax authority, in terms of social welfare, in the presence of honest taxpayers and tax evaders. It is precisely this document that incorporates the positive link between tax compliance and tax ethics in the social welfare service and draws on optimal tax policy. The main result is that the right combination of deterrents to prevent tax evasion depends on taxpayers' ethics. For honest taxpayers, increased tracking should be offset by tax relief. Instead, in case of tax evasion, the increase in monitoring should be accompanied by higher penalties. Therefore, more stringent monitoring is recommended in each case, as the authority of the tax authority is an effective way to build trust in the tax authority. As a result, the behavior approach for optimal tax policy leads to different conclusions and recommendations for the tax authority.

Schneider (2015) proposed the following policy measures to reduce the shadow economy, corruption, and tax evasion in the case of Greece:

1. *Shadow economy*

- To reimburse the VAT on labor-intensive services in order to strengthen the incentive to supply those services in the official economy.
- Household investments should be tax deductible; hence, if you need a bill, you cannot do it in the shadow economy.
- The use of the policy instruments of (increased) punishment and detection rates should be applied in special areas where the shadow economy activities are connected with organized crime (e.g. the case of prostitution).
- Decrease of the public burden of taxes and social security payments as part of the wage cost.

2. *Tax evasion:*
   Five concrete measures against tax evasion and for a more efficient tax collection:

- A tax amnesty could be installed. If evaded tax revenues are declared and/or brought back to Greece, a flat rate of 25% or 30% should be paid. Afterwards, a high punishment should be installed.
- The introduction of a monetary incentive scheme for tax collectors; for example, 5% of those additionally collected revenues are used to better equipment for them and to pay a bonus.
- Potential evaders could get a letter from the tax office arguing that there is some evidence of potentially evaded tax revenues, offering them to pay a 20% tax rate of this sum and nothing further happens, or they have a tax inspection with all consequences.
- Every Greek household can deduct a certain amount of paid VAT, for example, €500 out of a collection of a turnover of €7000 and bills showing the VAT.
- Small businesses or enterprises pay a fixed amount of taxes of €1000 (5000) from a turnover from €15,000 to 30,000 (31,000 to 50,000) and the normal rate from €51,000 turnover. From the tax authorities, only the turnover is checked.

3. *Corruption:*
   A successful fight against corruption is the third big policy challenge for the Greek government—four measures:

- Firms which provide bribes and/or are corrupt should be banned from public contracting for three to five years.
- Whistle blowing (blowers) should be actively supported by government institutions. (Monetary) incentives should be installed for the detection of corruption.
- Public employees and politicians should immediately lose their offices and pension rights if they take bribes.
- Strict compliance measures should be installed.

9.7 Conclusions

Tax evasion is a widespread global phenomenon. The high personal income tax rates are partly responsible for high levels of tax evasion everywhere. The high personal income tax rates are often also associated with adverse effects on economic activity.

Tax evasion is also an important socioeconomic problem in all societies of the world, regardless of the type of tax system or the level of economic development in the country; therefore, cheating with tax incentives or tax evasion needs to be analyzed in a wider context—Shadow Economics. Economic studies analyze the interaction between taxpayers, the tax burden, the social environment, and the country's economic development to make a comprehensive assessment. Theoretical research analyses the interaction between taxpayers' behavior and their social status and not just reasons for individual motivation to explain the level of tax evasion, and, as a result of the research model framework, the only integration of detection models and the large data-processing capability, combined with a psychosocial portrayal of tax evaders, will allow their rapid recognition, although this does not mean they have committed an illegal act.

Evidence suggests that tax evasion and tax evasion are a general and persistent problem in every country with serious negative consequences. Tax evasion represents a significant share of the shadow economy even in advanced industrialized countries around the world. Slemrod and Yitzhaki (2002) estimate that around 17% of income taxes are not paid in the United States, while the Tax Justice Network (2011) estimates that average tax evasion rates in 119 developed and developing countries around the world exceed 50% of their healthcare expenditure. In addition, Schneider (2000) reports that the shaded product equals 39% of the real GDP size in the developing countries, 23% in the transition countries, and 14% in the OECD countries. Schneider and Ernste (2000) Schneider and Bajada (2003) suggest that the shadow economy and associated tax evasion increases the recession and increases the volatility of business circles.

A permanent question is whether taxation is bad for growth. A dominant view is that taxation is detrimental to growth. Taxation reduces the reward of business innovation and thus discourages investment that is important for growth. This prospect emphasizes the minimization of the

tax burden on successful innovators in order to encourage more people to try to become successful innovators. An alternative view argues that taxation should not be analyzed independently of the environment and the institutional environment. Indeed, taxation is central to many aspects of this environment: tax revenues finance public infrastructure, education and schools, legal systems, and much more. Entrepreneurs and innovators are often reliant on these public goods, and higher taxation can boost growth if they support a stronger supply of public goods because it increases expected returns on business. Tax increases and redistribution may help to increase investment opportunities in an incomplete credit market economy (Banerjee and Newman 1993; Galor and Zeira 1993; Benabou 1996; Aghion and Bolton 1997).

The overall impact of tax on growth depends on how tax incentives are impacted by the effects of public goods. There are two possible consequences of this statement. Firstly, the relationship between growth and taxation is likely to be nonlinear, as marginal incentive effects and the impact of public goods will vary significantly depending on the existing levels of taxation—the former will become more painful, and the latter will become less effective as taxation will continue to increase. Secondly, while the impact of incentives may be clear, the impact of public goods is based on a crucial hypothesis: that taxes are spent on public goods rather than simply inefficiently spent or disposed of. We therefore foresee that the optimal tax rate for a very efficient government will be higher than the optimal rate for the most corrupt. The good public outcome obviously explains why some Scandinavian countries manage to innovate and develop at a steady pace with taxes that are high and extremely progressive, while other countries suffer.

Plato in his *Republic* book states "When there is an income tax, the just man will pay more and the unjust less on the same amount of income."

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Part III

Non-Income Taxation as Pure Political Leverage

10

Bank Transaction Taxes: International Evidence and Potential Implications for Greece

Hiona Balfoussia, Dimitris Malliaropulos, Dimitris Papageorgiou, and Athanasios Tagkalakis

10.1 Introduction

This chapter studies a particular case of financial transaction tax, namely, the bank transaction tax—that is, a tax imposed on any payment, withdrawal, or transfer made via the banking system. We review the relevant academic literature on countries which have employed the tax. Moreover, we use Greece as a case study of what the bank transaction tax would imply for a peripheral euro-area economy during the crisis, both in the context of a meta-analysis of existing literature as well as using a micro-founded dynamic stochastic general equilibrium (DSGE) model with a detailed financial sector and an appropriate shock. We conclude that, while the bank transaction tax has some advantages, its imposition also has a number of negative implications.

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The remainder of this chapter is structured as follows: Section 10.2 presents a brief history of bank transaction taxes as employed in different economies, mainly in Latin America. Subsequently, it explores their revenue performance, and their implications for bank intermediation and economic growth. Section 10.3 first presents a meta-analysis of the possible implications of a bank transaction tax on the Greek economy. Next, it employs a DSGE model calibrated to the Greek economy, to formally explore the implications of a bank transaction tax—viewed as a financial shock—on the economy. The dynamic responses to such a shock and their transmission channels are explored for the benchmark calibration as well as for a case were the banking sector is under financial distress. Section 10.4 offers some concluding remarks.

10.2 Bank Transaction Taxes: A Review of Existing Evidence

A Brief History: Mostly a Latin American Phenomenon

First applied in 1898 by the US government as a 2 cent tax on bank checks to finance the Spanish-American war, a century later many Latin American countries have used similar taxes to boost fiscal revenues. As of end-2004, such taxes were in effect in six Latin American countries: Argentina, Brazil, Bolivia, Colombia, Peru, and Venezuela. Ecuador has also levied such taxes in the past.

Bank transaction taxes have generally been introduced as an emergency means of raising revenue in times of, and in response to, economic crises (see Table 10.2 in the Appendix). In each case, the tax was introduced on a temporary basis, although in some cases it was subsequently extended. Tax rates have ranged between 0.2% and 2.0%, varying widely both across countries and over time. Moreover, bank transaction taxes have not been levied continuously in most countries.

The list of taxable financial transactions also differs across countries. In most cases, only bank debits, including check clearance, withdrawals from ATM outlets, and loan repayments are liable for taxation. In addition, in Argentina in 2001–2004 and Ecuador in 1999–2000, bank credits were also taxed. In Colombia, only bank credits were taxed during 1999–2004.

In most countries, certain institutions (e.g., government agencies and charitable organizations) and specific transactions (e.g., transactions with the central bank and among different government agencies) are exempted from taxation. In Argentina (through 1992 and April–December 2001) and Ecuador, a portion of the bank transaction tax liability was creditable against the income or value-added taxes.

Bank transaction taxes have been a particularly attractive source of revenue for Latin American policymakers, as their collection is relatively efficient and inexpensive. Collection and administration costs of these taxes are low, since financial institutions themselves collect the tax on behalf of the government. In addition, the government enjoys an immediate and continuous revenue stream, since the tax is collected from transactions in real time. They also offer the appeal of a large tax base, so that relatively high tax revenues can be raised with a fairly low rate (Kirilenko and Summers 2003).

Their prevalence in Latin America relative to other taxes is in part explained by the fact that countries in this region tend to have revenues from income taxes and value-added taxes that are significantly below those obtained in more developed countries for similar statutory rates. For example, taxes on income, profits, and capital gains corresponded, on average, to 11.4% of GDP in OECD countries between 1990 and 2005. In contrast, the average revenue from these same taxes is only 3.9% of GDP in the Latin American countries considered in Restrepo (2013). This underpins the importance of bank transaction taxes as a fiscal policy tool and helps explain their popularity in Latin America. Bank transaction taxes have also been used, particularly in Brazil and Ecuador, as an instrument to reduce tax evasion by taxing the informal economy and by allowing for the cross-checking of information on income taxes and financial transactions.[1]

Revenue Performance

Revenue from bank transaction taxes in Latin America has varied widely, but has typically been in the order of 1% of GDP (Honohan and Yoder 2010). According to the analysis by Restrepo (2013), the average bank account debit tax rate in seven Latin American countries (Argentina, Bolivia, Brazil, Colombia, Ecuador, Peru, Venezuela) in the period 1986–2005 was 0.49% and the average annual revenue yield was 1.05% of GDP.

Revenue performance has been particularly strong in Brazil and Colombia, with annual revenue in the range of 0.6–1.6% of GDP for effective tax rates in the range of 0.2–0.38% (see Table 10.3 in Appendix). However, bank transaction tax productivity—as measured by the ratio of revenues over GDP to the average statutory rate—has in general been on a declining trend. In addition, there is a strong negative nonlinear correlation between bank transaction tax rate and productivity (Baca-Campodonico et al. 2006). This nonlinear relationship implies that revenue performance declines exponentially as tax rates increase.

Baca-Campodonico et al. (2006), examining six Latin American countries that have levied bank transaction taxes since the late 1980s (Argentina, Brazil, Colombia, Ecuador, Peru, and Venezuela), conclude that bank transaction taxes do not provide a reliable source of revenue, especially over the medium term. They show that:

- *For a given tax rate, bank transaction tax revenue declines in real terms over time*. Hence, *in order to meet a given revenue target, the tax rate needs to be raised repeatedly*.
  - More specifically, a 0.1 percentage point increase in the statutory tax rate reduces the revenue base (or productivity) by 0.18–0.30%.
  - Thus, increasing the tax rate erodes the tax base by more than it raises revenue.
- *Increasing the bank transaction tax rate accelerates the speed at which the tax base is being eroded*—that is, over time, revenues decrease much more for higher bank transaction tax rates.

  - More specifically, for a tax rate of 0.2%, the second-year revenue is 9% lower than during the first year the tax is in effect, while for a tax rate of 0.3%, bank transaction tax revenue is nearly 30% lower in the second year compared to the first year.

- *Bank transaction taxes yield more revenue in countries with deeper financial systems or higher inflation, and deposit-lending interest spreads*. This is because:
  - The deeper the financial system, the higher the opportunity cost of conducting transactions outside banks.
  - The higher the inflation, the greater the opportunity cost of holding money.
  - The higher the interest spread, the greater the risk of lending money outside banks.

Negative Implications for Bank Intermediation and Economic Growth

Moving beyond the question of revenue performance, the key concern raised with respect to bank transaction taxes is that they are likely to result in disintermediation—that is, in the removal of funds from financial intermediaries—with the purpose of conducting transactions in some other way, for example, in cash, by barter, through accounts not subject to the tax, as well as other informal (non-bank) settlements of payments between firms.

There is, indeed, substantial evidence in support of such concerns:

- ***Substitution into cash***: In Brazil, Colombia, and Ecuador, the ratio of currency outside banks to narrow money has increased by between 15% and 150%.
- ***Off-shore bank transactions***: Argentinians opened bank accounts in Uruguay and Ecuadorians used banks in Aquas Verdes, a town on the border with Peru.
- ***New instruments and practices***: In Colombia, the volume of cleared checks was cut in half from an average of approximately 60,000 per

month to approximately 30,000 per month after the introduction of the tax. In Brazil, financial institutions offered investment and privatization funds in which an investor pays the tax only at the time of the initial transaction. In many countries, checks would not be deposited in bank accounts but would rather be successively endorsed, being transferred from payee to payee. Thus, Brazil at some point introduced legislation to prohibit more than one check endorsement.

- ***Trading volume decline***: In Colombia, the volume of transactions in the interbank, foreign exchange, and money markets declined to approximately 20% of the average pre-tax level, while the volume in the T-bill market declined to approximately 10% of the average pre-tax level. In Venezuela, trading volume on the stock exchange dropped by 47% compared to the previous year.

Kirilenko and Perry (2004) estimate the degree of disintermediation (a permanent erosion of the tax base) resulting from the introduction of a bank transaction tax. The authors show that the introduction of a bank transaction tax results, on average, in disintermediation of between 4 and 44 cents for every dollar in revenue. According to their estimation, financial disintermediation has reached maximum values of 46 cents in Argentina, 58 cents in Brazil, 64 cents in Colombia, 48 cents in Ecuador, 66 cents in Peru, and 49 cents in Venezuela. These numbers are equivalent to a loss of over 0.5% of GDP due to disintermediation. The authors also find that disintermediation effects tend to cumulate as the taxes remain in place.[2]

The higher preference for cash results in a lower availability of deposits as a source of funding for banks, leading to a lower provision of bank credit to the private sector. According to Restrepo (2013), the introduction of a bank account debit tax rate at the average statutory rate of 0.49% results in a reduction of bank credit to the private sector over GDP ratio of 10.3%. Note that the author points out that such a reduction took place despite the fact that in some countries (e.g., Argentina) legislation had been enacted prohibiting the use of cash in large-value transactions and requiring the payment of wages and salaries into bank accounts.

Bank disintermediation, in turn, negatively affects aggregate economic growth. Effects can be traced at the industry level, with the growth prospects of industries that are more dependent on external finance or that

have fewer tangible assets being hurt the most. More specifically, following the introduction of a bank transaction tax at the average 0.49% statutory rate, annual output growth is 3.6% slower for industries with high dependence on external financing relative to those sectors that are inherently low users of external financing, while industries with low asset tangibility grow 4.3% slower per year than industries with high asset tangibility in the years following the tax implementation (Restrepo 2013).

Kirilenko and Summers (2003) point out that disintermediation results not only in a reduction of the tax base, but also in a possible misallocation of financial resources. Given that a fundamental role of the banking system is to allocate capital efficiently, the implementation of a bank transaction tax (which constitutes an adverse shock to the banking system) reduces the efficiency of the allocation function performed by the banking system and this, in turn, lowers an industry's ability to take better advantage of its investment opportunities (Restrepo 2013).

Overall, the bulk of the aforementioned research concludes that, at low rates and for a limited time, bank debit taxes can be used as a quick and effective way to generate revenue. At higher rates and/or over an extended period of time, the taxes lead to significant welfare losses and financial disintermediation, thereby undermining savings, investment, and growth prospects.

10.3 The Case of Greece: An Exploratory Analysis

Potential Implications of a Bank Transaction Tax: A Meta-Analysis

Distinct Characteristics of the Greek Case

Greece is a full member of the European Monetary Union and thus policies pertaining to the banking sector are decided in agreement with EMU and EU institutions and in accordance with the relevant regulations. While a bank transaction tax was not in place prior to the

outbreak of the financial crisis, its possible imposition was *inter alia* included in the public discourse on which policy tools Greek governments should employ to boost tax revenue. This discussion was part of the broader postcrisis policy debate, which emphasized the need to reform financial regulation so as to ensure that the financial sector itself bears some of the cost of crisis prevention and management (IMF 2010).[3] Indeed, the adoption of a bank transaction tax may have been actually considered as a possible policy tool at some stage of the sovereign debt crisis. Although the measure was in fact never adopted, we use Greece as a case study for examining the potential implications of a bank transaction tax on a peripheral EU economy during the crisis. It should be noted from the outset that our analysis does not focus on the impact of introducing a bank transaction tax on public finances, but rather on the transmission channels of such a measure on the economy. Thus, we do not provide a normative analysis of whether this tax measure is superior or inferior to other fiscal policy measures.

All in all, it can be argued that the imposition of such a tax during the Greek sovereign debt crisis would have had negative effects on both the real economy and the financial sector. Following a period of heightened uncertainty about the country's prospects within the EMU, a substantial proportion of the stock of cash in circulation had been withdrawn from the banking system and was being held in hoards. As a result, there would have been plentiful means of payment to be used for cash transactions, thus bypassing the banking system. This situation can be compared with the previously examined Latin American experience where such readily available stocks of non-bank means of payment may not have existed, yet, notably, the imposition of a bank transaction tax nonetheless caused substantial switches out of bank-intermediated transactions. *A fortiori* then, in Greece, it would have been relatively easier to divert transactions away from the banking system, albeit without necessarily bringing about a further reduction in the stock of outstanding deposits. This means that the main mechanism through which the bank transaction tax normally undermines aggregate output growth according to the literature—that is, via a reduction in deposits and therefore in the lending capacity of banks—might not necessarily have become as

operative in the case of Greece. On the other hand, the tax base itself (i.e., the volume of bank-intermediated transactions) might have declined more steeply in Greece than the experience with Latin America would suggest. The reason is that inflation in Greece was—and still is—projected to remain low or even negative for a prolonged period, implying that the opportunity cost of holding cash is low in Greece, in contrast to the experience of Latin American economies which underwent very high inflation episodes in the 1990s.

Moreover, the imposition of a bank transaction tax in Greece would act as a disincentive for the return of deposits to the banking system, thus increasing the fragility of the banking system. It would also deter the use of electronic means of transaction (credit and debit cards) and would provide incentives for conducting transactions in cash or through other informal (non-bank) settlement of payments, thus boosting tax evasion and the underground economy.

To address these concerns, additional measures might have been deemed necessary, such as the imposition of tougher capital controls in order to contain the cash withdrawal. All the above can be viewed as working against the primary policy goals for the Greek financial sector at the time, which were the gradual abolition of capital controls, the return to financial normality, and the strengthening of the banking system.

Approximating Potential Revenue from a Bank Transaction Tax

In order to roughly estimate the potential revenues from the imposition of a bank transaction tax, we first need to define the tax base. We use Bank of Greece data for 2015 to make an illustrative example. Domestic transactions that could be liable for tax are the following:

- **Credit transfers**, which involve funds transferred between accounts (of the same or different beneficiaries, in the same or in other banks). Credit transfers involve transactions initiated both in paper-based form and electronically. Data also include credit transfers performed via ATMs with a credit transfer function. Credit transfers involving

cash at one or both ends of the payment transaction—for example, money and postal orders—are also included. Credit transfers used to settle outstanding balances of transactions using cards with a credit or delayed debit function are also included, as these are separate payments from the cardholder to the card issuer.

- **Direct debit**, where a payer's payment account is debited, potentially on a recurrent basis, on the basis of the payer's consent.
- **Card payments with cards issued by resident PSPs (except cards with an e-money function only)**, referring to transactions performed using cards with a debit, credit, or delayed debit function at a terminal or via other channels. Transactions reported by payment service include data on card transactions at virtual POSs, for example, over the Internet or the telephone. As mentioned before, credit transfers at ATMs are not included but are shown under "Credit transfers". Payments with cards issued by merchants, that is, retailer cards, are excluded, except where the retailer card was issued in cooperation with a PSP, that is, co-branded.
- **Checks**, which are related to written orders from one party to another. Cash withdrawals with checks are included, but cash withdrawals using bank forms are not (these are reported as "OTC cash withdrawals"). Checks issued but not submitted for clearing are not included.
- **E-money payment transaction**, whereby a holder of e-money transfers e-money value from his/her own balance to the balance of the beneficiary, either with a card on which e-money can be stored directly or with e-money accounts.
- **Cash withdrawals from ATMs**.

Transactions related to any form of deposits are not included. The volume of transactions which would have been liable for a bank transaction tax in 2015, the year when the possibility of such a tax most frequently appeared in the public discourse, are estimated at around 427 billion euros. Assuming alternative scenarios for the level of tax (ranging from 0.1% to 0.4%), and using the empirical findings from other countries (see, e.g., Baca-Campodonico et al. 2006), according to which the productivity of tax revenues declines when the rate increases (resulting in effective rates between 0.1% and 0.37%), revenue estimates range from 427 million euros to 1.581 million euros or 0.24% to 0.90% of 2015 GDP.

Note that these estimates have been calculated based on domestic transaction and GDP figures for a single year. They do not incorporate projections about the evolution of domestic transactions and GDP figures in subsequent years. Taking this into account, these revenue estimates should be considered as the upper bound of revenue for the first year of imposition of a bank transaction tax. For subsequent years, the tax yield of the bank transaction tax should be projected as declining gradually, given that disintermediation would be expected to increase, in line with international evidence (see Baca-Campodonico et al. 2006 and Kirilenko and Perry 2004), thus eroding the tax base.

Potential Implications of a Bank Transaction Tax: Insights from a DSGE Model

In order to delve deeper into the possible underlying mechanics of a bank transaction tax, we employ a DSGE model with a detailed financial sector, and we explore the potential implications of such a tax on the Greek economy. There is a growing literature which incorporates a banking sector and financial frictions in DSGE models. However, while there have been several attempts to embed various types of financial transaction taxes within macro models (see *inter alia* Lendvai et al. 2013, for a DSGE model and Song and Zhang, 2005, for a partial equilibrium approach), the impact of a bank transaction tax has not, to our knowledge, been examined so far.

The model we adopt in this analysis is the "3D" model of Clerc et al. (2015), which has a fully developed micro-founded private sector as well as a detailed financial sector featuring bank intermediation, banking capital regulations and strategic bank default in equilibrium. Private agents, namely entrepreneurs and households, are also allowed to strategically default in equilibrium, thus yielding a model which is rich in terms of the interactions between the real and financial sectors. A bank transaction tax is essentially a financial shock, a tax imposed and collected entirely through the banking system. It follows that the transmission channels at play are likely to be the same ones via which any shock to the financial sector is propagated through the economy. Hence, a DSGE model with a financial sector such as the 3D model is appropriate for the purpose of this analysis.

Balfoussia and Papageorgiou (2016) consider the model's ability to fit the Greek data. They explore the insights the model provides as regards the linkages between the aforementioned three sectors of the Greek economy and try to interpret the Greek economic and financial crisis through the lens of this tool. We use their calibration as a basis for our attempt to explore the implications of introducing a tax on bank transactions, that is, on transfers, cash withdrawals, and electronic transactions. The goal is to describe the channels through which such a tax affects the economy and to provide visual representations and indicative quantitative estimates of the transmission mechanism.

The 3D Model[4]

The model economy consists of households, entrepreneurs, and bankers. We summarily present their main characteristics.

Households are infinitely lived and can consume, supply labor in a competitive market, and invest in housing. There are two types of households, patient and impatient, that differ in their subjective discount factor. In equilibrium, patient households are savers and impatient households are borrowers. The latter negotiate limited liability non-recourse mortgage loans from banks using their holdings of housing as collateral. They can individually choose to default on their mortgage, with the only implication of losing the housing units on which the mortgage is secured.

Entrepreneurs are the owners of the physical capital stock and finance their purchases of physical capital with their inherited net worth and with corporate loans provided by banks. Loans to entrepreneurs, like mortgage loans, are also subject to limited liability and risk of strategic default.

Bankers are the providers of inside equity to perfectly competitive financial intermediaries—the "banks". The latter provide mortgage and corporate loans that are financed from saving households' deposits and from bankers' equity injections. The banks are subject to regulatory capital constraints and must back a fraction of their loans with equity funding. They too operate under limited liability and may default due to both idiosyncratic and aggregate shocks to the performance of their loan portfolios. In the case of a bank default, deposits are fully guaranteed by a deposit insurance agency (DIA) funded by a lump-sum tax. However, as a result,

depositors require a deposit risk premium in order to entrust their deposits in the banks, which is a function of the default probability of banks, thus raising the funding cost of banks when their default risk is high.

Finally, regarding the production sector, there are perfectly competitive firms that produce the final good and new units of capital and housing.

Households

There are two representative dynasties of *ex ante* identical infinitely lived households that differ only in their subjective discount factor. One dynasty, indexed by the superscript s, is made up of relatively patient households with a discount factor β^s. The other dynasty, identified by the superscript m, consists of more impatient households with a discount factor $\beta^m < \beta^s$. In equilibrium, the patient households save and the impatient households borrow from banks.

The dynasty of patient households maximizes

$$E_t\left[\sum_{i=0}^{\infty}\left(\beta^s\right)^{t+i}\left[\log\left(c_{t+i}^s\right)+v^s\log\left(h_{t+i-1}^s\right)-\frac{\varphi^s}{1+\eta}\left(l_{t+1}^s\right)^{1+\eta}\right]\right]$$

subject to

$$c_t^s + q_t^H h_t^s + d_t \le w_t l_t^s + q_t^H\left(1-\delta_t^H\right)h_{t-1}^s + \tilde{R}_t^D d_{t-1} - T_t + \Pi_t^s$$

where c_t^s denotes the consumption of non-durable goods, h_t^s denotes the total stock of housing, l_t^s denotes hours worked, η is the inverse of the Frisch elasticity of labor supply, and v^s and φ^s are preference parameters. Also, q_t^H is the price of housing, δ_t^H is the depreciation rate of housing units, and w_t is the real wage rate. As owners of the firms, households receive profits, Π_t^s, that are distributed in the form of dividends. $\tilde{R}_t^D$ is defined as

$$\tilde{R}_t^D = R_{t-1}^D\left(1-\gamma PD_t^b\right)$$

where R_t^D is the gross fixed interest rate received at t on their deposits, and PD_t^b is the economy-wide probability of bank default in period t. In the case of a bank default, the principal and the interest of bank deposits are fully guaranteed by a deposit insurance agency (DIA) which is funded through a lump-sum tax T_t. However, it is assumed that households face linear transaction costs denoted by γ which, as seen in the above equation, create a wedge between the return on deposits and the risk-free interest rate and a link between the probability of default and the cost of funding for the banks. The presence of a deposit risk premium raises the funding cost for banks while, in addition, the fact that this premium depends on the economy-wide default risk rather than on their own default risk induces an incentive for banks to take excessive risk and provides a rationale for macroprudential policy.

Impatient households have the same preferences as patient households except for the discount factor, which is $\beta^m < \beta^s$. The budget constraint of the representative dynasty is:

$$c_t^m + q_t^H h_t^m - b_t^m \le w_t l_t^m + \int_0^\infty \max\left\{\omega_t^m q_t^H \left(1-\delta_t^H\right) h_{t-1}^m - R_{t-1}^m b_{t-1}^m, 0\right\} dF^m\left(\omega_t^m\right)$$

where b_t^m is aggregate borrowing from the banks and R_{t-1}^m is the contractual gross interest rate on the housing loan agreed upon in period $t-1$. ω_t^m is an idiosyncratic shock to the efficiency units of housing owned from period $t-1$ that each household experiences at the beginning of each period t. The shock is assumed to be independently and identically distributed across the impatient households and to follow a lognormal distribution with density and cumulative distributions functions denoted by $f(.)$ and $F(.)$, respectively. This shock affects the effective resale value of the housing units acquired in the previous period, $\tilde{q}_t^H = \omega_t^m q_t^H \left(1-\delta_t^H\right)$, and makes default on the loan *ex post* optimal for the household whenever $\omega_t^m q_t^H \left(1-\delta_t^H\right) h_{t-1}^m < R_{t-1}^m b_{t-1}^m$. The term in the integral reflects the fact that the housing good and the debt secured against it are assumed to be distributed across the individual households that constitute the dynasty.

After the realization of the shock, each household decides whether to default or not on the individuals loans held from the previous period.

Then, the dynasty makes the decisions for consumption, housing, labor supply, and debt in period t and allocates them evenly across households. As shown in Clerc et al. (2015), individual households default in period t whenever the idiosyncratic shock ω_t^m satisfies:

$$\omega_t^m \leq \bar{\omega}_t^m = \frac{x_{t-1}^m}{R_t^H}$$

where $R_t^H = \frac{q_t^H\left(1-\delta_t^H\right)}{q_{t-1}^H}$ is the *ex post* average realized return on housing and $x_t^m = \frac{R_t^m b_t^m}{q_t^H h_t^m}$ is a measure of household leverage.

Since each of the impatient households can default on its loans, the loans taken in period t should satisfy a participation constraint for the lending banks, whose interpretation is that the expected gross return for bankers should be at least as high as the gross equity return of the funding of the loan from the bankers, $\rho_t \phi_t^{\mathrm{H}} b_t^m$, where ρ_t is the required expected rate of return on equity from bankers (defined below) and ϕ_t^{H} is the capital requirement on housing loans. Thus, the problem of the representative dynasty of the impatient household is essentially a contracting problem between the representative dynasty and its bank.

Entrepreneurs

Entrepreneurs are risk-neutral agents that live for two periods. Each generation of entrepreneurs inherits wealth in the form of bequests and purchases new capital from capital good producers and depreciated capital from the previous generation of entrepreneurs, which they then rent out to final good producers. They finance capital purchases with their initial wealth and with corporate loans from banks, b_t^e. The entrepreneurs derive utility from the transfers they make to the patient households in period $t+1$ (dividends), c_{t+1}^e, and the bequests they leave to the next cohort of entrepreneurs (retained earnings), n_{t+1}^e, according to the utility function $\left(c_{t+1}^e\right)^{\chi^e}\left(n_{t+1}^e\right)^{1-\chi^e}$, $\chi^e \in (0,1)$. Thus, the problem of the entrepreneurs in period $t+1$ is:

$$\max_{\left\{c_{t+1}^e, n_{t+1}^e\right\}} \left(c_{t+1}^e\right)^{\chi^e} \left(n_{t+1}^e\right)^{1-\chi^e}$$

subject to $c_{t+1}^e + n_{t+1}^e \leq W_{t+1}^e$, where W_{t+1}^e is the wealth resulting from the activity in the previous period.

The optimization problem of the entrepreneur in period t is to maximize expected wealth:

$$\max_{\left\{k_t, b_t^e, R_t^F\right\}} E_t\left(W_{t+1}^e\right)$$

subject to the period t resource constraint $q_t^K k_t - b_t^e = n_t^e$ and the banks participation constraint, where $W_{t+1}^e = \max\left\{\omega_{t+1}^e\left(r_{t+1}^k + \left(1-\delta_{t+1}\right)q_{t+1}^K\right)k_t - R_t^F b_t^e, 0\right\}$, q_t^K is the price of capital at period t, k_t is the capital held by the entrepreneur in period t, b_t^e is the is the amount borrowed from the bank in period t, r_t^k is the rental rate of capital, δ_t is the depreciation rate of physical capital, and R_t^F is the contractual gross interest rate of the corporate loan. ω_{t+1}^e is an idiosyncratic shock to the efficiency units of capital which is independently and identically distributed across entrepreneurs. It is realized after the period t loan with the bank is agreed to, and prior to renting the available capital to consumption good producers on that date. Similar to the case of borrowing households, entrepreneurs default on their loans whenever $\omega_{t+1}^e\left(r_{t+1}^k + \left(1-\delta_{t+1}\right)q_{t+1}^K\right)k_t < R_t^F b_t^e$. As shown in Clerc et al. (2015), the entrepreneur will repay their corporate loan in period $t+1$ whenever the indiosyncratic shock ω_{t+1}^e exceeds the following threshold:

$$\bar{\omega}_{t+1}^e \equiv \frac{R_t^F b_t^e}{R_{t+1}^K q_t^K k_t} \equiv \frac{x_t^e}{R_{t+1}^K}$$

where $R_{t+1}^K = \dfrac{r_{t+1}^k + \left(1-\delta_{t+1}\right)q_{t+1}^K}{q_t^K}$ is the gross return per efficiency units of capital in period $t+1$ of capital owned in period t, $x_t^e = \dfrac{R_t^F b_t^e}{q_t^K k_t}$ denotes

the entrepreneurial leverage that is defined as the ratio of contractual debt repayment obligations in period $t+1$, $R_t^F b_t^e$, to the value of the purchased capital at t, $q_t^K k_t$.

Similar to the case of impatient households, the interpretation of the participation constraint is that, in equilibrium, the expected return of the corporate loans must equal to the expected rate of return on equity, ρ_t, that the bankers require for their contribution to the funding of loan, $\phi_t^F \left(q_t^K k_t - n_t^e\right)$, where ϕ_t^F is the capital requirement applied on corporate loans.

Bankers

Like entrepreneurs, bankers are risk-neutral and live for two periods. They invest their initial wealth, inherited in the form of a bequest from the previous generation of bankers, n_t^b, as bank's inside equity capital. In period $t+1$, the bankers derive utility from transfers to the patient households in the form of dividends, c_{t+1}^b, and from the bequests left to the next generation of bankers (retained earnings), n_{t+1}^b, according to the utility function $\left(c_{t+1}^b\right)^{\chi^b} \left(n_{t+1}^b\right)^{1-\chi^b}$, where $\chi^b \in (0,1)$. Thus, the problem of the banker in period $t+1$ is:

$$\max_{\left\{c_{t+1}^b, n_{t+1}^b\right\}} \left(c_{t+1}^b\right)^{\chi^b} \left(n_{t+1}^b\right)^{1-\chi^b}$$

subject to

$$c_{t+1}^b + n_{t+1}^b \leq W_{t+1}^b$$

where W_{t+1}^b is the wealth of the banker in period $t+1$.

Regarding the decision problem of the bankers in period t, the banker born in period t with initial wealth n_t^b decides how much of this wealth to allocate as inside equity capital across the banks that specialize in housing loans (H banks) and the banks that specialize in entrepreneurial loans

(F banks). Let e_t^F be the amount of the initial wealth n_t^b invested as inside equity in F banks and the rest, $n_t^b - e_t^F$, in H banks. The net worth of the banker in period $t+1$ is $W_{t+1}^b = \tilde{\rho}_{t+1}^F e_t^F + \tilde{\rho}_{t+1}^H \left(n_t^b - e_t^F \right)$, where $\tilde{\rho}_{t+1}^F, \tilde{\rho}_{t+1}^H$ are the *ex post* gross returns on the inside equity invested in banks F and H, respectively. The maximization problem of the banker is to decide on the allocation of their initial wealth in order to maximize the expected wealth:

$$\max_{e_t^F} E_t \left(W_{t+1}^b \right) = E_t z_t^b \left(\tilde{\rho}_{t+1}^F e_t^F + \tilde{\rho}_{t+1}^H \left(n_t^b - e_t^F \right) \right)$$

where z_t^b is an i.i.d. shock to the bankers wealth. An interior solution in which both types of banks receive positive equity requires that $E_t \tilde{\rho}_{t+1}^F = E_t \tilde{\rho}_{t+1}^H = \rho_t$, where ρ_t denotes the required expected gross rate of return on equity investment at time t. This expected return is endogenously determined in equilibrium but it is taken as given by individuals and banks.

Banks

Banks are institutions that provide loans to households and entrepreneurs. There are two types of banks: banks indexed by H are specialized in mortgage loans, and banks indexed by F are specialized in corporate loans. Both types of banks ($j = H, F$) issue equity bought by bankers and receive deposits from households.

Each bank maximizes the expected equity payoff, $\pi_{t+1}^j = \omega_{t+1}^j \tilde{R}_{t+1}^j b_t^j - R_t^D d_t^j$—that is, the difference between the return from loans and the repayments due to its deposits, where ω_{t+1}^j is an idiosyncratic portfolio return shock, which is i.i.d. across banks and follows a log-normal distribution with mean one and a distribution function $F^j\left(\omega_{t+1}^j\right)$, b_t^j and d_t^j, are respectively, the loans extended and deposits taken by bank at period t, R_{t+1}^D is the gross interest rate paid on the deposits taken in period t, and $\tilde{R}_{t+1}^j$ is the realized return on a well-diversified portfolio of loans of type j.

Each bank faces a regulatory capital constraint:

$$e_t^j \geq \phi_t^j b_t^j$$

where ϕ_t^j is the capital-to-asset ratio of banks of type *j*. The regulatory capital constraint states that the bank is restricted to back with equity at least a fraction of the loans made in period *t*. The problem of each bank *j* can be written as:

$$\pi_{t+1}^j = \max\left\{\omega_{t+1}^j \tilde{R}_{t+1}^j b_t^j - R_t^D d_t^j, 0\right\}$$

subject to the aforementioned regulatory capital constraint.

In equilibrium, the constraint will be binding so that the loans and deposits can be expressed as $b_t^j = \frac{e_t^j}{\phi_t^j}$ and $d_t^j = \left(1-\phi_t^j\right)\frac{e_t^j}{\phi_t^j}$, respectively. Accordingly, the threshold level of ω_t^j below which the bank defaults is $\bar{\omega}_{t+1}^j = \left(1-\phi_t^j\right)\frac{R_t^D}{\tilde{R}_{t+1}^j}$ and the probability of default of each bank of type *j* is $F^j\left(\bar{\omega}_{t+1}^j\right)$. Thus, bank default is driven by fluctuations in the aggregate return $\tilde{R}_{t+1}^j$ and the bank idiosyncratic shock ω_{t+1}^j. In the case in which a bank defaults, its deposits are taken by DIA.

As shown in Clerc et al. (2015), the average default rate for banks can be written as:

$$PD_t^b = \frac{d_{t-1}^H F^H\left(\bar{\omega}_{t+1}^H\right) + F^F\left(\bar{\omega}_{t+1}^F\right)}{d_{t-1}^H + d_{t-1}^F}$$

The Production of Capital, Housing, and Consumption Good

The final consumption good in this economy is produced by perfectly competitive firms which use capital, k_t, and labor, h_t, as inputs into a Cobb–Douglas production technology. Capital and housing producing firms also

operate under perfect competition. Capital producers combine a fraction of the final consumption good, I_t, and previous capital stock k_{t-1} to produce new units of capital goods that are sold to entrepreneurs. Housing producers are modeled in a similar manner. Both types of firms aim to maximize expected profits. They are unaffected by financial frictions, but do face investment adjustment costs and optimize intertemporal in response to changes in the price of capital.

Approximating the Bank Transaction Tax

The model has been calibrated to the Greek economy at a quarterly frequency, based on data spanning the period 2003–2010.[5] This is a period which includes both an upturn and a downturn, under the same monetary policy regime, that is, within the EMU. It intentionally does not include the peak of the Greek sovereign debt crisis (2010–2011), as this was not a typical recession period but rather an extreme event. Nonetheless, the data period can be thought of as capturing a full cycle. Balfoussia and Papageorgiou (2016) present the details of the calibration. The long-run solution of the model is in line with key features of the data on the Greek economy and, thus, constitutes a reasonable starting point for our experiment. The model has been solved using a first-order approximation around the deterministic steady state.

As already outlined, the model does not include a tax-collecting government sector, only the deposit insurance agency which is financed by lump-sum taxation as necessary. However, the presence of a government sector is not necessary for our analysis, as the bank transaction tax is in practice collected via the banking system and, moreover, as already stated, our aim is not to explore its impact on public finances but rather to understand its possible transmission channels. In our analysis, we approximate the bank transaction tax by introducing a financial cost into the model. In particular, this cost reduces the effective interest rate households receive on their deposits. More specifically, $\tilde{R}_t^D$, the net interest rate on deposits, is now defined as:

$$\tilde{R}_t^D = R_{t-1}^D \left(1 - \gamma PD_t^b - \xi_t\right)$$

where, as above, R_t^D is the gross interest rate on deposits received by saving households at time t on their deposits, PD_t^b is the economy-wide probability of bank default in period t, γ are the linear transaction costs faced by households, and ξ_t is the financial cost which is zero in the long run. The financial cost ξ_t increases the wedge between the return on deposits and the risk-free interest rate and raises the funding cost for banks. It is modeled as an $AR(1)$ stochastic process of the form:

$$\ln \xi_t = \rho^{\xi} \ln \xi_{t-1} + \varepsilon_t^{\xi}$$

where ρ^{ξ} is the persistence parameter and $\varepsilon_t^{\xi} \sim \left(0, \sigma_t^{\xi}\right)$.

The baseline scenario assumes a temporary but persistent increase in this transaction cost, equivalent to introducing a flat tax on financial transactions equal to 0.001 (1 euro per 1000 euros of transaction). We set the persistence parameter to 0.8. This is more appropriate than considering the long-run implications of permanently imposing such a tax, given that financial transaction taxes are typically not introduced with a view to becoming a permanent feature of the tax system, but rather as *ad hoc* policy tools to be used for a period of a few years, when tax receipts are in need of a boost. Given the setup of the model, the implicit tax base of such a tax is the stock of deposits at time t. However, in practice bank transaction taxes are levied not upon deposits per se but upon bank transactions. Thus, we adjust the shock accordingly, to account for the fact that the value of financial transactions in the Greek economy is approximately 3.5 times that of deposits on an annual basis.

In addition to examining the impact of such a shock on the economy under the benchmark calibration, we undertake the same exercise under a different parameterization. In particular, we consider the implications of a bank transactions tax for the economy under conditions of high financial distress in the banking sector. Specifically, for the case of high financial distress we assume that the volatility risk for both types of banks (i.e., the volatility of the idiosyncratic portfolio return shocks ω_{t+1}^H and ω_{t+1}^F which hit banks specialized in mortgage loans and corporate loans respectively) is 20% higher than in the baseline case. Within the context of this model, an increase in financial distress has both financial and real implications,

rendering the economy overall more vulnerable to various types of shocks [see Clerk et al. (2015) and Balfoussia and Papageorgiou (2016)]. Given that bank transactions taxes have typically been used in economies with relatively high financial sector vulnerabilities and especially during periods of heightened real and financial uncertainty, it is economically meaningful to examine how the impact of such a policy tool varies, depending on whether the economy's financial sector is under stress.

Findings and Implications for Greece

The effects of introducing such a bank transaction tax are depicted in Figs. 10.1 and 10.2. The series plotted are the dynamic responses of key variables to the shock, expressed as percentage deviations from the steady state. We track the transmission of the shock through the economy. The first-order effect of imposing a financial transaction cost is that depositors will immediately demand a higher interest rate on their deposits, in order to compensate for the extra cost incurred via the bank transaction tax, in addition to the anticipated cost of bank default. This constitutes an increase in the banks' funding cost. It also directly leads to a decline in deposits and bank capital. These effects are then propagated and amplified through two financial amplification channels.

Tracking the first amplification channel, as a result of the increased funding cost, banks are forced to increase lending rates and reduce the supply of credit to the real economy. This has a negative effect on aggregate real economic activity and on individual real macroeconomic variables including consumption and residential and corporate investment. It also leads to a decline in the price of productive capital and housing. In the context of the model, these assets constitute collateral against which loans have been pledged. Thus, a decline in asset prices leads to increased rates of default for both households and entrepreneurs who now find that this is their optimal strategy, as the outstanding value of their loans is now higher than the market value of the asset pledged as collateral. This increased rate of default of all types of economic agents has further second-order adverse consequences on real and financial variables, and on banks which are rendered more vulnerable to shocks.

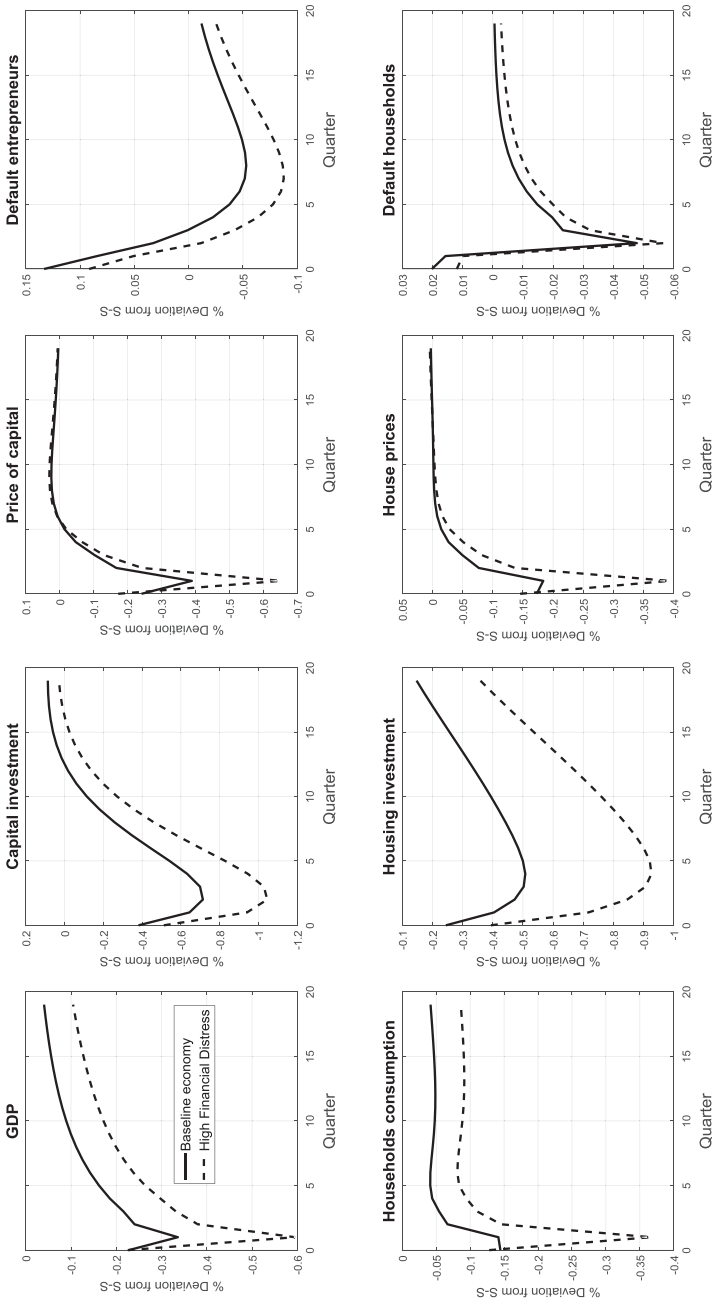

Fig. 10.1 Real economy

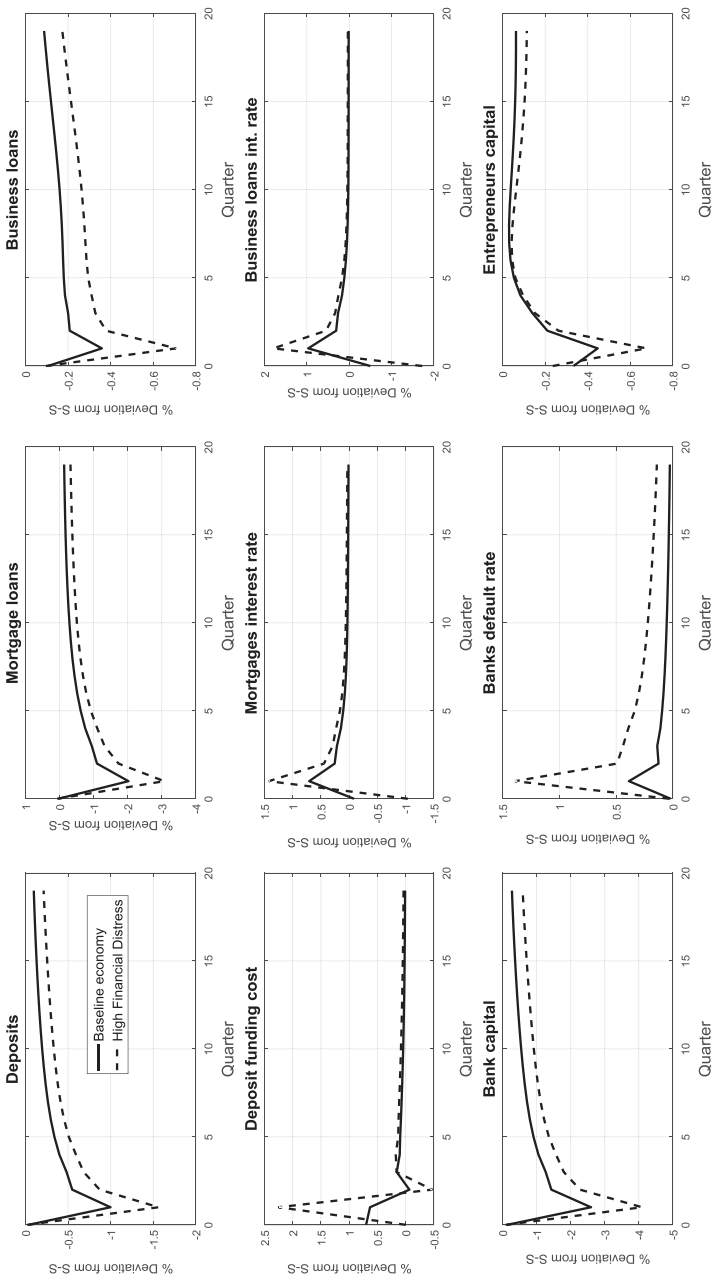

Fig. 10.2 Financial sector

Turning to the second financial amplification channel, the decline in bank capital also leads to an increase in the rate of bank defaults and, consequently, to a further increase in the deposit premium required by depositors in order to compensate for bank default risk. This pushes up the cost of deposit funding which feeds into lending rates, further depressing both total credit and collateral valuations and further aggravating the real economy. In sum, the impulse–response functions illustrate that a bank transaction tax has a negative impact on both macroeconomic and financial variables.

Table 10.1 presents the computed average impact of this measure over the first four quarters for both parameterizations. The average impact of introducing a flat tax on financial transactions equal to 0.001 over the first four quarters following the shock is a decline in deposits by 0.52%. This leads to a decline in entrepreneurial credit by 0.22% and to a much greater decline in mortgage loans by 1%, as households refrain from both depositing and borrowing for housing purposes. As a result, real GDP declines by 0.25%.

Table 10.1 also presents corresponding information for the case where the financial sector is under greater financial distress—that is, where the volatility of the risk shocks hitting banks is 20% greater. A dashed line is used to plot the dynamic effect of the same temporary shock under high financial distress in Figs. 10.1 and 10.2. The real and financial effects of the negative financial shock modeled here are more detrimental and protracted under conditions of high financial distress, as the banking system is overall more vulnerable. This implies that a bank transaction tax has a

Table 10.1 Average effect of a bank transaction tax over the first four quarters

	0.001	
Bank transaction cost	Baseline	High financial distress
Estimated impact on GDP (%)	−0.25	−0.38
Estimated impact on mortgage loans (%)	−1	−1.5
Estimated impact on entrepreneurial loans (%)	−0.22	−0.38
Estimated impact on capital investment (%)	−0.61	−0.88
Estimated impact on deposits (%)	−0.52	−0.78

Note: For the case of high financial distress, we assume that the volatility risk for both types of banks is 20% higher than in the baseline case. The 0.1% bank transaction tax is equivalent to a 0.35% deposit tax in the model

more severe negative real and financial impact in countries where the banking sector is subject to high-risk shocks, such as in the Latin American countries examined in Sect. 10.2, and, in recent years, in Greece.

In order to correctly interpret the above quantitative estimates, a number of issues must be taken into consideration. First, the imposition of a bank transactions tax may adversely affect the productive process more than the model predicts. Long chains of production require numerous financial transactions, generating a multiplicative impact of the bank transaction cost on the cost of production. In this sense, the above figures may underestimate the impact of such a measure.

On the other hand, the model employed in this exercise does not allow for substitution away from banking transactions.[6] In particular, it does not allow for cash transactions which are relatively widespread in the Greek economy—as in many of the economies where similar taxes have been levied. Cash transactions can readily be used to avoid the financial transaction cost and, indeed, account for the declining efficiency of such tax schemes reported in Sect. 10.2. Furthermore, the model does not permit economic agents to use cash as a store of value, as is often done during periods of financial turbulence and is known to have occurred in Greece during the peak of the crisis. It is also not possible to account for the financial markets' capacity to innovate in order to bypass regulation. Taking these points on board would lead us to assume that the aforementioned estimates may be biased upwards.

Regarding the importance of bank capitalization, given the structure of the model and the experiments conducted in both Clerc et al. (2015) and Balfoussia and Papageorgiou (2016), it is safe to assume that the impact of a financial shock such as a bank transaction tax will be smaller the better capitalized banks are—that is, the higher the required regulatory rate of capital requirements, as a higher capitalization acts as a buffer against exogenous shocks. Within the model calibration, regulatory capital requirements are set at 8% for corporate loans and 4% for mortgage loans, in line with Clerc et al. (2015).[7] However, during turbulent times, banks strive for capital ratios in excess of the minimum capital requirements, in order to dispel investors' fears. On the other hand, as documented in Sect. 10.2, bank transaction taxes encourage disintermediation and cash hoarding and, thus, undermine

bank capitalization. Neither cash hoarding nor disintermediation are modeled within the context of this model and, thus, their impact cannot be quantified. Nonetheless, Sect. 10.2 does illustrate that this impact may well be non-negligible.

Finally, one must acknowledge that, in practice, there will also be a positive impact on real economic activity stemming from the government's use of these tax proceeds, especially if it is pursuing expansionary and productivity-enhancing policies. This would, in turn, generate second-order positive effects on the financial sector. These effects, which cannot be gauged within the context of this model, would also dampen the size of the overall effect presented above.

10.4 Conclusion

This chapter contributes to the ongoing debate about whether and how financial transactions should be taxed. We focus on the bank transaction tax, review its historic use, mainly in Latin America, and discuss its implications. According to the literature, such a tax offers an immediate and continuous revenue stream, whose collection is efficient and inexpensive. However, revenue performance declines over time, especially for higher tax rates. Moreover, bank transaction taxes result in disintermediation and encourage cash transactions and the shadow economy, with adverse implications on both credit supply and economic growth. We consider the potential impact of such a tax on the Greek economy, employing both a meta-analysis and a DSGE model in which we recast the bank transaction tax as a financial shock. We explore the dynamic responses to such a shock and their transmission channels, both under the benchmark calibration as well as under an alternative parameterization were the banking sector is in financial distress. Our results corroborate the aforementioned intuition and indicate that the adverse consequences of a bank transaction tax are likely to be more severe if the banking sector is under financial distress. We conclude that, while a bank transaction tax may be a quick and effective way of generating short-run tax revenue, its use as a permanent policy tool may have a number of negative implications on the banking sector and the real economy.

Appendix

Table 10.2 Bank account debit taxes in Latin America

Country	Dates	Brief history
Argentina	1988–1992 2001–Present	Argentina has experimented with bank debit taxes in three distinct episodes. After a short lived implementation in 1976 when the tax was only in place for three months, Argentina reintroduced the bank account debit tax in 1983 for a three-year period and then again between 1988 and 1992. While its introduction in 1983 was largely motivated by the need to finance the country's public debt, its reinstatement at the end of the 1980s was mostly driven by declining tax revenues, increasing tax avoidance, high inflation, and weakened economic conditions. More recently, the *Impuesto sobre los debitos y creditos en cuentas bancaria* (tax on bank debits and credits) was put in place again in 2001, following the economic crisis of the late 1990s. In this latter episode, the tax base was extended to include both debits and credits from bank accounts. Baca-Campodónico et al. (2006) document that, in Argentina, the tax was followed by an increased in the demand for cash, even when inflation was rapidly increasing. This was exacerbated by the use of quasi-currencies (e.g., provincial bonds) that were exempt from the tax.
Bolivia	2004–Present	The *Impuesto a las transacciones bancarias* (tax on bank transactions) was introduced in April of 2004, following a failed attempt at taxing personal income and net wealth. Following the introduction of the tax, Bolivia's central bank documented an increase in the use of currency and a reduction in both the number of electronic transfers and in the number of cleared checks.
Brazil	1994 1997–2007	Brazil first enacted the tax in 1993 to finance healthcare programs, but the Supreme Court quickly abolished it on the grounds that it had been earmarked for a specific use, which was deemed unconstitutional. A subsequent ruling allowed the tax to be collected for a year in 1994. In 1997, the *Contribución Provisoria sobre Movimentación Financiera* (temporary tax on financial transactions) was introduced. It lasted until 2007. To reduce avoidance of the tax, checks in Brazil could only be endorsed once. Albuquerque (2006) finds that the tax helps explain an increase in interest rates, and that it has had a negative effect on financial intermediation. Koyama and Nakane (2001) find that the tax has reduced the issuance of checks and has induced portfolio reallocation from term deposits to mutual funds. Koyama and Nakane also argue that bank debit tax increases gross bank spreads while reducing net spread, which ultimately lowers the profitability of all private parties in the intermediation of funds.

Colombia	1999–Present	The *Gravamen a las transacciones financiearas* (financial transactions tax) was adopted in 1999 amid a weak economy, an unhealthy financial system, and low fiscal revenues. In 2001, the tax rate was increased from 0.2% to 0.3%. In 2003, two important changes were made: first, the tax base was amplified to include some transactions that were being used mainly by financial institutions and firms to avoid the tax; second, it established a levy on the liquidation and renovation of certificates of deposits financial intermediaries by financial institutions. The tax rate was again raised in 2004 to its current level of 0.4%. Arbeláez et al. (2005) documented a significant increase on the demand for currency relative to bank deposits following the introduction of the tax. They also show a decrease in the number of checks cleared after the tax.
Ecuador	1999–2000	In Ecuador, a broad tax of 1% on banking and financial transactions was introduced in 1999 to reduce the fiscal revenues effect of the sharp decline in world oil prices. The *Impuesto a la circulacion de capitales* (tax to capital circulation) was initially introduced to replace the income tax. However, at the end of 2000, the income tax was reinstated and the financial transactions tax was eliminated. Revenues from the tax were strong in 1999 when it was meant to replace the income tax, but when the latter was reintroduced in 1999, the productivity of the tax declined significantly. Ecuador's case is arguably the one where effects of the tax on financial intermediation are more severely compounded by weak economic conditions, particularly in the banking system.
Peru	1990–1991 2004–Present	In Peru, a 1.0% tax on bank debits was introduced in 1989 as a measure to raise fiscal revenues during a period of rising inflation. The tax rate was increased to 2.0% in 1990 due to the need to raise fiscal revenues. Nevertheless, Baca-Campodónico et al document that the growing financial disintermediation led the government to reduce the tax rate to 1% in 1991 and 0.75% in 1992. When reintroduced in 2004, the tax base was widened to include both debits and credits.
Venezuela	1994 1999–2008	In Venezuela, the *Impuesto al debito bancario* (bank account debit tax) was first introduced for less than a year in 1994. It was reintroduced in May, 1999 until May, 2000. In 2002, it was again reinstituted and extended until 2008, when it was eliminated. In both episodes, the tax was introduced as a temporary measure to ease the fiscal stress caused by falling oil revenues. Faust et al. (2001) examine the effects of the first two bank account debit tax episodes and argue that this particular tax policy resulted in a change in the preference for currency by economic agents. Specifically, they show a significant decline in the number of cleared checks and an increase in the amount currency held outside banks.

Source: Restrepo (2013)

Table 10.3 Bank transaction taxes in Latin America

Country	Year	Effective rate	Collection as % of GDP	Productivity (2/1)
Argentina	1988	0.70	0.83	1.18
	1989	0.70	0.66	0.94
	1990	0.30	0.30	0.99
	1991	1.13	0.91	0.81
	1992	0.55	0.58	1.06
Brazil	1994	0.25	1.28	5.10
	1997	0.20	0.86	4.28
	1998	0.20	0.89	4.44
	1999	0.38	1.40	3.69
	2000	0.33	1.35	4.04
	2001	0.37	1.45	3.95
	2002	0.38	1.54	4.05
	2003	0.38	1.48	3.90
	2004	0.38	1.49	3.92
Colombia	1999	0.20	0.71	3.54
	2000	0.20	0.60	2.98
	2001	0.30	0.75	2.50
	2002	0.30	0.71	2.37
	2003	0.30	0.71	2.37
	2004	0.40	0.89	2.24
Venezuela	1994	0.75	1.30	1.73
	1999	0.50	1.13	2.26
	2000	0.50	0.89	1.78
	2002	0.83	1.56	1.88
	2003	0.88	1.35	1.54
	2004	0.50	0.82	1.64
Peru	1990	1.42	0.89	0.63
	1991	0.81	0.58	0.71
	2004	0.10	0.16	1.61

Source: Baca-Campodonico et al. (2006)

Notes

1. In contrast to Latin American countries, some European countries such as Ireland recently imposed taxes on cash withdrawals, in order to encourage the use of electronic payments in the economy.
2. Fenochietto et al. (2012) find clear evidence of a significant negative impact of the bank transaction tax on the level of savings and checking account deposits in Argentina between 1996 and 2010. The tax generates a long-run negative impact on the level of deposits estimated at about 3% for each increase in the net tax rate by 0.1 percentage points.

3. As part of this policy debate, the European Commission (2011a, b) in fact proposed an EU-wide financial transaction tax that would cover a broad array of financial assets, though the proposal was eventually abandoned. Hemmelgarn et al. (2016) and (IMF 2010) provide a comprehensive overview of current policies and recent research on financial transaction taxes, including an evaluation of their possible merits and drawbacks.
4. This section summarily presents the 3D model of Clerc et al. (2015), following their Sects. 10.3 and 10.4, to facilitate the reader's understanding.
5. Mendicino et al. (2015) have calibrated the model to euro area data.
6. It should be noted that any form of banking restrictions, such as the ones in place in Greece at the time, would imply limitations on agents' ability to substitute away from banking transactions.
7. As regards corporate loans, this is compatible with the weights of Basel I and with the treatment of non-rated corporate loans in Basel II and III. The capital requirement parameterization for mortgage loans is compatible with their 50% risk-weight in Basel I.

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11

Taxing Energy: Why, How, and How Much?

Thomas A. Alexopoulos

11.1 Introduction

Though we think of the economy as something running with money, for some others, money is only a tool for monitoring and directing amounts of energy and energy investment in the real economy. In the last decades, mankind has increased its ability to use energy resources, introducing the term "energy-intensive economies", and offering several luxuries that have improved the quality of life. Only nobles and aristocrats were enjoying these luxuries before, by employing many servants and spending significant amounts of money. Today, our equivalent "energy servants", depend again on the amount of money we can allocate for them. Energy is the primary material for an economy to be built, and all of its activities have their energy analogous. Take, for instance, each time we spend a dollar to purchase a good; this is roughly the worth of 25 kg of lignite coal delivered

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to the electric power sector (EIA 2017a), including the costs of extraction from the ground, refinement, transportation, and burning to provide energy for that economic activity or the value of one dollar of bread. This corresponds to certain cubic feet of natural gas that are used to produce fertilizer, gallons of diesel to drive a tractor to plant wheat, kilowatt hours of electricity to grind it, and more diesel to deliver the flour to wherever the bread will be made. Last and more loosely speaking, the value of eight hours of physical and mental service requires certain amounts of calories which, again, are energy. Therefore, literally speaking or not, economic activities have all their energy analogous, just like in physics where one has to exercise force that is energy, in order to produce work.

The production and accumulation of wealth has always been a principal question of economics; nonetheless, energy which is a key factor in the production of it, has not been given proper importance. Few economists, such as Jevons W.S., have shed light on its underlying importance, while most economists have treated energy as a peripheral "mere" commodity—no different from other commodities such as livestock, grains, and metals. Their analyses are about the production, substitution, and consumption of commodities, as well as their trade in markets, the nexus with economic growth, and the identification of any possible limits to economic growth. We understand now, however, that energy has an upgraded key role to all of these issues. Today, there are numerous analyses in the literature about energy and economic growth. Nasreen and Anwar (2013) explore the causal relationship between economic growth and energy consumption in 15 Asian countries. Based on their results, economic growth is co-integrated with energy consumption, having a positive impact and with a long-run bidirectional causality between them. In the case of China, Sheng et al. (2013), employ an instrumental regression technique disaggregated to 27 provinces of China between 1978 and 2008, and examine the relationship of economic growth and energy demand. Their empirical results show that economic growth is an important factor affecting energy demand across all provinces in China. Last, Bozoklu and Yilanci (2013), restricted their sample in 20 OECD countries. To that end, they employed a Granger causality test in the frequency spectra allowing short (temporary) and long-run (permanent) causality. Based on their results, there is a bidirectional causality running from gross domestic product (GDP) to energy consumption and vice versa. Their

findings suggest that policymakers should adapt their strategies not only on the causality path but also on the duration of this causal relationship.

Energy has concerned economists well before the twenty-first century and has affected their understanding of two fundamental concepts: scarcity and economic surplus. Until the first energy revolution of fossil fuels, economic theories were based on the stipulation that nature was controlling the utilization rate of resources—in other words, there was an absolute scarcity of economic goods and services. At the end of the nineteenth century, absolute scarcity due to physical limitations became much less important because of the enormous and abundant energy deriving from fossil fuels. The concept of the natural means by which wealth is created just fell off economists' screening, and was substituted by the relative scarcity, which is more dependent on psychological choices and individual actions over money. Hence, through the use of abundant and exploitable amounts of energy, we can transform our ecosystem to satisfy not only our fundamental needs but also our deeper desires on the road to prosperity. In this respect, the goal of economics is transformed into determining who gets goods and services and how goods and services better improve human well-being—or, in other words, the optimal allocation of resources maximizing our psychological desires and just how to obtain more from the environment.

Energy has always been in the foreground, shaping theories and introducing new concepts in our economy. Today issues like the most appropriate form of energy, or the most efficient way of transforming, transporting, and distributing energy, are of major importance. Furthermore, setting a fair and just price for it and applying an optimum tax afterwards, are of equal importance, and special care must be taken with regards to the ways for succeeding with it.

11.2 The Binary Nature of Energy

Conceptually, energy can be seen from two different standpoints. First, there is the technical approach, where we can categorize energy depending on its source form and its final use, and, second, we have the economic perspective where we treat energy as a product having a price and is traded in a market with certain characteristics. From the technical point of view,

energy has many forms and uses, while in sensu stricto, it is the ability of a system to perform work. As stated in Physics, energy is a property of objects which can be transferred to other objects or converted into different forms, but cannot be created or destroyed, and there is a difficulty to give one single comprehensive definition of energy because of its many forms. The most common types of energy include: kinetic, potential, chemical, electric, magnetic, radiant, nuclear, thermal, gravitational, and nuclear, but there are only two ways in the literature to classify it; the first is according to its ability for replenishment or not, and the second on whether it has been transformed or can be used directly as it exists in nature. In the first case, we are talking about primary and secondary sources of energy, while in the latter we have renewable sources of energy (RES) and non-renewable sources of energy (non-RES). These two classifications can be jointly attributed to a single form of energy—for instance, coal is classified as a non-RES primary source of energy; on the contrary, hydrogen is classified as a RES secondary form of energy. Figure 11.1 presents the energy flow of all primary energy sources to end users.

Furthermore, energy use varies substantially in quantity and form, from region to region, and different energy sources are used to fuel different sectors of the economy. The transportation sector is almost

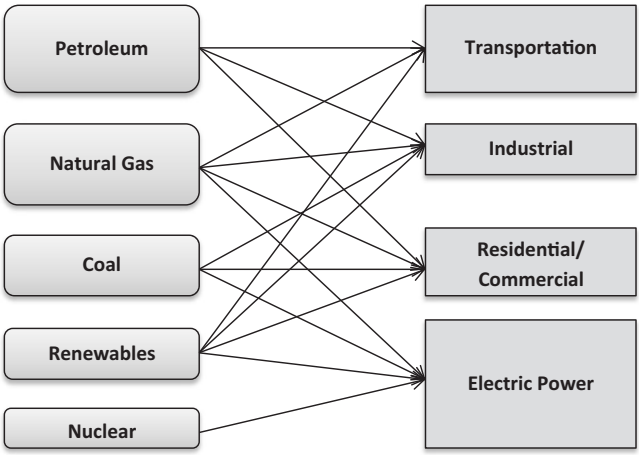

Fig. 11.1 Primary energy flow by source and sector
Source: Author

completely dependent upon petroleum, whereas the overwhelming majority of both coal and nuclear power is devoted to electricity production. Natural gas use is split among the industrial, residential or commercial, and electric power-generation sectors, while nuclear use is intended exclusively for power production. Besides renewables, no other form of energy developed on a commercial scale is environmentally benign, and if we consider the continously increase of per capita energy consumption, then its positive impact for society is more upgraded.

On the other hand, if we are to treat energy as a product of our economy, we certainly have to consider the idiosyncratic market conditions wherein energy products are traded. A proper analysis of energy markets has to include the indivisibility of capital, depletion of exhaustible resources, asset specificity, and capital intensiveness. Social surplus in price equilibrium price differs in the way that the power supply function is not linear due to invisibility of capital and product output. Energy is induced in the system incrementally according, each time, to the nominal capacity of the power plant and its technical rump rate, generating booms and busts in the aggregate supply function (Bhattacharyya 2011). Furthermore, all fossil fuels as primary sources of energy are considered non-renewable, and their price may depart from the marginal cost, including an additional scarcity rent which is often called "royalty" or "user cost".[1]

Besides the inability to produce specific quantities of electricity and the exhaustion of non-renewable resources, the energy industry is characterized also by asset specification and capital intensiveness. Assets, in the energy sector, are considered highly specific with little alternative use. Take for instance a thermal oil-based power-generating plant; it cannot be sited in a different location without pipeline infrastructures, or because of the high cost of dismantling and reinstalling it somewhere else. Relevant reasons for asset specificity are: site specificity, specific investments in human capital, and idiosyncratic investments. In addition, vertically integrated arrangements in all energy industries seemed as if there was natural selection, at least in the past century, due to asset specificity. Lastly, energy investments are characterized by capital intensiveness. In many cases, especially in large thermal or nuclear power stations, the initial capital cost accounts for the largest part of the average cost and, consequently, per unit cost falls with higher sizes, due to economies of

scale. A pertinent example here is SaskPower (2014), which is a facility operating at Boundary Dam Power Station. Its initial capital cost was $1.5 to $1.6 billion, and although its construction started in 2011, it became operational only after October 2014. The result of capital intensiveness is that the marginal cost tends to be lower compared to average cost, and any pricing based on marginal cost would then lead to financial losses. All prior-mentioned characteristics differentiate our economic understanding of energy-related products from the usual competitive model and standard social welfare maximization.

11.3 Drivers and Instruments for Taxing Energy

Roughly speaking, energy prices in a competitive market environment reflect operating costs and underlying costs due to capacity constraints, or due to loyalties. When it comes to tax energy, there are several different reasons and instruments to do so, resulting in different levels of taxation. Standard reasons for taxing energy are, of course, revenue collection, correction of market failures, monopolies, and the abatement of negative environmental. In a market with no negative externalities, taxation affects total quantities, resulting in welfare loss for the society. In these cases, based on theory, taxes should be implemented on the most inelastic commodities in order to minimize efficiency losses (Ramsey 1927).

As mentioned in Sect. 11.2, the physical concept of energy entails different properties and constraints of it, depending always on its form and use, which eventually results in different economic characteristics and limitations. Take, for instance, the primary energy sources of crude oil, gas, and coal. They are scarce and exhaustible, suffering, therefore, from resource and scarcity rents, and constituting a perfect tax base for the government (Karp and Newberry 1991). In this case, taxing the scarcity rent does not affect the supplied quantity and, therefore, causes no welfare losses; but, on the other hand, it does not correct for any externality. Another motive to tax energy is monopolies' control, which exists both in the supply and demand sides. Although it is hard to separate monopoly

profits and scarcity rents, both of them result in lower volumes and increased prices. Hence, taxing of monopoly profits and or scarcity rents is a favorable option in many countries.

Furthermore, taxing energy may be accounted for by the use of infrastructure, such as roads and transmission networks for electricity transportation. In power networks, taxing has been applied directly through specific tariffs on the price and the quantity of the transmitted electricity, while, in transportation, the payment for using these facilities is indirect and, to a certain extent, inaccurate through fuel prices, since, for the same service, different quantities of fuel and consequently taxes are being paid.

Besides the above, production and consumption of energy produces always has negative externalities and, depending on the energy form, these may include greenhouse gas (GHG) emissions (fossil fuels), esthetics, and noise (wind power and renewables in general), destruction of natural habitats (hydropower), and radiation (nuclear power). By definition, externalities exist when producers and consumers do not consider such costs. Hence, their correction depends on the counterbalance between social and private cost, which is an additional argument for taxing energy production and use.[2]

Toward this notion, several instruments have been implemented. They include, for example, a share of renewables in the energy production mix, the so-called green certificates (Bye 2003; Menanteau et al. 2003), the white certificates which are measures in the demand side mostly for energy saving (Meran and Wittman 2012), the right to trade GHG emissions (Hoel and Karp 2001; Bertoldi et al. 2005), or in other words the brown certificates, and many other instruments such as subsidies for renewable energy, informational standards for energy-consuming appliances, and so on. A number of reasons including administrative efficiency, actual cost of implementation, policy errors due to uncertainty and so on, could affect the selection of the most appropriate instrument.[3]

While policymakers have a bunch of instruments available for direct implementation, decreasing externalities may be a complex task, and potential negative spillovers are produced out of it. In the literature, the first-best instruments given the existence of externalities have been

thoroughly discussed; what it seems as an optimal national tax system can induce non-optimal solutions in a global context. If domestic taxation on emissions contributes to leakages and higher emissions abroad, then exemptions could be made from what is an optimal solution for a closed economy. Furthermore, as Hoel (1996) states, taxes have different spillovers including increased costs, deadweight loss, effects on competition, employment, and income distribution. To compensate for these kind of side effects, regulatory authorities usually allow for certain exceptions from, and countermeasures to, the first-best instruments. A representative example here is Norway's taxing system, which favors fossil fuels (Bruvoll and Bye 2003; Deloitte 2014). Thus, tax exemptions, reductions and discriminations could complicate the selection of an optimal portfolio of taxing instruments and weaken the realtionship between theory and real practice, resulting in partial effects.

Partial effects due to the coexistence of different instruments are broadly discussed, and a consensus is reached on their dependency on demand and supply elasticities in the energy market. Overall, there are several studies addressing the effects of a diverse portfolio of energy and environmental taxing instruments (Parry 1997; Fullerton and Metcalf 1997; Goulder et al. 1999). For instance, Fischer and Newell (2008) present a ranking of different policies/instruments in the US electricity sector based on their economic efficiency and innovation inducement. Namely, they compare emissions tax or charge, performance standard, fossil fuels tax, minimum requirements for renewables, and subsidies for renewables and R&D. Their conclusions are in favor of a portfolio of instruments, instead of a single taxing mechanism and one target.

To sum up, if considering all of the different initial conditions and instruments, as well as tax exceptions or reductions, a wealth of tools and different paths open for policymakers, making their mission for optimum economic, energy, and environmental efficiency a difficult task to be achieved, based less in theory and more in practice. In the next section, we shed light to the variety of implemented taxing instruments across countries, and present indicative examples by stressing national specific features.

11.4 The Variation in Energy Taxation in the EU

Depending on the selected instrument and the exante objective of taxing energy and its consequences, different levels of taxation are formed which can only partially be explained by taxation theories. The objective of taxing energy has been always to collect revenue, since price elasticities of energy products are generally low and, therefore, can be considered as a direct application of Ramsey's rule. Furthermore, global concerns on pollution introduced new pollution-based taxes. In general, energy, pollution, and transport taxes vary significantly between countries and economic activities. Transport taxes may differ from country to country depending on its infrastructures and its population allocation, which may be distributed close to cities or scattered in the whole country. Figure 11.2 illustrates these disparities between tax revenue from energy, transport, and pollution taxes in European countries. As shown, net energy taxes constitute the largest revenue in most countries, followed by transport taxes. Pollution and resources taxes are the least significant in terms of revenues.

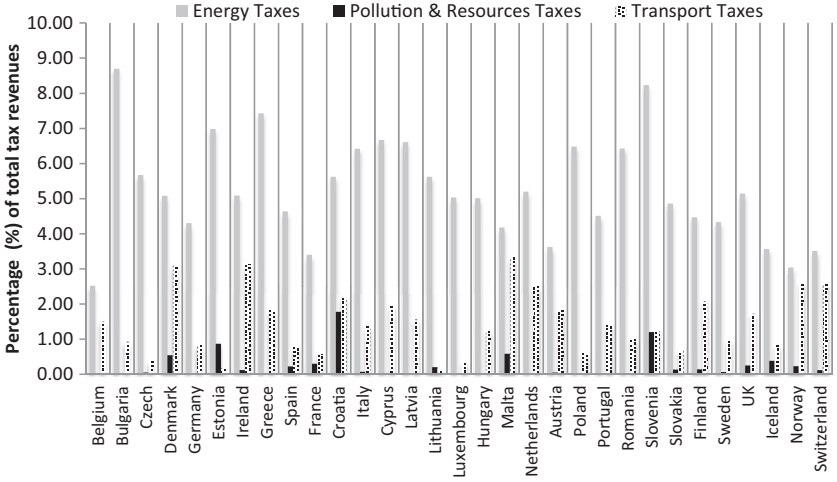

Fig. 11.2 Revenue from energy, pollution, and resources and environmental taxes in percentage of total revenue from taxes and social contributions 2013
Source: Eurostat

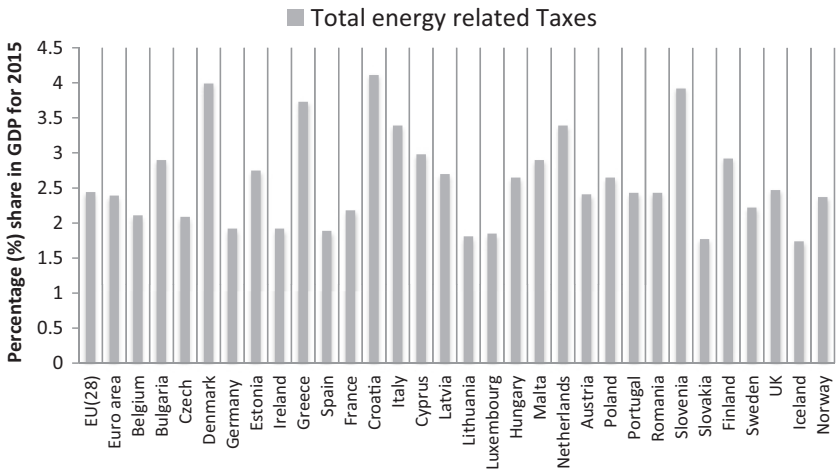

Fig. 11.3 Total energy-related taxes as share of GDP 2015
Source: Eurostat

Another issue is the share of all energy-related taxes (net energy, transport, pollution, and resources taxes) in GDP. Despite the strong concerns during the last two decades, and implementation of several energy and environmental policies, their merit in overall economy is limited. As shown in Fig. 11.3, taxes in most EU countries vary between 2% and 4% of GDP. One should except at least for Europe to produce double-digit numbers since it is considered to be the pioneer in sustainable development and green energy.

Besides low tax revenue from energy-related taxes per share of GDP, increasing environmental awareness did not increase environmental and energy taxes as suggested in the Environmental Kuznets Curve (EKC) literature (Stern 2004). Instead, when examining the shares of taxes over time (see Fig. 11.4) they are fairly stable for the 15 EU countries. We observed a decrease in GDPs percentage share, especially after the 2008 financial crisis, but this is temporary. Apart from this period, the share of tax revenue as percentage of GDP is constant between 2.6% and 2.4%. Most of the energy and environmental policies implemented after the mid-1990s, and popular targets like the 20–20–20 policy have been in force for more than a decade. Hence, one should expect a rise in tax revenue from these policies. Still this is not the case, rejecting therefore the

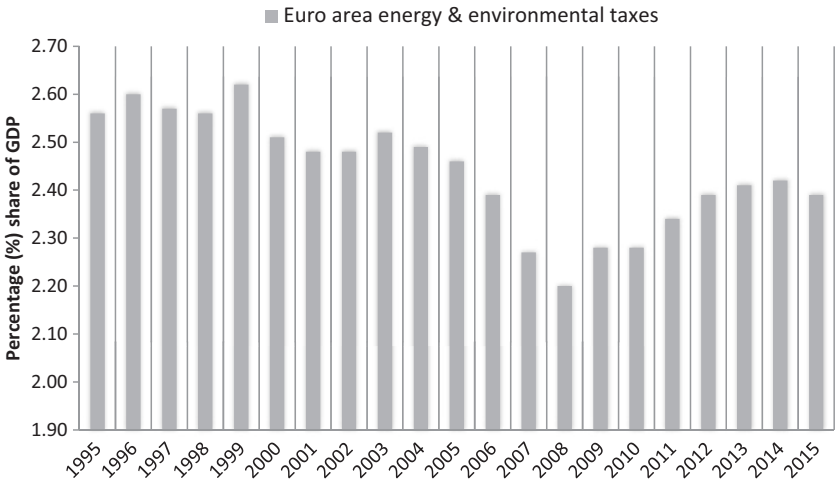

Fig. 11.4 Total energy and environmental taxes as share of GDP in Euro area
Source: Eurostat

EKC hypothesis. Now, when it comes to electricity, some theories may apply. A plausible driver for taxing electrical power is to cover the use of infrastructure for its transportation. In this notion, most countries separate this tax component to correspond to production energy and infrastructure costs. Another rationale behind the taxation of electricity might be the government's demand for standard and secured revenue. According to Ramsey's theory, one should tax the less elastic goods, and electricity is considered as such a commodity. Furthermore, some argue that we should tax electricity to cover the negative environmental externalities caused from its production. Thus, there are at least three different reasons to tax electricity. On the other hand, tax exemptions or reductions should be implemented depending on the final user. For instance, industrial users should be less taxed compared to households, due to stronger positive spillovers of industry in the economy. The task becomes more complicated when different instruments per single tax cause are considered. Several questions rise for tax designers to answer like what is more efficient in terms of revenue: to apply ad valorem taxes on purchased quantities or fixed rates per user? Or how differently should end-users be taxed? And what instrument is the most appropriate to counteract externalities from electricity generation? Green, white, or brown certificates? These

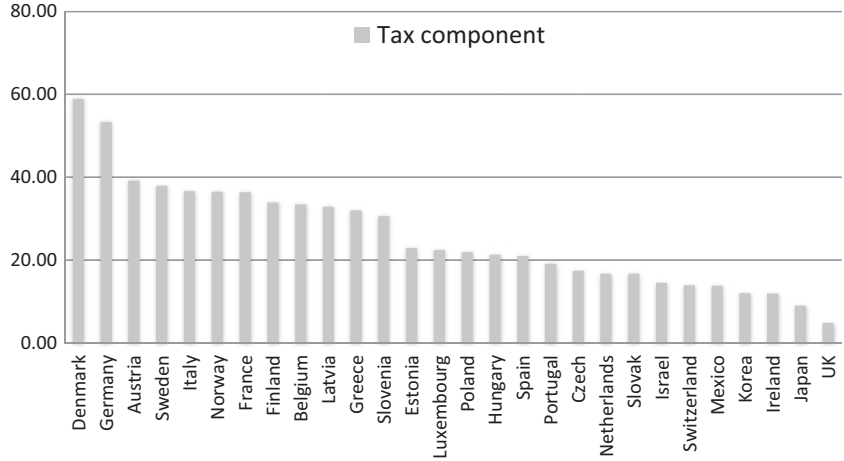

Fig. 11.5 Tax component as a percentage of the total price
Source: EIA 2017b

and similar other issues must be addressed by tax-makers before introducing a new tax policy, regardless of the difficulty of it.

Figure 11.5 presents the tax component in electricity price as a percentage share of it for the first quarter of 2017 for households. Normally, one should expect same taxation levels, because electricity as a product has no qualitative diversifications and approximately the same amount of electricity is required per person. Nevertheless, we observe significant variance in the tax component of electricity price among the countries, which is a strong preference in favor of a portfolio of taxation instruments rather than one single instrument. Denmark and Germany have the highest tax component in their electricity prices; on the opposite, the UK demonstrates the lowest component. A profound reason for this differentiation may be the need for certain governments to collect more revenue or the priority of public funding. However, this is not enough to explain such a divergence. Other reasons include interacting with each other. An intuition here is the different tax base from country to country. Northern sea countries, Norway, the UK, and the Netherlands have large and well-established oil sectors that reduce the need for additional taxes in other forms of energy, like in electricity. In addition,

potential tax exemptions or reductions in Pigouvian taxes for reasons of competitiveness, might create an environment with low pollution taxes.

In summary, this section has shown significant differences in imputed taxes in different countries and sectors. Differences in taxes cannot be substantiated only by different elasticities. Potential other significant reasons may act for this dispersion, like the power of specific pressure groups, different local concerns, mixed incomprehensible and unsuccessful environmental measures, and so on.

Germany: A Case in Point

Germany has implemented many different taxes on electricity consumption. As a result, the tax component in its total electricity price is among the highest in EU and OECD countries. The main tax constituents on electricity price for households and industry are summarized below.

First, electricity prices in Germany are burdened by a tax component which is imposed by the Law on Renewable Energy (EEG). It is a surcharge on electricity purchased from all consumer categories, working as a finance mechanism (feed-in tariffs, premiums, etc.) to support RES. A similar levy has been added after the enactment of the CHP (cogeneration of heat and power) Law of 2016. CHP tax is levied on all electricity sales at a rate derived from the difference between the wholesale electricity market price and the higher feed-in tariff for CHP plants. Additionally, a fee is levied on electricity sales to finance the concession of land and public or private property by the infrastructure needed to generate, transport, and distribute electricity. Besides the above fees and levies, the electricity tax known as *"Stromsteuer"* has been in place in Germany since 1999, with the German industry benefitting from several rate reductions and exemptions.

While each tax component serves a different cause, all of them aggregate in the total price of the product. An obvious question here is, if the aggregate amount from all excise taxes and VAT continues to be compatible with the Ramsey rule or, in other words, if electricity consumption is relatively inelastic to changes in tax rates.

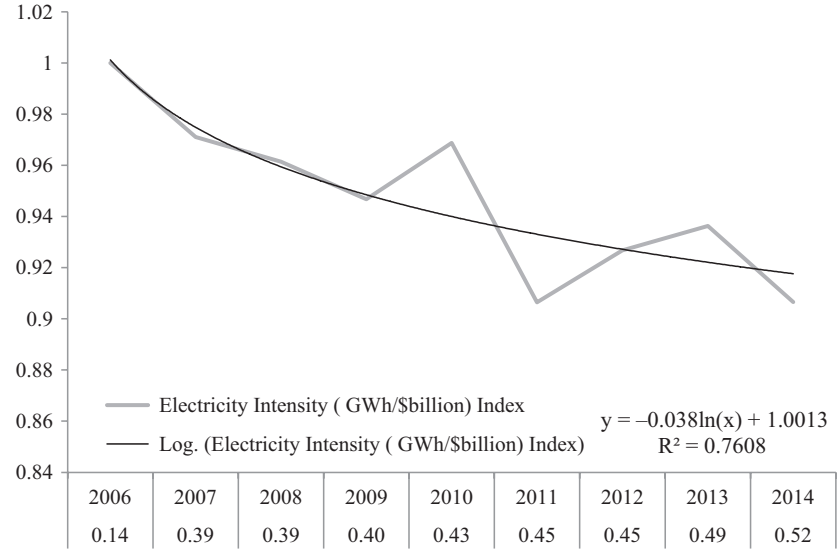

Fig. 11.6 The electricity consumption of Germany per real GDP_{ppp} (GWh/€billion), expressed in index form
Source: EIA 2017b

To answer this, we depict in Fig. 11.6 the electricity consumption of Germany (GWh/€billion) per real GDP (PPP), expressed in index form. The data are sourced from EIA (2017b) and Eurostat (2017). As shown, electricity consumption stays rather unchanged despite the significant increase of the total tax component from 14% in 2006 to 52% in electricity price in 2014. Moreover, the best fit, in terms of coefficient of determination is achieved with a level-log function, suggesting a decreasing effect of taxes on consumption or, in other words, stressing the unwillingness of consumers to change their power demands due to different levels of taxation. As shown, an increase of the tax component by 1% results in a decrease of four units of electricity consumption or approximately of 700 GWh/€billion of energy. An insight here is the following: The German goverment doesn't have to worry from the different distorting effects that different tax instruments may cause in economy, since its aggregate tax revenues from electricity seem to stay on the Ramsey path.

11.5 Conclusions

Every time we use our laptop, talk on our cellphones, or use our everyday comforts in our house, we consume energy. Besides, every time we sell a manufactured good like a car or a simple loaf of bread or even when raw materials like fruits or vegetable are traded, we need energy for their production and transportation. If economy is the human body and blood the money, then energy would definitely be the water. Energy is the necessary exogenous component to sustain activity as water is to sustain life. Without it, our economy and societies in general would be in hibernation and today's quality of life and way of living would resemble, in our eyes, more of a virtual reality.

Therefore, taxing energy is crucial but also a complicated task due to its global use, literally in all aspects of human life. Policymakers should bear in mind that different tax incentives and instruments in energy may cause mixed and contradictory results and, sometimes, even rebound effects could arise. Take for instance emissions taxes—a Pigovian tax which was introduced on energy to reduce its negative environmental externalities. The collected revenue then is used to subsidy among others, renewables, which nonetheless created deadweight loss and market inefficiencies like the merit order effect in electricity's supply stack.[4] This demotivates new investors to buy into advanced new coal-based power utilities with zero carbon emissions, resulting eventually in more GHGs in the atmosphere.

Another issue is that energy, in terms of production, conversion, transportation, and consumption, is very sensitive to technological advances. This could change already established practices and targets in the energy industry. A case in point here is with renewables. Three decades earlier, renewables were completely out of the frame; but now they are considered as mainstream. This may be the case tomorrow with nuclear fusion. Nuclear fusion offers limitless energy at low cost and without significant negative externalities. There are currently successful tests of its operation around the word[5] and, if it becomes fully functional, then policymakers, not only those in taxation, will have to adapt their plans radically and instantly. All in all, if we had to use three words to describe energy taxation, these would be: complicated, versatile, and sensitive.

Notes

1. Hotelling (1931), Kay and Mirrlees (1975), Heal (1976), and Sollow and Wan (1976).
2. Pigou (1920) and Sandmo (1975).
3. An extensive literature exists on how these factors influence the instrument choice. See for example, Hahn (1986), Nichols (1984), and Weitzman (1974).
4. Cludius et al. (2014) and Clo et al. (2015).
5. Viswanathan (2017).

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Part IV

"Resistance is Futile": Greece and the Failure of Tax Policy

12

Overtaxation of Private Sector Salaried Employment as a Key Impediment to the Recovery of Greece

Michael Mitsopoulos

12.1 Introduction

The Greek economy exhibits a number of attributes that are often cited with respect to its relative deficits in competitiveness and fiscal performance, when compared to most, or all, other European Union (EU) and Organisation for Economic Co-operation and Development (OECD) countries. This is exemplified by the low employment-to-population ratio, the consequent high capital to labor and low return on capital ratios, the small size of the average Greek company, the exceptionally high predominance of self-employment, and the high levels of estimated tax evasion. In spite of the fact that all these attributes, and other depending on the occasion, are observed in the same country, rarely have they been assessed as consequences of some common underlying factors, which in turn encourage economic activity to adapt in ways that lead to them. Surely, by now an extensive literature regarding both the drivers

The views expressed are not necessarily those of the employer.

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and the consequences of institutions has not only matured significantly but also reached out beyond a select group of economists. The work of Acemoglou and Robinson has to be credited in particular for the renewed focus with respect to the topic, especially beyond experts, but also for walking the final mile on the path suggested by Olson (1982) and North (1990). But even if the overall weakness of institutions, as broadly documented for Greece, needs to be analyzed in greater detail if one is to devise policies that will lead to the gradual strengthening of institutions and the evolution of economic activity with patterns that are more often observed in developed countries, the extreme positioning of Greece in dimensions that describe attributes like the ones already mentioned requires further investigation. Indeed, Greece is an outlier even with respect to many countries with intermediate institutional maturity.

The debate regarding the impact that tax rates and the tax system have is constantly on the forefront of the policy discussions regarding Greece. This is not only a result of the fiscal pressures that have been present since the ballooning of public debt during the 1980s, but also of the practice adopted repeatedly since 2009 to emphasize tax increases in order to meet the fiscal consolidation targets (e.g., Mitsopoulos and Pelagidis 2011; Pelagidis and Mitsopoulos 2016). This led gradually to a heated debate regarding the estimation of the "multiplier" that different fiscal measures, like tax increases or cost cutting, have on economic activity.

As the discussion regarding the overtaxation of Greece evolves, given of course the need to meet fiscal targets as defined by the current agreements with the official lenders and the high stock of debt, one has to recall that during the period before the crisis the International Monetary Fund (IMF), for example, systematically recommended that the country should control expenditure, rather than rely on tax increases, as a means to rectify its fiscal imbalances (e.g., Pelagidis and Mitsopoulos 2016). Good examples of the research supporting these recommendations are the IMF staff report for Greece during the 2006 Article IV consultation (Tsibouris et al. 2006; IMF 2010a), where it is stated that the expenditure control side of a fiscal consolidation effort is of high significance, and in addition that the interest rates play a pivotal role. This statement comes within a broader approach that suggests that fiscal consolidations that are

based on expenditure cuts have smaller contractionary effects than tax-based adjustments (IMF 2010b), even though the results in this research exercise are mainly driven by the impact of interest rate changes. This point is worth mentioning, given the limited attention policymakers have given in the past years to the impact of the adverse terms of access to finance that the Greek private sector is subject to. The topic has also been examined by the European Commission (at a high level, Alesina 2010), the European Central Bank (ECB) (ECB 2010a, b), and the OECD (e.g., Guichard et al. 2007). A recent topic that has received increased attention is also the mix of the spending cuts and tax increases (e.g., Auerbach and Gorodnichenko 2012; Alesina and Ardagna 2013; European Commission 2012a, b). Lately, these insights have been included in the proposal for comprehensive, and credible, strategies (e.g., Gaspar et al. 2016) where, it has to be noted, country-specific details matter as much as the effect credibility exerts on interest rates.

Following this work and other related literature, research has evolved from a recognition of the fact that older estimates regarding the fiscal multipliers may have been highly misleading, especially during the special conjecture the country faces (Blanchard and Leigh 2012; Batini et al. 2012; European Commission 2012b), to the more careful analysis of the structure of taxation in Greece and the implications this has (e.g., 2016 IMF Article IV Directors Conclusion, presented in IMF 2017 and IMF WEO forecasts for Greece; IMF).

But the more fundamental and structural impact of the tax increases, and as a matter of fact of the structure of the tax burden in the country even before the onset of the crisis, on economic activity has not been examined, beyond a very recent reference in the IMF Debt Sustainability Analysis (DSA) that is included in IMF 2017.

Given that "any tax is bad", but at the same time public goods ranging from education and health to infrastructure and the services offered by an administration in a socially conscious country with rule of law are indeed supportive to growth, the investigation of the position of the tax burden with respect to some threshold, above which taxation is harmful in some or many ways, is necessary before one can proceed to argue that the tax

burden has to be reduced. In addition, the qualitative aspects of such a suggested reduction are equally, if not more, important.

Within this context, this chapter sets out to investigate the implications of the basic structure of the personal income tax system in Greece, following a description of some of its salient details. Subsequently, an assessment is made of the way the policy response during the crisis, with respect to the taxation of labor, contributes to the evolution of employment data. As a first step, the literature regarding the impact of taxation on the labor market is briefly reviewed in Sect. 12.2, in order to establish a basis for the subsequent analysis. Section 12.3 proceeds to describe how the structure of the personal income tax system in Greece, along with the social security contributions structure, is integral to the extractive institutions, as Acemoglu and Robinson would argue, that prevail in Greece. Section 12.4 provides the data to support the assertions of Sect. 12.3 and to demonstrate the relative disadvantage at which private sector salaried labor is placed in Greece when compared to other domestic alternatives that range from public sector employment and self-employment to advantageous pension schemes. Section 12.5 argues that private sector salaried employment is placed at a comparative disadvantage not only domestically but also internationally. This is important, as this kind of employment is particularly important for the production of tradable goods by companies with a more sophisticated organizational structure, and therefore it is exposed to a high degree of international competition, especially within the context of a single market. Section 12.6 links the preceding analysis with some key social and economic attributes of Greece that suggest the low reciprocity of the tax wedge in Greece. Having described the starting point of the tax system that we examine and the persistence of this structure during the crisis, Sect. 12.7 summarizes conclusions of the companion chapter regarding the effect of the changes in the tax wedge on private sector salaried labor especially during the most recent crisis years, and Sect. 12.8 concludes, arguing for a bold rationalization of the tax structure and rates that is ultimately compatible with the rise of productive employment in the private sector, the creation of high incomes that can be taxed lucratively at reasonable rates and, ultimately, the growth of public revenue.

12.2 Literature on Impact of Taxation on Labor Markets

The question regarding the impact taxes have on labor has received attention in seminal work like Ramsey (1927), Mirrlees (1971), Hall (1973), Rosen (1979), Hausman (1980, 1981), Stern (1986), Hausman and Poterba (1987), Triest (1990), Blundell (1995), Feldstein (1995), and Diamond (1998). The reaction of labor supply, be it employees or hours, and the labor market in general, to the height and progressivity of income taxes as elasticities change given different skills, had emerged already at the time as an important but controversial issue. Limitations posed by data availability and methodological challenges often led to varying results, in spite of continuing progress as the literature matured. Mankiw et al. (2009) summarize key insights the literature has provided over the years, as it grappled with these challenges that reflected the simple reality that both the income and substitution effects are at work, as written down already by Robbins (1930). Such, general, findings are that the optimal marginal tax rate schedules depend on the distribution of ability and the importance of personal characteristics, but, as also stressed by Manski (2012a, b), one has to admit that we cannot settle with certainty and unconditionally the question of what impact a tax increase will have. The latter is especially relevant to the investigation of the difference in elasticities between men and women, as examined by work ranging, indicatively, from Hausman (1980) and almost all of the early literature to Meghir and Phillips (2010), Keane (2011), and Saez et al. (2012). It also affects even basic methodological issues, as is the use of marginal or average rates (Immervoll 2004) and the rather non-trivial issue of the impact during a longer and short-term horizon (e.g., Heitger 2000; Arpaia and Carone 2004; Sánchez et al. 2016; OECD work like Cacciatore et al. 2012; or Gal and Theising 2015).

In spite of the controversies found in the literature, there exists sufficient empirical evidence to suggest that tax increases lead to growth slowdown and employment decline, as well as an encouragement of undeclared work (e.g., Davis and Henrekson 2004). And at least in Europe, the taxation of labor may have reached in many countries a level that is actively

harmful to employment and growth (e.g., Planas et al. 2007; Seward 2008; Nickell 2004; Pissarides 1998). This seems to be true, even when overcoming technical issues as the likely interaction between taxation, industrial relation institutions (e.g., Sinko 2004, 2005), the benefit structures, and the structure of the tax wedge (e.g., Garcia and Sala 2006; Carone et al. 2003; Price et al. 2015) that may in turn also be related to the benefit structure, and the fact that the relationship between unemployment and employment, which are both used in various studies, is also affected, potentially endogenously, by the size of the inactive population. In addition, the related evidence regarding the negative impact of progressivity can be found both in cases in which economy-wide aggregates for performance indicators and tax burden measures are used (on the contrary, Lehmann et al. 2013, e.g., argue in favor of progressive taxes), and in those cases in which detailed data from tax returns or household surveys are used (good early examples are Triest 1990 and Feldstein 1995) that make it possible to match individual earning or employment attributes to individual specific tax burden measures. A large part of the literature also completes these findings by investigating the different reaction at the lower end of the market, especially with respect to the oft-established effect on employment groups that are easier pushed out of the labor market, like women and hours worked. Similarly, an oft-established result is the reduced short-term impact of tax policies on the job market for employees with higher educational achievement (e.g., for all, a summary literature by Bocconi University for the European Commission, 2011 and Zidar 2015 for a recent analysis of US data). Research that examines the reaction of high earners and businesses to tax rates is also relevant to our subsequent investigation. Such research is offered, among others, by Giroud and Rauh (2017), who examine the effect of taxation on business and entrepreneur migration among US states; Akcigit et al. (2015), who examine the effect of taxation on the location choice of superstar inventors; and Moretti and Wilson (2015), who investigate the detrimental long-term impact of increased top tax rates on the location decision of star scientists.

The investigation of the impact that taxation has on employment concerns also the fiscal performance of the country, as suggested by work like Alesina and Ardagna (2013). Davis and Henrekson (2004) investigate, in

particular, the detrimental effect of increased taxes on economic activity in sectors like retail trade and eating, drinking, and lodging service. These sectors, that are relatively, to other countries, large in Greece, are particularly susceptible to a substitution between formal and clandestine labor as the tax incentives structure changes. Their insights also reaffirm the importance that tax-funded benefits have on the decision to work (and to move between the official and clandestine labor market), as individuals assess in addition to the tax burden also the value of the benefits offered by social expenditure in a country. Kolm and Birthe (2003) introduce the punishment rate into the equation, examining the impact of higher punishment rates, and of more diligent audits, on the labor market behavior. They find in both cases a negative impact on the shadow economy but with less clear-cut implications, especially of the audit rate on unemployment and wages. Once again, as suggested for example by Anderberg (2003), the analysis is complicated by the impact the regulation of labor markets may have.

Daveri and Tabellini (2000) extend the investigation of the impact of higher taxes on labor observed in Europe to the more intensive use of capital that depresses return on capital undermining growth, an effect we have indications also applies to the case of Greece (Pelagidis and Mitsopoulos 2014). Petrucci and Phelps (2009) suggest that the relatively closeness of the Greek economy may be of relevance in case one contemplates reducing labor taxes and raising at the same time taxes on capital, a contemplation that may easily emerge in the case of a debate to reduce taxes on labor given the existing fiscal constraints.

It also appears relevant that these higher taxes, depending on the services offered in return to the taxpayers, may in the end be evaluated on a cost-benefit base by the labor market and taxpayers, as suggested by Rogerson (2007)—a point relevant to Greece given the poor performance of schools on the PISA survey, the poor rating of the health system received, for example, in Eurobarometer surveys, and an overall poor rating of the quality of the public administration, not least through the Transparency International CPI. Also, the addition of retirement strategies, intensity of work effort, and quality of such, as explicitly spelled out to be part of the labor supply by Hall (1973) who cited numerous studies that touched upon these issues even at that time, sound particularly relevant to Greece today.

12.3 Attributes of Greece: Domestic Comparison and Analysis

As already suggested in the introduction, the combined deficits of Greece in all dimensions of the tax system and job market performance have to be examined together, as otherwise, one cannot understand the way the incentives and disincentives built in the system—and deeply entrenched in a stable equilibrium with the political system and society—fit together as parts of a comprehensive, and rational, whole. Overall, one can argue that, in line with the literature product market regulations (e.g., Cacciatore and Fiori 2016 or Nicoletti and Scarpetta 2003), we can describe Greece as a case with excessive bureaucracy by a captured state, not that much in the sense of Hellman et al. (2000) or Campos and Giovannoni (2006), given the small share of large corporations in the private economy, but mainly in the sense of clusters of small special-interest groups and state-controlled dominant firms (Mitsopoulos and Pelagidis 2009; Matsaganis 2007). This situation is, rationally, combined with high corruption (Rose-Ackerman 2006; Lambsdorff 2006) and creates rents that are then redistributed within the setting of a political game (Olson 1982; North 1989, 1990; Tullock 1967; Ekelund and Tollison 1981; Persson and Tabellini 2000; and, more recently, the work of Acemoglu and Robinson 2012). Fiori et al. (2008) as well as Bassanini and Duval (2006), in turn, focused on the complex relationship between policies. They examined the relationship between labor and product market regulations as well as taxation, and were at the beginning of a strand of the empirical literature that supported and elaborated the theoretical literature that was predicting the role of product market regulations in the creation of rents and the role of labor market regulations as a tool to redistribute the rents, once they have been created. A vibrant empirical literature expands insights on the complex relationship between various institutions and tax and benefit policies. Overall, a pattern emerges according to which X-inefficiencies with labor market regulation are being used to redistribute the rents created by regulations in product markets. This setting applied fully till the reforms of 2012 that significantly deregulated the labor market, even if it did not bring all dimensions of the labor market regulations in line with the practices of other European countries.

Also, restrictive product market regulations remained largely in place or were canceled out by the increase in the country risk and the fragmentation of the single market for financial services. As the related theoretical and empirical work suggests, the fact that the mechanism to redistribute rents was diminished, even while the regulation that created them in the first place largely survived, led to the natural development that the labor market reforms were partially retracted subsequently. The Council of State decision on the mandatory arbitration, which is a globally unique setting and a key ingredient in the mechanism to control the distribution of rents, is an example of these reversals. Also, initially the agreement of May 2017 stipulated the demise of the remaining part of the most useful labor market reforms by Autumn 2018. This pressure to reverse these reforms is representative of the fact that the mechanisms that create and distribute rents and costs are often arcane and unexpected—ranging from the taxation of inputs to production like energy to the strategy to roll out to the private sector as much as possible of the cost of the political uncertainty generated during the power struggle between the insiders of the rent-seeking society and the official lenders (Bachmann et al. 2013; The Economist 2012b and 2013; European Commission 2013, indicatively, examine the impact of uncertainty on economic activity). One further dimension of these X-inefficiencies is the social security system. So far, the details of the social security system have received extensive coverage, highlighting its attribute as essentially a mechanism to purchase votes among privileged groups and at the cost of the next generations and outsiders that comprise the rest of society and that are not necessary to maintain the equilibrium in the political game (Tinios 2016 and Leventi and Matsaganis 2016 offer insights regarding some aspects of the latest policy reforms implemented). The technical insights offered by Greek experts as cited are backed up by OECD statistics on the pension system and data that are occasionally made available (e.g. a monthly bulletin with details of pensioners was discontinued in summer 2015, only to be restarted in May 2017 as a prior action of the May 2017 agreement). Recent statements by the IMF stressed how, in spite of sweeping pension cuts and contribution increases, the structure of the system remains such as to ensure the need for further measures down the road. This observation simply reaffirms the fact that a pension system that largely was part of a mechanism to redistribute rents, and in spite of the

broad benefit cuts and contributions increases that have made almost everyone worse off, still retains the salient attribute of a rent redistribution mechanism that is an essential part of a captured state.

With respect to the tax system, the predominant rhetoric asking for "the rich to finally pay" is usually a deterrent to investigate closer the comprehensive landscape of the tax system, especially given the recent addition of the pressure of the official lenders to "finally make the Greeks pay the taxes they owe". Such a behavior is in line with the patterns documented by work like di Tella and McCullock (2006, 2007) that show how in countries where there is high government regulation of markets, that creates poverty and inequality, envy toward economic success increases and distrust toward market economics rises. Yet, it also discourages the closer inspection of facts that, once carefully documented, raise the combined attributes of the Greek tax system along with the social security system possibly to the pinnacle of the redistribution mechanisms that thrive on the oppressive, closed as Acemoglu and Robinson would note, regulations and administrative and political practices. In effect the, not immediately obvious to the casual observer, combination of attributes is conceived in such a way that each of them separately can be easily defended in front of a public that is distrustful of market economics, while disguising their contribution to the comprehensive construct of an extraction mechanism.

In particular, this system has as ingredients a social security system that traditionally levied high and non-retributive contributions on salaried labor in the private sector, well above OECD averages and in line with the principle of a high-public expenditure, high-tax state. At the same time it used to offer, at least till the 2016 reform of the social security system, officially, or with officially sponsored acceptance of low-frequency tax audits that ensured most tax evasion went undetected, much more attractive terms to self-employment in the way of a much reduced, relative to salaried labor, tax wedge. In addition, the terms offered to public sector salaried employment and pensioners, especially when they originated from the last two groups, were also much more advantageous, when compared to private sector salaried employment. The combined assessment of this structure of the social security deal offered to different groups of the society and economy is, generally, much too complicated to be understood at the level of the public debate.

But it is essential in order to see clearly how salaried labor in the private sector was, and still is, asked to carry a high burden in particular in the form of employer and employee contributions that do not lead to commensurate benefits, in order to create a rent that is subsequently channeled to the other groups. In many cases, these rents are not easily assailable since they are channeled to individuals that appear not to be privileged at first glance, like public sector pensioners or pensioners of the farmers' fund that pay very low pensions (Mitsopoulos and Pelagidis 2011), but that receive their financial support in a way that does not target social needs in a sophisticated way.

At the same time, the overly progressive tax system appears, by itself, to be fair in a left-leaning society—something that is, in turn, expected from a society that is not wealthy and that is envious exactly as happens in tightly regulated economies with many small businesses and low levels of productivity. Since the high tax-free threshold essentially exempts the majority of taxpayers (i.e., voters) the disproportionate burden placed on a relatively low number of higher-income individuals that include, beyond private sector employees also privileged pensioners and public sector employees, for example, is of no importance to the majority of the taxpayers and irrelevant for the majority of the voters. In addition, the progressiveness of the system and the tax-relief offered to the many at a threshold that does not seem linked with privilege is again deceiving, as by itself it may appear easily as socially just. Only by juxtaposing the structure of the tax system and the social security system does the combined design reveal its full impact and true purpose and the full extent of the burden placed in particular on private sector salaried labor. Because, when adding the high social security contributions on private sector salaried labor on top of the structure of personal income tax rates one sees how, on the one hand, the low-income private sector employee effectively pays a high tax, in the form of nonretributive social security contributions, that the pensioner or public sector employee of similar income does not pay. And how the high-income private sector employee that pays the same progressive income tax that the high-income pensioner or public sector employee pays is further burdened by the high social security contributions. The latter, at least till the end of 2016, was also facing a much higher tax wedge when compared to a self-employed individual with

comparable income. In the next Sect. 12.4, we will work through the details of this structure. Having added the presentation of numerical evidence to this description, we will use the insight provided by the available facts to also formulate policy proposals that could lead to a structural shift away from the disincentives to private sector salaried employment and toward an expansion of the tax base. But, further documentation is needed in order to establish the pivotal damage this situation inflicts on the growth prospects of the country. In particular, it has to be established that the level of the tax wedge is also excessive by international standards and, therefore, Sect. 12.5 will be allocated accordingly.

12.4 Domestic Comparison Greece, Supporting Data

The analysis of data provided by IKA (Mitsopoulos 2016) has already shown us how larger companies retained during the early years of the crisis, and the past labor market reforms that were applied since 2012, the structure of employment and remuneration. On the other hand, smaller companies, that by definition have fewer degrees of freedom when adjusting to a severe downturn and that, as a proportion of their turnover depend more on the compensation of employed persons, initially proceeded with aggressive layoffs. After the worst decline had stabilized—a moment that coincided with the increased flexibility introduced by the labor market reforms in 2012—they proceeded with the reduction of average wages of full-time employees, rehiring the employees laid off till 2012 at much lower wages, or by the widespread practice of offering those that had worked full time before 2010 a part-time job. This trend was supported by the combined effect of reduced social security contributions and increased fines and audits for clandestine employment that applied gradually from the end of 2013 and throughout 2014.

Our access to more recent data by IKA demonstrates this trend in a firm way well into 2015, along with a mild but visible erosion of the initially perceived resilience of employment and salaries in larger companies. This, discreet but now obvious, trend can be explained by a policy to replace employees that leave for whatever reason, and those that retire, with new hiring that take place at much reduced wages. Such reasons

include the migration of high-skill and earning potential individuals (Kostantellos 2015) as a possible manifestation of the tax arbitrage suggested by Agell and Persson (1998) in an open small economy. Further support for such interpretations is offered by the abovementioned literature that examines the mobility of companies, inventors, and star scientists as a reaction to tax increases.

The starting point of the analysis of the distribution of tax burdens across income groups is the data released General Secretariat of Public Revenue and Independent Public Revenue Authority (AADE) for the tax year 2015 (the year wage earners declared their 2014 income). According to this data, the total amount of declared income from salaries and wages was 31.2 billion euro—leaving, thus, about 18.2 billion euro for wages and salaries earned, and declared, by the private sector if one subtracts the wage bill of the general government. According to the general government budget execution bulletin in 2014, the general government paid 13 billion euro in salaries and wages, but it has to be stressed that the expense registered in the general government budget does not necessarily equal the declared income as, on the one hand, remuneration of taxable individual income may appear in other expenditure lines and, on the other hand, a full audit of the full declaration of income paid by the general government has not been completed, in particular, with respect to payments that are still not included in the single-payment authority processes. In addition, total income declared, according to the tax data for 2015, from pensions was 22.4 billion euro.

From other data sources, that include IKA data for private sector wages, the data of the Helios system for pensions till the summer of 2015, when its data releases were discontinued and from the combination of general government data on employee remuneration that is combined with the data of the periodic census of public sector employees, we know that the average wage earned in the public sector and the average pension of former public sector employees exceed the average private sector wages and pensions during 2014. The relative generosity of public sector wages is also shown in the MoU reviews during 2014, and that contained related data (Pelagidis and Mitsopoulos 2014, 2016). This means that public sector wages contribute to the peak in the distribution of wage incomes around the 10.000 euro per year income bracket, while the higher peak in the distribution of pensions can be attributed to the relatively generous public

sector pensions, as is visible in Fig. 12.1. The peak of pension income at lower brackets is in turn attributed both to the numerous low pensions of the farmers fund, and to private sector employee pensions that generally are less generous than public sector pensions. The private sector completes the density of the income distribution in lower- and higher-income brackets, as suggested by the subtraction from the declared tax data of the (adjusted for non-taxable contributions) income of private sector employees provided by IKA, and that also supports Fig. 12.6.

A first observation that can be made at this point is that the value of the tax rebate offered to pension and wage income, as foreseen in 2015 by Article 16 of the Code of Income Tax and as still valid for 2016, mainly benefits the main mass of wage and pension income that is concentrated in the range between 5 and 25000 euro of annual wage and salary income, that in turn includes to a large extent the wages paid to public sector employees and to pensioners, including relatively generously paid former public sector employees.

As a matter of fact, applying the formula for the tax rebate and the income tax along with the solidarity tax on the distribution of declared pension and wage incomes, by taking the average income for each bracket as computed from the division of the total income declared with the number of taxpayers in the bracket and then applying the tax formula to this individual average income, and then re-estimating the value of income tax and solidarity contributions without the tax rebate, allows us to compute the value of the tax rebate for the wage and pension income declared by wage earners and pensioners. This exercise shows that the tax rebate amounts to 3.9 billion euro for all declared wage income and 3.4 billion euro for all declared pension income—in total, 7.3 billion euro, with 6.2 billion being related to pension and wage income of up to 25000 euro for 2015, always according to the 2015 tax data. According to the AADE data, the tax rebate amounted for this year to 9.5 billion euro, but this potentially includes income from other sources. Still, the officially released data reaffirms broadly, and in line with the expected decline in income during the 2011–2015 period, that the value of this rebate is indeed of such a high magnitude. Figure 12.2 demonstrates the allocation of the benefit of this tax rebate across income brackets. This benefit significantly contributes to the documentation of the very high progressivity of the Greek tax system in the OECD Taxing Wages database, and

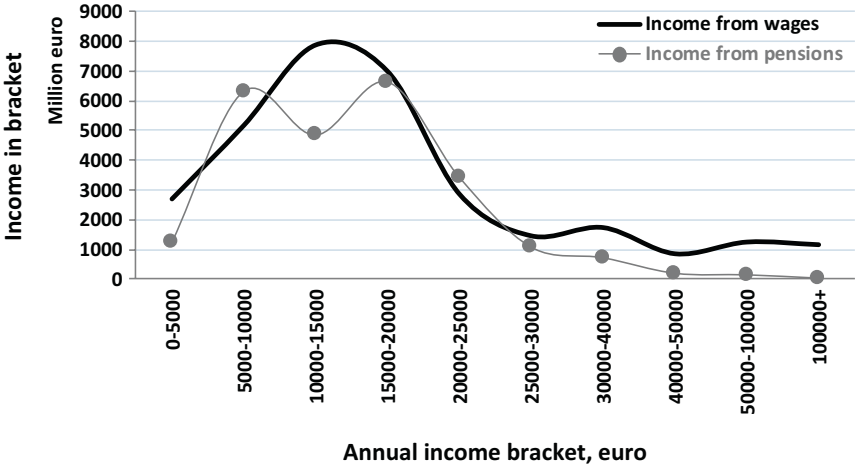

Fig. 12.1 Distribution of taxable income from salaries and from pensions, 2015 personal income tax declaration. Data regarding statistics of filed tax returns available at AADE website. Annual statistical bulletin for tax year 2015

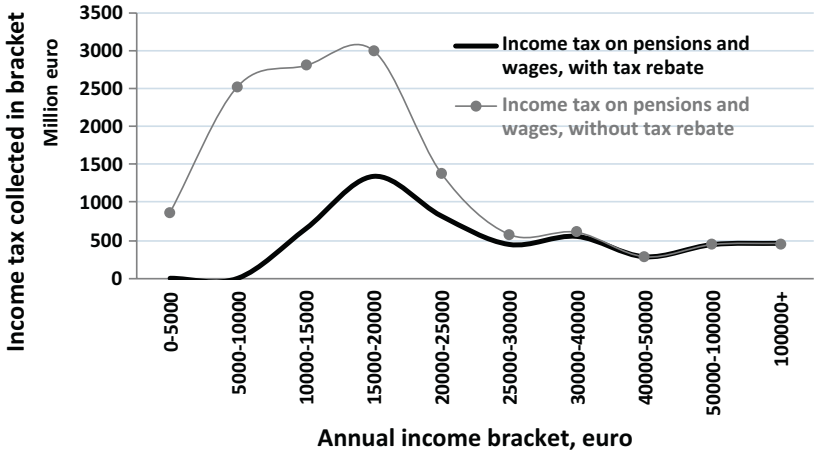

Fig. 12.2 Distribution of tax rebate benefit across income brackets. Comparison of actual tax burden per bracket and of tax burden that would follow in the case of an abolition of the rebate. Data regarding statistics of filed tax returns available at AADE website. Annual statistical bulleting for tax year 2015

the fact that official data released regarding declared incomes and paid taxes persistently reveal that very few income earners pay a disproportionately large share of all personal income tax, even as the majority of individuals pay no or negligible personal income tax, as argued by Mitsopoulos and Pelagidis (2011).

Figure 12.3 repeats the exercise of computing the value of the benefit that follows from the tax rebate per income bracket separately for pension and wage income. It emerges how the bulk of the benefit is concentrated essentially in the brackets of annual income between 5–10000 euro and 15–25000 euro, and how the benefit is broadly equally distributed among wage and pension earners but actually skewed a little in favor of pension income. We can also see in Fig. 12.4 how the rebate affects the majority of pension and wage earners—in total, about 5.4 million (i.e., 2.6 million pension earners, about 630000 general government employees according to the apografi of 2014, and about 2.2 private sector wage earners).

The bottom line is that the tax rebate benefits to a large extent the majority of pensioners and public sector earners that are mainly concentrated in the income brackets that share most of the tax rebate benefit. The notable cost of this tax rebate (over seven billion euro) that benefits such a large number of taxpayers has to be kept in mind as one observes

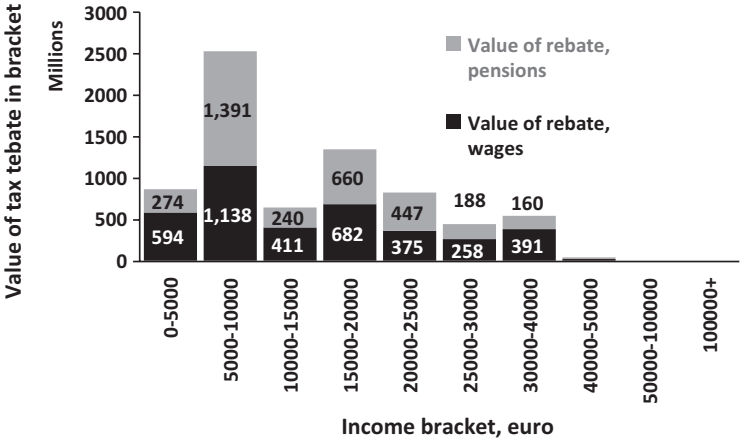

Fig. 12.3 Distribution of tax rebate benefit across income brackets. Allocation to income from pensions and from wages. Data regarding statistics of filed tax returns available at AADE website. Annual statistical bulletin for tax year 2015

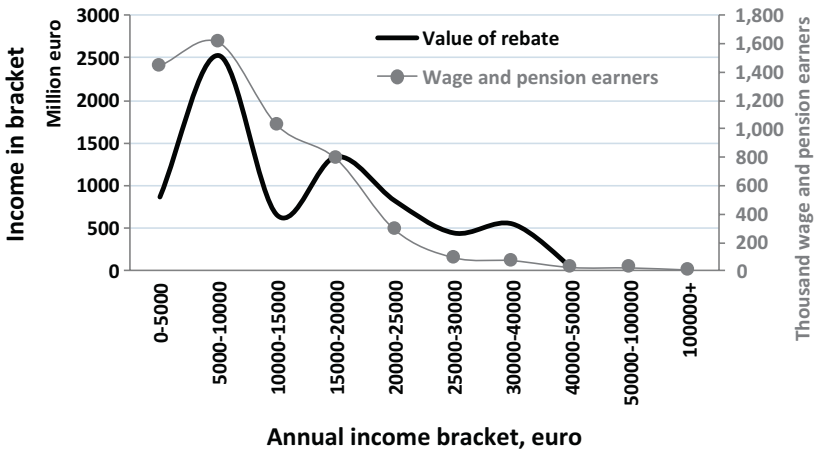

Fig. 12.4 Distribution of tax rebate benefit across income brackets and distribution of taxpayers across the same brackets. Data regarding statistics of filed tax returns available at AADE website. Annual statistical bulletin for tax year 2015

the very progressive rise of income tax rates and other taxes. For example, as revealed by a Ministry of Finance report on the property tax paid in 2016, Appendix 3 (Fig. 12.12), the recurrent property tax is somehow less progressive than the overly progressive income tax, as a result of the need to meet fiscal targets and therefore the need to expand somehow the tax base. Still, both these taxes burden in a very progressive way a small number of private sector wage earners that have earnings which are materially affected by these taxes, and property for which the same applies, so that in the end the increased taxes they pay exceed significantly their benefits from the current design of the tax system. And, in addition, they pay the extraordinary levy. This levy, whose distribution is presented in Fig. 12.5, burdens at a relatively low rate the numerous tax payers in the 15–25000 euro bracket, and leads to high revenue for the state from this bracket as a result of the large number of taxpayers that are concentrated in this bracket. On the other hand, public revenue from this levy, that in 2015 was in the range of about 600 million euro from wage and pension income, increases again among higher-income brackets as the effect of the declining number of taxpayers is compensated for by the highly progressive increase in the rate of the levy.

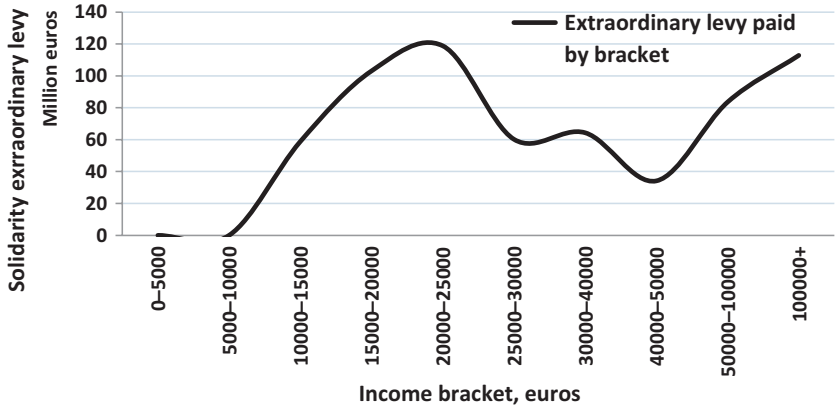

Fig. 12.5 Distribution of government income from extraordinary solidarity levy on wage and pension income. Data regarding statistics of filed tax returns available at AADE website. Annual statistical bulletin for year 2015

At this point, one has to take into account the fact that private sector employees pay substantial social security contributions. Regardless of the recent introduction of a related levy on pensions, the change in the way social security contributions are computed for the self-employed in 2016 and the existence of some social security contributions paid by general government employees till now, the bulk of such contributions paid by wage and pension earners is paid by private sector employees (at the time IKA, now merged into EFKA) that are in income brackets affected by the tax rebate. Figure 12.6 shows how the bulk of the social security contributions made by private sector salaried employment, both in the way of employer and employee contributions, is concentrated in the brackets that are broadly between 10 and 15000 euro—that is, above the peak of declared incomes created by low pensions and the peak that concentrated the main bulk of public sector wage earners and pensioners, as seen before in Fig. 12.1. This means that, at least till 2015, the bulk of private sector employees that benefited from the tax rebate, as did pensioners and public sector employees, were burdened at the same time with the high social security contributions that pensioners and public sector employees did not pay. The combined effect is that the pensioners and public sector employees were keeping most of the net benefit of the tax rebate, while for the private sector employees this benefit was canceled out through the social security contributions.

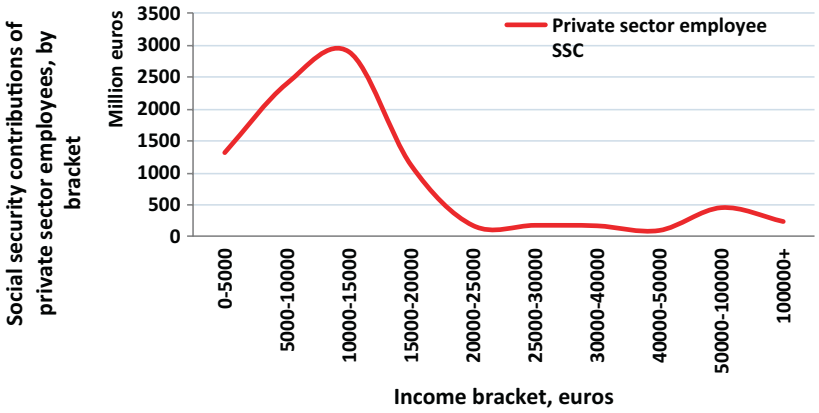

Fig. 12.6 Distribution of social security payments to IKA. IKA data on basic wage payments, December and June 2015 average, and extrapolation on annual basis

This analysis also suggests how this policy, that places private sector salaried employment at such a disadvantage within the country, can be rectified. Given that the earnings of social security contributions from IKA were in 2014 about 9–10 billion euro, according to a presentation leaked by the union of IKA employees (POSE-IKA) on their website, a reduction by 15% of both employee and employer contributions (approximately 8 pp, from a combined total of 48% to 40% on the gross wage without employer contributions) would not lead to a static cost to the public purse of more than 1.5 billion. Such a rebate would benefit mainly private wage earners with an income up to 20000 euro per year. Therefore, a reduction in social security contributions for private sector employees that is financed by a reduction of this tax rebate would effectively shift the tax burden away from the tax-paying private sector to those that are paid by the government, reversing the current situation that is exactly the opposite. That is, it would reduce the burden on those employees that are actually net contributors to the public purse, at the expense of those that are paid out of the public purse. The gain for the latter, beyond the short term, would be that this move would lead to the proliferation of private sector salaried employment and, ultimately, a rebound in growth and government income. This means, that the reduction in after tax income

would be compensated for with the prospect that this, indeed reduced, income would be more secure and that, in addition, the precondition for the end of strict austerity would be gradually created.

One can further elaborate this proposition, in order to allow a more targeted use of the tax rebate with respect to social priorities and needs. For example, in most other countries, tax benefits are related to the existence of underage children, as becomes evident from the EU taxation database of the European Commission. This means one could offset the negative impact of the reduction of the unconditional tax rebate with a tax rebate that can actually, if exhausted, be connected with a check on other benefits, and that depends on the existence of children in a family. If such an annual rebate/check amounts to less than 700 euro per child (Table 12.1), less than 1500 euro for a two-child family, and has a cap (i.e., does not increase any more) say after the third child (benefit 2000 euro for such and any larger a family), the cost at 2.3 billion euro would be again manageable, given the size of the current tax rebate that is worth annually over 7 billion. In such case, the tax rebate would be allocated, beyond the financing of a reduction of the tax wedge on private sector employees, in a targeted way toward families with working parents, which is another group that currently is treated unfavorably in Greece. This is demonstrated by the fact that the country has the lowest fertility rate in the EU according to Eurostat data (1.3 for Greece in 2014, instead of 1.58 for the EU28 average). Also, the tax rebate that is related to the existence of children can be calibrated in such a way to ensure for example that a family of two public sector employees with two children are not left off worse in any way when compared to the current (i.e., for the data used, the system applicable in 2015) structure of the tax and social security system—something that is necessary not only to ensure the social fairness of these changes but also to maximize public support for it. One has to add here that AADE data has a much smaller number of tax returns with one or two children, and a commensurate increase in the number of returns from married couples with no children, suggesting a massive underreporting of children in tax returns. This is likely as such an underreporting essentially is immaterial to the calculation of the tax. Therefore, Eurostat demographic data is used for the analysis.

Finally, one has to look at the distribution of the age of pensioners. Eurostat data allows us to look at the composition of the age distribution

Table 12.1 Estimate of cost to offer tax rebate/grand to families with children and high-age pensioners. Demographic data, Eurostat/Elstat

Total families /	Families with number of children						Members of	Number of
euro	0	1	2	3	4	5+	such families	children
3021425	974909	1054478	795232	158832	30431	7543	8863595	3284520
Tax credit per family€	0	700	1500	2000	2000	2000		
Cost, million€	0	738	1193	318	61	15		
Cost, sum, million€	2325							

of the population and Helios system data offers us a composition of the age of pensioners, at least till the summer of 2015.

For example, in December 2014 a monthly pension bill of 2.4 billion euro according to Helios system was allocated by 28% (676 million euro in this month) to pensioners between 51 and 65 years of age, and another 18% (444 million euro in this month) between the age of 66 and 70. If one argues that pensioners below age 50 mostly receive a pension for some extraordinary condition (e.g., invalids) that should be supported by the tax rebate and those aged above 70 should be supported by the tax rebate for obvious age-related reasons, one can also argue that for those between the age 66 and 70 the rebate should be gradually earned as age progresses. The net impact of such a rationale would be to retain, out of the current value of the tax rebate for pension income that is 3.37 billion euro, a tax rebate valued at 2.1 billion euro. That is, a tax at the current rate of 22% would burden pensioners below 65, and to a gradually diminishing extent those aged between 66 and 70. In particular for the recipients of the Farmers' Fund pensions, which used to be issued only after age 65, a calibration with the Guaranteed Minimum Income (GMI) should ensure that no undue social hardship is imposed on those that are most in need of a targeted GMI.

The following calculations show that one could redistribute in a socially just way the current value of the, currently unconditional, tax rebate on pensions and salaries, which has an annual implicit value of 7.3 billion for example:

- By reducing social security contributions on wages in the private sector by 15% (worth 1.5 billion).
- By offering quite generous tax breaks/cash support to families with children (indicatively, with a benefit/check of cumulative worth up to 700 euro for the first child, 1500 for two children, and 2000 for bigger families, the cost will be about 2.3 billion). In the case of only tax rebates, the cost would be much lower but a precise computation needs access to official databases of the tax authorities and the social security funds.
- Retaining the tax rebate for invalids and old-aged pensioners (partially over 65 years, fully over 70 years, cost 2.1 billion).

- These actions sum to 5.9 billion euro, less than the 7.3 billion of the current value of the unconditional rebate. Of course, one can alter the priorities of the initiative, for example, making the reduction in social security contributions more generous and reducing the benefit for families with children—but the rationale of placing such a large weight on the benefit for children is that the rebate will really help those most in need—working middle-income families.
- These computations still leave a static benefit to the budget of at least 1.4 billion euro related to wage and pension income. This could also finance a partial reduction in the often excessive property tax and, especially if the support for children comes mainly in the way of a tax rebate and not a cash transfer, as an unconditional tax rebate that is close, or even generously above, when compared to other EU countries—the threshold associated with risk of poverty.

Such changes would most likely encourage the growth of the tax base. They would enable a dramatic reduction in the tax wedge for private sector salaried employees, bringing the tax burden of this type of employment more in line with international standards and making it more comparable with other income sources in Greece, without the need to increase the tax wedge on the latter to excessively high levels. Also, the tax rebate that is now offered in a largely indiscriminate way would be used, to a large extent, in a targeted way to support, in particular, working families while securing that especially pensioners of high age are protected from any reduction of their income. Within the context of the existing fiscal constraints, therefore, the redesign of the tax rebate offers enough freedom to shift the incentives built currently in the system, and that discourage salaried private sector work especially when it is of higher productivity, in exactly the opposite direction. Such a redesign has good chances to support the growth of activity and jobs and, therefore, the tax base. It should be mentioned here that the proposed measures are aligned with the recommendations following from the first steps of the analytical work the OECD is undertaking in the area of employment taxation, as summarized succinctly by Thomas (2011).

12.5 International Comparison of Greece

Within the context of a single market and in a globalized market with high mobility of tangible and intangible capital, the comparative burden put on production inputs matters for any country, and especially for a small country that is part of a single market. In the case of Greece—placed among developing, rather than developed, countries in a wide range of indexes that include the WEF Global Competitiveness Index, World Bank Doing Business and World Governance indexes, Transparency International Corruption Perceptions Index, and the Atlas of Economic Complexity index, to name a few—this matters more than in other countries. This is because of the high level of public and, given the decline in gross domestic product (GDP), now also private debt, that is more in line with the debt levels of developed countries. While the institutional maturity is a topic that is harder to address in the short term, as institutional reforms and changes in unwritten laws need gradually to adapt to a setting more in line with the practices of advanced economies, tax rates are usually easy to change from a policy perspective. The fact that the taxes, now collected with high rates and through an often arcane system, are required to service not only the workings of the state and the social security system, but also to service and repay the high public debt means that the strategy decided with respect to the level of taxation is key not only with respect to the growth prospects of the country, but also for the ability of the country to honor its present and future commitments. It is also relevant to the existing institutional environment, as, given its quality levels, it is unlikely that, when combined with high taxes that are usually found in countries with good institutions, the competitiveness of the country can be maintained (Aghion et al. 2016).

We first start out to compare the relative height and progressiveness, when compared to other compatible or more developed EU and OECD countries, for the private sector salaried labor tax wedge (Figs. 12.7 and 12.8). For many years, this fact has not received much attention, and this comment applies in particular to the concurrent preference to favor tax increases rather than structural cost reductions, by both Greek governments and the official lenders during the 2010–2015 period. As already mentioned, the sole exception to this rule is found in the 2016

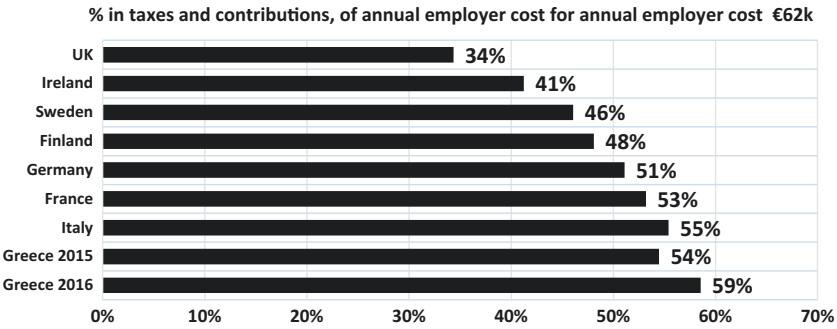

Fig. 12.7 Tax wedge for an individual costing 62000 euro per year to his employer, Greek and OECD countries. OECD taxing wages database, 2015, Greek laws

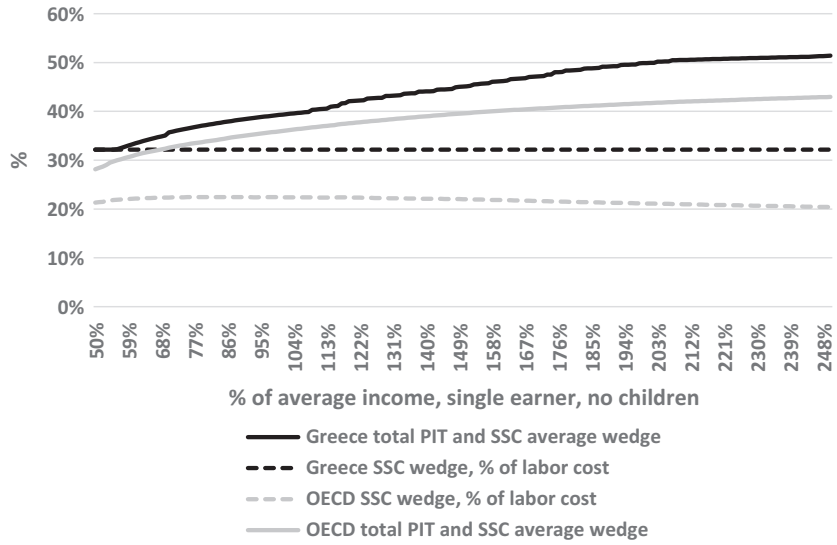

Fig. 12.8 Tax wedge for Greek and OECD countries, for range of incomes as percentage of country single childless average earner. OECD taxing wages database, 2015. PIT personal income tax, SSC social security contributions

IMF DSA and recent papers and statements by the IMF (IMF 2017). As we will see, the overtaxation of, in particular, private sector wage earners is matched with a disappointing tax revenue, as a percentage to GDP, largely because of the narrow tax base.

This means that the overtaxation of salaried private sector employment has not been linked sufficiently with the relative scarcity of private sector salaried employment—as an absolute number of salaried employees, as a percentage of the population, and as the wage bill of the corporate sector of the economy, as a percentage of GDP (Pelagidis and Mitsopoulos 2014). The remarkable extent to which the Greek economy eschews private sector salaried employment, especially at above-average wages as shown by the data of IKA cited in the previous section, and the extent to which the Greek economy seems to favor self-employment to an unusual extent (the ratio of self-employed to employees, both in the public and private sector, is 17.5% for the euro area in 2015 and 47% for Greece, according to Eurostat data; Greece has the highest ratio of self-employed to employees in the EU) in addition with the relative predominance of pensioners, often at young ages, and public employment are clearly compatible with the disadvantageous position this kind of employment has, both domestically and internationally. In addition, the Greek economy appears to emphasize the intensive use of capital, as reflected by the high capital-to-labor ratio and the low return on capital. Pelagidis and Mitsopoulos 2014 present data from balance sheet analysis, sourced from Bureau Van Dijk, to demonstrate that indeed profit margins in Greece were low even during the period of high growth, while recent research (Cette et al. 2016) suggests such a pattern can also be found in other countries that put a high burden, in the case examined of regulatory factors, on the input labor. One has to contemplate these facts as Greece now has moved to also significantly increase taxes on capital and wealth, which appears to have its own detrimental effects (e.g., all the literature following King and Fullerton 1984; Auerbach and Hassett 2016). In particular, taxes levied on dividends and corporate profits now add to relatively high levels. And once the social security contributions of company officers that are also shareholders, now levied on dividends, are added, the burden becomes the highest in the OECD and EU.

This situation, in turn, has significant second-order implications on all fronts. Better-paid salaried labor is a key input for larger, better-organized companies that are more likely to innovate, export, and adhere to the labor laws and tax laws on which they depend to a larger extent for their operation (e.g., Kumar et al. 1999). The tendency of larger companies to offer better wages is well established in the literature (e.g., Gibson and

Stillman 2009, OECD Structural and Demographic Business Statistics data), and applies also to the case of Greece, as can be shown with the use of data from IKA (e.g., Mitsopoulos and Pelagidis 2011). This fact can, in turn, be linked both with the ability of larger companies to use their financial strength to offer better wages, and thus attract better talent, among other reasons (Brown and Medoff 1989 that also review early related literature are a good starting point to access the vibrant and extensive related literature) but also the lower turnover costs and inherent higher productivity (early evidence was presented, e.g., by Brown et al. 1990 and Holzer 1988, with more extensive and recent evidence presented in Bartelsman et al. 2013 or, based on the World Bank Enterprise Survey, in IFC 2012). Looking at the other side of the coin, one can argue that better-paid labor is a key input for successful companies that have succeeded to establish a competitive advantage and grow rapidly in size building exactly on this success that among others makes them key contributors to job growth (Haltiwanger et al. 2013). Taxing highly and progressively salaried labor works, therefore, as a regulation that discourages the growth of companies, and when this progressivity is high, the administrative obstacle holding back company growth is commensurately high. Bartelsman et al. (2013) proceed to argue how such an administrative burden can encourage companies to stay small and, thus, given the robust relationship between size and productivity, reduce productivity in countries that adopt such administrative disincentives for companies to grow. This result is in line with the comments made in The Economist (2012a).

The small average size of the Greek company (Fig. 12.9) is indeed compatible both with the documented higher levels of tax evasion and unofficial economic activity, as well as with the higher levels of clandestine employment and it is exactly this process that suppresses the average productivity in an economy. It is also compatible with a reduced predominance of manufacturing in the economy, as manufacturing involves on average larger companies and even larger SMEs that are part of value chains that develop around larger companies, and that depend on salaried labor more than SMEs that are not part of such value chains, like companies in the retail and the food and board business sectors (that, as shown by Davis and Henrekson 2004, find it easier to substitute official for clandestine labor). The relatively poor performance of the country in the indexes of the Atlas of Economic

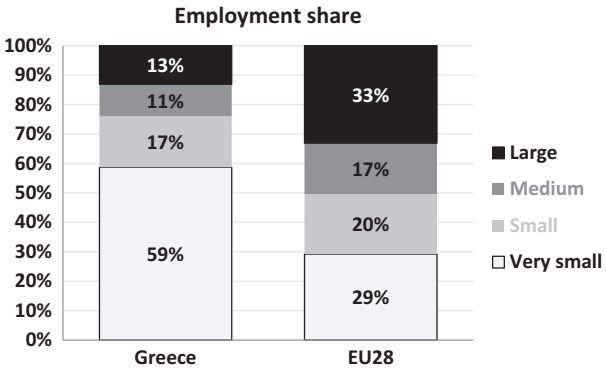

Fig. 12.9 Employment in business sector according to company size. European Commission SBA Factsheet 2015 for Greece

Complexity, along with the comparative—to other EU countries, for example, according to Eurostat data—small contribution of manufacturing to value added and employment (Mitsopoulos 2014), can thus also be linked to the overtaxation of this labor input, especially to the extent that an arcane transformation of the minimum wage into hourly wages and back for blue-collar workers increases, in the end, their minimum wage. The deficit observed in private sector salaried employment especially among larger companies, in turn, is observed at the same time an overall deficit in employment is observed (the employment rate for the whole population above the age of 15 is 39% in Greece, as opposed to 50.6% for the euro zone and 52.1% for the EU28 and according to 2015 Eurostat data. For the 15–64 age group, the employment rate in Greece is, respectively, 50.8% and 65.6% for the euro area. In both cases, Greece has the lowest rate in the EU.). This strongly suggests that there may be a positive relationship among private sector employment and the capacity of an economy to provide, overall, many employment opportunities within the context of a business ecosystem that has a balanced distribution of companies according to their size and that can support more complex production networks.

Comparing the tax receipts from personal income tax in Greece, as a percentage of GDP to the European average using the European Commission Taxation Trends database, reveals a small deficit that persists till the year 2012, when data is available in the format more convenient to

make the point (Table 12.2). It should be added that more recently published data that include the years 2013 and 2014 do not offer a structurally different picture; simply, the breakdown of the data is less suited to our presentation purposes. But this picture is misleading, as the employment-to-population ratio, as we have seen, is below the European averages, which means that since, on average, personal income tax contributes at a level relative to GDP that is only slightly lower, the per capita contribution of those few that contribute is above average. This in turn means that this above average, when compared to the European averages, per capita tax burden is placed on relatively few individuals with above-average income, given the progressivity of the tax system analyzed in Sect. 12.4.

In addition, data on social security contributions show about average contributions from wage earners and self-employed. But since the wage earners are relatively few, the self-employed relatively numerous, and the sizeable imputed social security contributions that benefit public sector employees are excluded from the computation, it follows that the per capita contribution of private sector wage earners is high and that of self-employed low, when compared to the European averages. This is set to change since the second half of 2016, with the extension of the excessive tax wedge of salaried employment to self-employment, rather than the introduction of a similar but reasonable tax wedge for all. This analysis is compatible with the OECD taxing wages data that suggests an above-average tax wedge for salaried employment in the private sector, not only as a result of the progressive taxation at above-average incomes, but overall as a result of the high social security contributions. In addition, an analysis of the available tax data suggests that, while the self-employed form about one-fifth of total employment, the total declared wage income—from the public and private sector, and in spite of the tax-free threshold that is very generous and applies only to wage and pension income—is about six times the declared income from self-employment. Therefore, and at least in part, the conclusion that the actual tax burden on self-employment was lower, till the reforms of 2016, as a result of increased tax evasion appears reasonable, even when taking into account that many self-employed are highly skilled individuals (Mitsopoulos and Pelagidis 2011).

One has to add, finally, that Eurostat computes high imputed employer contributions in the general government, reflecting the high generosity of the public sector pension scheme, both in absolute terms and when compared

Table 12.2 Social security contributions and personal income tax as % of GDP along with employee and self-employed to population ratios

2012	Social contributions as % of GDP—Employers	Social contributions as % of GDP—Employees	Social contributions as % of GDP—Self-employed	Personal income tax, % to GDP	Self-employed to population	Employees to population
Belgium	8.9	4.4	1.3	12.7	6.7	35.2
Bulgaria	4.2	2.5	0.5	3.0	12.3	34.8
Czech Republic	9.9	3.2	2.5	3.8	7.7	40.0
Denmark	0.0	0.9	0.0	24.5	3.4	45.0
Germany	6.8	6.4	2.4	8.8	5.7	46.6
Estonia	10.6	0.8	0.1	5.3	4.1	42.6
Ireland	3.1	1.1	0.2	9.7	6.6	33.5
Greece	4.8	4.6	1.5	6.9	12.6	24.6
Spain	8.4	1.7	1.8	7.7	5.4	33.9
France	11.6	4.2	1.3	8.5	4.1	37.9
Croatia	6.0	5.3	0.2	3.7	7.5	29.5
Italy	9.3	2.4	1.8	12.2	10.6	29.9
Cyprus	6.2	2.5	0.4	4.0	5.2	40.3
Latvia	5.8	2.6	0.1	5.7	5.0	38.2
Lithuania	7.3	2.2	1.5	3.5	4.7	38.0
Luxembourg	4.9	5.2	1.3	8.6	4.4	39.5
Hungary	7.7	5.1	0.4	5.4	4.3	35.5
Malta	2.8	2.7	0.5	6.7	5.2	36.0
Netherlands	5.4	7.0	3.6	7.7	8.6	43.4
Austria	7.0	6.0	1.9	10.1	6.7	42.7
Poland	4.9	4.9	2.5	4.6	8.9	31.4
Portugal	5.1	3.6	0.3	5.9	7.5	36.3
Romania	5.7	2.9	0.3	3.5	13.7	30.1

Slovenia	5.8	7.7	1.7	5.8	8.5	37.4
Slovakia	6.8	3.0	2.8	2.6	6.4	36.4
Finland	9.2	3.0	1.0	13.0	5.7	41.2
Sweden	7.0	0.0	0.2	15.2	2.5	46.1
United Kingdom	3.9	2.6	0.2	9.6	5.8	39.6
Iceland	3.7	0.0	0.1	14.1	6.7	46.0
Norway	5.8	3.2	0.5	9.9	3.2	50.3
European Union	7.3	3.9	1.5	9.4	7.0	37.3
Euro area	8.3	4.4	1.9	9.2	6.7	37.8

European Commission Taxation trends in the European Union, AMECO database, 2012. 2014 data available, but with analysis that is less suited to support the argument made here

with the private sector. Till recently, the state did not pay any noteworthy social security contributions as an employer, given that it acted as its own social security fund. Therefore, the payout to former employees that have taken their pension reflected the terms of retirement that existing employees could expect. The higher than in the private sector average pension (according to the publications of the monthly reports of the HELIOS system of the Ministry of Labor, Social Security and Social Solidarity published in 2015) and the often young retirement age reflect the key parameters of the generosity of this system, at least till the most recent reform took place.

12.6 Some Further Social Implications of the Overtaxation of Key Productive Inputs

The crisis has had severe social implications (e.g., Matsaganis 2013; Giannitsis and Zografakis 2015; European Commission 2015), which are a result not only of the way the pressure to reform and consolidate was transposed into policy action, and for some periods turbulent inaction, but also of the implications the resulting political uncertainty had on the economy (e.g., Pelagidis and Mitsopoulos 2014, 2016). Within this context it has to be stressed that, as the pressure mounted in particular on the private sector where massive layoffs pushed many families below or close to the poverty level especially when they had children and as suggested by Eurostat data on risk of poverty and material deprivation, the qualitative challenges of the national health and education system became of increasing importance and, at the same time, amplified as the government proceeded with frequent and usually untargeted budget cuts. These challenges are documented through the poor performance of Greek public schools in the OECD PISA survey, which in turn can be linked to the combination of low autonomy and low accountability (OECD 2013), and a similar situation faced by Greek institutes of higher education (Mitsopoulos and Pelagidis 2008). They are also documented in the poor performance of the public health system, as the special eurobarometer of June 2014 documents that 74% of Greeks rate the health system as "bad", as opposed to an EU average of 27%. In addition, 78% of Greeks believe that they can suffer damage to their health during a treatment, as opposed to an EU average of 53%. At the same time, many qualitative indexes

collected by the Euro Health Consumer Index (2015) point out both grave resource misallocation and severe shortcomings in the quality of the Greek health system, with both the perception of corruption and the overuse of antibiotics and, in particular, more expensive imported patented ones, diagnostic tests, and cesarean sections, suggesting a failure to use the, now even more limited, resources in a targeted way.

In addition, the impact of especially job loss on families with children, that are predominantly part of the private sector as job loss in the public sector was mainly associated with early retirement, has further highlighted the weaknesses in the system that supports working parents. This is exemplified by the low percentage of Greek children that are in official childcare, for the 3- to 6-year age bracket but, in particular, for the under 3-year age bracket (according to 2014 Eurostat data, in Greece, 35% of the children between 3 and 6 years have no formal childcare, the fourth largest percentage in the EU, while the EU average is 17%), suggests that the lack of such public infrastructure indeed challenges lower income families that strive to balance parenthood and the ability to find or retain a job during the crisis. This, it should be noted, is the case in spite of the low number of children in Europe's fastest-aging society. Furthermore, a sector-by-sector comparison of employment rates to European averages suggests that, besides the large deficit in manufacturing employment, construction, and employment in supporting business services, the other sector with a sizeable and visible employment deficit is the sector of social support services. This finding is compatible with the deficits documented in childcare, and that are also evident in the care of elderly people as suggested, for example, by the low number of senior care units.

Along with the non-reciprocity of a large part of social security contributions, especially for private sector employees, and the structure of the tax system, these facts complete a picture according to which especially the private sector employees, and their employers, do pay high taxes, but do not gain access to quality public services in return. The effort to describe a number of important parameters of this reality is connected with the analysis of the tax system in Greece, given the insights offered by works like Garcia and Sala (2006) and Davis and Henrekson (2004), which show that the reaction of the labor market to taxes differs, among others it goes without saying, according to the reciprocity of the services provided in return to these taxes, especially toward the lower end of the job market.

As far as public sector employment is concerned, higher job security was correctly perceived as a fact. During the crisis, unemployment was essentially something that bothered the private sector given that the reduction of public sector employment was a result of massive and early retirement schemes in spite of the above average, when compared to the private sector wages (Pelagidis and Mitsopoulos 2014) and a much more generous pension scheme, as reflected by the high imputed employer contributions estimated by Eurostat. This situation persisted for many decades, encouraging a crowding out of employment from the private sector by the public sector, as argued by Malliaropoulos (2011). The force and duration of this process is directly linked with the depletion of the production base of the country, the proliferation of small businesses that have low productivity and an increased propensity to operate within the shadow economy, and, finally, the predominance of the services sector that has, overall, led to the unusually high ratio of private sector consumption to GDP that is documented in Greece (about 10 p.p. higher than the EU average, and one of the highest in the EU during the past years). The fact that this ratio has not declined during the implementation of the adjustment programs, which were supposedly aiming to support an export-led recovery, in combination with the persistence of the overtaxation of the key inputs as described, strongly suggests a positive relationship between these two developments. It also suggests that the failure to assess the link between the structure of the tax system, the small average size of the Greek company, the competitiveness deficit of the country, and the weak performance of the job market has been a particularly weak point of the adjustment programs.

12.7 Data Analysis According to Company Size

The companion Chap. 13 attempts to identify the impact of tax wedge changes on employment development, within the context of, at times, intensifying uncertainty, and the implementation of structural changes in labor and product markets.

Overall (Table 12.3) the analysis shows how the lower end of the job market is faster to react to changes in the tax wedge, which underlines the importance of tax decreases to support quick increases in employment,

Table 12.3 Summary of results from Tables 13.1–13.4

Coefficient. Negative coefficient and decline in dependent variable means increase in employment.	Part time	Low-income full time	High-income full time
Seasonal (summer) effect	+	+	–
Tax wedge (decrease for low incomes, increase for higher ones)	+	–	+ small companies at very high incomes
Dummy for 550–750 eurobracket	N/A	+	N/A
PMR reforms (increase of index means progress)	+	+ or insignificant	–
Wage setting reforms (increase in index means increase in flexibility)	+	+ or insignificant	–
ELA (decline)	+	+ or insignificant	–

Direction of reaction of employment per bracket from a change in the regressors, post 2012

especially at the lower end of the job market. Such a normalization, as shown by the analysis, also involves the reduction of part-time employment and the encouragement of better-paid employment in larger companies. With regard to the upper end of the market, the analysis demonstrated a solid and constant reduction of employment at higher remunerations. This trend seems to be rather unaffected in the short term by changes in the tax wedge, which nevertheless has always only increased in the period examined for higher incomes. The strong negative impact of the June dummy on the year-on-year changes for better-paid employment is documented, but remains unexplained by our approach and data, beyond the suggestion that it may pick up delayed reactions to general developments—and that exist as the strong downward average year-on-year change shows, and that coincide with the start of the summer period. Thus, the rationalization of the tax rates that apply at higher incomes would probably take longer to show results, which nevertheless will materialize with some delay as also suggested by the related literature. In the short term, a stabilization of employment at higher incomes is more likely to follow from a reduction in uncertainty. High uncertainty in the presence of the increased flexibility of labor markets has, so far, also driven employment toward part-time employment and out of well-paid employment, but left, on the aggregate, the aggregate population of lowly paid full-time employment mostly unaffected.

12.8 Conclusion

The issue of taxation has been central to the public discourse in Greece during the past years, and central to the discussions among policymakers both within and outside the country. The need to meet fiscal targets, and the resistance to cut expenditure through structural reforms, has repeatedly led to tax increases, usually with a focus on increased progressivity in order to fit the numerous tax increases better within the political rhetoric. This chapter argues that, along with the insights gained by the existing and extensive literature, a detailed analysis is required, and that succinct evaluations may not be able to fully capture the attributes that drive a reaction of employment in Greece to further tax increases. An attempt toward such an analysis, based both on previous research and the use of datasets on declared incomes as well as private sector salaried labor, examined the impact of taxation in two separate approaches. First, the way salaried labor in the private sector is placed at a disadvantage, especially when better-paid, both within the country and internationally, labor is documented. The drivers of this situation are pinpointed in the combined effect of very progressive personal income taxation and high social security contributions for private sector employees. Given that, at least till now, self-employment, clandestine activity, and public sector employment, along with generous pension schemes, faced ultimately significantly lighter tax wedges, the production processes that depend disproportionally on full-time salaried employment were placed for years at a competitive disadvantage in Greece. As large, more productive, growing companies that are more extrovert and stronger engaged in innovation are exactly such cases, the structure of the tax system in Greece can be directly linked to the small size of the average Greek company and, overall, the low competitiveness of the economy. Given that this situation also places the Greek companies at a disadvantage when compared with companies in other countries, this situation can also be linked with the failure of Greek companies to become, on average, more competitive in international markets.

The analysis of the evolution of employment, per income brackets in the companion Chap. 13, since 2010 suggests that taxation exerts a strong and immediate influence toward the lower and lower medium end of the job market, with tax increases leading to quick increases in part-time employment and a decline in full-time employment. At the same

time, uncertainty and the pressure to deleverage the economy appears to be a more important driver of short-term job market developments as one moves to higher-income levels, although taxes are both higher and increasing more persistently here. At these levels, it appears, high taxes support a slow-moving reduction of the number of employees that remains unaffected by short-term tax wedge changes, a pattern that appears compatible with the findings of the literature in other countries. On the other hand, uncertainty and its economic implications appear to decisively reflect on such employment in the short term.

As a result, increases in the tax wedge for private sector employees along with a continuing pressure to deleverage in the economy are not developments compatible with the increase of non-wage competitiveness, or the rise of a corporate landscape that will be more competitive internationally, supporting a robust increase in exports along with the stated program goals. As such, the approach taken during the past years, once again, toward tax policy is not supportive to the aim of a solid recovery of Greece. The excuse of fiscal constraints does not justify the continuation of a structure of tax policies that appear to be strongly linked with the structural weaknesses expressed by the Greek economy across multiple dimensions, given that the overly generous tax rebate can be reallocated in a socially just and useful way. In particular, the tax wedge should be drastically reduced especially for private sector salaried employment. But this reduction should be paired with a reallocation of the tax rebate toward a reduction of social security contributions in the private sector. Furthermore, it should also finance a new benefit system that links tax rebates, beyond a certain level, with the existence of dependent children as well as the age of pensioners. Such a reform could significantly realign the incentives offered by the tax system, encouraging the expansion of activities that depend on private sector salaried labor. The impact would be substantial and immediately visible toward the lower end of the job market—something that will have a strong and immediately visible impact on the coherence of society. It would also contribute to the turnaround of the Greek economy and the reduction of uncertainty that will in turn contribute toward putting a break on the erosion of the job market at higher skill levels. This will be the case especially if, at the same time, extreme marginal rates, that apply to very few individuals and, therefore, have a reduced fiscal impact, are reduced to more reasonable levels, in order to stop the slow-moving brain drain.

Appendix 1

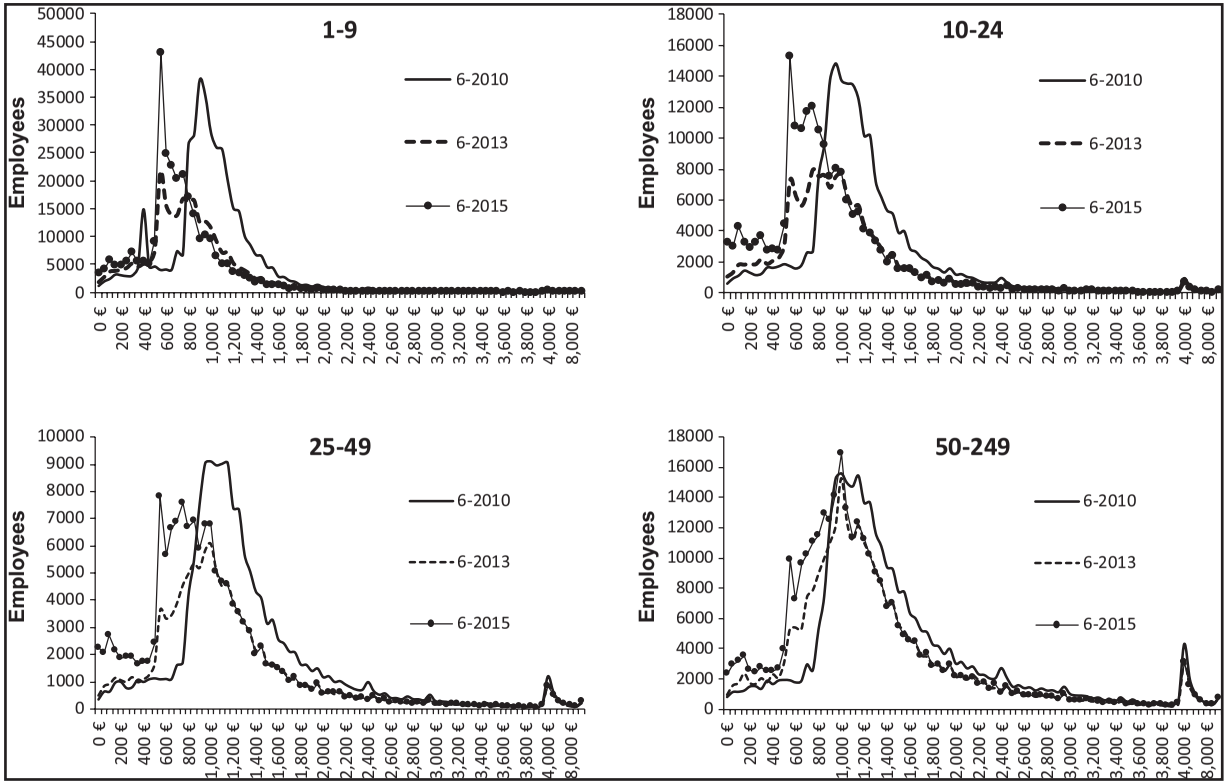

Fig. 12.10 (continued)

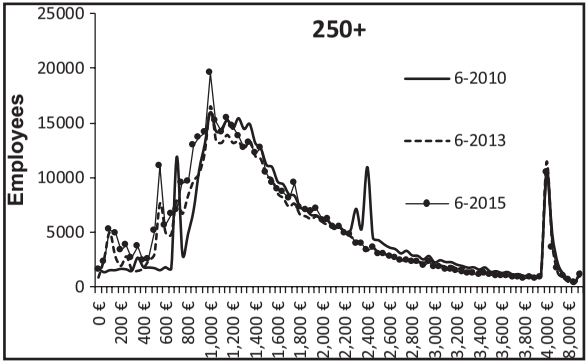

Fig. 12.10 The evolution of full-time employment 2010–2015, according to company size
Data source: IKA.
Notes: Vertical axis, number of employees. Horizontal monthly gross wage declared to IKA. Figure per company size, as measured by number of employees declared to IKA

Appendix 2

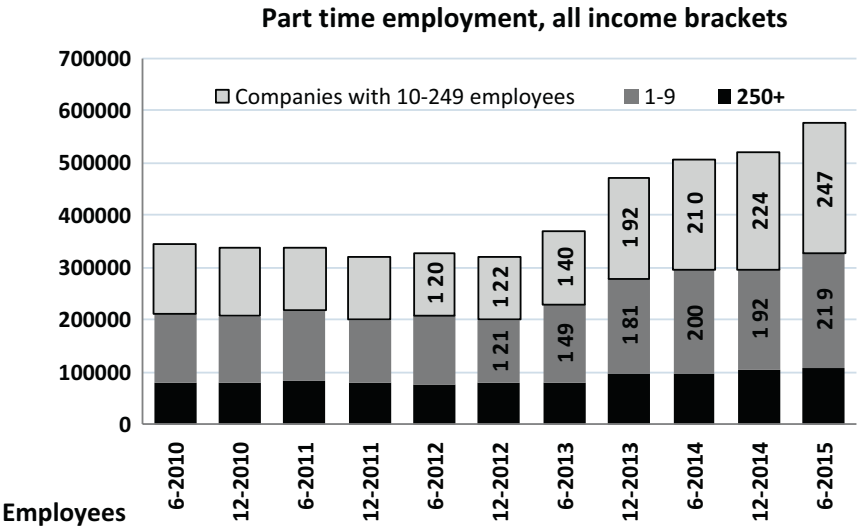

Fig. 12.11 Evolution of part-time employment
Data source: IKA

Appendix 3

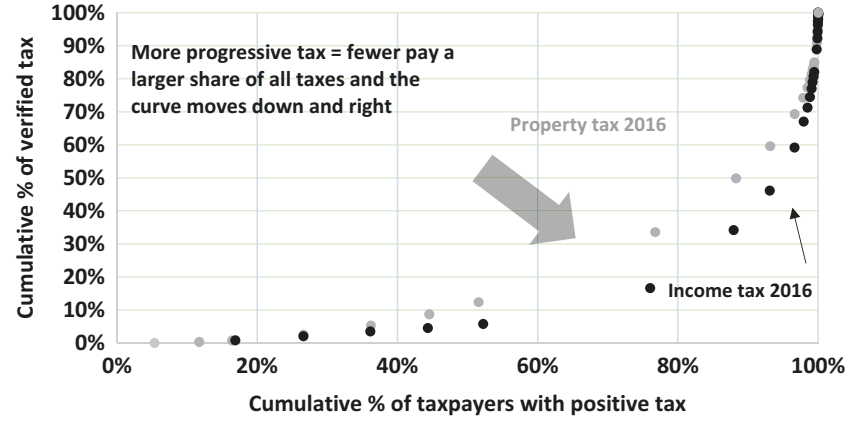

Fig. 12.12 Comparison of progressivity of personal income tax and property tax, 2015
Source: Ministry of Finance report on ENFIA for 2016 and data provided to the press

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13

The Reaction of the Greek Private Sector Job Market to Changes in Tax Rates and Uncertainty

Michael Mitsopoulos

13.1 Introduction

Having described the structure of the Greek tax system, and the persistence of this structure during the crisis in Chap. 12, we turn in this chapter to examine the effect of the changes in the tax wedge on private sector salaried labor, especially during the most recent crisis years. Taking advantage of data that allows us to track full-time employment in both the lower end of the job market and the upper income echelons, we can investigate the impact of tax policy changes in different segments of the job market. In addition, the available data allows us to treat separately part-time employment. This analysis is, in addition, performed for various firm sizes, in order to gain better insights regarding the impact of both the implemented tax policies and the evolution of the macroeconomic environment that affected the private sector.

The documented impact suggests that changes in the tax wedge have an immediate impact on the lower end of the job market. But the analysis

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also shows a strong, but less easy to analyze, decline in better-paid full-time employment and that is documented during the 2013–2015 period. While the average tax wedge for the upper echelons of the job market steadily increases, the decline in employment seems to be affected mainly by a steady trend that goes beyond the short-term impact of further tax increases, and by fluctuations in our metric for uncertainty.

These results should be considered when designing national tax policies and the adjustment program, in order to nudge the distribution of employment in Greece toward patterns that would be more aligned with the stated goal of a recovery that is based, among others, on sophisticated non-wage competitiveness and that can increase the supply of tradable goods. Section 13.2 presents the data and the data sources, and Sect. 13.3 proceeds with the analysis of this data. Section 13.4 summarizes the key results of the analysis and Sect. 13.5 concludes.

13.2 Presentation of Data and Data Sources

This section strives to identify the impact of tax wedge changes on employment development, within the context of, at times, intensifying uncertainty, and the implementation of structural changes in labor and product markets. The dependent variable will be employment of salaried private sector labor per annual gross-salaried income bracket, and the independent variables will include, beyond the average tax wedge, a measure of uncertainty that also reflects the pressure on private sector access to finance as well as measures for the perceived reforms in product and labor markets.

Regarding the independent variables, beyond the average tax wedge, we use the liability side entry of commercial Greek banks toward the eurosystem, that included the access to Emergency Liquidity Assistance (ELA) but also the other facilities provided by the eurosystem, and as provided by the monthly statistical reporting on the website of the Bank of Greece. Given that this dependence increased during times of increased uncertainty, when deposits were being withdrawn faster than loan portfolios could deleverage, we can use this dependence as a proxy of the level of risk in the country and the acuteness of the pressures excreted on the private sector with respect

to access to finance. It should be noted that the disadvantageous, with respect to the other euro area countries, terms of access to finance, especially in terms of real interest rates that are important for companies that see their debt burden increase in a disinflationary environment, and after taking into account the effect of tax increases on prices in order to estimate the true impact of disinflation, had and have a substantial effect on the Greek economy (e.g. Mitsopoulos 2016). This comes as no surprise given the influence interest rates have in some of the research cited in Chap. 12 that investigates the size of the fiscal multiplier. Given that our data reaches till June 2015, and as the implementation of capital controls took place in July 2015, we do not need to include a dummy for the introduction of capital controls.

The data for product market reforms, used as one of the independent variables, are sourced from the WEF GCI, in the form of product market efficiency, while for labor markets the WEF GCI variable on wage flexibility is chosen here as it captures in particular changes in the wage-setting mechanism that include, but also go beyond, the reduction in the minimum wage. Given that during this period of recurrent and increased uncertainty structural reforms were implemented, but their progress is documented in indexes that evolve along with the deepening of the crisis and the increase of the dependence of the banks on the eurosystem, an inclusion of institutional variables needs to be assessed with caution. This happens as contrary to the case of Mitsopoulos (2016) no data for other countries, which could help the regression pick up the separate impact of the two variables, is available here.

Our dependent variable will be the data made available by IKA (the social security fund for private sector salaried labor, now absorbed by the all-encompassing EFKA), from June 2010 till June 2015, and that includes the number of employees by monthly gross income bracket with a grid of initially 50 euros from 0 till 4000 euros, and then with a grid of 1000 euros till 10,000 euros monthly gross income. The data regards companies of the private sector or state-owned companies but that employ their staff according to the terms of the private sector, except construction sites. The employment of the latter, it should be noted, declined strongly as a result of severe policy failings that were particular to the construction sector and real estate market. The income bracket is for the so-called gross wage, that

is the wage received by the employee before tax and including his social security contributions, but not the contributions paid by the employer. Also, the data corresponds to the wages paid at the end of the month; thus, they do not include wages owed by the employer and for which he did not file a return to the social security fund and did not pay the owed social security contributions. Since the latter are a fixed ratio with respect to the gross wage up to a threshold (approximately 5500 euros per month, after which social security contributions remain flat reflecting in principle the fact that benefits no longer increase), it is easy to adjust and to compute the total monthly cost to the employer. IKA data does not record other types of compensation like overtime, surcharges for night shifts or bonuses and perks, an omission that will constitute a measurement error in the present analysis to the extent that especially during the 2010–2012 period compensation declines took place mainly, beyond layoffs, through the reduction of such non-wage compensation items (Pelagidis and Mitsopoulos 2014). In addition, while we have access to the number of employees within a given income bracket, and in order to compute the tax wedge faced by the employees within a given bracket, we have to overcome the obstacles set by the fact that our data is grouped in these brackets. The approach selected is to take the average of the bracket lower and upper bound, and to compute the tax wedge that corresponds to it. This approach is generating a number of additional challenges to the econometric analysis that is to follow, but they are not critical in the sense that it is still possible to obtain useful results in spite of their implications.

With respect to the tax wedge, the laws regarding income tax, the solidarity surcharge, employer social security contributions, and employee contributions were collected for the 2010–2015 period (laws 3842/2010, 4024/2011, 4172/2013 plus the change in social security contributions). It was assumed that changes in the laws and rates applied to the period the legislation effectively took hold, as any other approach would be arbitrary given the very different political circumstances relating to the various legislative changes. Again, any deviations from the accuracy of this assumption are equivalent to measurement errors or omitted variables. Applying the formula for the income tax and social security contributions, including the tax rebate formula and the cutoff level of the contributions, to the monthly average income of the grid times 14, to simulate a year of private

sector full-time employment, the corresponding tax wedge was computed along with the average tax wedge on any given bracket. It should be noted that beyond the changes in the rates, the changes in the structure of the tax rebate were more arcane and, therefore, not always well understood. Effectively, the tax-free threshold that applied to all income was replaced in 2013 by a rebate system that kept the tax-free threshold intact for lower-income employees but reduced its size as income increased. The assumption of year-round full-time employment is clearly not accurate for a part of the population, and in particular for the labor market churn. But as a result of the high tax rebate at lower income levels, only the rate of social security contributions is relevant, so the obtained results are not affected by this setting in the case of part-time employment. The extent of the churn can also affect the part of the distribution of full-time employees that appears at monthly incomes that correspond to less and more than the minimum wage—their low monthly earnings are a reflection of their hiring after the start of the month or their departure before the end of the month. This is, once again, equivalent to a measurement error and missing variable, especially to the extent that we have changes in the churn patterns over time.

Another issue requiring clarification is the use of the average tax wedge, rather than the marginal tax wedge that is often favored in the literature, and which offers more clear borders between brackets, thus possibly amplifying statistical significances. Even though marginal rates, which now exceed well over 60% for better-earning individuals according to the OECD Taxing Wages database, are highly visible to employers and employees, and thus can have a disproportionate effect on their behavior, it is also true that the marginal rate can misrepresent the evolution of the average tax wedge. This is true especially for lower medium and medium incomes in the presence of a complicate tax rebate formula that is subject to extensive parametric changes, as happened in Greece during the 2010–2015 period. Therefore, the full application of the rebate system and the solidarity tax that leads to the computation of the average tax wedge, is used in an effort to capture the combined effect of all these on the actual burden posed on wage income.

We may have access to essentially the population of the private sector employees (beyond clandestine employment or employment that is

owed salaries by its employers) but as we have data for only 2 out of 12 months for each year, essentially our cross section is a sample, and not population data. It should be noted that the months of June and December were selected as they offer a mix of summer (when tourism-related employment is high) and winter (when the latter is not as pronounced) and that also is reflecting the seasonality of employment in education (in July the number or seasonal employment in education has started to fall, but has not reached its through, while in December it remains at full employment). In addition, a very practical reason was that for these two months IKA publishes more detailed bulletins and also that the Department of Actuarial Studies and Statistics of IKA is able to provide more detailed data if requested, as it kindly did in order to prepare the dataset used in this analysis.

Our analysis needs also to take into account the minimum wage and the change that was legislated from 2012, and this is done with a dummy that reflects the wages corresponding to the available bracket limit close and below the minimum wage that applies after 2012 (550 euros) and before (essentially 750 euros, again taking an approximate bracket close to the real minimum wage of 780 euros). This dummy will be included only when relevant, that is only for full-time employment in wage brackets that include this monthly gross wage range.

A more serious challenge presented by the data is that the data provided by IKA, and that offers us a dependent variable per group in the form of the number of employees per income bracket, essentially can be matched only with one independent variable that is directly related to the skills of each employee. This variable is the tax wedge we compute, and that is used under the assumption of the exogeneity of the tax wedge due to behavioral changes as the ones envisioned by Saez and Diamond 2011. That is, we assume that the evolution of the number of employees is not related to a tax policy response as the time window we work in is not sufficient to elicit such changes. Our other independent variables that include measures of the strain on private sector financing and reform progress, for example, are not able to cover the absence of a measure for skills, that is important in standard equations that essentially investigate the supply, demand, and equilibrium of labor. While data for educational achievement, for example, is made available by Eurostat, there is no way

to link this data with the data we have and that regards the distribution of employees across income brackets for a given period of time. Given these constraints, the way forward selected is to take differences year on year for employment levels for each bracket, as that way we have a high likelihood to remove from the regression most of the effect of skills. Doing so, on the other hand, implies that, after demeaning the data, we miss the ability to take into account the concentration of employment in certain brackets, and that may influence average results for each of our separate regressions. This is even more the case when the number of brackets included in each separate regression changes, as will happen in the approach finally adopted. This consideration always applies when we take log-differences of employment, in which case essentially our dependent variable is the percentage change in employment, irrespectively of the density of the distribution at any given bracket. Therefore, we will also limit the interpretation of the results to the sign, as well as the relative size and significance, of the coefficients for the transformed data.

Full-time and part-time employment are analyzed separately, in order to investigate in a detailed way the different dynamics affecting both types of employment. Another reason to do so is the fact that the distribution of employees across brackets differs substantially. For example, the mass of part-time employees is concentrated toward lower wages in a range that starts from below to a bit above the minimum wage, and the distribution of full-time employees, beyond churn, essentially starts above the minimum wage. The latter first rises fast and occasionally abrupt, in order to decline, after about 1100–1200 euros of monthly wage, convexly as soon as the progressive income tax rate starts increasing, in a fairly uniform across company size way and persists across time (Appendix 1 of Chap. 12, Fig. 12.10). One can also observe the shifts toward employment in the newly deregulated lower minimum wage bracket after 2012 for example (Mitsopoulos 2016). Below this threshold, the dynamics, and the shape, of the employment per bracket distribution changes, in particular with respect to the slope which loses its clear downward and convex shape. In addition, the 2012 reforms smooth out the spikes of full-time employment after the minimum wage. This suggests that the visible wage increases (as also argued with 2009 data in Pelagidis and Mitsopoulos 2014) beyond the minimum wage that were

the result of the complicated construct that involved the unilateral recourse to arbitration together with the application of the favorability and extension principle were largely removed after the 2012 reforms.

13.3 Regression Analysis of the Data

During the first regressions, when untransformed data was used, strong heteroscedasticity emerged, both through White tests and through the visual inspection of residuals that revealed clear non-linear patterns that depended on the wage brackets in the case of full-time employment.

In initial regressions, that are not reported here, dummies were used for the part of the wage grid during which the tax wedge stays effectively stable (at the level of social security contributions) above the minimum wage level that applied before 2012. The latter was used, as the distribution of employees across the brackets that have a stable tax wedge is influenced by other factors, rather than changes in the tax wedge, during this interval, and in the regressions that covered all 2010–2015 data. In addition, it was attempted to handle persistent heteroscedasticity, even after the use of log differences, with the use of White robust estimators and SURE approaches for various specifications, but overall the results were never really satisfactory, with the visual inspection of residuals revealing clear patterns and the results being either not robust to various changes in the specification, unable to fully benefit from SURE, or with the interpretation of the results not standing up to all efforts to make them match the realities observed in the data and over time.

So, the effort to handle the data analysis with a few comprehensive regressions was given up, and it was decided to break the sample into many subsamples and deal with them separately. Untransformed data was used for part-time employment and lower-paid full-time employment. And, given the non-linear behavior of the distribution for higher wage brackets, natural log differences were taken for higher-paid employment as suggested in Greene 2003 and Wooldridge 2010, and they were used along with untransformed dependent variables, as this transformation largely eliminated the non-linearity that is also visible in Appendix 1 of Chap. 12.

Also, as in the final iterations presented here heteroscedasticity had been eliminated almost completely as a result of the breaking up of data

and its transformation in some cases, and the visual inspection revealed in almost all cases a near-perfect absence of undesired patterns, no effort was made to try to reintroduce comprehensive analysis through SURE for example. One loss of this approach is the inability to include a dummy for the increased intensity of audits for clandestine employment, that do coincide with the separation of the data around June 2013. In the related initial regressions this dummy had a significant and positive sign on part-time employment for smaller companies, suggesting a tendency of these audits to increase in particular part-time employment, or at least employment reported as part-time irrespective of actual working hours.

Regarding part-time employment (Appendix 2, Fig. 12.11) it exists above 1000 euro brackets in all company sizes, but generally at very low numbers as it reflects usually highly paid close collaborators or family members in small firms and free-lance professionals like accountants or lawyers in larger firms. Their market is not representative of the overall job market and part-time employment. Given that the number of employees is anyhow low, after some trial regressions for part-time employment the approach was limited to lower income brackets that slightly exceed the minimum wage, a practice that strongly increased the robustness and significance of results. Therefore, we focus on part-time employment in the 300–500 euro bracket, which contains the majority of the mass of part-time employment that is hired in order to keep compensation below the minimum wage for full-time employment, especially after the 2012 reforms.

Also, regarding higher-paid full-time employment, after some trial and error, it became evident that there are sufficient differences in the behavior of very high income brackets and upper medium income brackets in order to warrant separate regressions, that were rewarded with reduced heteroscedasticity, below significance levels, increased robustness and statistical significance, and results that were more easy to interpret. This can be rationalized also through an observation of the distributions in Appendix 1, where one can see how the slope of the distributions changes around this level for a number of company sizes. Tests for breaks are not reported, as a visual observation of the difference in the related R2 in the constrained and unconstrained regression was large and an observation of Tables 13.1, 13.2, 13.3, and 13.4 reveals that the differences in coefficients change between time, company size, and

wage brackets both with respect to their size and their significance in numerous ways that would be both lengthy, and unrewarding, to test 1–1, and then present here.

The use of data for June and December each year justified the use of a seasonal dummy, in our case for all June data, in order to capture the seasonal hiring especially as a result of the tourist season during the summer, and effectively, as a difference from the effect of December seasonal hiring, that also exists.

Data periods are June 2010–June 2013 and June 2012–June 2015, essentially including the June 2012–2013 period in both regressions. This is done as thus the length of the panel data includes a more satisfactory three-year-on-year difference, rather than limiting, say the first period, to only two as would be the case if we took only the June 2010–June 2012 period to isolate the period before the measures were implemented (in the latter case significance levels declined not only as a result of the reduced sample numbers but also because of the erratic developments of this period, with the negative impact of the rapidly increasing dependence on the eurosystem's assistance dominating).

The regressions take place for each of the five standard company sizes (small up to 9 employees, 10–24, 25–49, 50–249, and 250+ employees) labeled correspondingly sizes 1–5 in the relevant tables, with size "1" referring to the smallest companies.

For Tables 13.1, 13.2, 13.3, and 13.4 the dependent variable "ELA" reflecting the dependence on the eurosystem by the Greek systemic banks is in millions of euros divided by 100,000, the tax wedge is percentage points of the total employer cost, and Product Markt Regulation (PMR) and Employment Protection Legislation "EPL wage" are the World Economic Forum Global Competitiveness Index (WEF GCI) indexes scaled on the 1–7 (best) interval. For the range selected each time, taking year-on-year differences gives the average change that is presented in the column called "average" left of the variable code. Regressions were performed on demeaned changes.

Our approach, of taking differences per bracket, and effectively taking the average impact of changes in tax wedges and other dependent variables on the bracket averages, has the advantage that it makes full use of the available data, as opposed to the more common approach to use group

Table 13.1 OLS regressions for part-time employment 300 till 500 euro monthly gross wage

		June 2010–June 2013						June 2012–June 2015				
	Company size	1	2	3	4	5	Company size	1	2	3	4	5
	Mean	134	1914	2243	1953	1793		2460	4175	4488	4290	4058
	R2	0.214	0.65	0.703	0.639	0.603		0.385	0.641	0.703	0.663	0.64
	R2White	0.46	0.262	0.281	0.292	0.354		0.351	0.399	0.395	0.395	0.435
X2(4) critical value 14.86												
	N R2W	11.5	6.55	7.025	7.3	8.85		8.775	9.975	9.875	9.875	10.875
	N	25	25	25	25	25		25	25	25	25	25
	cst	*–99*	–4107	–4847	–4195	–3835		*–265*	–6827	–8043	–7228	–6762
Average year-on-year change of demeaned data	Season	*164*	6845	8078	6992	6391	Average year-on-year change of demeaned data	*442*	11378	13406	12047	11271
0.0005	Wedge	*305617*	466592	480563	473311	*377577*	–0.0064	848029	659025	631178	634252	794858
0.0080	PMR	*11804*	*–42427*	*–52863*	*–43536*	*–40837*	0.1080	*75219*	145933	159803	148869	159362
0.2000	EPL wage	*2055*	–38229	–45776	–39094	–36032	0.3511	*77470*	169209	186952	173479	18197
0.0220	ELA	*–2434*	–27053	–31599	–27595	–25382	–0.1486	*49557*	91491	99746	93180	99992

Italics: not significant, underlined: 3–5% significance, other: better significance

Table 13.2 OLS regressions for log differences of full-time employment, wage bracket 1150 till 2000 euro monthly gross wage on untransformed differences

	Company size	June 2010–June 2013						June 2012–June 2015				
		1	2	3	4	5	Company size	1	2	3	4	5
	Mean	−0.303	−0.288	−0.261	−0.428	−0.503		−0.209	−0.194	−0.172	−0.377	−0.481
	R2	0.801	0.734	0.734	0.665	0.743		0.596	0.484	0.247	0.87	0.86
	R2White	0.24	0.198	0.324	0.39	0.407		0.257	0.291	0.343	0.406	0.463
X2(4) 0.995 critical value over 80												
	N R2W	21.6	17.82	29.16	35.1	36.63		23.13	26.19	30.87	36.54	41.67
	N	90	90	90	90	90		90	90	90	90	90
	Cst	−0.04774	−0.07966	−0.14191	0.23399	0.40324		0.34569	0.28227	0.19121	1.05939	1.50822
Average year-on-year change of demeaned data	Season	0.07957	0.13276	0.23651	−0.38999	−0.67206	Average year-on-year change of demeaned data	−0.57615	−0.47044	−0.31868	−1.76565	−2.51369
0.0102	Wedge	*−2.57817*	25.75220	0.39442	54.79514	76.23576	−0.0056	*−12.33369*	*−12.41779*	*−12.62766*	*−19.02200*	*−24.27387*
0.0085	PMR	−3.80225	6.92844	11.42978	22.98790	33.93362	0.1082	−6.84705	−5.97727	−4.73510	−17.20664	−23.79978
0.2024	EPL wage	*0.08519*	0.48788	*0.19887*	4.47751	6.77941	0.3511	−7.50385	−6.43725	−4.91253	−20.08060	−28.06838
0.0223	ELA	0.43061	*0.23462*	*−0.14771*	2.16100	3.20047	−0.1486	−3.90189	−3.37935	−2.63363	−10.17243	−14.16923

Italics: not significant, underlined: 3–5% significance, other: better significance

Table 13.3 OLS regressions for log differences of full-time employment, wage bracket 2000 till 4000 euro monthly gross wage on untransformed differences

	Company size	June 2010–June 2013					Company size	June 2012–June 2015				
		1	2	3	4	5		1	2	3	4	5
	Mean	−0.165	−0.267	−0.301	−0.538	−0.725		−0.080	−0.168	−0.198	−0.454	−0.638
	R2	0.114	0.449	0.616	0.928	0.959		0.656	0.763	0.807	0.951	0.971
	R2White	0.008	0.011	0.005	0.056	0.164		0.026	0.027	0.021	0.024	0.054
X2(4) 0.995 critical value over 80												
	NR2W	1.64	2.255	1.025	11.48	33.62		5.33	5.535	4.305	4.92	11.07
	N	205	205	205	205	205		205	205	205	205	205
	Cst	−0.05575	0.17501	0.25062	0.78528	1.20646		0.48023	0.85577	0.98630	2.06241	2.82812
Average year-on-year change of demeaned data	Season	0.09291	−0.29167	−0.41769	−1.30879	−2.01076	Average year-on-year change of demeaned data	−0.80039	−1.42629	−1.64383	−3.43736	−4.71353
0.0097	Wedge	*3.95871*	8.72733	11.06086	15.10358	17.80566	0.0030	9.59907	*4.20406*	*1.68984*	*−2.30850*	*−2.00620*
0.0085	PMR	*−0.01915*	4.83405	6.69342	15.81055	22.83651	0.1082	−9.89368	−15.61084	−17.66062	−32.91839	−43.46611
0.2024	EPL wage	*−0.41634*	1.87988	2.61826	8.06605	12.36638	0.3511	−10.08810	−16.63624	−18.93521	−37.28490	−50.22784
0.0223	ELA	*−0.16164*	1.25560	1.71998	5.00377	7.59060	−0.1486	−5.19413	−8.53994	−9.72960	−18.08367	−25.18483

Italics: not significant, underlined: 3–5% significance, other: better significance

Table 13.4 OLS regressions full-time employment, wage bracket 500 till 1100 euro monthly gross wage

	Company size	June 2010–June 2013					Company size	June 2012–June 2015				
		1	2	3	4	5		1	2	3	4	5
	Mean	−2067	227	842	299	166		1135	2675	3095	2332	2301
	R2	0.513	0.506	0.542	0.487	0.427		0.623	0.71	0.755	0.667	0.672
	R2White	0.152	0.248	0.326	0.278	0.269		0.196	0.195	0.208	0.208	0.2
X2(5) 0.995 critical value over 80												
	N R2W	9.12	14.88	19.56	16.68	16.14		11.76	11.7	12.48	12.48	12
	N	60	60	60	60	60		60	60	60	60	60
	Cst	−2817	−7543	−8824	−7503	−7200		−1399	−7406	−9109	−5902	−5623
Average year-on-year change of demeaned data	Season	*94*	8707	11,016	8715	8479	Average year-on-year change of demeaned data	−1998	8608	11,573	5866	5450
	550–750 dummy	8280	6958	6644	6820	6337		7795	6722	6495	7147	7057
0.0081	Wedge	*15001*	*222846*	*290243*	*210216*	*22061*	−0.0127	−206612	−226861	−217126	−300470	−342170
0.0085	PMR	*3802*	*3278*	*7351*	*−1352*	*4268*	0.1082	−29909	56678	81891	*29138*	*22963*
0.2024	EPL wage	*−2812*	−43700	−53959	−44512	−42457	0.3511	−47390	57868	89122	*21293*	*12119*
0.0223	ELA	*−6887*	−38627	−47135	−38658	−37788	−0.1486	−23712	27808	43287	*9710*	*5070*

Italics: not significant, underlined: 3–5% significance, other: better significance

averages for analysis. As a result, it is undermining the ability to specifically trace the impact on aggregate employment, but this shortcoming is alleviated by the fact that the data is separated into so many subgroups. Also, this approach offers us a detailed breakdown of the distribution of employment, and its average reaction to the change in key policy and macroeconomic dimensions, as we are effectively estimating the attributes of the density function of employment along income brackets in four separate intervals and for five company sizes.

Observing data averages, during the June 2010–June 2013 period, there was a small increase, on average, in part-time employment in the 300–500 euro wage bracket, and for the June 2012–June 2015 period this mean increase per 50 euro bracket was markedly larger. Regarding full-time employment, for the 550–1100 euro bracket there was a small increase, except for very small companies where there was a strong decline, in the 2010–2013 period, while there was a strong increase for the 2012–2015 period, especially for medium-sized companies.

Regarding higher-paid full-time employment, the mean evolution (in percentage change here) was negative for all sizes and periods.

The seasonal effect of summer (June dummy) is strong for all periods and for part-time employment (it about doubles though for the 2012–2015 period) and for lower-pay full-time employment, and for all company sizes. On the other hand, it is negative, and lower, for larger companies, and the decline gained strength for the 2012–2015 period for well-paid full-time employment. This suggests that developments during the summer on previous summer periods of the examined data, or during the ten months we are not having data, affected strongly and negatively this type of employment. In particular, the loss of employment for full-time employment at higher wages, and among larger companies, appears to be particularly pronounced for a comparison between June 2014 and June 2013 as well as June 2015 and June 2014, with the changes in December on December of the previous year changes being neither so consistently negative, nor of compatible size when they are negative. So, a simple computation of the differences per bracket as described reveals that such a strong loss of employment, as picked up by the seasonal dummy, indeed exists in these cases.

The WEF GCI subindexes for product market efficiency seem to have affected positively, especially part-time employment after 2012 in all but small companies, and negatively highly paid full-time employment after 2012, reflecting possibly a parallel evolution of reforms with dynamics that did not favor such employment.

Increased wage-setting flexibility, according to the WEF GCI index, appears to have strongly supported part-time employment growth after 2012, and full-time employment growth at low wages among medium-sized companies after 2012 at the same time that it coincided with a fall in highly paid employment especially at larger companies and for very high wages. This development is interesting to compare with the impact of the tax wedge. For the 2010–2013 period the increase of the tax wedge was universal, leading to a weakly significant increase in part-time employment and coinciding with a positive coefficient that is significant only for well-paid full-time employment. This reflects most likely a lag in the reaction of the market to the initial tax increases especially among higher-skill professionals, a result that would be compatible with the findings of, say, Moretti and Wilson (2015), Giroud and Rauh (2017), and Akcigit et al. (2015), given also the behavior of higher incomes subsequently. For the 2012–2015 period there was actually a decrease in the tax wedge, as a result of increased progressivity of the tax law of 2013 and the decline in social security contributions of 2014, for all but very high earners.

For these very high earners the impact of this increase coincided with a strong increase in employment among very small companies, possibly reflecting an increased tendency to declare incomes in these companies. Interestingly, the impact of higher taxes for higher earners in medium and larger companies is not significant (this is confirmed by the small robustness of the estimators to parametric changes like the wedges included in such regressions undertaken to test robustness, even though the signs generally did not change). This result is in line with the literature regarding the elasticity of employment to tax changes among higher-skill and higher-wage individuals. But we also have to keep in mind that, as already seen in Chap. 12, in Greece the high and progressive tax wedge, both when compared internationally and domestically, has led to

a long-term paucity of better-paid salaried employment. This may also mean that those that are indeed employed may face less elastic supply and demand, in spite of the further increase in the tax wedge. Also, it is a small country, and those reaching higher echelons in the wage grid usually have high skills and an educational background that offers links with abroad, a fact that makes them highly mobile, at least when compared to the average workforce. Thus, one cannot rule out, as also suggested by part of the literature cited in Chap. 12, that changes in employment toward the lower end of the market may be driven more by changes in labor demand as a result of tax wedge changes, but that for higher skill and income labor, lower-frequency demand and supply changes may become more important. As a result, the reaction time to changes in the tax wedge may change significantly, undermining the ability of our approach to pick up the slower, but potentially longer-lasting, response of higher-skilled labor to increases in the tax wedge, or to separate the impact of taxation increases and the impact of uncertainty. It may also be the case that this slower-moving process is related to the sign and significance of the seasonal dummy, to the extent that anecdotal evidence suggests a tendency of migrating professionals to quit jobs along seasonal patterns in order to benefit from the summertime to manage the reallocation.

Also, we do not track individuals here, but only bracket averages. This means that if there is a migration of incomes toward lower brackets, as documented by Giannitsis and Zografakis (2015), especially among higher-income brackets, the medium upper income brackets will both lose parts of their population, as they migrate toward lower brackets, and receive new members as those with previously higher incomes migrate into the given bracket. For this econometric analysis, the result would be results of low significance, as observed. In the end, we need to keep in mind the fact that both the numbers of these higher-earning individuals are small in Greece, and that during the crisis years their number has been put on a less volatile, when compared to lower-paid employment, but now solidly declining path. This implies a loss of lucrative, for the state, tax payers, and a loss of skill and leadership for the private sector. The long-term impact of this loss should not be underestimated.

For low-paid full-time employment the fall in the wedge coincided with an increase of employment in all cases, but for very small companies that again seem to be subject to different mechanisms, and a strong decline in part-time employment, suggesting that decreasing the tax wedge on salaried employment at lower incomes drives employment out of part-time employment and into full-time employment.

The increase in the ELA dependence during the 2010–2013 period, reflecting the periods of increased uncertainty, led to a strong impact at the bottom of the job market, with an increase in part-time and low-paid full-time employment, while at the higher-income brackets for full-time employment the impact was insignificant or positive, indicating again that the lower end of the job market is more flexible and reacts faster in such cases. After 2012 the decline in uncertainty, as reflected by the gradual decline from ELA dependence, has led to a force that pushes part-time employment down, suggesting that normalization does favor full-time employment. Still, the impact on lower-pay full-time employment appears insignificant in most cases, or suggests a decline as well. This development is in line also with the substitution effect between the two employment types observed at these levels of income with respect to taxation, and may once again reflect the effect of migration of employees between brackets. On the other hand, the impact of the fall in ELA has been to lead to a supportive pressure on better-paid full-time employment, that is intuitive, significant, and increases steadily in size as companies get larger. This suggests overall the positive impact of the normalization of the economy on employment with these attributes, and shows how the normalization may be more important for these employees than taxation, at least in the short to medium run.

Regarding the dummy for 550–750 euros in Table 13.4, it is strongly positive reflecting on the one hand that by the end of 2012 there had already been a strong increase of employment in this wage bracket. The fact that this effect persisted after 2012, and the fact that increased churn before 2012 is included in this bracket, shows that the increased flexibility of the job market as a result of the lower minimum wage encouraged a strong migration of employment in the brackets between the old and new, lower, minimum wage.

13.4 Overview of Regression Results

From the preceding analysis one can see how the lower end of the job market is faster to react, the importance of tax decreases to support quick increases in employment especially at the lower end of the job market, the importance of normalization of the situation both for the reduction of part-time employment and the encouragement of better-paid employment in larger companies, and, finally, how, in the setting of uncertainty, the increased flexibility of markets has driven employment toward part-time employment and out of well-paid employment, but left, on the aggregate, the aggregate population of low-paid full-time employment mostly unaffected. The strong negative impact of the June dummy on the year-on-year changes for better-paid employment is documented, but remains unexplained by our approach and data, beyond the suggestion that it may pick up delayed reactions to general developments—and that exist as the strong downward average year-on-year change shows, and that coincide with the start of the summer period. Still, this steady downward trend in better employment is compatible, and it should be kept in mind with the steady increase of the tax wedge for better-paid employees throughout the crisis and for all the years examined.

13.5 Conclusion

The analysis of the evolution of employment, per income brackets, since 2010 suggests that taxation exerts a strong and immediate influence toward the lower and lower medium end of the job market, with tax increases leading to quick increases in part-time employment and a decline in full-time employment. At the same time, uncertainty and the pressure to deleverage the economy appears to be a more important driver of short-term job market developments as one moves to higher income levels, in spite of the fact that taxes are both higher and increasing more persistently here. At these levels, it appears, the opportunity to do business is more important than the tax for those, few, that were professionally active in Greece at the higher echelons of the salaried employment

market before the crisis, even though structural and other, possibly major, developments in the recent history of economic turbulence seem to have supported the strong trend to reduce this kind of employment. Thus, while changes in taxation appear to have an immediate and visible effect on the lower end of the job market, uncertainty and the general negative climate—that included taxation one has to stress—appear to be more important drivers for the immediate reactions at the higher end of the job market. Still, it remains along the ever-increasing tax wedge at higher income brackets, and we observe a steady decline of employment at these income levels that does happen to accelerate, for some reason, during the summer. Such a slow-moving trend, it should be noted, is compatible with the results found by the literature in other countries. Also, one has to point out, our analysis does not examine data for other countries as well, and, therefore, cannot link the progressive taxation with the perceived paucity of employment at the higher end of the job market.

A sizeable reduction of the tax wedge, mainly through the reduction of private sector social security contributions, along with a redesign of the tax rebate in the direction outlined in Chap. 12, along with a rationalization of the excesses of the tax wedge for higher incomes, especially through the solidarity surcharge, would, therefore, help to support, on the one hand, an immediate rebound of employment at the lower end of the market, and at the same time support the gradual strengthening of employment at higher income brackets.

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14

The Double Trap: Taxes and Subsidies as Determinants of Economic Growth and the End of the Downward Growth Spiral in Greece

Christos K. Tsenes and Dimitrios D. Thomakos

14.1 Introduction and Literature Review

The relationship between the size of government and the underlying growth rate of an economy has obviously not been a new topic. This debate has been conducted in various fields during the decades, each time under the prism of the contemporary socio-economic conditions. Post World War II left-right politics, various theories on political economy, evolution of econometric studies, and even further, political philosophy have been a few of the areas in which this dialogue has taken place.

Nevertheless, this debate seems to be returning back to the forefront. Earlier research finds a negative correlation between government size and growth. In his study, Cameron (1982) does find a negative correlation between the average percentage of government expenditure and the

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average rate of growth in real GDP; still, the chapter concludes that increased spending does not necessarily lead to stagflation, that is, a situation in which inflation is high, economic growth slows, and unemployment remains persistently high. Similarly, Landau (1983), after expanding the dataset with education, energy consumption, and other dummy variables, also finds a negative correlation. Analogous results can be found in other research such as Marlow (1986), Barro (1991), Engen and Skinner (1992), Hansson and Henrekson (1994), and Grier (1997).

It would be a surprise not to find work that rejects the hypothesis of a strong negative correlation between government spending and growth; Mendoza, Milesi-Ferreti, and Asea (1997) is one. However, such findings have been largely questioned due to the statistical methods used or the initial assumptions made. The rationale on which criticism is based is what is more widely known as "Wagner's law". The German economist Adolph Wagner (1835–1917) observed that, in the early industrialized economies, public expenditure was rising constantly as the gross national product was also growing. More recently, Easterly and Rebelo (1993) do show that there is a strong positive relationship between government size and per capita income, but this mainly refers to lower levels of income and does not hold for the highest levels of income.

More contemporary studies continue to explore further aspects of this correlation and offer more insight regarding cross-country differentiation and appropriateness of variables used. Fölster and Henrekson (2000) find a negative correlation, both in the case of richer countries, as well as when this small sample is expanded with non-OECD countries. What is more interesting is that results are more robust when government expenditure is used as an independent variable instead of total tax revenue.

Dar and Amir Khalkhali (2002), when they examined 19 OECD countries over the 1971–1999 period, concluded that, among others, total factor productivity growth is negatively correlated to the size of government; private-sector efficiency, fewer centrally imposed policy distortions, and the crowding-out effect[1] are some of the main arguments when trying to explain these results.

Romero-Avila and Strauch (2008) move one step ahead, breaking down government spending. They find that government consumption and transfers tend to affect GDP per capita in a negative manner, whereas

government spending has a positive effect when it takes the form of investment, highlighting the distorting effects of taxation on the accumulation of private physical capital. This is a differentiation similar to the work of Barro (1990), who distinguishes four categories of public finances: productive vs. non-productive spending (if expenditure is contributing to growth or not), and distorting vs. non-distorting taxation (if taxation is affecting the investment decision).

Looking at a wide range of research on the fields of development economics, one can find that government spending on infrastructure, support for R&D in the form of subsidies, setting a minimum wage, and/or funding for schooling can all have a positive longer-term effect on growth. This is more evident in the emerging and developing world, where this form of spending pushes out the Production-Possibility Frontier.

In Afonso et al. (2005), the authors conclude that "big governments" tend to perform less efficiently compared to "small governments". Again, going one step forward, Afonso and Furceri (2008) find that it is not only the level of the underlying variable which measures the size of government but its volatility, as well, that tends to have a negative effect on growth.

More specifically, indirect taxes, social contributions, government, subsidies, and government investment have a negative effect on growth; moreover, the higher the volatility, the lower the underlying growth in the economy. Only in a subset (EU countries) of the sample (OECD) do transfers have a positive and significant effect on growth.

Bergh and Karlsson (2010) added another factor in the equation: economic freedom and globalization. They do not deviate from other studies and confirm a statistically strong negative correlation between government size and its effect on growth. However, they argue that countries characterized by a high degree of openness and sound economic policies can use these features to alleviate the aforementioned negative correlation. Although the negative relationship still holds, countries scoring high in the Konjunkturforschungsstelle (KOF) Globalization index or the Fraser Institute's Economic Freedom index could end up with a weaker negative correlation. Hence, policies to lighten the burden of a big government upon the growth rate of the country could be achieved indirectly by increasing this country's openness to trade.

In this chapter, we bound our research on the relationship between the size of government and the underlying growth rate to the case of Greece. This country has already signed three memoranda of understanding and is already taking additional measures as a prelude for what could end up being a fourth one. It differentiates considerably from other cases in the European periphery and has lagged significantly in returning sustainably to growth rates. One can argue that it illustrates policy mistakes and one-size-fits-all approaches of correcting imbalances in the European Union, as well as inefficiencies commonly seen in the rest of the European south; and all this at a time when doubts over the coherence of the European Union have been rising, especially after the UK referendum and the triggering of Article 50 for exit from the European Union. We follow a two-part empirical methodology, first considering variations of the national income identity and, second, the temporal persistence of different explanatory variables on economic growth. We are mainly interested in examining the negative relationship between taxes and growth, at a time when the disposable income of the Greek household is shrinking, and the government's budget constraints do not allow for fiscal expansion.

The rest of the chapter is structured as follows: in Sect. 14.2, we describe the data and variables used; in Sect. 14.3, we discuss our empirical methodology; in Sect. 14.4, we discuss the first round of our results and introduce the notion of the budget constraint; in Sect. 14.5, we focus on policy implications; finally, in Sect. 14.6, we offer some concluding remarks and extensions of the current research.

14.2 Data and Variables

The source for all our data is the National Statistical Service of Greece, either directly from the official site or downloaded from Bloomberg, for maximum cross-variable availability and consistency. Our data is quarterly, spans a time frame from Q1 1999 to Q2 2016 and is based on the non-financial accounts of the general government.

We start by using two different measures of GDP as the dependent variable:

1. The year-on-year change of the nominal GDP, non-seasonally adjusted[2], in percentage terms % (variable name: GDPYOY).
2. The quarter-on-quarter change of the nominal GDP, non-seasonally adjusted, in percentage terms % (variable name: GDPQOQ).

Based on previous literature and our own initial conjectures, the set of explanatory variables includes the following:

1. The quarter-on-quarter change, the year-on-year change, and the share of GDP of the Gross Capital Formation, non-seasonally adjusted, in percentage terms % (variables' name: CFQOQ, CFYOY, CFGDP, respectively).
2. The quarter-on-quarter change, the year-on-year change, and the share of GDP of the Gross Final Consumption Expenditure, non-seasonally adjusted, in percentage terms % (variables' name: CONSQOQ, CONSYOY, CONSGDP, respectively); this covers both the general government final consumption and the private/household final consumption.
3. The Trade Balance (Exports minus Imports) as a share of GDP, non-seasonally adjusted, in percentage terms % (variables' name: TBGDP).
4. The Unemployment Rate, in percentage terms % (variable name: UNEMPGDP).
5. The Total Revenue, Total Expenditure, and the General Government Balance (Total Revenue minus Total Expenditure), as a share of GDP, in percentage terms % (variables name: TRGDP, TEGDP, PBGDP, respectively).
6. The quarter-on-quarter change, the year-on-year change, and the share of GDP of the Subsidies Payable, non-seasonally adjusted, in percentage terms % (variables name: SUBQOQ, SUBYOY, SUBGDP, respectively).
7. The quarter-on-quarter change, the year-on-year change, and the share of GDP of the Value-Added Tax Receivable, non-seasonally adjusted, in percentage terms % (variables' name: VATQOQ, VATYOY, VATGDP, respectively).
8. The quarter-on-quarter change and the year-on-year change of the Retail Sales, non-seasonally adjusted, in percentage terms % (variables' name: RETQOQ, RETYOY, respectively).

9. The quarter-on-quarter change and the year-on-year change of the Industrial Production, non-seasonally adjusted, in percentage terms % (variables' name: IPQOQ, IPIYOY, respectively).

The use of the aforementioned variables and their respective lags is based on two assumptions. First, we start by utilizing standard Keynesian macroeconomic theory: the gross domestic product (GDP) is a way to measure a nation's production (method of total value of all goods and services sold to final users). Then, we proceed and insert variables which are exogenously set by the governments but are expected to affect or alter consumption and, finally, growth. We will statistically test our hypotheses and examine whether our expected thesis, on the negative relationship between government size/higher taxes, and lower growth, holds or not.

As a first remark, (Tables 14.1 and 14.2) the post-crisis period—hence, the years from 2010 to 2016—has been characterized by a negative annual GDP growth rate (−4.493), down from a 1.854% in the full sample, extending from 1999 to 2016. It is the period in which most macroeconomic variables such as investment, consumption, retail sales, industrial production are all collapsing, and unemployment is rising to

Table 14.1 Full sample descriptive statistics 1999–2016

Variable	Average (%)	Median (%)	Standard deviation (%)	Min (%)	Max (%)
GDPQOQ	0.832	2.690	7.302	−14.300	12.800
GDPYOY	1.854	2.470	6.270	−10.030	10.260
CFQOQ	5.321	−2.790	47.412	−48.600	312.700
CFYOY	−1.248	0.280	20.997	−53.620	59.510
UNEMPGDP	14.514	11.200	6.934	7.200	27.800
CONSQOQ	0.902	1.450	7.145	−14.190	12.530
CONSYOY	2.194	4.635	6.459	−13.910	12.320
PBGDP	−7.879	−7.535	5.229	−30.120	1.720
SUBGDP	0.317	0.095	0.393	0.010	1.310
VATGDP	6.894	6.875	0.619	5.660	8.410
TBGDP	−8.217	−9.355	6.143	−19.210	12.540
RETQOQ	1.806	1.100	17.299	−28.430	36.550
RETYOY	1.638	4.500	8.818	−18.600	17.900
IPQOQ	−0.089	−0.550	7.733	−16.990	23.350
IPYOY	−1.892	−1.300	5.496	−16.400	7.900

Notes: For variable nomenclature, see Sect. 14.2 of the chapter

Table 14.2 Post-Crisis Descriptive Statistics 2010–2016

Variable	Average (%)	Median (%)	Standard deviation (%)	Min (%)	Max (%)
GDPQOQ	−0.973	−0.545	8.266	−13.960	11.610
GDPYOY	−4.493	−4.965	3.551	−10.030	1.670
CFQOQ	10.026	−15.005	74.288	−48.600	312.700
CFYOY	−10.371	−13.950	22.704	−53.620	59.510
UNEMPGDP	22.319	24.500	5.362	11.700	27.800
CONSQOQ	−1.125	−0.315	7.213	−14.190	9.170
CONSYOY	−4.830	−4.620	3.669	−13.910	3.480
PBGDP	−8.557	−8.425	6.287	−30.120	0.450
SUBGDP	0.751	0.835	0.335	0.110	1.310
VATGDP	7.208	7.220	0.543	6.110	8.410
TBGDP	−4.417	−7.215	6.823	−15.110	12.540
RETQOQ	−1.480	−0.690	13.284	−22.990	21.340
RETYOY	−5.519	−5.250	5.579	−17.500	8.800
IPQOQ	0.132	−0.225	7.091	−16.990	11.420
IPYOY	−2.315	−2.250	6.011	−16.400	7.900

Notes: For variable nomenclature, see Sect. 14.2 of the chapter

an average of roughly 22%, while proceeds from VAT as a percentage of GDP remain roughly stable, implying lower proceeds in absolute levels. We are interested in testing if there is any dependence among these variables and, especially, between the ones acting as a proxy to the size of the government—that is, subsidies and the VAT—and the GDP growth rate.

14.3 Methodology

Our empirical methodology is broken into two parts, rather standard but highly illustrative on the results we obtained. The first part considers variations of the national income identity, and the second part considers the temporal persistence of different explanatory variables on economic growth. To this end, consider the following regression specification:

$$y_t = \boldsymbol{x}_t^{'}\boldsymbol{\beta} + u_t \tag{14.1}$$

where y_t is the appropriate measure of economic growth as the dependent variable, $\boldsymbol{x}_t$ is a (K x 1) vector of explanatory variables, $\boldsymbol{\beta}$ is the (K x 1) vector of parameters, and u_t is the regression error term. We assume, and

subsequently test, that the regression error passes all standard assumptions. We also assume that some or all of the explanatory variables in the vector $\boldsymbol{x}_t$ are endogenous, a standard assumption when working with the set of macroeconomic variables that enter into the national income identity. The parameters of the model are then estimated by instrumental variables (IV), the choice of instruments being confined to a subset of the first four lags of all K explanatory variables we have available. Being aware of the problems that pertain to IV estimation, we take particular care to balance the number of instruments with appropriate specification tests on the validity of the instruments used and, obviously, economic intuition. In particular, we validate the need for the use of IV by applying the Hausman test on the consistency of least squares estimates, and the Sargan test of over-identification and the validity of the chosen instruments in each model. Finally, note that a static model such as the one in Eq. (14.1) can be considered as an "equilibrium" or long-term model, and the interpretation of each parameter estimates should be made as such.

We then consider a simpler framework, in a time series-like context, where we examine the individual total effect—over time—of some explanatory variables on economic growth. We perform this second step in our analysis to validate the inference from the analysis of the first part and to further illustrate the significance of our findings, namely the negative influence of government size and higher taxes on growth. We, thus, consider the following regression model:

$$y_t = \rho y_{t-1} + \sum_{i=0}^{L} x_{t-i,j}\gamma_{ij} + u_t \tag{14.2}$$

where now x_{tj} is one of the components of the vector $\boldsymbol{x}_t$. We are interested in the long-term impact of the explanatory variable which is defined as follows:

$$\omega_j = (1-\rho)^{-1} \sum_{i=0}^{L} \gamma_{ij} \tag{14.3}$$

that is—scaled by the persistence of economic growth—the sum of the parameters of the lags of the explanatory variable. Note that since all our variables are measured in the same scale (%), we can compare

the magnitudes of the estimated long-term impact coefficients and assess the potential priorities on the way a growth-conducive policy might be implemented.

We further discuss our approach in the following sections.

14.4 Discussion of Results and the Budget Constraint

Discussion of Results

We start with the expenditure-based approach of GDP which is obtained by summing up household consumption, investment, government spending, and net exports. Thus, we get the standard national income identity:

$$GDP_t = C_t + G_t + I_t + (X_t - M_t) \tag{14.4}$$

where C_t is private consumption or consumer spending, G_t is government spending, I_t is investment or business spending, and (Xt − Mt) is the trade balance of exports minus imports.

As a starting point, we are interested in just verifying whether the annual changes in the variables at the right-hand side of the equation affect the GDP growth rate. Indeed, the expenditure-based approach of GDP holds in the case of Greece (Table 14.3, Model 1). All coefficients have a positive sign, in accordance with standard underlying theory, and are all statistically significant, at least at the 10% significance level. At the same time, the model has high explanatory power, again, to be expected, as we are regressing income on its components on an identity. However, this starting point is essential in visualizing, assessing, and discussing what (is now well known that) drives growth in the Greek economy, essentially consumption. From this very basic illustrative model, we proceed to a number of other models, where we want to examine the impact of different explanatory variables on the drivers of economic growth and the size of the government.

Table 14.3 Model estimates, Eq. (14.1), full sample 1999–2016

	GDPYOY		GDPQOQ			
Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Constant	0.008 **	0.011	0.071 ***	0.110 ***	1.043 ***	0.890 ***
	(0.038)	(0.748)	(0.000)	(0.000)	(0.002)	(0.000)
CFYOY	0.093 ***	0.141 **	–	–	–	–
	(0.000)	(0.022)				
CONSYOY	0.839 ***	0.792 ***	–	–	–	–
	(0.000)	(0.000)				
TBGDP	0.079 *	0.120 *	0.486 ***	0.705 ***	0.555 **	–
	(0.062)	(0.090)	(0.000)	(0.000)	(0.019)	
UNEMPGDP	–	0.005	−0.190 **	−0.360 ***	−2.394 ***	−1.370 **
		(0.979)	(0.020)	(0.000)	(0.000)	(0.017)
IPYOY	–	−0.074	–	–	–	–
		(0.850)				
CFQOQ	–	–	−0.046 ***	–	0.025	–
			(0.001)		(0.584)	
CONSQOQ	–	–	0.843 ***	0.752 ***	–	–
			(0.000)	(0.000)		
IPQOQ	–	–	–	0.377 ***	–	0.331 *
				(0.000)		(0.068)
SUBGDP	–	–	–	–	43.800 ***	29.013 ***
					(0.007)	(0.008)
VATGDP	–	–	–	–	−11.418 ***	−10.589 ***
					(0.009)	(0.000)

RETQOQ	–	–	–	–	0.045	0.209 ***
					(0.641)	(0.005)
PBGDP	–	–	–	–	–	0.592 **
						(0.017)
R-squared	0.926	0.914	0.831	0.850	0.397	0.461
Durbin-Watson	1.371	1.285	2.287	2.331	1.582	2.049
Hausman (*p*-value)	0.000	0.000	0.000	0.000	0.000	0.000
Sargan (*p*-value)	0.325	0.372	0.307	0.379	0.584	0.207

Notes
1. For variable nomenclature, see Sect. 14.2 of the chapter
2. Table entries are coefficient estimates and corresponding *p*-values (in parentheses)
3. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively
4. Durbin-Watson gives the value of the corresponding statistic in the presence of lags
5. Hausman test gives the *p*-value on the null hypothesis that OLS estimates are consistent
6. Sargan test gives the *p*-value on the corresponding statistic on the validity of the overidentifying restrictions

In an attempt to, thus, capture additional information, we proceed with adding the unemployment rate and the industrial production as two additional explanatory variables (Table 14.3, Model 2). Confirming the previous model, positive yearly changes in capital formation and consumption still lead to higher GDP growth rates. Consumption continues to hold the highest coefficient among all. Furthermore, the higher the trade balance as a percentage of GDP, the higher the effect on the growth rate. An interesting point needs to be made at this stage. In our dataset, the trade balance—either in absolute values (TB) or as a share of GDP (TBGDP)—is negative; hence, Greece has been running a trade deficit, with imports surpassing exports in almost all years in our sample. Therefore, the positive sign of the coefficient means that the higher the trade deficit is (imports surpass exports), the lower the GDP growth rate. This is also consistent with existing literature. Furthermore, contrary to our ex ante expectations, the unemployment rate and annual changes in industrial production do not seem to explain annual changes in the GDP growth rate, as they are not statistically significant and do not survive the related significance tests.

We next move on to the inclusion of the two variables we use as proxies for government size, the subsidies, and the VAT variables. However, we find that these do not have a statistically significant effect on the annual GDP growth rate. We use these two variables as an indicative set of proxies to government size or the government's means of "interfering" in the economy. Their inclusion in the first two models has resulted in a reduction of the overall explanatory power of the right-hand side variables. This result is not entirely unexpected as annual changes tend to be affected by the general state of the macroeconomy and not by the faster-moving (and more volatile) evolution of subsidies and taxes. Thus, we next model, consider, and discuss quarterly relationships of all the underlying variables, in an attempt to capture the faster-moving information contained in the quarter-to-quarter changes while keeping the same explanatory power and underlying economic intuition.

Looking at our next set of results (Table 14.3, Model 3), we can see that the original set of explanatory variables—capital formation, consumption, and trade balance—remains statistically significant. Adding the unemployment rate as a supplementary explanatory variable, now becomes statistically

significant, bearing a negative sign, as implied by the underlying theory. Assuming that unemployment falls to 20% from 25%, quarterly GDP growth rate will benefit by roughly 1.0%. Most importantly, consumption remains as the explanatory variable bearing the highest coefficient; bearing a coefficient of 0.843, a 5% rise in consumption would boost growth by roughly 4.2%—a rather significant outcome. On the other hand, the new sign of the coefficient of the capital formation variable, now, seems to be changing from positive to negative. This strikes a bit at odd as a positive sign of the coefficient would look more appropriate according to literature: positive changes in capital formation are expected to lead to a rising GDP growth rate. A possible explanation for this negative sign might be a confounding effect, where the significance and sign of the role of capital formation is assumed by the other variables plus the rising unemployment during the sample period.

By replacing the capital formation variable with industrial production as a proxy, we end up with a model that has mildly higher explanatory power (Table 14.3, Model 4); most importantly, all signs now look in harmony with the underlying theory and earlier findings. In order to provide an example, a 5% quarterly increase in industrial production would boost GDP by roughly 1.9%; similarly, achieving a trade surplus of 5% against GDP would result to a growth rate of 3.5%. We need to highlight that a decline of 5 percentage points in the rate of unemployment would boost growth by roughly 1.8%, while a 5% increase in total consumption would also boost growth by an estimated 3.8%. A pattern is starting to take shape, which is consumption playing a determinant role with respect to growth.

We need to point out, as noted in passing before, that consumption tends to bear higher-magnitude coefficient estimates and, hence, we feel additional focus should be given on consumption expenditure in building a more comprehensive model. The reason is that, as defined by the National Statistical Service of Greece and envisioned in this chapter too, it includes both private/household and general government consumption. It is worth noting that this variable has risen from an already stunning 85% of GDP towards 90–92% of GDP in late quarters (Fig. 14.1). Even more interestingly, the ratio of household-to-government consumption is highly skewed towards the former with a ratio of roughly 3:1. It is clear,

and by now well understood, that the Greek economy has adopted a consumption-driven model all these years. This means that total consumption, and, in particular, private consumption can boost or derail growth, subject to economic conditions, and the current productive structure and capacity of the Greek economy. Both these states of the world, boost and bust of growth, have appeared in Greece throughout the years from 1980 and on, and in that exact order.

Thus, and as an intermediate step, we estimate a regression with total consumption expenditure as the dependent variable; as explanatory variables, we include the unemployment rate, the subsidies, and the VAT as shares of GDP, and the quarterly change of retail sales. Taking into consideration that a significant part of economic activity comes from private consumption, via this step, we are trying to isolate and remove from the picture any direct effect from government consumption. Nevertheless, we do stay focused on the issue of measuring the size of the government indirectly, by incorporating the subsidies and the VAT variables. To be more precise, we do not outright measure the size of the government in the economy using the traditional ways, such as total revenue or total expenditure to name a couple; we are mainly interested in how the government may affect economic activity by altering some of the tools it has in its discretion.

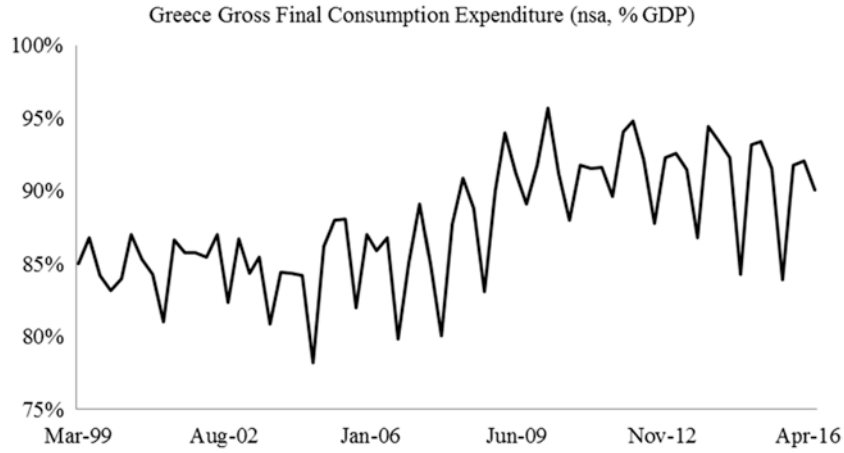

Fig. 14.1 Total Consumption as a share of GDP
Source: National Statistical Service of Greece

We end up with a very illustrative model for consumption expenditure (Table 14.4), with anticipated signs and interpretations. A rising rate of unemployment (negative sign estimate) and a rising VAT (negative sign estimate) hurt total consumption expenditure, whereas subsidies on products payable (positive sign estimate) support consumption; it is not surprising that retail sales—as a proxy to private consumption—have a positive sign, boosting total expenditure. All coefficients are statistically significant either at the 1% or the 5% level of significance. Offering a more qualitative point of view, consumption is presenting a comparatively huge elasticity to changes in subsidies (38.177) and the VAT (−9.463). The two aforementioned explanatory variables outpace by far the magnitude of both unemployment (−1.866) and retail sales (0.233).

Table 14.4 Model estimates for consumption growth

Variable	CONSQOQ
Constant	0.804 ***
	(0.001)
UNEMPGDP	−1.866 **
	(0.020)
SUBGDP	38.177 **
	(0.014)
VATGDP	−9.463 ***
	(0.003)
RETQOQ	0.233 ***
	(0.000)
R-squared	0.444
Durbin-Watson	1.863
Hausman test (p-value)	0.000
Sargan test (p-value)	0.796

Notes
1. For variable nomenclature, see Sect. 14.2 of the chapter
2. Table entries are coefficient estimates and corresponding *p*-values (in parentheses)
3. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively
4. Durbin-Watson gives the value of the corresponding statistic in the presence of lags
5. Hausman test gives the *p*-value on the null hypothesis that OLS estimates are consistent
6. Sargan test gives the *p*-value on the corresponding statistic on the validity of the overidentifying restrictions

At this point, we have suggestive clues that are supportive with regard to the importance of taxation and subsidies as two additional determinants of the behavior and decision-making process of Greek households when consuming.

Given the results from Table 14.4, we next proceed and plug the consumption determinants into the equation for growth, returning our focus on the remaining two models of Table 14.3. The new results (Table 14.3, Model 5) show now that all variables—except for the capital formation and retail sales—are statistically significant at least at the 5% significance level. On top of this, the signs of the coefficients match the ex ante ones from economic theory. Subsidies and an improving trade balance tend to increase growth, as they have a positive sign; on the other side, rising unemployment and increases in VAT as a percentage of GDP tend to hurt growth, as both bear a negative sign coefficient. Contrary to previous models, the capital formation variable no more looks problematic, as the coefficient sign now matches the one suggested by macroeconomic theory (positive); albeit, it is not statistically significant. Moreover, retail sales do not seem to survive significance tests, despite initial expectations. Once more, we are taking a qualitative look, trying to identify if anything stands out in our results, and so is the case; indeed, the magnitude of the subsidies and VAT coefficients arises as quite large, both in absolute terms as well as compared to those of the other explanatory variables. Most importantly, we have managed to break down the effect of—the wider measure of—consumption and identify which parts of it have set it high in the list of explanatory variables in previous models: taxation and subsidies.

It looks like a final adjustment on our model at the government side is needed, in order to account for budget constraints and how they potentially affect our model. At this stage, the means and magnitude of government interference in an open economy is starting to take shape. Subsidies and the VAT are just two out of a whole set of economic variables, which are being set exogenously by the state, but they feed through the economy and, finally, affect how various agents act in the real economic environment. We discuss these issues next.

The Budget Constraint

The history of the Greek economy, since 2009, is fairly well known. Capital formation and exports/imports have not been factors capable of changing the picture in boosting growth. On the contrary, the former has collapsed, both in absolute terms as well as relatively to GDP, whereas the country continues to run a trade deficit, albeit shrinking (Figs. 14.2 and 14.3). A few factors that have contributed to this development can be identified: a series of national elections, one referendum voting, and an overall fragile political environment have driven political risk to ultra-high levels and investment to ultra-low levels. The imposition of capital controls back in June 2015 amplified this trend.

So, how can a government boost growth, given the fiscal limitations that are now imposed? A lot of theories have tried to give an answer to this question, some with notable success and others with less. What seems to be a more appropriate question in this chapter is "how can a government boost growth, subject to its constraints?" In the case of Greece, we need to solve the problem backwards, hence starting with the constraints. The primary budget surplus has been one major constraint, stemming from the already signed bailout programs. Currently, fiscal loosening is not an available tool in the case of Greece. Another constraint is the currently existing model of economic activity. As highlighted previously, the growth model that Greece has been largely following during the last decades has been based on consumption, both private and public. But since primary surpluses need to be reached and funding is hard to get, public spending seems limited. At this point, it seems that a policymaker would try to solve an unsolvable equation: trying to boost GDP, under an existing consumption-based model, not only via cutting down government consumption but, also, by increasing taxes, hurting private consumption as well. A quite difficult, maybe impossible, task one would say.

Nevertheless, what looks as a constraint, might also be part of the solution. Let us, thus, look at a very informative model, (Table 14.3, Model 6). As estimated in previous regressions, growth in industrial production

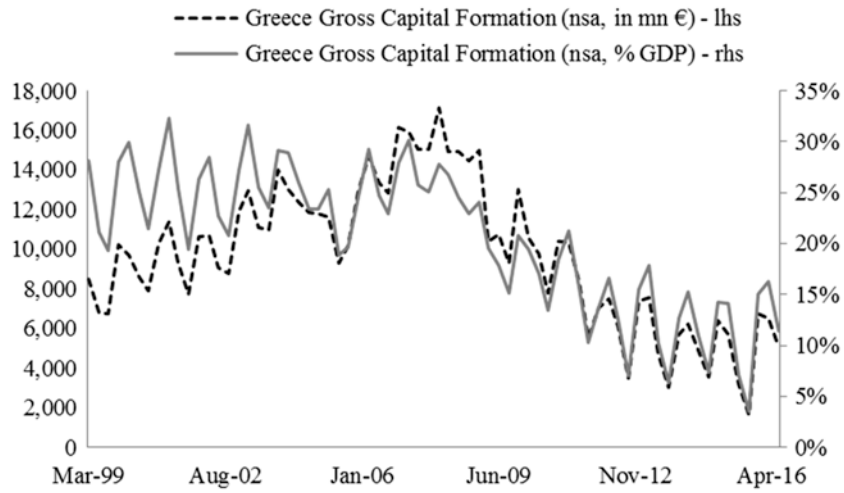

Fig. 14.2 Capital formation in absolute levels and as a share of GDP
Source: National Statistical Service of Greece

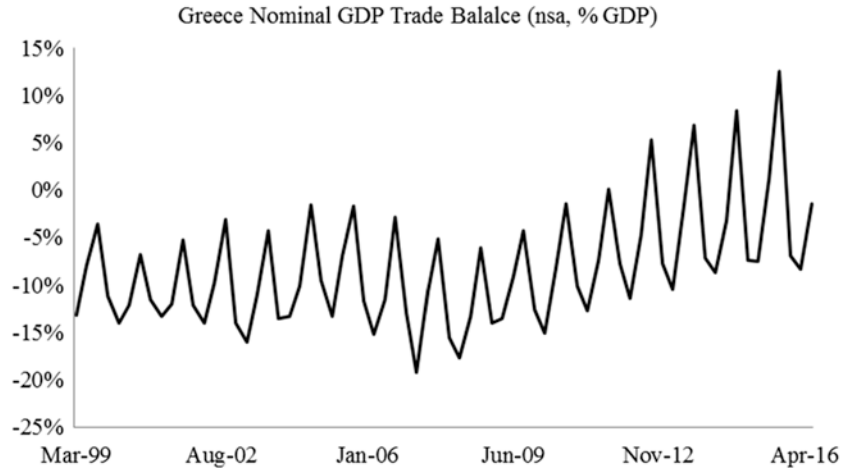

Fig. 14.3 Exports minus Imports as a share of GDP
Source: National Statistical Service of Greece

(positive sign) results to a growing GDP, as well. A 5% growth in industrial production would boost growth by 1.7%. Investment in capital goods has a front-loaded, immediate effect—via hiring and increasing household income—as well as a longer-term effect, by pushing out the Production-Possibility Frontier of the economy. Retail sales (positive sign) are also positive for growth but with a lower magnitude; a 5% increase in retail spending would add just 1% to GDP growth. It might currently be hard to see consumer spending by Greek households rising sufficiently. This might require reducing the rate of unemployment (negative sign) to see GDP rising, as increasing taxation and losses in disposable income have been dramatic during the current crisis. The absolute level of the unemployment coefficient is higher than 1, meaning that a reduction by 5 percentage points in the unemployment rate has a multipliable effect upon growth, increasing it by roughly 6.9%. Since unemployment is a lagging macroeconomic indicator, any positive effects from its reduction might need time to diffuse in the economy. As an alternative, the increase in disposable income could as well be a result of cutting back indirect taxes such as the VAT (negative sign), and/or increasing subsidies (positive sign), in order to generate a positive shock to the economy. The use of the word "shock" is not accidental since both explanatory variables have a rather high coefficient. For example, a very small decrease in the state revenues from indirect taxes as a percentage of GDP would act as a multiplier and give a significant boost to the GDP growth rate. Last but not least, running budget surpluses is beneficial by itself, as the estimated coefficient is carrying a positive sign (0.592). At first sight, this might strike at odds with Keynesian economics; the latter dictates that budget deficits are appropriate in order to boost growth in periods of recession whereas saving and budget surplus are best at times of growth. Nevertheless, in the case of Greece, this looks more like the case of "tiding up" public finances and cutting back non-performing areas of the public sector, and less as a growth-disruptive policy tool. What started as a policy constraint (running a budget surplus), now seems to help; no need to remind the reader that focus should be given on the additional variables in the model and the corresponding policies that would boost private consumption.

Before moving on with the discussion of our results of Model 6, we briefly switch focus on the estimates of the individual long-term effect of

each individual explanatory variable upon the GDP growth rate and their relevant magnitude, based on the specifications in Eqs. (14.2) and (14.3) (Table 14.5). In the long run, industrial production does not seem to survive the significance tests, whereas all the rest do, at least at the 10% significance level. More significantly, the VAT and the subsidies' variables present the highest long-term impact estimates.

Taking into consideration these long-run effects, and given that VAT is a much larger part of GDP compared to subsidies, we can easily deduce that, should existing fiscal policy were to change, any attempt should start by reducing the VAT. One would argue that lowering the VAT rate would result in lower tax revenues; however, this might not be the case. "Elasticity" is the key. Theory suggests that, when moving away from the extremes, a small reduction in an already high VAT rate might lead to such an increase in retail sales that would ultimately increase total VAT proceeds, instead, of reducing it. So far, evidence does not suggest otherwise, at least not when examining the reverse. Findings in a working paper published by the Foundation for Economic and Industrial Research (2015) show that the effectiveness of the tax collection mechanisms worsened during the first years the country entered recession, most probably due to the simultaneous rise in the unemployment and VAT rates. Tax evasion and tax avoidance have gained ground not only in the case of Greece; Portugal, Lithuania, and Spain also suffered similar symptoms after the VAT had increased.

Table 14.5 Long-Run Estimates, Eq. (14.2)

Variable	Adjusted R-squared (%)	Schwarz criterion	LR Estimate	p-value
IPQOQ	57.340	−175.960	0.066	0.821
UNEMPGDP	73.231	−222.250	−0.182	0.000
RETQOQ	78.044	−216.476	0.545	0.000
SUBGDP	0.512	−134.930	−1.547	0.080
VATGDP	39.214	−168.123	−2.066	0.076
PBGDP	18.464	−148.739	0.310	0.002

Notes
1. For variable nomenclature, see Sect. 14.2 of the chapter
2. LR estimates are the long-run estimates of Eq. (14.3) in the chapter
3. *p*-value indicates the significance of the long-run estimates

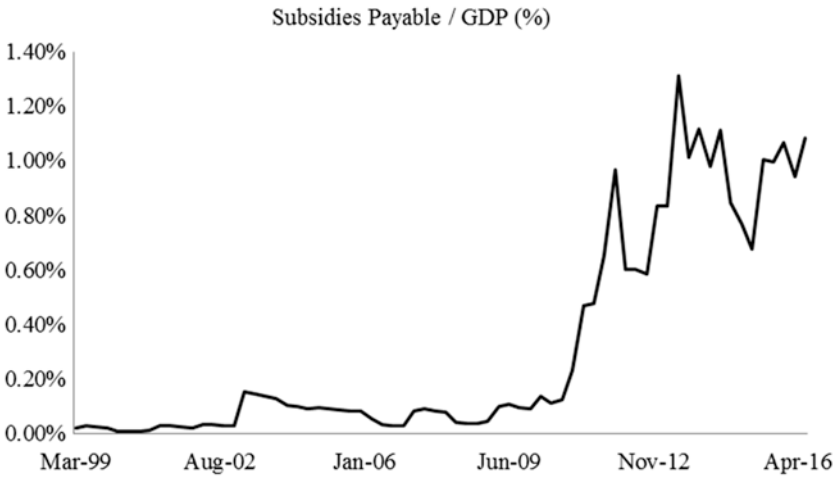

Fig. 14.4 Subsidies as a share of GDP
Source: National Statistical Service of Greece

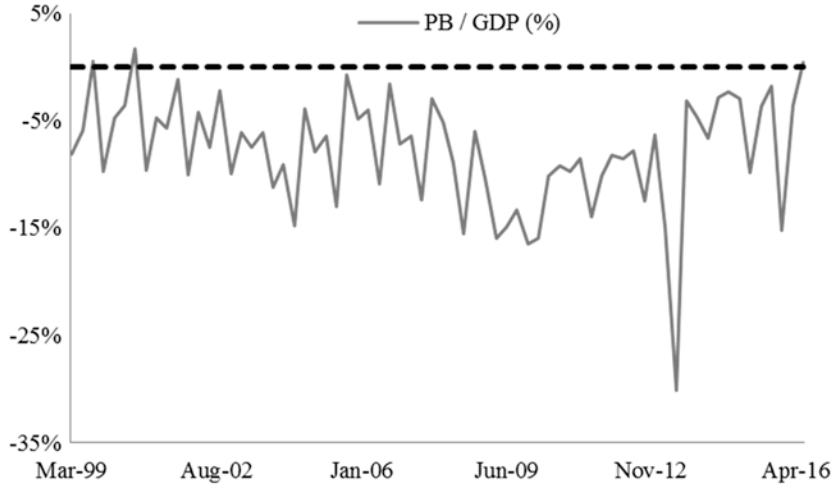

Fig. 14.5 General Government Balance as a share of GDP
Source: National Statistical Service of Greece

Back to Model 6, the subsidies variable might also look as a valuable tool, as its multiplier value is very high, while its share of GDP is quite small (Fig. 14.4); hence, a small increase in subsidies payable by policy-makers could quite easily not derail the budget constraint (Fig. 14.5) and, at the same time, offer a disproportionately positive shock.

To illustrate the above conjectures, we compute the scaled estimates of the subsidies and VAT variables in Model 6, to account for the mean differences in their magnitudes (Table 14.6). These scaled estimates clearly illustrate the points made above: a small decrease in VAT would have a disproportionately positive impact on growth, while a small increase in subsidies would aid growth, while at the same time neither of them being responsible for derailing the budget constraint.

Table 14.6 Scaled estimates from Model 6 of Table 14.3

Variable	Mean	Standard deviation	Coefficient model 6	Scaled estimates
GDPQOQ	0.832%	7.302%	–	–
SUBGDP	0.317%	0.393%	29.013	11.065
VATGDP	6.894%	0.619%	−10.589	−87.711

Notes
1. For variable nomenclature, see Sect. 14.2 of the chapter
2. Mean and standard deviation are the corresponding sample statistics from Table 14.1
3. Scaled estimates are computed as *Coefficient Model 6* × (*Mean*/*Mean of GDPQOQ*)

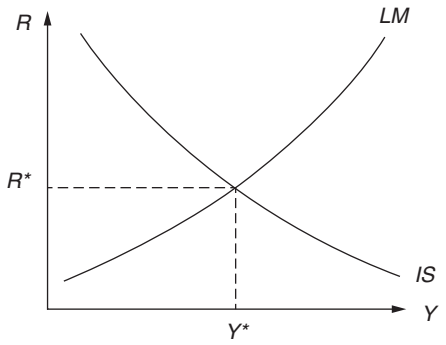

Fig. 14.6 The IS/LM curves

14.5 Policy Implications: "Size" Matters and So Does "Timing"

One might, erroneously, think that the consumption-based model that Greece has been following in the last decades has been considered as an "optimal" one in this chapter, since it has been taken for granted. On the contrary, we have treated the existing productive structure of the Greek economy more of a constraint, hence an exogenous variable that cannot be altered neither easily nor rapidly. Existing literature, policymakers, and many economists tend to agree on a more balanced approach, that is, a growth model that would be also based on investment and exports. We do not deviate from this general approach and do argue in favor of it, at least as a general principle. Nevertheless, the notion of timing is crucial, especially for the Greek economy, as we discuss next.

Policymakers may pursue fiscal or monetary policies in an effort to boost growth. Let us remember the IS-LM model (Fig. 14.6). The IS-LM model shows the relationship between interest rates and real output in goods and services market plus money market. The intersection of the "investment–saving" (IS) and "liquidity preference–money supply" (LM) curves identifies the "general equilibrium" in the economy. By following a looser (tighter) fiscal policy, the IS curve is moving upwards and on the right (downwards and on the left), increasing (decreasing) output and interest rates equilibria, given monetary policy (LM curve). Similarly, a looser (tighter) monetary policy is moving the LM curve downwards and on the right (upwards and on the left), increasing (decreasing) output and reducing (increasing) interest rates equilibria, given fiscal policy (IS curve). Of course, simultaneous changes can take place, targeting an equilibrium point of higher output and stable, or even lower, rates.

Quoting Lawrence Peter "Yogi" Berra, "in theory there is no difference between theory and practice; in practice there is"; hence, constraints apply and set boundaries to the availability of tools. In the case of Greece, monetary loosening is not an available option. Since the country is a member of the European Monetary Union (EMU), monetary policy is set by the European Central Bank (ECB); hence, it can be treated as an exogenous variable. Consequently, the discussion is moving on to the

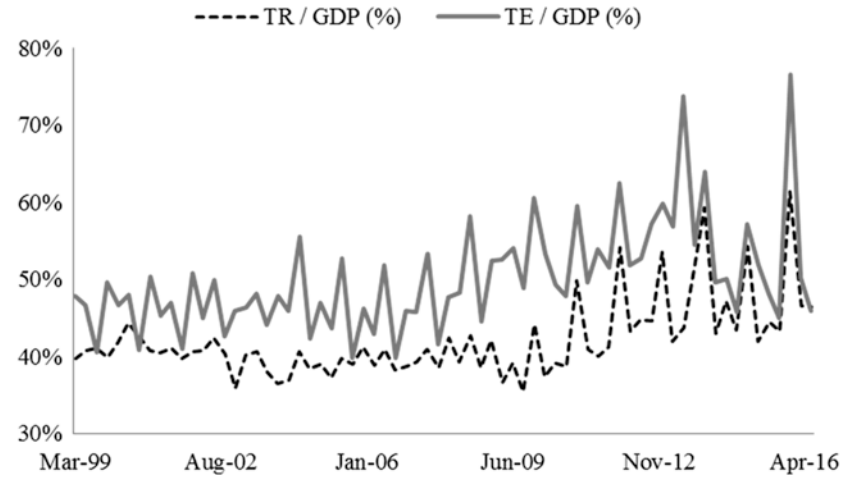

Fig. 14.7 Total revenue and total expenditure as a share of GDP
Source: National Statistical Service of Greece

availability of fiscal tools in order to boost growth. The latest Greek governments have committed themselves in achieving positive primary balances and balancing out their budget constraints. This means that government total revenue (taxes, T) must exceed at least government total spending (G). Looking back at our final model, we highlight three variables related to the fiscal side: subsidies, the VAT, and the general government balance. So, the system of equations we need to solve for is the following: indirect taxes such as the VAT need to be reduced in order to boost growth, subsidies need to increase for the same reason, while respecting the budget constraint.

Schematically:

$$\begin{aligned}&\text{PB} - \text{and} > 0, \text{subject to VAT} \downarrow + \text{Subsidies} - \Rightarrow (T - G) - \text{and} > 0,\\ &\text{subject to VAT} \downarrow + \text{Subsidies} - \Rightarrow G \downarrow > T \downarrow\end{aligned} \tag{14.5}$$

or, to put it in words, government spending needs to decline to such a level that would also allow for a reduction in taxes. Which is to come first? Budget constraints cannot relax at this stage, meaning that tax revenue cannot be reduced although its effect would be more immediate and

would also support growth. Nevertheless, where there is a will, there is a way. Although not all government spending is inelastic, following the last years of government cost cutting, further cuts seem hard to implement. The answer lies in privatizations and the engagement of the private initiative. Via the utilization of a large-scale privatization scheme and public-private partnerships (PPPs), significant sums of public spending could be retracted out of the state budget, allowing for a reduction in government spending and, hence, government size. Most importantly, this would allow for a reduction in taxes against a promise to be implemented at a later stage. Having a credible plan to scale down the public sector, could provide some room by the creditors' side for even a small and gradual but immediate reduction in tax rates, against the expectation for the completion of a privatization plan. Both lower taxes and less government spending lead to a smaller government size, with the easiest-to-implement solution (tax cuts) being front-loaded time-wise, against the slower process of privatization; at the same time, both support consumer as well as investment sentiment and, eventually, growth itself.

By no means does this strike at odds with existing literature. The size of a government tends to have a negative effect on growth. Either measured in terms of total revenue or total expenditure, the rationale remains the same: the size of the state's economic activity and its interference in the economy (excluding laws and regulation) need to shrink. History cannot prove otherwise. In our case study, total revenue and total expenditure as shares of GDP have risen from an average of 40% and 46.7% in the pre-crisis period (1999–2008) to 45% and 54.5% (2009–2016), respectively (Fig. 14.7); growth did not benefit much.

This also solves the issue of timing policies appropriately. Contrary to monetary loosening, which is set exogenously, fiscal action can be taken immediately, saving valuable time. Most importantly, in the paradigm of Greece and the European periphery, in general, there is significant interconnection between fiscal and monetary policies. For example, participation to the ECB's quantitative easing program (QE) requires some form of fiscal prudence, as set in the various bailout programs. This means that some form of monetary loosening—such as moving the LM curve via QE down-right, short-term, and long-term debt relief measures—can finally be elicited.

14.6 Concluding Remarks

The starting point of this chapter was to examine and, finally, verify or falsify the hypothesis that the government size—as approached by indirect taxes and subsidies—has a negative effect on growth also in the case study of Greece. Our results show that such a negative relationship does exist, confirming a large part of past research. Even when accounting for a series of macroeconomic, social, and political constraints—such as the presence of Troika, the budget constraints, the long-term underlying growth model of Greece, and political instability—the solution towards escaping this downward spiral seems to lie at the grounds of fiscal loosening. Fiscal action arises as the most efficient strategy, targeting the disposable income of the Greek household. Some improvement in the tax collection mechanisms and the fight against tax evasion could allow for lower tax rates, without the need for the government to find additional resources in order to keep total revenue unchanged and sustain a general government surplus. The latter has been a prerequisite under the signed memoranda of understanding and bailout programs. The contribution of this chapter is not that of just presenting another host of statistical models covering the areas of growth, taxation, and fiscal balance; rather, we intended to offer an additional perspective on the policies that need to be examined and implemented from the IMF, European officials, and Greek policymakers in order to avoid another default in the Euro-zone. As a first step, individualities and particularities of the underlying growth model of Greece should be identified, allowing for greater specialization of measures. Emphasis should be given not only to front-loaded reforms but, also, to the reduction in indirect taxes and a lift to consumption, at least for the short term and until the model is transformed to a more productive one. Improvement in the effectiveness of tax collection mechanisms and success against tax evasion will allow for greater equality in income distribution, lower taxation where needed most, at a time when needed most, without any derailments for the budget constraints. Currently, focusing solely on the latter and achieving high primary balances does not seem to rank high with respect to the probability of achieving a sustainable growth rate to enter a long-term development cycle.

By no means does this chapter cover all aspects of the relationship between government size and growth. The next step, a natural extension to indirect taxation, is to examine income taxes, although this topic is much more complex due to constant changes in tax rates across time and across governments, indicative of the lack of a long-term policy on taxation by most officials so far. We are currently pursuing this in ongoing research.

Notes

1. According to this way of thinking, when public sector spending is rising, private sector spending is being reduced or even eliminated.
2. We are using non-seasonally adjusted data by necessity so as to have a complete and coherent dataset, some of the variables not being offered in seasonally adjusted terms. Seasonally adjusting the data on our own produced qualitatively similar results.

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15

Taxes as Barriers to Sustainable Economic Prosperity: The Case of Greece

Panagiotis Liargovas and Nikolaos Apostolopoulos

15.1 Introduction

Since May 2010, Greece has been under the so-called economic adjustment programs. The first one was agreed between Greece and the troika (European Commission, European Investment Bank, and IMF) on May 2, 2010, and was accompanied with a 3-year €110 billion loan to Greece (which was deprived from the private capital markets) in order to avoid a sovereign default. The loan was conditional on the implementation of austerity measures to restore the fiscal balance, privatization of government assets to keep the debt pile sustainable, as well as implementation of structural reforms to improve competitiveness and growth prospects. In October 2011, Eurozone leaders consequently agreed to offer a second €130 billion loan for Greece,

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conditional not only on the implementation of another austerity package (combined with the continued demands for privatization and structural reforms outlined in the first program) but also on a restructuring of all Greek public debt held by private creditors. In August 2015, a third program was agreed, offering Greece an additional €86 billion loan. Increase of taxation was one basic element of the policy mix applied in Greece throughout the three economic adjustment programs. However, increased taxation in Greece does not lead to *sustainable economic prosperity* which is the main objective of the EU taxation system (EU 2016a). Higher taxation has the opposite results and at the same time triggers negative effects in the society (Matsaganis and Flevotomou 2010). The urgent need for a fairer taxation system is underpinned in the last taxation policies survey of the European Union (EU 2016a), not only for Greece but for the whole of the European Union.

Textbook analysis suggests that taxes have two main effects: they can influence production and growth as well as income distribution. Their effect on production and growth is realized either through their impact on the ability and will to work, save, and invest or through their impact on the allocation of resources. Taxes reduce disposable income, and therefore consumers reduce their expenditure on goods and services which are required to be consumed for the sake of improving efficiency.[1] As efficiency suffers, ability to work declines. Taxes also adversely affect ability to save. This means low level of investment.

The impact of taxation on the willingness to work, save, and invest is due partly to the result of money burden of tax and partly the result of psychological burden of tax. According to supply-side economics, high marginal tax rates strongly discourage income, output, and the efficiency of resource use.

The most important objective of taxation is to raise required revenues to meet expenditures. Apart from raising revenue, taxes are considered as instruments of control and regulation with the aim of influencing the pattern of consumption, production, and distribution. According to Keynesian economics, taxes could smooth out the economic cycles; if the economy is in recession, they could be reduced so as to increase consumption and spending. If the economy overheats, an increase in taxes

may act as a stabilizer. A recent study by PwC (2016) reveals that Greece has one of the highest taxation among the OECD countries. Moreover, the structure of the taxation system is slightly different than the EU average, attributing weight to consumption (European Union 2016b).

This chapter aims to shed some light in Greece's taxation system by answering some fundamental questions: Has this increase in taxation affected people's ability and willingness to pay taxes? Furthermore, do taxes act counter-cyclically or pro-cyclically? The next section makes a comparison between the highest tax rates in Greece, in the EU, and in the Eurozone. Section 15.2 focuses on tax rates in Greece and in Europe. In Sect. 15.3 taxes and social contributions as percentage of GDP are analyzed. Sections 15.4 and 15.5 extend the comparative study by looking at the implicit tax rates and the effective tax rates on corporate investment, respectively. Section 15.5 conducts an analysis for the intertemporal tax policy in Greece. Finally, we offer some concluding remarks.

15.2 Tax Rates in Greece, in the EU, and in the Euro Area

In Greece (as shown in Fig. 15.1) the tax rates for both households and businesses are higher than the average of the countries of both the European Union and the Euro Area.

The highest VAT rate is 23% versus 21.6% in the EU and 20.8% in the Euro Area. The highest income tax rate for individuals in Greece stands at 46% against 39.5% in the EU and 42.3% in the Eurozone, while the highest tax rate for legal entities in Greece stands at 26% (compared with 22.9% in the EU and 24.8% in the Eurozone).

According to the academic and empirical research (e.g. Alesina and Ardagna 2009; Giavazzi and Pagano 1990), overtaxation does not necessarily mean more tax revenues due to exhaustion of the ability to pay and also due to increase of tax fraud. Figure 15.2 shows the decrease in revenues from income tax of Natural and Legal Entities and Tax on Property, from 2012 onward.

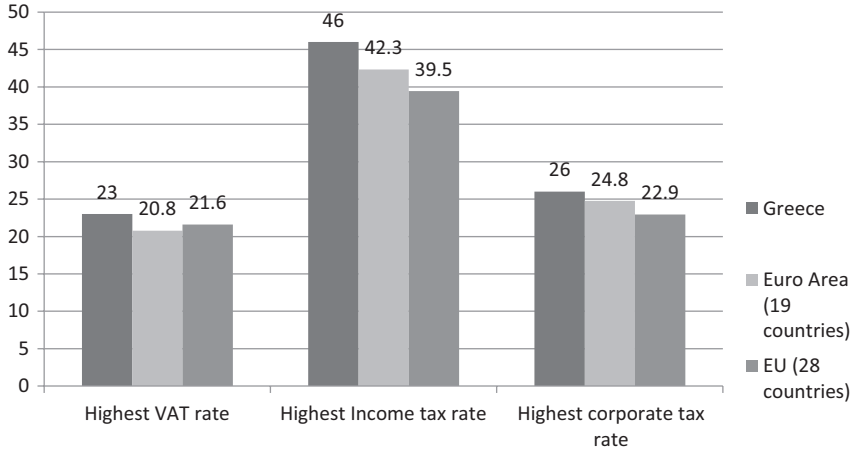

Fig. 15.1 Higher tax rates in Greece, in the EU, and in the Eurozone

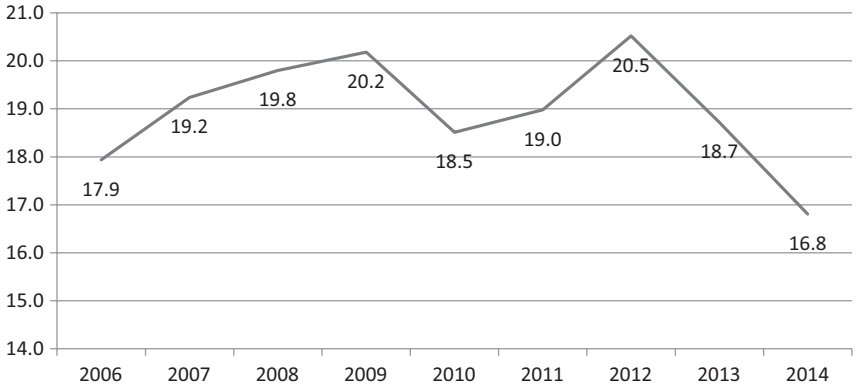

Fig. 15.2 Evolution of tax collection on income of physical and legal entities and tax on property (in bn. €)

15.3 Taxes and Social Contributions % of GDP in Greece, in the EU, and in the Euro Area

Taxes and social contributions are the main source of general government revenue. The overall tax-to-GDP ratio, meaning the sum of taxes and compulsory social contributions in % of GDP, in the EU28 stood at 39.9% in 2013, up from 39.5% in 2012. The overall tax ratio in the Euro

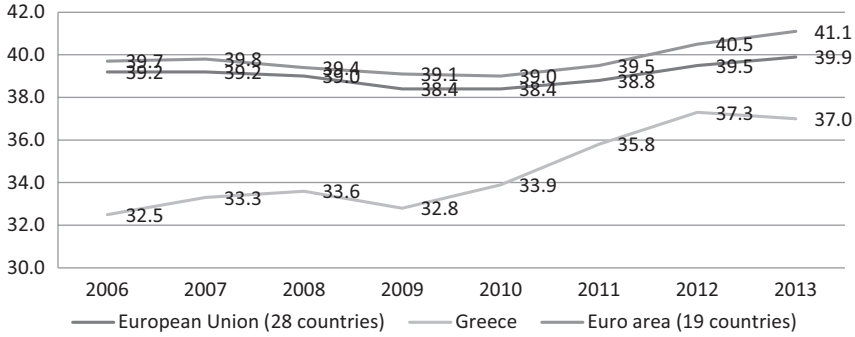

Fig. 15.3 Total receipts from taxes and social contributions (including imputed social contributions) after deduction of amounts assessed but unlikely to be collected, % of GDP

Area (EA 19) increased to 41.1% in 2013 from 40.5% in 2012. However, in Greece the overall tax ratio decreased to 37.0% in 2013 from 37.3% in 2012 (Fig. 15.3).

The tax burden varies significantly between Member States, ranging in 2013 from less than 30% of GDP in Switzerland (27.2%), and Lithuania (27.0%), to more than 47% of GDP in Belgium (47.2%), Denmark (48.5%), and France (47.2%).

15.4 The Implicit Tax Rates in Greece, in the EU, and in the Euro Area

Taxes and social contributions can be split to direct and indirect taxes and taxes by economic function. The main assumption for the second category is that each tax may be attributed to a single economic function, consumption,[2] labor,[3] capital.[4]

Accordingly, tax indicators can be calculated as:

- Ratios of total taxes and social contributions.
- Ratios of GDP.
- Implicit tax rates.

Implicit tax rates (ITR) are indicators that measure the actual or effective average tax burden on different types of economic income or activities, that is, on labor, consumption, and capital in an economy. ITR express aggregate tax revenues as a percentage of the potential tax base for each field.

Tax indicators in % of GDP give limited information regarding the extent of the tax base. Implicit tax rates do not suffer from this deficiency as they are calculated as the ratio of total fiscal revenue and a potential tax base.

The ITR on Labor

The ITR on labor is the ratio between taxes and social contributions paid on earned income and the cost of labor. The numerator includes all direct and indirect taxes and social contributions levied on employed labor income, while the denominator amounts to the total compensation of employees working in the economic territory increased by taxes on the total wage bill and payroll taxes. It is calculated for employed labor only.

The average implicit tax rate on labor in the EU28 rose from 35.8% in 2011 to 36.1% in 2012. Among the Member States, the implicit tax rate on labor in 2012 ranged from 23.3% in Malta, 24.5% in Bulgaria, 25.2% in the UK, and 25.4% in Portugal, to 40.1% in Finland, 41.5% in Austria, and 42.8% in Belgium and Italy.

In Greece, the implicit tax rate on labor rose sharply from 30.9% in 2011 to 38.0% in 2012 while intertemporally was lower than the EU and EA averages (Fig. 15.4).

The ITR on Consumption

The ITR on consumption is the ratio between the revenue from consumption taxes and the final consumption expenditure of households on the economic territory.

The average implicit tax rate on consumption in the EU28 was stable at 19.9% in both 2011 and 2012. Implicit tax rates on consumption

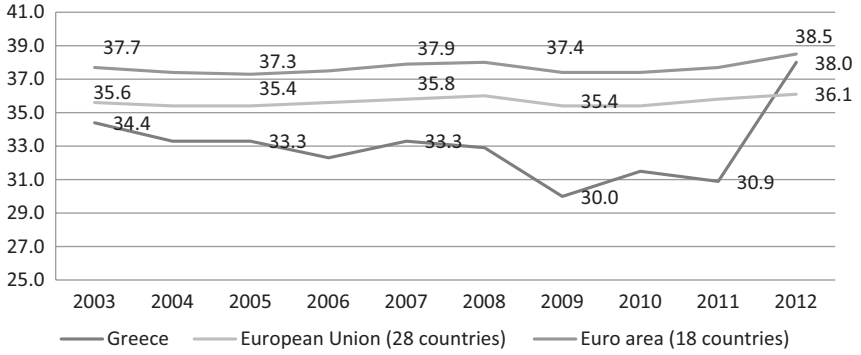

Fig. 15.4 Implicit tax rates on labor 2003–2012

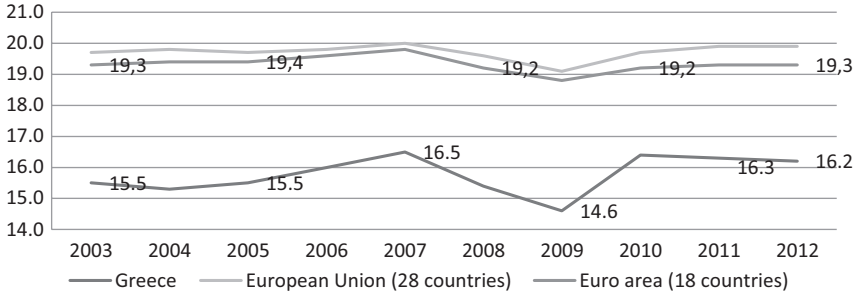

Fig. 15.5 Implicit tax rate on consumption 2003–2012

were lowest in 2012 in Spain (14.0%), Greece (16.2%), and Slovakia (16.7%) and highest in Denmark (30.9%), Croatia (29.1%), and Luxembourg (28.9%).

In Greece, the implicit tax rate on consumption was intertemporally lower from the EU and the EA averages, both in periods of expansion (2003–2007) and recession (2008–2013) of the Greek economy. This can be mainly attributed to the extensive tax evasion and tax avoidance and not on the tax rates (standard and reduced) which are among the highest in the EU (Fig. 15.5, Table 15.1).

Table 15.1 Implicit tax rates on consumption and labor 2003–2012

	Implicit tax rates on consumption										Implicit tax rates on labor									
GEO/TIME	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
European Union (28 countries)	**19.7**	**19.8**	**19.7**	**19.8**	**20.0**	**19.6**	**19.1**	**19.7**	**19.9**	**19.9**	**35.6**	**35.4**	**35.4**	**35.6**	**35.8**	**36.0**	**35.4**	**35.4**	**35.8**	**36.1**
European Union (27 countries)	19.7	19.7	19.7	19.8	20.0	19.6	19.0	19.6	19.9	**19.8**	35.7	35.4	35.4	35.6	35.8	36.0	35.4	35.4	35.8	**36.2**
Euro area (18 countries)	**19.3**	**19.4**	**19.4**	**19.6**	**19.8**	**19.2**	**18.8**	**19.2**	**19.3**	**19.3**	**37.7**	**37.4**	**37.3**	**37.5**	**37.9**	**38.0**	**37.4**	**37.4**	**37.7**	**38.5**
Euro area (17 countries)	19.3	19.4	19.4	19.6	19.8	19.2	18.8	19.2	19.3	**19.3**	37.7	37.4	37.3	37.6	37.9	38.0	37.4	37.4	37.7	**38.5**
Belgium	21.4	22.0	22.3	22.4	22.1	21.2	20.8	21.2	21.0	**21.1**	43.2	43.8	43.6	42.4	42.4	42.4	42.0	42.7	42.9	**42.8**
Bulgaria	19.2	21.5	21.8	23.5	22.6	24.7	22.0	21.4	21.1	**21.5**	35.6	35.7	33.2	29.7	30.4	27.4	25.7	23.5	24.2	**24.5**
Czech Republic	18.8	20.8	21.1	20.3	21.3	20.5	20.7	20.9	21.8	**22.5**	41.7	41.5	41.3	41.1	41.7	39.9	37.6	38.4	39.0	**38.8**
Denmark	33.3	33.3	33.9	34.2	33.9	32.6	31.3	31.3	31.4	**30.9**	38.1	37.5	37.1	36.9	36.6	36.6	34.8	34.2	34.3	**34.4**
Germany (until 1990 former territory of the FRG)	19.0	18.5	18.4	18.5	20.1	20.1	20.2	19.7	20.0	**19.8**	38.8	37.8	37.5	38.1	38.2	38.6	38.0	37.2	37.3	**37.8**
Estonia	19.8	19.7	22.0	22.7	23.6	21.1	25.6	25.1	25.8	**26.0**	36.9	35.8	33.8	33.6	33.9	33.8	34.9	36.6	35.7	**35.0**
Ireland	24.4	25.5	26.0	26.0	25.2	22.8	21.9	22.1	21.4	**21.9**	24.9	26.2	25.4	25.3	25.5	24.5	25.1	25.9	28.2	**28.7**
Greece	**15.5**	**15.3**	**15.5**	**16**	**16.5**	**15.4**	**14.6**	**16.4**	**16.3**	**16.2**	**34.4**	**33.3**	**33.3**	**32.3**	**33.3**	**32.9**	**30**	**31.5**	**30.9**	**38**
Spain	15.9	16.1	16.7	16.6	15.7	13.9	12.5	14.8	14.1	**14.0**	31.6	32.0	32.4	32.9	33.7	32.4	31.4	32.6	32.9	**33.5**
France	20.1	20.3	20.3	20.1	19.8	19.4	18.9	19.2	19.7	**19.8**	39.0	38.9	39.3	39.3	39.0	39.0	38.6	38.1	38.8	**39.5**
Croatia	30.7	30.1	30.0	30.5	29.8	29.4	28.1	29.2	27.9	**29.1**	29.2	30.0	29.6	30.3	30.8	31.0	31.3	31.1	29.7	**29.2**
Italy	17.3	17.6	17.4	18.0	17.9	17.2	16.9	17.6	17.4	**17.7**	41.7	41.7	41.2	40.9	42.4	43.0	42.6	42.6	42.3	**42.8**
Cyprus	18.0	19.4	19.7	20.0	20.5	20.4	19.2	19.0	17.6	**17.6**	22.8	22.7	24.4	23.9	23.9	24.6	26.2	26.9	26.8	**28.8**
Latvia	18.3	18.1	19.9	19.8	19.6	17.4	16.9	16.9	17.2	**17.4**	36.6	36.7	33.2	33.1	31.1	28.4	29.2	33.1	33.3	**33.0**
Lithuania	17.0	16.1	16.5	16.7	17.8	17.7	16.5	18.0	18.2	**17.4**	36.9	36.0	34.9	33.6	33.1	32.7	32.6	31.5	31.5	**31.9**
Luxembourg	23.8	25.4	26.3	26.4	27.1	27.1	27.8	27.5	28.0	**28.9**	29.2	29.4	29.9	30.3	31.0	31.6	31.6	31.8	32.5	**32.9**
Hungary	25.6	27.0	26.1	25.4	26.3	26.0	27.2	27.4	26.8	**28.1**	39.3	38.3	38.4	38.9	41.0	42.3	40.2	38.4	38.2	**39.8**
Malta	16.2	17.5	19.1	19.4	19.4	19.3	18.9	18.5	18.9	**18.7**	21.8	22.1	22.5	22.7	21.2	21.2	21.7	21.6	22.5	**23.3**
Netherlands	23.7	24.2	24.4	25.3	25.6	25.7	24.7	25.4	24.8	**24.5**	32.0	31.9	32.3	35.1	35.6	36.8	35.9	37.0	37.5	**38.5**

Austria	22.2	22.1	21.7	21.3	21.6	21.7	21.6	21.3	21.2	**21.3**	41.0	41.1	40.8	40.9	41.0	41.3	40.3	40.5	40.8	**41.5**
Poland	18.3	18.5	19.8	20.6	21.6	21.4	19.3	20.5	20.8	**19.3**	32.7	32.7	33.8	35.4	34.0	31.7	30.9	30.3	32.0	**33.9**
Portugal	18.9	18.8	19.7	20.0	19.1	18.2	16.7	17.6	18.2	**18.1**	22.9	22.3	22.4	23.1	23.7	23.5	23.6	24.2	25.4	**25.4**
Romania	17.7	16.4	17.9	17.8	18.0	17.7	16.9	18.1	20.3	**20.9**	29.7	29.1	28.1	30.1	30.2	27.3	28.6	30.0	33.0	**30.4**
Slovenia	23.8	23.7	23.5	23.7	23.9	24.2	23.4	23.2	22.9	**23.4**	37.8	37.6	37.6	37.3	35.9	35.9	35.1	35.0	35.3	**35.6**
Slovakia	20.3	20.8	21.5	19.5	19.9	18.3	17.0	17.4	18.3	**16.7**	36.1	34.5	32.9	30.5	31.1	32.7	31.4	32.2	31.6	**32.3**
Finland	28.1	27.7	27.6	27.2	26.5	25.9	25.6	25.1	26.4	**26.4**	42.5	41.6	41.6	41.6	41.3	41.2	40.1	39.0	39.5	**40.1**
Sweden	27.0	26.9	27.3	27.2	27.5	27.9	27.6	27.9	27.3	**26.5**	43.5	43.5	43.6	42.9	41.2	41.2	39.4	39.1	38.9	**38.6**
United Kingdom	18.6	18.6	17.9	17.8	17.7	17.6	16.8	18.0	19.3	**19.0**	24.6	25.1	25.9	25.9	26.1	26.2	24.7	25.6	25.8	**25.2**
Iceland	26.3	27.9	29.3	30.6	29.1	26.2	24.1	24.8	24.8	**24.5**	:	:	:	:	:	:	:	:	:	**:**
Norway	28.4	28.8	29.4	30.6	31.1	29.1	28.6	29.0	29.2	**29.4**	37.7	37.8	37.1	36.6	36.1	35.7	35.7	36.3	36.4	**36.4**

Source: Eurostat

The ITR on Capital

The ITR on capital is a ratio of taxes on capital and individual items of national accounts (operating surplus, mixed income, interest, dividends, etc. of individual sectors). There is no data available in Eurostat concerning the implicit tax rate on capital in Greece.

Nevertheless, in the next section we will refer to the notion of effective tax rates on corporate investment and present some comparative tables for EU countries including Greece. The effective tax rates on corporate investment can serve as an appropriate indicator for investment decisions since they measure how taxes affect a firm's incentive to invest. An increase of the corporate investment tax burden will lead to a reduction of a country's long-term economic growth.

15.5 The Effective Tax Rate (ETR) on Corporate Investment in Greece, in the EU, and in the Euro Area

The core methodology for investment activity evaluation is forward-looking micro view. The ETR on corporate investment is used for analyzing tax impact on corporate investment decisions. Its construction allows international comparison of the tax burden on investment. The methodology is based on assumption of competitive markets and standard properties of production function.

Devereux and Griffith (1998) distinguish two different ways on how to measure the tax burden imposed on corporations' investments: (1) the effective marginal tax rate (EMTR) and (2) the effective average tax rate (EATR) on corporate investment. The EMTR and EATR are calculated for a hypothetical investment. Their calculation is based on current tax law and does not reflect only the statutory tax rate.[5]

The Effective Marginal Tax Rate (EMTR) on Corporate Investment

The EMTR on new investment assesses how much the corporate tax reduces the rate of return on new investment and is consequently the best measure of how taxes affect a firm's incentive to invest. The EMTR measures the tax impact on capital investment as a portion of the cost of capital.

In considering a new investment, a firm will, like any rational investor, allocate capital to maximize profit. The assumption that firms are profit maximizers provides a starting point for calculating the EMTR. Firms increase investment when marginal returns cover marginal costs and reduce scale when marginal returns are less than marginal costs. Since it is only the marginal cost of investment, rather than the marginal return, that is directly observable, the EMTR uses marginal cost to calculate the measure. The EMTR is evaluated as the effective tax cost as a share of marginal investment costs net of economic depreciation and risk, which is also the pretax rate of return on capital. For example, if the pretax rate of return on capital (i.e. the tax-inclusive cost of capital) is 20% at the profit-maximizing point and the posttax rate of return on capital (i.e. the tax-exclusive cost of capital) is 10%, the EMTR is 50%.

EMTR represents marginal investment realized in a given country, both by resident and nonresidents. Devereux and Griffith (1998) specify marginal investment as those whose expected rate of return before tax is adequate for the investor in comparison to the minimal expected rate of return after tax. The minimal rate of return is determined by the actual interest rate which can be received by alternative investment and economic rent before and after tax is equal to zero. The stricter is a tax regime in a given country, the higher is the EMTR, and the less attractive are the investments in this country (Table 15.2).

The effective marginal tax rate (EMTR) on corporate investment (i.e. the tax impact on capital investment as a percentage of the cost of capital) varies significantly between Member States of the EU, ranging in 2014 from less than 7% of the cost of capital in Belgium (6.9%), Croatia

Table 15.2 Effective marginal tax rate % (EMTR) on corporate investment 2004–2014

GEO/TIME	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Austria	25.6	18.4	18.4	18.4	18.4	17.4	17.4	18.4	18.4	18.4	**18.4**
Belgium	19.6	19.6	1.3	–0.5	–3.6	–5.1	–1.1	2.1	4.7	5.9	**6.9**
Bulgaria	**10.8**	**8.2**	**8.2**	**5.6**	**5.8**	**5.5**	**5.5**	**6.2**	**6.2**	**6.2**	**6.2**
Croatia	13.6	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	6.9	**6.9**
Cyprus	13.1	9.5	9.5	9.5	9.5	9.5	10.6	10.6	9.4	14.1	**14.1**
Czech Republic	16.6	14.9	13.6	13.6	11.8	11.2	10.6	10.6	10.6	10.6	**10.6**
Denmark	19.7	18.5	18.5	16.7	17.1	17.2	17.2	17.2	14.7	14.7	**16.9**
Estonia	4.7	4.2	4.0	3.8	3.6	3.6	3.6	3.6	3.6	3.6	**3.6**
Finland	23.5	21.2	21.2	21.2	21.2	18.1	18.7	21.8	20.7	17.3	**14.4**
France	34.4	34.5	34.3	34.8	34.9	35.0	28.3	28.4	29.6	32.8	**35.8**
Germany	29.4	29.4	28.3	28.3	22.5	21.7	21.7	22.5	22.5	22.5	**22.5**
Greece	**20.4**	**18.3**	**16.3**	**13.7**	**14.1**	**20.8**	**13.5**	**11.1**	**11.1**	**19.8**	**19.8**
Hungary	18.4	14.4	13.9	15.5	15.5	15.5	15.9	16.6	16.6	16.6	**16.6**
Ireland	13.0	13.0	13.1	13.1	13.1	13.3	13.2	13.2	13.2	13.2	**13.2**
Italy	**21.8**	**21.8**	**21.8**	**21.8**	**20.1**	**20.9**	**20.9**	**10.2**	**11.2**	**12.2**	**6.9**
Latvia	12.4	12.4	12.4	12.4	10.8	10.8	2.7	4.2	4.2	3.9	**12.4**
Lithuania	6.5	6.5	7.9	7.6	6.5	8.3	6.5	6.4	6.4	10.1	**10.1**
Luxembourg	17.7	17.7	17.2	17.2	17.2	16.5	16.5	15.8	15.8	16.9	**16.9**
Malta	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	26.9	**26.9**
Netherlands	24	21.7	20.4	17.4	17.4	14.1	14.2	13.9	16.9	13.4	**16.9**
Poland	12.2	12.3	12.2	13.6	13.6	13.7	13.7	13.7	13.8	13.8	**13.8**
Portugal	17.8	17.8	17.8	17.1	17.1	17.1	18.8	18.8	20.8	20.8	**20.8**
Romania	**16.4**	**11.5**	**11.5**	**11.9**	**11.9**	**11.9**	**11.9**	**11.9**	**11.9**	**11.9**	**11.9**
Slovakia	10.2	11.3	11.3	11.3	11.3	11.3	11.3	11.3	11.3	13.5	**13.0**
Slovenia	12.6	15.0	15.9	16.1	15.4	14.5	13.8	13.8	12.3	16.2	**16.2**
Spain	35.4	35.4	35.4	33.6	33.4	33.4	33.4	31.4	33.2	34.8	**34.1**
Sweden	17.4	18.6	18.6	18.6	18.6	17.4	17.4	17.4	17.4	14.5	**14.5**
UK	28.1	28.1	27.7	27.9	28.0	28.9	29.0	28.4	27.4	26.7	**25.3**
EU 28	**18.7**	**17.4**	**16.6**	**16.2**	**15.7**	**15.6**	**15.0**	**14.8**	**14.9**	**15.7**	**15.9**
EA 19	**19.4**	**18.7**	**17.5**	**17.0**	**16.3**	**16.2**	**15.3**	**15.0**	**15.4**	**16.6**	**17.0**
FYROM	–	**8.8**	**8.8**	**6.9**	**6.1**	**1.9**	**1.9**	**1.9**	**1.9**	**1.9**	**1.9**
Turkey	–	**19.6**	**12.8**	**12.6**	**12.6**	**12.6**	**12.6**	**12.6**	**12.6**	**12.6**	**13.3**
Norway	–	23.1	23.1	23.1	23.3	23.3	23.3	23.3	23.3	23.3	**21.1**
Switzerland	–	12.5	12.5	12.5	12.4	12.4	12.4	12.4	12.4	12.4	**12.4**
Canada	–	37.5	36.7	34.7	33.2	31.8	29.0	25.6	24.3	24.0	**23.7**
Japan	–	42.8	42.8	41.9	41.9	42.8	42.8	42.8	42.1	42.1	**40.4**
USA	–	35.9	35.9	35.1	35.1	35.1	34.3	34.3	34.3	34.3	**34.3**

Source: TAXUD/2013/CC/120 Effective TAX Levels Using the DEVEREUX/GRIFFITH Methodology, Final Report 2014

(6.9%), Italy (6.9%), Bulgaria (6.2%), and Estonia (3.6%) to more than 34% of the cost of capital in France (35.8%) and Spain (34.1%).

In Greece the EMTR in 2014 was at 19.8% which is higher compared to the EA 19 (17.0%) and the EU 28 (15.9%) average. The Greek (EMTR) is highly volatile from year to year due to the complexity and instability of the corporate tax code (Table 15.3).

The Effective Average Tax Rate (EATR) on Corporate Investment

The EATR provides the average level of effective taxation of investment at different levels of profitability (higher than EMTR). This indicator uses positive economic rent which is provided by given investment. The effective average tax rate (EATR), as developed in Devereux and Griffith (2003), has proved a popular measure of capital taxation, both in academic research and policy analysis. Its great strengths include that it is based on tax laws and thus forward-looking and that it is defined for any level of pretax profits, thus encompassing the effective marginal tax rate (EMTR; see King and Fullerton 1984) as a special case, when the posttax economic profit is exactly zero. As every tax measure, it also has its weaknesses. Notably, it cannot include every important tax law and may thus be misleading about the incentives faced by any particular firm. It is defined as the ratio of the present discounted value of taxes over the present discounted value of the profit of a project in the absence of taxation.

In Greece the EATR in 2014 was at 24.1% which is higher compared to the EA 19 (21.8%) and the EU 28 (21.1%) average. Greece, since 2009, has maintained the highest EMTR in its geographical neighborhood (Italy, Turkey, FYROM, Romania, and Bulgaria) making less attracting to invest in Greece than in the other regional countries. The Greek effective average tax rate on corporations (EATR) is highly volatile from year to year due to the complexity and instability of the corporate tax code.

Table 15.3 Effective average tax rate % (EATR) on corporate investment, 2004–2014

GEO/TIME	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Austria	31.2	23.0	23.0	23.0	23.0	22.7	22.7	23.0	23.0	23.0	23.0
Belgium	29.5	29.5	25.7	25.4	24.9	24.7	25.3	25.9	26.3	26.5	26.7
Bulgaria	17.1	13.2	13.2	8.8	8.9	8.8	8.8	9.0	9.0	9.0	9.0
Croatia	18.1	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
Cyprus	14.8	10.6	10.6	10.6	10.6	10.6	11.6	11.6	11.9	15.2	15.2
Czech Republic	24.6	22.7	21.0	21.0	18.4	17.5	16.7	16.7	16.7	16.7	16.7
Denmark	26.8	25.1	25.1	22.5	22.6	22.6	22.6	22.6	22.0	22.0	22.2
Estonia	20.4	18.8	18.1	17.3	16.5	16.5	16.5	16.5	16.5	16.5	16.5
Finland	27.2	24.5	24.5	24.5	24.5	23.6	23.8	24.7	23.3	22.3	18.4
France	35.0	34.8	34.4	34.6	34.6	34.7	32.8	32.8	34.3	35.4	39.4
Germany	35.8	35.8	35.5	35.5	28.2	28.0	28.0	28.2	28.2	28.2	28.2
Greece	**30.4**	**27.8**	**25.2**	**21.7**	**21.8**	**30.5**	**21.0**	**17.5**	**17.5**	**24.1**	**24.1**
Hungary	17.8	16.6	16.3	19.5	19.5	19.5	19.1	19.3	19.3	19.3	19.3
Ireland	14.3	14.3	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4
Italy	31.8	31.8	31.8	31.8	27.3	27.5	27.5	24.9	25.1	25.1	24.0
Latvia	14.3	14.3	14.3	14.3	13.8	13.8	11.8	12.2	12.2	12.1	14.3
Lithuania	12.7	12.7	16.0	15.2	12.7	16.8	12.7	12.7	12.7	13.6	13.6
Luxembourg	26.5	26.5	25.9	25.9	25.9	25.0	25.0	24.9	24.9	25.5	25.5
Malta	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2	32.2
Netherlands	31.0	28.4	26.7	23.1	23.1	22.2	22.2	21.8	22.6	21.6	22.6
Poland	17.1	17.1	17.1	17.4	17.4	17.5	17.5	17.5	17.5	17.5	17.5
Portugal	24.6	24.6	24.6	23.7	23.7	23.7	24.8	24.8	27.1	27.1	27.1
Romania	22.4	14.7	14.7	14.8	14.8	14.8	14.8	14.8	14.8	14.8	14.8
Slovakia	16.5	16.8	16.8	16.8	16.8	16.8	16.8	16.8	16.8	20.3	19.4
Slovenia	21.5	22.1	22.3	20.9	20.0	19.1	18.2	18.2	16.4	15.5	15.5
Spain	36.5	36.5	36.5	34.5	32.8	32.8	32.8	31.9	32.4	33.7	32.6
Sweden	23.1	24.6	24.6	24.6	24.6	23.2	23.2	23.2	23.2	19.4	19.4
UK	29.3	29.3	29.2	29.3	28.0	28.3	28.4	26.9	25.2	24.3	22.4
EU 28	**24.4**	**23.0**	**22.7**	**22.1**	**21.3**	**21.6**	**21.0**	**20.8**	**20.8**	**21.1**	**21.1**
EA 19	**24.7**	**23.6**	**23.2**	**22.6**	**21.6**	**22.0**	**21.2**	**21.0**	**21.1**	**21.7**	**21.8**
FYROM	–	**13..3**	**13.3**	**10.6**	**9.0**	**7.9**	**7.9**	**7.9**	**7.9**	**7.9**	**7.9**
Turkey	–	**26.8**	**17.9**	**17.9**	**17.9**	**17.9**	**17.9**	**17.9**	**17.9**	**17.9**	**18.1**
Norway	–	26.4	26.4	26.4	26.5	26.5	26.5	26.5	26.5	26.5	25.1
Switzerland	–	18.8	18.8	18.8	18.7	18.7	18.7	18.7	18.7	18.6	18.6
Canada	–	35.7	35.4	34.6	32.4	31.5	29.2	26.4	25	24.9	24.8
Japan	–	41.7	41.7	41.3	41.3	41.7	41.7	41.7	40.1	40.1	37.7
USA	–	38.3	38.3	37.4	37.4	37.4	36.5	36.5	36.5	36.5	36.5

Source: TAXUD/2013/CC/120 Effective TAX Levels Using the DEVEREUX/GRIFFITH Methodology, Final Report 2014

15.6 The Tax Policy in Greece in the Last Decades

To conduct an analysis for the intertemporal tax policy in Greece,[6] we assess the stance of tax policy based on both the policy *instrument* (the tax rate) and the policy *outcome* (tax revenues as a percentage of GDP), despite the fact that the latter is heavily affected by the strong pro-cyclicality of the tax base (it is apparent that in periods of growth the disposable income and the consumption of the private agents also increase to a more or less degree).[7]

In the case of total tax revenues as a percentage of GDP, the analysis of the data shows that the correlation with the GDP is −0.378,[8] therefore proving the strong pro-cyclical behavior of the tax policy. As far as tax rates are concerned, in the present analysis we constructed a database on Greece's tax rates.[9] Our database is constructed for the period 1986–2012 (at an annual frequency) and includes three tax rates:

- Personal income tax rate (highest).
- Corporate income tax rate (highest).
- Value-added sales tax (main).

Unlike government spending, which varies over time, tax rates may remain constant for prolonged periods—presumably because tax rate changes typically require explicit legislative approval.

To summarize tax policy in a single number, we constructed a tax rate index for Greece by taking a weighted average of the cyclical components of each tax rate, where the weights capture the relative historical importance of each tax rate in total revenues. The correlation between the cyclical component of the (constructed) tax rate index and the real GDP is −0.26 for Greece, which confirms the pro-cyclicality of the applied tax policy (tax rates are being reduced in periods of growth and raised in periods of recession).

The pro-cyclical fiscal policy followed in Greece, as we have shown, contradicts the intertemporal fiscal policy followed in most Eurozone countries, which is generally acyclic. This empirical observation is complemented

by the remark that Government Consumption as a percentage of GDP in Greece is, in comparison with the other Eurozone countries, marginally counter-cyclical (its correlation with the GDP is −0.168) for the period 1970–2012, especially if we compare it with that of Germany (the correlation with the GDP is −0.625, therefore strongly counter-cyclical) and the population-weighted average standard deviation of the corresponding variable of the 18 countries of the Eurozone (the population-weighted average correlation of this variable with GDP is −0.494, therefore significantly counter-cyclical) (see Sect. 15.4.2 for a comparison on the statistical properties of business cycles in Greece with other countries). However, this turns into clearly pro-cyclical if we isolate the period 1990–2012 (the correlation with the GDP is 0.176).

The latter is in stark contrast to the strong counter-cyclical strategy of the Government Consumption (as a percentage of GDP) observed in other Eurozone countries (Germany −0.63 and Eurozone (18 countries) −0.49). It is also in contrast to the Keynesian approach, under which the Government Consumption as a proportion of GDP should be reduced in periods of growth and increased in downturns. Most countries in the Eurozone seem to deviate less compared with Greece.

Based on these, we reach the conclusion that fiscal policy in Greece (as far as taxes and expenditures are concerned) tends to strengthen economic cycles compared with other Eurozone countries (see Sect. 15.4 in which we make a comparison of the statistical properties of business cycles between Greece and other countries).

Taking into consideration the existing uncertainties in the current international environment and the strong disturbances currently affecting the economies of the Eurozone countries, the implementation of a pro-cyclical fiscal policy (or—at least—of a not quite strong counter-cyclical policy) deprives governments of an effective stabilizing macroeconomic tool.

The fact that the Greek fiscal policy remains essentially and largely pro-cyclical—since it includes extensive public spending cuts and tax increases amid unprecedented contraction of the Greek economy—has a significantly negative effect.[10]

Moreover, due to the high tax rates in Greece (see PBO Quarterly Report October–December 2013) and their highly distortionary nature,[11] individuals have stronger incentives for tax evasion and for reducing their labor supply and for investment and consumption[12] (see Table 15.4).

Table 15.4 Ranking of countries based on the total corporate tax rate and the distortionary effect of taxes on work incentives and investment

Index	Greece	USA	Germany	Australia	Czech Republic	Japan	Sweden	Austria	Belgium
Tax rate	101	107	108	109	112	114	121	122	127
Effect on investment	142	40	43	80	132	86	23	65	110
Effect on labor	137	38	64	59	133	76	20	112	142

Source: Global Competitiveness Index. World Economic Forum, 2013

The overall tax burden on firms in Greece is lower in comparison with the USA, Germany, Czech Republic, Australia, Sweden, Austria, Belgium, and Japan (Table 15.4). However, it seems that this type of taxation, while relatively lower, is significantly distorting as it affects—at a much greater extent—the decisions to invest and work in Greece.

15.7 Conclusion

Excessively high Greek corporate tax rates compared to neighborhood countries (Italy, Turkey, FYROM, Bulgaria, and Romania) and the EA and EU averages have shrunk the Greek corporate sector and reduced corporate tax revenues. The statutory corporate income tax rate of Greece is higher than the EA and EU averages (26% compared to 24.8% and 22.9%), while effective tax rates on capital investments appear to be high and dispersed. Indeed, the differences between the taxation systems in the EU raise the issue of tax harmonization in the EU (e.g. Bearer-Friend 2012; Wasserfallen 2014).

For businesses, it is not unusual to see their effective tax rates, regardless of how these are defined, being lower than their statutory tax rates (26% in Greece compared to the 24.1% of the EATR and 19.8% of the EMTR). This results from tax preferences ("loopholes," if using a pejorative term) that are more generous than the economic costs of generating taxable income.

For economists, it is also commonly understood that the effective tax rates follow the trend of statutory tax rates in the long run. The long-run divergence between these two rates is not caused by the economic cycle but by irregular provisions of various conditional tax preferences. These irregular conditional tax allowances or credits narrow the tax base, which often goes hand in hand with rather high statutory tax rates.

The combination of a narrow tax base and an otherwise unnecessarily high tax rate hurts business investment in general by benefiting only those investors who can use available tax preferences. This creates an uneven playing field, resulting in a misallocation of capital toward tax-favored activities as well as making the tax system more complex to comply with and administer.

The Greek Government, moreover, puts itself at a disadvantage with high statutory corporate tax rates, since businesses are encouraged to shift profits out of Greece with transfer pricing and tax-efficient financing structures to low tax rate jurisdictions, thereby reducing revenues that could be used to finance general government services.

We conclude that the problem with the Greek corporate income tax system is much broader than the high statutory tax rate of 26%. The corporate tax system also undermines economic growth with a non-neutral treatment of business activities.

Notes

1. In the case of Greece, the indirect taxation does not lead to fair income distribution (Kaplanoglou and Newbery 2003) as it is more regressive than other forms of taxation (Decoster et al. (2010).
2. Taxes on consumption include taxes on transactions between producers and final consumers (mainly VAT and excise duties).
3. Taxes on labor are divided among employed and unemployed labor. Employed labor: mainly personal income tax and compulsory social security contributions. Unemployed labor: part of personal income tax and compulsory social security contributions of self and non-employed are the main components.
4. Taxes on capital include capital and business income taxes and taxes on stocks of capital. Capital and business income: mainly corporate income tax, personal income tax, and social security contributions by self-employed persons. Taxes on stocks of capital: mainly taxes on land, buildings, and other structures and taxes on business and professional licenses.
5. The statutory corporate tax rate is the rate that is imposed on taxable income of corporations, which is equal to corporate receipts less deductions for labor costs, materials, and depreciation of capital assets.
6. The annual data used cover a period from 1970 to 2012 regarding the total tax receipts as a share of GDP and from 1986 to 2012 with respect to the tax rates. The data come from the OECD database.
7. In spite of this fundamental problem, many researchers have relied on data on tax revenues—or, more frequently, tax revenues as a proportion of GDP, which could theoretically be construed as an "implicit tax rate"—to analyze the cyclical properties of tax policy. Unfortunately, however, doing

so conveys a highly misleading picture (Frankel et al. 2013), although in Greece our argument on pro-cyclical tax policy is further supported.

8. The data cover the period 1970–2012 and come from the OECD database (revenue statistics-comparative tables). To isolate the cyclical component of a time series, we used the filter Hodrick-Prescott (HP). It is important to note that a pro-cyclical fiscal policy implies a negative correlation between tax revenues as a percentage of GDP and/or tax rates with respect to GDP over the economic cycle. This terminology differs from the Real Business Cycles literature according to which each variable positively (negatively) correlated with the cyclical component of GDP is referred to as pro-cyclical (counter-cyclical).
9. The data have been obtained from OECD.
10. The counterargument that is particularly true for Greece (a heavily indebted country) is that in times of recession, counter-cyclical policies increase the countries debt as well as the needs for future refinancing it. See also "Are countercyclical fiscal policies counterproductive?" of David B. Gordon and Eric M. Leeper (NBER Working Paper No. 11869), published in December 2005.
11. Briefly, taxes distort economic decisions of people because these decisions are influenced not only from the real economic costs and benefits (the first best) but also from taxation.
12. In this context the choice between work and leisure is also influenced, the choice of the country for the realization of an investment, for migration, for savings and consumption.

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16

The Impact of Tax Policy on the Economic Growth of Greece

Grigorios Spirakis and Antonios Sarantidis

16.1 Introduction

The context of policy establishment and application on tax issues is nowadays more than ever at the epicenter of political situations, government plans, and political and social organizations. The role, the significance, the content, and the application of fiscal policy are delimiting to this direction the significant issues of reforms, which are emerging as a necessity, especially during the global financial crisis and the current economic recession. The fiscal framework in Greece shows that after the Greek dictatorship, numerous efforts and legislation changes have been done on that. These changes are limited on various alterations in tax rates as well as on the establishment of new taxes, which in fact do not constitute a reform and do not bring the expected results.

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The modernization of the tax system and the tax audit mechanism, but especially the establishment of a stable and fair tax environment, are necessary conditions in order to attract more investments, to stop the recession, to return into growth, and to recover from the financial crisis. The application and implementation of such reforms are not going to be based on randomness. Instead, the exit from the financial impasse requires to be based on substantial scientific studies and research projects that are focusing on the problems of the Greek economy and on how to address these. The application of fiscal policy through the establishment of new taxes, the increase of tax rates, and the transfer of taxable income to higher rates are weakening the consumer purchasing power and are increasing the tax evasion and tax avoidance phenomenon. Instead, a policy that will launch a modern, effective, fair, and stable tax system with minimum legislative interventions and which will be focusing on the simplification and the stabilization of the fiscal framework (e.g. a substantial reduction in tax rates as well as the abolition of some taxes) may be necessary in order to face the current economic recession.

In this chapter, we seek to describe the framework of the Greek economy in which the factors that lead and maintain on this recessionary reality were born and were strengthened. Furthermore, we try to approach the theoretical background of taxation as a fiscal policy instrument, in order to cover the public expenditures and the income redistribution. The changes that were made on the Value Added Tax (VAT), the personal income tax, the business income tax, and so on were studied and analyzed not only at an institutional framework level but also on a basis of quantitatively measurable data. Specifically, during the period of economic recession and the period that is preceding the appearance of the debt crisis, this chapter determines whether repeated tax reforms and frequent changes and amendments of the tax legislations are affecting the economic growth and the foreign direct investments of Greece. In order to achieve that, we obtain data from the tax legislation archive of the taxheaven.gr website, the Official Greek Government Gazette (FEK), the WDI (World Development Indicators), the WGI (World Government Indicators), the Penn World Tables and the database of Transparency International. In the empirical part, we are using the Principal Component Analysis (PCA), OLS regressions, and the methodologies of GARCH

and GARCH-M. This study is similar to that of Romer and Romer (2010). In their study, they examine the effects that tax changes have on the US economic activity and define tax policy as the number of the significant tax legislation changes. We define and measure tax policy as the number of all legislative tax changes that have a direct negative impact on the income of businesses and individuals in Greece. Moreover, we go a step further and construct a new Tax Policy Index (TPI) by using five additional variables that are mentioned in the corresponding literature. The estimation results led us to the conclusion that the Tax Policy Index has significant negative effects on the economic growth. Foreign direct investments seem to be unaffected or affected to a much lesser extent than expected.

Furthermore, this chapter expects to become a useful tool to policy makers and to provide new knowledge in the direction of: (a) the estimation of the impact that the existing tax system has on the Greek economy and growth; (b) the assessment of the benefits that will come from the implementation of a modern and stable tax system that is focusing, on the redesign of the tax administration structure, on the stability of the fiscal institutional framework, on the reduction of bureaucracy, on the simplification of procedures and the transparency of operations, on the human capital development and on the eradication of corruption, the immediacy, flexibility and the independence of the tax and audit mechanism; and (c) the contribution of tax reforms on the maximization of the economy, on the reciprocity of taxation, and on the economic development. To the best of our knowledge, this is the first study that tries to construct a new Tax Policy Index and to shed light on the effects that it has on the economic growth and the FDI of Greece.

The rest of the chapter is organized as follows. Section 16.2 provides some introductory notes about the taxation, the reciprocity of taxes, and the redistribution of income while Section 16.3 presents the malaise factors of the current fiscal framework of Greece. Section 16.4 presents an example of VAT about the collectability, the impact, and the development potentials of fiscal policy. Section 16.5 provides a brief literature review while Section 16.6, the Database. Section 16.7 describes the methodologies and Section 16.8 presents the estimation results while Section 16.9 concludes.

16.2 Introductory Notes About Taxation, Reciprocity of Taxes and the Redistribution of Income

The organized societies are operating in order to develop their economies and to promote and improve the overall welfare of their citizens. In the cases where the free market cannot operate effectively (because of the complexity, the imbalance, and the distortions that are impeding economic development) a State intervention is required. This State intervention is implemented with the application of the indicated policy and aims to smooth the above malfunctions and restore the economy into growth. Through the application and implementation of this policy, the necessary financial resources/revenues are collected and are intended in order to cover the government spending, to achieve the objectives of the national policy, and hence to improve the prosperity of the society.

A way to achieve this is to impose financial burdens/taxes that allow collecting all the necessary financial resources from individuals and businesses in order to cover financial costs, to produce public goods and to make them available to the community as well as to promote economic development and social welfare. The collection of taxes is a complicated process which should be implemented following rules and always on the basis of the recognition and enforcement of tax burdens. Conceptually, tax burdens consist of the burden that is caused to citizens through the imposition of taxes. The essential issue that economists are facing is the identification of the appropriate criteria in order to promote a fair distribution of tax burdens among citizens. In this direction, two theories have been developed: (a) the theory of consideration or theory of received benefits, in which two people, who are under the same conditions and are deriving the same benefits from the public activity, must have a common tax treatment, and (b) the theory of tax-paying ability or ability to pay theory. According to this theory, the criterion for a fair distribution of taxes is not the specific benefit that citizens receive from the public activity, but their ability to pay, that is, their ability to participate into taxes (Tresch 2015).

Taxes are monomer weights that are imposed from the State to the private sector, but without being offset by a specific provision of the State

to the private sector. They are taking the form of money movements from the private sector to the State, where the latter is responsible to ensure their reciprocity. Public institutions are acquiring the necessary ways in order to cover all the expenditure types and to meet their multilateral obligations. That fact shows that the most important function of taxes is the fiscal function. This is of course not the only one. Taxes, except from fiscal operations, are performing some non-fiscal operations, economic, and social ones.

This important tool of fiscal policy, exhibits three basic functions: (a) the fiscal function, which expresses the dimension that the State seeks and obtains the necessary purchasing power in order to meet its multifaceted obligations, (b) the economic function, which is to serve or to assist the objectives of government's economic policy, like the pursuance of economic stabilization at a level that is conducive to full employment and (iii) the social function of taxes, which enables the State to implement the social policy (Musgrave 1957; Head and Krever 2009).

It is usual that fiscal operations are implemented simultaneously with economic and social functions. The consequences of that are that the fulfillments of an economic or social function prove to be short-term at the expense of the fiscal function of taxes. In contrast to the above, the current Greek reality shows that the economic and social function of taxes has been suspended, and only the fiscal function has been strengthened. The continuous tax charges are not followed by more or at least better public services.

The actual cost of the State shall be contributory to the society. From a different perspective, it could be assumed that the State must return to the taxpayers a specific amount in an annual basis, which corresponds to the yearly State expenditures amount for the university education of taxpayer's children. This amount will exclusively be released in order to pay a fair price for the education provided by a public university. Therefore, the university education services will be covered by these amounts and only if these amounts are not sufficient then they could be supported by long-term loans. The loans could be paid back in installments and over a specific time period, after the completion of the university studies and only if the individual starts earning a taxable income. Such reciprocity is possible to emerge in every sector of social life and social activity. In such

a hypothetical situation, citizens will know that the share of tax burden returns again back to them, or at least to a large extent, it also reinforces the tax consciousness that is weakening the incentive for tax evasion, tax avoidance, and the tax delinquent behavior.

Taxation not only constitutes the main source of States revenues, but it is also one of the fiscal measures that is applicable to the redistribution of income. Income redistribution is defined as measures that the State takes, in order to achieve the most socially acceptable distribution of the total production and to reduce large income differences among citizens. Okun and Summers (2015) argue that the redistribution of income between different income strata have a negative impact on growth. Studies of the International Monetary Fund (2015) and the OECD (2014) are showing the converse. Specifically, (a) the analysis of the historical relationship between growth and inequality leads to the conclusion that nations where relatively little economic inequality exist, have more chances to achieve sustainable economic development and (b) the effect of income redistribution is positive in relation to the development.

The offer of opportunities and economic resources is of great significance in a society that shows higher inequality. Therefore, if we assume that children of less affluent families are less likely to finish university in contrast to children of wealthy families, then this (beyond the important social dimension of this phenomenon) constitutes a significant restriction of the human development potential and acts as a brake on prosperity and growth.

16.3 Malaise Factors of the Current Fiscal Framework in Greece

The ineffectiveness, dysfunctional, labyrinthine, and general pathogenesis of the current fiscal institutional framework emerges through the paradoxical perception and incorrect tax consciousness that: (a) taxes need not to be paid on time, (b) taxes may be adjusted and be paid in the future without extra charges, with discharge of increments and by deleting the additional fees, (c) the supervisory mechanism of sanctioning does not

work effectively and can be avoided, (d) the extrajudicial settlement of resolving tax disputes is time consuming, expensive, and in most cases does not lead to a solution, (e) the recourse to the tax courts allows the suspension of tax collection for many years.

The key aspects of the current economic situation in Greece are the strong economic downturn and the significant changes on the economic and social wellbeing of citizens. A significant part of this situation was the high debt level and the global crisis of the financial systems. The fiscal policy measures that were introduced at 2010 and onwards, essentially concerns the imposition of new taxes and fees, by increasing tax rates and by moving the tax base to higher rates. By this way, the aim was to cover the public expenditures exclusively through a higher taxation, which combined with the inevitable loss of consumers' purchasing power led to a spectacular decline of every economic and business activity.

16.4 The Collectability, the Impact, and the Development Potentials of Fiscal Policy: The Case of VAT

The implementation of policy that increases the value added tax (VAT) rate, that transfers goods and services to a higher tax rate as well as the recent policy that has increased the standard VAT rate to 24%, is very doubtful on whether it would bring the expected revenues to the government coffers. These tax measures were dictated by the institutions (EU, IMF, ECB) as a basic requirement in relation to the prerequisites, which are necessary in order to meet the country's borrowing needs and to ensure the requested liquidity.

In the last years, we observe continuous changes of the VAT rates (Taxheaven 2016). VAT rates were increased over 6% per VAT category, while a range of goods and services were transferred from a lower to a higher VAT category. The apparent results of this policy can only be a contraction of consumption, which is the result of the inevitable rise in prices in a number of goods and services. A legitimate question is arising: every time that VAT rates are increased, are the related revenues from

VAT collection also increased, or is the result the opposite of the desired? In fact, according to the Greek Foundation for Economic and Industrial Research, the collection of VAT revenues in Greece shows a high lag, which differs by 30% from the expected revenue collection (IOBE 2015).

The experience of international development and the poor effectiveness of the audit and collection structures in Greece are showing that an increase in VAT rates maximizes the delinquency and causes an increase on the tax evasion and avoidance phenomenon. That is because the incentive for non-payment of taxes is becoming stronger. It should be noted that the phenomenon of the undeclared cashier machines has been deteriorating in recent years. Undeclared cashier machines provide tax legitimacy to transactions, but actually they "exempt" the entrepreneur from his obligation of VAT and income tax payments. Furthermore, a VAT increase contributes further to the phenomenon of tax evasion. That is, for example, because if a company absorbs the tax increase, then she will have fewer resources available in order to respond to its obligations. If the company reflects the VAT increase to the price of the product or the service provided, then she has to face the problem of the reduced consumption.

According to the Eurostat statistics for the years 2012–2013, Greece has the fourth largest deficit between the establishment and recovery of VAT revenues among the 26 EU countries. This deficit reaches 34% of the total tax burdens, when for the EU countries the corresponding deficit exceeds barely 15%. Countries with higher deficit rates than Greece are Lithuania, Romania, and Slovakia with deficit rates of 37.7%, 41.10%, and 34.9%, respectively (European Commission 2015).

The possibility and potential for economic development in each individual sector is impeded by tax increases. These increases are causing contractions in business activities, an increase in unemployment rates, fiscal aggravations, and are limiting the growth of the economy. The consumer always has the opportunity and the option to obtain the same or a similar product or service from another country. This product or service incorporates into his price less taxes and costs, thus it is more competitive. This fact deprives from the national economy the necessary revenues and restricts the GDP.

The increases in VAT rates and the changes of goods and services from lower VAT rates to higher ones leads undoubtedly to price increases

and to reduced consumptions, which is due to the decline in consumers' purchasing power. This policy leads to job losses, to lower income tax revenues, and to a shortfall of revenues. Moreover, the increases in VAT rates are affecting horizontally and without any discrimination the entire population, regardless of their income criteria.

Of course, apart from their impact on households and on the demand of the economy, it raises another legitimate question about the effectiveness of VAT increases (and generally the argument of tax increases) during recession periods. Higher tax rates in a tax evasion regime are causing asymmetrical burdens on consumers; they are creating "black" capital for the entrepreneur and are reducing competition. Furthermore, higher tax rates are enhancing local "interest groups", are depriving tax revenues from the State, are canceling the exercise of real social policy, and, finally, they are unfair for all; because the main objective of economic growth is not the forced redistribution of income, but the increase of production as well as the increase of the overall economy. If the objective of economic policy is economic growth (under the current conditions in Greece) then, to increase taxes is not a suitable policy. On the other hand, the fight against tax evasion is becoming easier, both quantitatively as well as qualitatively when tax incentives change, procedures are simplified, and tax rates are reduced, making so the State competitive to the global economy.

The establishment of measures and policies that have a direct character of revenues collection are obstacles in order to ensure a sustainable perspective of growth. The problem occurs, both in short and in long term, since many Greek companies have moved to neighboring countries in order to invest their capital with lower tax rates and lower labor costs, depriving from Greece the necessary tax revenues. Instead, what the economy now needs is (a) the implementation of stable fiscal policies that will lead to incentives in order to invest in Greece, (b) an increase in consumer purchasing power, (c) the formation of tax consciousness on citizens, consumers, and businesses, and (d) the establishment of a taxation level that corresponds to the payment ability of an average Greek citizen.

In order to improve VAT collectability, it is important to adopt and to implement the policy of the direct tax withholding, which will be implemented by banking institutions. Then banking institutions could pay directly to the State the withholding taxes. This could be applied on transactions that

are carried out by the use of credit or debit cards and by other electronic ways (internet banking, mobile banking, etc.). It is also important to establish some measures in order to increase the volume of transactions that are carried out with non-physical forms of money. In fact, the restrictions that were taken after the implementations of capital controls have increased the electronic transactions of citizens and businesses. This fact makes now necessary the implementation of policy measures where VAT will be withheld at the transaction and will be directly paid to the State. The Greek state should proceed immediately in this direction. Of course, this should be done together with other measures such as, the direct connection of cash machines with the services of the Ministry of Finance, in order to provide such information to audit mechanisms on the amount and tax that has been paid at the relevant transaction.

16.5 Literature Review

The growth of countries, at all levels (economic, social, political or cultural), depends largely on their ability to collect public revenues. The amount of these revenues depends on the organization structure and stability of the existing tax system. The most effective tool, for creating the conditions that will enhance economic development, is the stability of the tax system. The current situation in Greece does not show encouraging prospects for a stimulating economic growth, and in any case, it will require some effective reforms. Most European countries have experienced serious problems in enhancing their economic development.

Economic growth, according to economic theory, is based on three factors, (a) capital, (b) labor, and (c) technological progress. Taxes would cause distortions on financial decisions that are related to tax rates, and thus they could cause adverse effects on economic growth. The reductions in tax rates, which are related to work, income, and capital (property), and the increase in the consumption tax rates are possible to awake the forces of growth in an economy. On the other hand, a possible increase in tax rates that is related to income, will adversely affect the participation of individuals in the labor market and the businesses as well as it will prevent innovation.

The taxation of capital has an effect on households' decisions, which are related to investments and savings. The excise duties are imposed in order to influence the consumer choice towards a healthier lifestyle. Environmental taxes have been established in order to force companies to reduce the impact of their operations on the environment. The cost for these adjustments has been often passed to the final goods or services; it charges the final consumer and reduces his disposable income. VAT changes are acting immediately and strongly on the consumer behavior of individuals. It has been argued that a single tax for all goods will be more effective and that the collection of taxes, in this case, would be substantial. On the other hand, proponents of low rates are arguing that taxes are necessary for redistribution reasons (Zipfel 2007).

The relationship between taxes, economic growth, and foreign direct investments has drawn the attention of researchers. The research of Engen and Skinner (1999) shows five different ways by which taxes could affect economic growth. Specifically, they show that taxes could decrease the productivity growth, the rate of investments, and the growth of labor supply, move the resources to sectors that have a lower tax rate, and distort the effective use of human capital. King and Fullerton (1984) show that economic growth and investment tax rates are negatively correlated. Yang (2016) uses the 1994 China tax reform in order to study the changes it has caused in economic growth. Moreover, he uses tax reforms in association with the degree of fiscal decentralization. In his results, he finds that a proper degree of fiscal decentralization could promote economic growth and an aggressive degree could hinder economic growth. Atems (2015) estimates the effects that taxes have on state economic growth. He shows that changes in taxes have negative effects in the short-run and spatial spillover effects in the long run on economic growth. Angelopoulos et al. (2008) study the effects that alternative tax structures have on the long-run growth of UK. In their results, they suggest to reduce the labor taxes and to increase capital and consumption taxes in order to advance the long-run economic growth.

Lee and Gordon (2005) find a negative relationship between corporate tax rates and economic growth. Koester and Kormendi (1989) and Easterly and Rebelo (1993) find that the marginal tax rate has a negative impact on the rates of economic growth. In another perspective, Padovano

and Galli (2001) are showing that a reduction in marginal tax rates could increase the rate of growth. Tosun and Abizadeh (2005) examine the effect that changes in the tax mix have on growth. By using a set of various OECD countries, they provide evidence that changes in personal and property taxes have a positive effect on economic growth while changes in payroll, goods, and services have a negative effect. Similarly, Papageorgiou (2009) examines the effects that changes in the tax mix have on the economic growth of Greece. He shows that a decrease in capital income tax rate and an increase in the consumption tax rate could promote economic growth. Engen and Skinner (1996) examine the impact of tax policy on the US economic growth. They define tax policy as the US tax reforms, and show that tax reforms are negatively associated with economic growth.

Devereux and Freeman (1995) examine the relationship between taxation and foreign direct investments. They show that FDI is not going to be significantly affected by taxation. In contrast to Devereux and Freeman (1995), Hajkova et al. (2006) examine the impact of tax on FDI. He argues that if a number of policy and non-policy factors are not controlled then it may lead to serious overestimation of tax elasticities. Furthermore, De Mooij and Ederveen (2008) are using and are examining a number of studies that are related to taxation and FDI. They show that most studies are reporting a negative relationship between taxation and FDI.

It becomes clear that some taxes have a strong impact on economic development and growth than others. Labor and income taxation are not keeping up with economic growth. Moreover, the increase in corporate taxes substantially prevents growth. In this sense, tax systems should be designed in order to reduce the burdens on labor and capital (De Mooij and Keen 2012).

16.6 Data

The dataset contains variables of tax policy, foreign direct investments, and economic growth. Data are collected for Greece, using annual time series observations. The period covers the years from 1980 to 2014. We test the

hypothesis that frequent changes in Tax policy, in the level of taxation, affects the GDP growth and FDI of Greece by estimating time series regressions and GARCH-M models. Data on GDP growth and FDI are obtained from World Bank's World Development Indicators (WDI). We prefer using time series data instead of cross sectional, because time series allow us to have a detailed estimation of the historical characteristics of Greece. Moreover, we can include the most appropriate and highest quality variables that are suitable for our analysis (Asteriou and Price 2001).

In this chapter, we construct a new Tax Policy Index (hereafter called TPI) for Greece by using the Principal Component Analysis (PCA). We include six different variables in our PCA estimation. The first variable is named Tax Policy and is measured as the annual number of tax legislation changes that have a direct negative impact on the income of businesses and individuals. We define and construct the Tax Policy variable by identifying and separating all government acts of taxation that are directly related to the real economic performance of Greece for the period of 1980–2014. These Tax legislation acts are related, for example, to an increase in the income taxation of individuals, to an increase in the income taxation of businesses, to a VAT increase, to a change in the taxation of alcoholic beverages, to a change in the taxation of combustibles (oil, gas), and so on. The legislation acts are obtained from the tax legislation archive of the taxheaven.gr website and the Official Greek Government Gazette (FEK).

In addition to the Tax Policy variable, we also include a set of five explanatory macroeconomic variables, namely the Inflation rate, the Unemployment rate, the Political Stability and Absence of Violence, the Degree of Openness, and the Corruption Perception Index (CPI of corruption). We choose these variables according to the influence that Tax Policy has on them and the impact they have on economic growth and FDI. A possible change of Tax Policy on the taxation rate could affect, for example, the inflation rate (Heitger 2002) or the unemployment rate (Pitchford and Turnovsky 1976). Furthermore, it has been shown in several studies such as Barro (2013), Asteriou and Sarantidis (2016), Jong-A-Pin (2009), Aghion and Howitt (1994), and Aghion et al. (2016) that these macroeconomic variables have an important influence on GDP growth and FDI. The source of the variables are from WDI

Table 16.1 The variables and their summary statistics

	Observations	Mean	Standard deviation	Minimum	Maximum
GDP	35	0.4765	3.4292	−8.6160	6.3030
FDI	35	0.8499	0.3710	0.0350	1.9790
Tax Policy (Number)	35	0.2528	0.2651	0.0010	1.0000
Inflation (CPI)	35	9.8531	8.1781	−1.4000	24.8750
Political stability and absence of violence	35	0.3837	0.2783	−0.2200	0.7900
Degree of openness	35	0.5094	0.2164	0.1440	1.0000
Unemployment (%)	35	10.3499	5.5062	2.6630	27.2510
CPI index of corruption	35	0.5334	0.2589	0.0000	1.0000

(World Development Indicators), WGI (World Government Indicators), Penn World Tables, and Transparency International. Table 16.4 in the Appendix provides information about the specific definition of the variables, as they were given in the corresponding databases.

Table 16.1 presents the summary statistics of GDP growth and FDI (dependent variables), as well as for the variables that are used as proxies in the TPI.

16.7 Methodology

In this chapter, we examine for possible negative effects of Tax Policy changes on the economic growth and FDI of Greece. For the first part of our empirical analysis, we test our variables for the existence of possible correlations and then employ the principal components analysis (PCA) in order to construct the TPI. In the second and main empirical part of our estimation analysis, we employ OLS regression and the econometric models of GARCH (1,1) and GARCH-M (1,1). By using the two latter models, we are able to test for possible effects of the TPI on the conditional variance of GDP growth and FDI.

Correlations and Principal Component Analysis

Before proceeding with the correlations and the PCA, we normalized the variables of Tax Policy, Degree of Openness, and CPI index of corruption to an interval from zero to one. We use the following simple equation,

$$X' = \frac{X - MIN(X)}{MAX(X) - MIN(X)} \tag{1}$$

where X is the initial value, MIN in the minimum value, MAX the maximum value, and X' the normalized value. After the normalization procedure, we test for possible correlations among the proxy variables and do not find any evidence of higher correlations among them.[1]

Next, we employ the PCA in order to construct a new measure of Tax Policy. This new measure is named Tax Policy Index (TPI). This index is constructed following the research of Alesina and Perotti (1996), Asteriou and Price (2001), and Asteriou and Sarantidis (2016). In particular, the PCA is expressed as a linear methodology of data reduction which is characterized by redefining the coordinates of a particular dataset to different coordinates that are appropriate for the upcoming data analysis. These new coordinates are the result of a linear combination derived from the input variables and are represented in an orthogonal axis, while the impending points maintain in a decreasing order regarding the values of their variance. For this reason, the first principal component holds more information on data in comparison to the second principal component, which does not hold the information that has been entered in the first component. The principal components are not correlated. The total number of principal components is equal to the number of the initial variables (X_j, $j = 1, 2, \ldots, k$), presenting the same statistical information. However, this method allows the reduction of all variables, as the first components (principal components) hold more than 90% of the statistical data from the initial data (Vidal et al. 2016).

Regressions, GARCH (1,1) and GARCH-M (1,1)

For this part of our estimation analysis and before proceeding with the GARCH models, we employ simple regressions in order to test for possible negative effects of the TPI on GDP growth and FDI. Furthermore, this step will show us if the new constructed index is giving us the expected and satisfactory results and if it is going to fit well in our GARCH models. We run two different regressions for each dependent variable; the first regression model for GDP growth as a dependent variable takes the following form:

$$\mathrm{GDP}_{\mathrm{it}} = a_0 + a_1 \mathrm{TPI}_{\mathrm{it}} + \varepsilon_{it} \tag{2}$$

where GDP denotes Greece's GDP growth, TPI denotes the Tax Policy Index, and ε denotes an error term. In the second regression model for GDP growth, we included the second dependent variable of FDI as an independent variable, and it takes the form:

$$\mathrm{GDP}_{\mathrm{it}} = a_0 + a_1 \mathrm{FDI}_{\mathrm{it}} + \beta_1 \mathrm{TPI}_{\mathrm{it}} + \varepsilon_{it} \tag{3}$$

where GDP denotes Greece's GDP growth, FDI denotes the foreign direct investments, TPI denotes the Tax Policy Index, and ε denotes an error term. By using the FDI as a dependent variable the regression model takes the following form:

$$\mathrm{FDI}_{\mathrm{it}} = a_0 + a_1 \mathrm{TPI}_{\mathrm{it}} + \varepsilon_{it} \tag{4}$$

where FDI denotes Greece's foreign direct investments, TPI denotes the Tax Policy Index, and ε denotes an error term. In the second regression model of FDI, we included the GDP growth as an independent variable, and it takes the form:

$$\mathrm{FDI}_{\mathrm{it}} = a_0 + a_1 \mathrm{GDP}_{\mathrm{it}} + \beta_1 \mathrm{TPI}_{\mathrm{it}} + \varepsilon_{\mathrm{it}} \tag{5}$$

where FDI denotes Greece's foreign direct investments, GDP denotes the *GDP* growth, TPI denotes the Tax Policy Index, and ε denotes an error term. The regression results are presented and discussed at the empirical results section.

After the regression estimations, we continue the empirical part by using GARCH (Bollerslev 1986) and GARCH-M (Engle et al. 1987; Enders 1995) models. Furthermore, we focus through these models on the conditional variance of the output and on the uncertainty that Tax Policy has. We estimate a GARCH (1,1) model that takes the following form:

$$\Delta \log\left(Y_t\right) = a_0 + a_i \sum_{q}^{i=0} \Delta \log\left(Y_{t-1}\right) + \sum_{p}^{j=1} \beta_j X_{t-1} + e_t \tag{6}$$

$$e_t \sim N\left(0, h_t\right), \tag{7}$$

$$h_t = b_1 e_{t-1}^2 + b_2 h_{t-1}. \tag{8}$$

where $\Delta \log(Y_t)$ denotes the GDP growth/FDI of Greece and is modeled as an AR (1) process by including the GDP growth/ FDI and the TPI (X_{t-1}). As mentioned above, we also want to find if the uncertainty affects GDP growth/FDI directly. For this purpose we estimate the GARCH-M model. By using this model we can test (a) if the uncertainty in GDP and FDI could have a direct impact on GDP and FDI, and (b) if the TPI could affect GDP and FDI separately. The GARCH-M (1,1) model we are using takes the following form:

$$\Delta \log\left(Y_t\right) = a_0 + \sum_{p}^{i=0} a_i \Delta \log\left(y_{t-1}\right) + \gamma h_t + e_t, \tag{9}$$

$$e_t \sim N\left(0, h_t\right), \tag{10}$$

$$h_t = b_1 e_{t-1}^2 + b_2 h_{t-1} + \sum_{p}^{i=1} b_i X_{t-1}. \quad (11)$$

Similar to the GARCH (1,1) model, the GDP growth/ FDI is modeled as an AR (1) process by including the GDP growth/FDI and the variance of the error term. The variance of the error term (h_t) is an equation of the lagged squared residuals, the lagged variance, and the TPI (X_{t-1}).

16.8 Empirical Results

In this section, we present and discuss the estimation results on the effects that the TPI has on the economic growth and foreign direct investments in Greece. We start with the estimation results of the regressions and proceed by examining for possible direct or indirect effects of TPI by using GARCH and GARCH-M. Figures 16.1 and 16.2 are presenting the newly constructed TPI together with GDP growth and FDI, where higher numbers are indicating more Tax Policy changes, lower economic growth, and lower foreign direct investments.

Table 16.2 presents the estimation results of the regressions, where columns 1 and 2 present the results for GDP growth and column 3 and 4 the results for FDI. In the first column, TPI (−2.3391) is negative and significant at the 1% level, showing us that GDP growth is negatively affected. In the second column, we include in the regression estimation the FDI variable. From the results, it is shown that TPI (−2.2367) is negative and significant at the 5% level showing us again that it adversely affects GDP growth. The third column presents the estimation results for FDI, where the TPI shows to be insignificant. In the fourth column, we include GDP growth in the regression estimation. Both variables seem to be insignificant and not to have either a negative or a positive impact on FDI. The regression results show that Tax Policy, which is captured by the constructed TPI, has negative and significant effects on the economic growth of Greece. In addition, it has neither positive nor negative effects on FDI. However, we continue our analysis by using GARCH and GARCH-M in order to examine further this relationship.

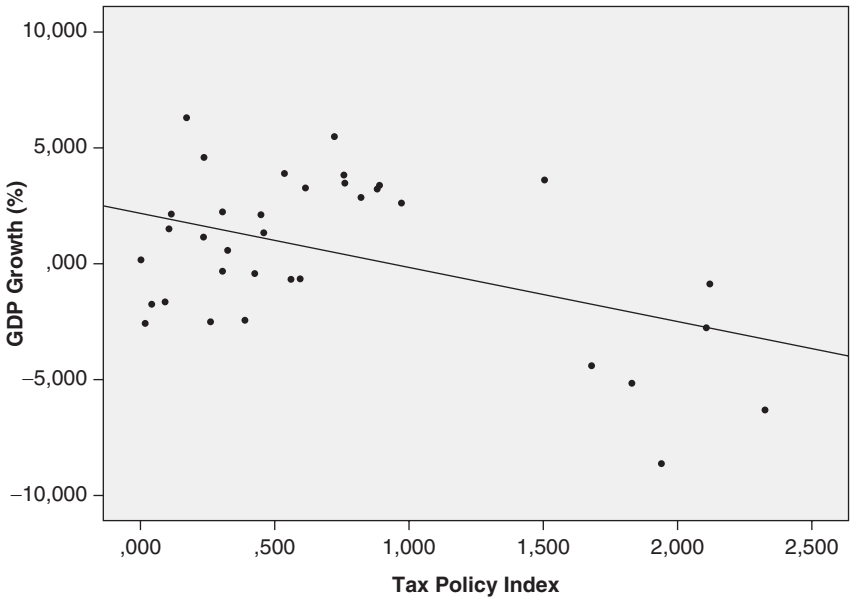

Fig. 16.1 GDP growth and the Tax Policy Index

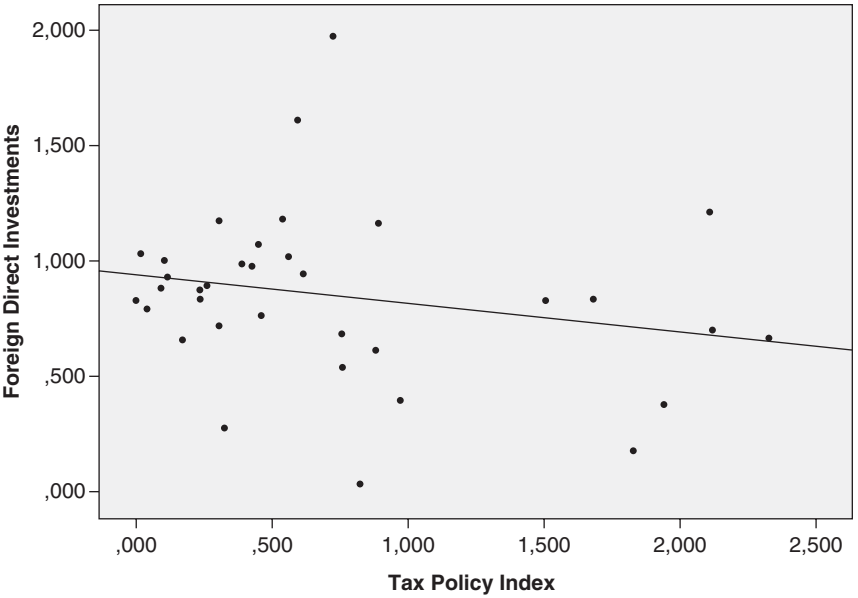

Fig. 16.2 Foreign direct investments and the Tax Policy Index

Table 16.2 Regression results for GDP and FDI

	Regressions			
	Dep. Var. GDP		Dep. Var. FDI	
Variables	1	2	3	4
GDP				0.0117 (0.56)
FDI		0.8328 (0.56)		
TPI	**−2.3391**** (−2.96)	**−2.2367*** (−2.73)	−0.1229 (−1.31)	−0.0955 (−0.90)
Constant	**2.1835**** (2.81)	1.4011 (0.88)	**0.9396**** (10.18)	**0.9140**** (8.80)
Observations	35	35	35	35
R-squared	0.21	0.22	0.05	0.06

Notes: Bold figures indicate statistical significant coefficients, ** denotes statistical significance at the 1% level ($p < 0.01$), * denotes statistical significance at the 5% level ($p < 0.05$), + denotes statistical significance at the 10% level ($p < 0.1$).

The *GARCH* (1,1) and *GARCH-M* (1,1) estimation results for GDP growth and FDI are presented in Table 16.3. Columns 1, 3, 5, and 7 are presenting the results of GARCH (1,1) while columns 2, 4, 6, and 8 that of GARCH-M (1,1). In the mean equation of column 1, the TPI (−2.2187) is as expected negative and significant at the 1% level, showing that GDP growth is negatively affected. In column 3, the TPI (−1.7096) in the mean equation is negative and significant at the 1% level. Furthermore, we estimated this model by including the TPI in the variance equation, where the TPI shows not to be significant and does not affect the variance of GDP growth. In column 2, we include the variance of GDP in the mean equation. The variable GDP(GARCH) is negative and significant at the 5% level (−0.2676) showing that the uncertainty of GDP growth does itself affects GDP growth. In column 4 we include in the mean equation both GDP(GARCH) and TPI and in the variance equation the *TPI*. Only the TPI in the mean equation is negative and significant at the 1% level (−1.3417), showing that GDP growth is negatively affected. When we use FDI as a dependent variable, then the TPI is negative and significant at the 5% level (−0.0211) only at the variance equation of column 8 showing that it has a negative impact on the variance of GDP growth. In the other columns, neither the TPI nor FDI(GARCH) is significant.

Table 16.3 GARCH and GARCH-M (1,1) estimates of GDP and FDI with Tax Policy Index in mean and variance

	Dep. Var. GDP				Dep. Var. FDI			
Parameter	1	2	3	4	5	6	7	8
Mean equation								
Constant	**2.6115****	**2.3340***	**1.9118****	**2.4802****	**0.9702****	**0.9669****	**0.9597****	**0.9720****
	(1401.822)	(2.0275)	(−6.0264)	(2.7390)	(13.9143)	−229.982	(14.1930)	(17.1780)
GDP (Var.)		**−0.2676***		−0.1221				
		(−2.0118)		(−1.3326)				
FDI (Var.)						−0.3801		−0.1540
						(0.4167)		(−0.2672)
TPI	**−2.2187****		**−1.7096****	**−1.3417****	−0.0761		−0.0815	−0.0842
	(−3.8629)		(−2.5536)	(−5.4852)	(−0.5661)		(−0.5524)	(−0.5725)
Variance equation								
Constant	13.961	−0.1085	0.5977	−0.0714	0.0023	0.0015	−0.0020	**−0.0069****
	(0.7193)	(−0.2039)	(−0.2989)	(−0.0717)	(0.3061)	(0.2613)	(−0.2583)	(−3.2750)
ARCH(1)	−0.3507	−0.1434	−0.2823	**−0.2889****	0.4974	0.5806	0.2807	**−0.1504****
	(−1.5328)	(−0.3621)	(−1.0752)	(−9.2210)	(1.0295)	(1.0971)	(0.7664)	(−3.2576)
GARCH(1)	**1.19708****	**1.2486****	**1.1489****	**1.2114****	0.6286	**0.5966+**	0.6779	**1.2194****
	(3.3549)	(2.5691)	(3.0817)	(5.2777)	(1.5997)	(1.7422)	(1.6421)	(58.4455)
TPI			120.944	21.321			0.0258	**−0.0211***
			(0.8505)	(1.5923)			(0.6981)	(2.1498)
Diagnostics								
R-squared	0.1863	−0.0571	0.1919	0.1723	0.0110	−0.0415	0.0250	0.0246
Adj R-squared	0.1617	−0.0891	0.1674	0.1206	−0.0189	−0.0731	−0.0045	−0.0363
DW stat	0.8091	0.5072	0.7924	0.7004	21.706	20.580	22.000	21.816
Akaike info criterion	51.526	51.579	52.439	53.178	0.6348	0.6187	0.6603	0.5804
Schwarz criterion	53.747	53.802	55.105	56.289	0.8570	0.8409	0.9269	0.8915

Notes: Model 2, 4, 6 and 8 are GARCH-M. Values of t-statistics are in parentheses. Bold figures indicate statistical significant coefficients, ** denotes statistical significance at the 1% level ($p < 0.01$), * denotes statistical significance at the 5% level ($p < 0.05$), + denotes statistical significance at the 10% level ($p < 0.1$)

From the above estimation results of GARCH and GARCH-M we conclude first that the TPI has a direct impact on the GDP growth of Greece while they do not have an indirect impact on the variance of GDP growth; second, that the uncertainty of GDP growth has a direct impact on *GDP* growth; and third, that the TPI has an indirect impact on the variance of FDI.

16.9 Conclusions

In the present chapter, we empirically examined the relationship between Tax Policy, economic growth, and foreign direct investments during the period 1980–2014 using time series data for Greece. We created a new variable, named Tax Policy, where we included all legislation acts of taxation that are negatively related to the real economic performance of Greece. Furthermore, we constructed a new Tax Policy Index by using the Principal Component Analysis. In order to do so, we used this new variable and five other variables that are mentioned in the empirical literature. These variables are the Inflation rate, the Unemployment rate, the Political Stability and Absence of Violence, the Degree of Openness and the Corruption Perception Index (CPI). To the best of our knowledge, this is the first time that Tax Policy is measured as the number of tax legislation acts for Greece. Moreover, there has been no attempt so far to construct a Tax Policy Index and to empirically estimate its effects on GDP growth and FDI.

From the regression results, it is shown that TPI affects GDP growth, while it does not affect FDI. The GARCH and GARCH-M results are showing the existence of a direct negative impact between the TPI and GDP growth and an indirect negative impact between the TPI and the variance of the FDI. Considering the above estimation results of our study, we are able to say that they provide strong evidence of a negative and significant impact between TPI and GDP growth, while they do not provide evidence of a strong impact on FDI. We believe that these first results are of great importance in understanding the role of Tax Policy on GDP growth and are of great significance to government regulators. The topic is open for further research in order to examine in depth the effects of Tax Policy on the GDP growth and on foreign direct investments.

Appendix

Table 16.4 Definition and source of the variables

Variable	Definition	Source
GDP (%)	GDP per capita growth (annual %)	WDI (World Development Indicators)
FDI (%)	Foreign direct investments, net inflows (% of GDP)	WDI (World Development Indicators)
Tax Policy (Number)	The number of Tax legislation changes per year. Refers only to the tax legislation changes that have a direct negative impact on the income of business and individuals.	Taxheaven.gr, Official Greek Government Gazette (FEK)
CPI (%)	Inflation, consumer prices (annual %)	WDI (World Development Indicators)
Unemployment (%)	Unemployment, total (% of total labor force)	WDI (World Development Indicators)
Political stability and absence of violence	Reflects perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically motivated violence and terrorism.	WGI (World Governance Indicators)
Degree of openness	The Degree of openness of a country measured in constant prices as percent (open in PWT).	Penn World Tables
CPI index of corruption	The Corruption Perceptions Index ranks countries/territories based on how corrupt a country's public sector is perceived to be. It is a composite index, drawing on corruption-related data from expert and business surveys carried out by a variety of independent and reputable institutions. The Corruption Perceptions Index ranges between 0 (highly corrupt) and 10 (very clean) for the years 1995–2011 and between 0 and 100 afterwards, where 0 means that a country is perceived as highly corrupt and 100 means it is perceived as very clean.	Transparency International

Note

1. The correlation results are not presented here but are available upon request.

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Afterwor(l)d: We Are the New Resistance

Taxation should be treated as a highly controlled substance: in small, carefully selected amounts, can be a booster to global economic health with minimum side effects; in large dosages, it has only side effects and no curative power. Furthermore, it is a substance that creates a strange addiction: it does not get the recipient addicted to these large amounts (in large amounts is actually lethal for the economy); rather, it creates an addict out of the one administrating the taxes—the government officials touting their pretentious care about the rest of us.

The global economy, and many of its constituent countries, has now reached the point of no return as far as taxation is concerned. There are now two camps in a duel that should not have been in the first place. On the one side, there are those with common sense that value growth, turnover, innovation, competition, and freedom—not just free, competitive markets but freedom itself; these are the ones that understand the enormous potential of sensible, permanently low tax rates, rates that boost the economy, increase tax morale, and lower tax evasion. These are the ones that do not fear global tax competition, that are not afraid to decrease the size of the government, and that are wiser than the rest of us, because their economic model offers, in the end, more quality public services

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than the others do. On the other side, there are those with supposedly good intentions about everything possible, those that say they know better, those that claim to be morally superior, the ones holding the vanity mirror in front of them. These are experts in dividing, they are experts in reducing: dividing the society into "good" and "bad" ones, with "right" and "wrong" ones, in reducing private entrepreneurship, in reducing disposable income, in reducing quality public services, in reducing morale and innovation. They offer a permanently larger government, an ever-increasing bureaucracy; they are the ones that build the "regulation wall": they stand inside it, shielded by it, and the rest of us have to climb it to comply with whatever nonsensical ideas the regulators will come up with. It is they that want to instigate a class war at every turn of their efforts, for without it their arguments do not stand to either scientific scrutiny or, worse, common sense. It is they that they want you to believe that regulation is benevolent only in large quantities, that high taxation is beneficial for the poor, that if all get poorer, then social justice is served. They yield their glass-made swords for fighting economic inequality only to find that they are easily shattered when faced with the facts that create growth. Yet, they still holler at us.

Standing against these global tax and regulation bullies is obviously the new resistance. Will they get their way, those who by their actions shield the monopolies, stifle competition, and go against our freedom to growth, to freedom itself? What this volume contributes in the resistance is that we cannot possibly allow the hollering for higher taxes to continue. Higher taxes cannot possibly address anything in a sensible way that helps all and not just the few that can evade them. We have to re-create the tax system based on tax morale, the appropriate motives for minimizing tax evasion, for minimizing capital flight, for making sure that investors and investments do not travel the globe for tax reasons only, and that tax loopholes are not put in place for the larger players to evade and avoid taxes easily. But first and foremost, we should come to a renewed understanding that personal income tax rates are highly more important than corporate income tax rates. Reversing the demonization of private consumption and understanding in full the simple concept of tax elasticity, we can clearly come up with better plans to raise revenue, more revenues

than before by a growing economy, and by the willing citizens that pay their dues to a government that does not waste their taxes in senseless and fake redistribution. Placing renewed emphasis on infrastructure, on aiding research and development, on improving the efficiency of government operations, on questioning the need for more regulation, all these can make a difference in the lives of this and future generations.

The works in this volume are telling a coherent economic story with marked implications. The results presented can easily be put into action, if and only if we fully understand the dangers of not implementing them immediately and wisely. For those insisting on a clear roadmap, here is what this would look like:

– There can be no progress in the tax front without transparency: complicated, outdated, ultra-regulated tax systems not only promote corruption and tax evasion, but they cannot possibly collect the revenues needed for public works.
– Increased regulation is decreased transparency: if you need an army of lawyers, and former politicians acting as advisors, you will survive the regulatory burden only if you already are a large player. This goes against competition and against the prospects of the many to become better off, and those who propose increased regulation cannot be friends of the many or caretakers of their needs.
– Don't fight the tax havens as low-tax-rate jurisdictions, fight money laundering and illicit tax practices: a low-tax-rate environment does not make its tax constituents automatically criminals. Low-tax environments attract resources that may be needed elsewhere, so instead of fighting them join them in reducing tax rates and promote transparency of tax operations everywhere.
– Taxation is about rights: the right of keeping what you earned for and the right of the government to serve public needs. Violating any of these two rights is a violation of economic freedom, and it hinders future growth.
– Taxation is about consumption and income, not wealth nor real estate nor energy, nor banking nor anything else. Focusing the burden of tax revenues in non-income and non-consumption is pure political leverage and creates more distortions that it supposedly cures.

- Universally lower tax rates are good for economic health: no discount and no further discussion on this one. Lower rates promote economic activity, promote investment and savings, increase revenue intake by the increased economic turnover, reduce motives for tax evasion, level the playing field for new firms, and promote entrepreneurial innovation, and serve the needs of the many and not the complicated tax avoidance actions of the few.
- Lower tax rates in a simpler tax system aid in tax enforcement: unwinding the complicated tax code promotes sensible tax enforcement strategies, while saving productive resources; increases in tax enforcement costs will not work in an environment where tax evasion and tax avoidance is the norm—global tax competition will see to it.
- Avoid focusing first on corporate tax rates: global tax competition is already in place and capital moves fast, usually to the detriment of productive investment where it is needed most. The current loopholes on corporate taxation already allow for tax avoidance, so what is needed is restructuring the corporate tax system and a new framework on corporate taxation that matches productive investment goals and profit reinvestment.
- Lowering corporate tax rates cannot happen in isolation from personal income tax rates. It makes no sense to lower the corporate tax rate from 30% to 15% but maintain the top personal income tax rate to 45%. Lowering both at the same time provides increased incentives for a multiplier effect on both investment and consumption, and, therefore, aid in increased revenues directly and also indirectly from increased sales tax/value-added tax (VAT) intake.
- Public revenues from taxation are not meant to be spent solely on income transfers and to fuel a class war. They are meant to provide public services accessible by and for all. Before attempting to redistribute income, a fundamental fallacy that in fact promotes inequality, we should make sure that the pool of income is growing: for without growth, there can be no redistribution.

Resolving the *Great Oxymoron* of this volume's introduction requires that we unite in promoting liberty and the freedom to become active participants in reviving global growth. If we are true in our intentions to

have sustainable economic development for this and future generations, then there can be only one of two paths. The one path is that of proven failures, of Leviathan governments that adore regulations, of tax-you-to-death high tax rates, of tax evasion that benefits the corrupt ones, the path that brought crisis and stagnation, the path of penalizing hard work, and promoting the creation of a new generation of plebs living on benefits. The other path is that of freedom to innovate, freedom to allocate resources for productive investment, the path of global opportunity, the path that creates new wealth, wealth that can be shared by all and not only by the regulation-protected chosen few. This is the path of decreased regulation and low tax rates, the path that fights state-sponsored capitalism and cronyism, the path of truly competitive and free markets.

Choose your path wisely.

Dimitrios D. Thomakos
Konstantinos I. Nikolopoulos

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[1] Note: Page numbers followed by "n" refers to notes.

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