

Chapter 3

Economic Growth: Opportunity or Risk

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Introduction

The assessment of economic growth is a subject of intensive controversy. This controversy is not a new one. In 1967, Mishan outlined the negative consequences of economic growth in his book entitled “The Costs of Economic Growth”. A characteristic feature of the current debate is that the controversy is becoming more diversified through the approaches of proponents and opponents. Advocates of growth view this as an opportunity for greater prosperity and stabilization of market-based systems, while opponents see in growth the risk of increased environmental pollution and an increasing disparity of distribution in terms of income and wealth. This controversy can be anticipated to intensify even more in the future.

Different approaches are of course also adopted amongst representatives of these two antitheses. Some advocates of economic growth scarcely acknowledge the risk. For example, in his widely used textbook “Introduction to Modern Economic Growth” (2009), Acemoglu ignores the problem of environmental risks, whereas some advocates of growth perceive the ecological risks and urge that these be reduced (Weder di Mauro Weder die Mauro 2008). Although taking these risks into consideration, such proponents nevertheless continue to see great opportunities in economic growth, amongst other things, by increasing people’s prosperity. The critics of economic growth also include representatives who fundamentally reject growth (Jackson 2013) or even call for a reduction in growth (representatives of degrowth economics such as Latouche 2009). On the other hand, other critics of growth favour ecologically and socially balanced growth in the context of sustainable development. Nevertheless, the risk of economic growth is essentially a predominant consideration for growth critics.

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Both growth advocates as well as their opponents take as a starting point macroeconomic growth, the indicator for which is the gross domestic product (GDP). However, this common starting point is problematic insofar as overall growth of a national economy only occurs in exceptional cases. In reality, there are sectors with varying degrees of growth, some which stagnate and others which are shrinking. A further consideration is that growth emerges through dynamic structural change in the various sectors. Economic sectors can be subject to stagnation and shrinkage, and new sectors—particularly service-oriented sectors such as the IT sector—can advance to become growth sectors.

On examining further the relationship between growth and the environment, additional factors are to be taken into account: some growth sectors are extremely harmful to the environment while others have only a slight environmental impact. The former, which cause climate change, for example, can certainly be classified under the “growth as risk” heading, whereas the latter type of growth sectors represent no risk from this perspective. Thus, there are growth sectors such as the spheres of health and nursing care, including care of the elderly, which are largely unproblematic in ecological terms, and from an economic and social perspective are fundamentally desirable. These sectors can unreservedly be categorized as “growth as opportunity”, and in this context, they can also be seen as examples of balanced or sustainable growth.

On examination of the growth sectors which can be classified under the “growth as risk” heading, the question arises as to how these can be transformed into more environmentally friendly sectors. In Germany, this is illustrated by the energy sector, a growing and very environmentally polluting sector. By switching to renewable energy sources, this form of environmental pollution can be greatly diminished by reducing emissions, thereby enabling the growth risk to be adapted into growth offering opportunities. It should, however, be borne in mind that the creation of renewable energy sources requires specific rare earths and rare metals, which diminishes certain non-renewable resources. To an increasing extent, this is seen to involve the risk of scarcity (Reller et al. 2013).

The opportunities and risks relating to economic growth should of course also be viewed and evaluated from the perspective of demand, i.e. consumption. From the perspective of consumer sovereignty, growth of consumption is seen as an opportunity aimed at offering everyone the possibility of acquiring those consumer goods which conform to their preferences. The challenges presented by the three dimensions of ecology, economy and social issues should be examined from the perspective of sustainable development. This results in both ecological as well as social risks. Consumption can lead to environmental pollution and too much consumption can adversely affect well-being. Concepts such as consumerism and conspicuous consumerism were developed in this connection, phenomena which had been brought to light back in 1899 by the American sociologist Thorstein Veblen (1899). In this context, Jackson therefore proposes a redrafting of the paradigm that consumption must always grow (Jackson 2013).

The Different Approaches to the Growth Controversy

The comments in this chapter are confined to the predominant approaches to the growth controversy, and the illustration below shows that, in principle, five distinct approaches can be identified. In the neoclassical growth theory, and its subsequent development within the context of the endogenous growth theory, the main focal point is the justification of economic growth. The neoclassical growth theory views growth as an important contributor towards economic development and prosperity, and can therefore be classified under the heading of “growth as opportunity”. The relationship between growth and the environment is disregarded in most growth models. Some neoclassical growth models explicitly examine this relationship, which is frequently ignored by the opponents or critics of growth (Fig. 1.1).

The other four approaches are unambiguously critical of growth and call for an economy without growth or with decreasing growth. The common basis is that growth leads to an increasing destruction of the environment and thus jeopardizes the existential basis for human life (life-support system). As briefly mentioned in the Introduction, some approaches taken by opponents of growth also claim that a risk of growth is that it leads to a continuous growth in consumption and that although this does not in principle lead to an increase in prosperity, it can lead to an impairment of well-being. The following comments will now focus on the relationship of growth and the environment in the different approaches, and present an evaluation in the context of the “opportunity versus risk” antithesis.

Environment and Growth within the Context of Neoclassical Growth Theory

The proponents of the neoclassical growth theory assume that growth is necessary for resolving environmental problems. According to this theory, environmental problems can only be solved on a certain economic level, which is to be achieved through growth. Therefore, industrialized countries are afforded quite different possibilities for solving their environmental problems than in the case of developing

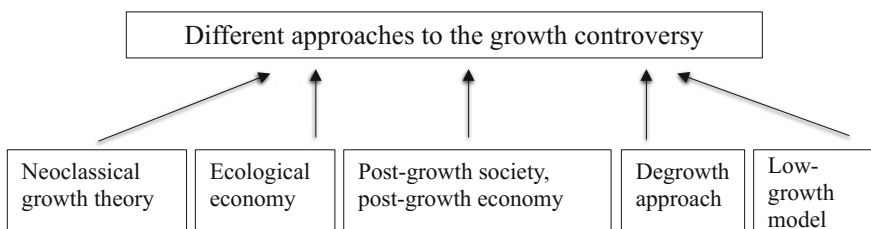


Fig. 1 Different approaches to the growth controversy. *Source* Author’s own illustration

countries. Furthermore, they fundamentally justify growth as necessary and desirable, as clarified by the following quotation: growth “is in Germany and Europe the only means of permanently guaranteeing quality of life and social stability. To this extent, as a political objective it has not only economic but also moral significance” (Paqué 2005, p. 1).

Robert Solow is regarded as the founder of modern growth theory. He presented his seminal growth model back in the 1950s with his article “A Contribution to the Theory of Economic Growth” (1956). Against the background of the first oil crisis and the heightened level of awareness created following the report by Meadows et al. “The Limits to Growth”, the neoclassical approach was broadened in the 1970s to include the problems surrounding resources. The question of how to optimally establish the conditions to enable long-term growth if non-renewable resources are necessary for achieving growth was the main focal point of approaches to resource economics.

Furthermore, in some neoclassical growth models, environmental damage leads to limited production possibilities (den Butter and Hofges 1995). Therefore, a stabilization or even an improvement of the environmental situation involves loss-prevention expenditures, leading either to a reduction in consumption or a reduction of investments in production facilities. As a consequence, in the growth equilibrium based on a consideration of the environmental situation, the GDP is lower than in a comparable case taking no account of the environment. In summary, however, it is evident that the uncertainties and risks associated with scarcity of resources, and also with environmental pollution (e.g. caused by emissions) due to growth, are not sufficiently taken into consideration in neoclassical growth theory. Growth consequently implies a risk.

Environment and Growth within the Context of Ecological Economics

Ecological economics originated in the 1980s in the USA and was developed and established itself as a counter-position to neoclassical economics. Amongst the proponents of ecological economics, there is a broad consensus according to which constantly rising consumption of natural resources together with increasing environmental pollution, resulting from emissions for example, is not sustainable. They therefore view the economy as a subsystem of the ecosystem and reject further economic growth. This produces a call for a restoration of the economy within ecological limits, a position which they justify by the assertion that the quality of life in highly developed countries can scarcely be improved through quantitative economic growth. Furthermore, they also point to the limits of the viability of individual ecosystems and, in this connection, assert that some ecosystems have reached their stress limits or have exceeded them.

Daly (1999) in particular, and also other proponents of ecological economics, have called for a steady-state economy over the past few decades. This aspiration for a stationary state, however, has been developed in previous studies by other economists. Adam Smith, for example, investigated the stationary state of an economy (Smith 1776, p. 99). However, in contrast to the proponents of ecological economics, he arrived at the realization that this state led to poverty. He therefore came to the conclusion that only growth can guarantee prosperity. Meanwhile, other economists have taken as a basis the possibility of a steady state and, unlike Smith, have considered this to be desirable (Kerschner 2008, p. 125).

In the development of steady-state economics, Daly was particularly inspired by John Stuart Mill, in that he assumed that “an economy that does not grow nor shrink physically in the long run” (Daly 2005, p. 125). He bases the quantitative limits of growth upon the two laws of thermodynamics. These necessitate an intensified incorporation of scientific laws into economics. In contrast to the neoclassical growth theory, Daly became convinced that from a certain point onwards quantitative growth not only reaches its limits but is also uneconomic. In this connection, he gives the following example: a company, or a household, strives towards an optimal level of activities. If they exceed this level through additional activities, this may result in the additional costs (marginal costs) exceeding the additional benefits (marginal benefits). Daly describes this state as uneconomic. He aggregates these factors on a macroeconomic level. Increasingly more natural resources (green flow) are used to produce tangible goods (brown flow). “As we expand brown flow, we reduce green flow” (Daly 1999, p. 5). This results in “uneconomic growth”.

The steady-state approach is widely criticized for failing to adequately demonstrate how it should be shaped and implemented. A further criticism, which is particularly expressed by neoclassical economists, focuses on the macroeconomic effects which are not analysed to a sufficient extent. Within the context of a market economy without growth, the following non-exhaustive list of factors should be mentioned: negative effects on the labour market, distribution, poverty, the financial sector, trade and the tax system (the counter-arguments are to be found in Daly 2008).

In conclusion, it is evident that the proponents of ecological economics call for an economy without growth due to the serious risks of economic growth. However, the macroeconomic consequences of this have not yet become fully apparent and it is not sufficiently clear how these consequences are to be overcome. In his article, Tichy demonstrates that for an economy without growth, safeguarding measures by the state with regard to the labour market and distribution policies will be indispensable. But he also comes to the conclusion that this has not yet been adequately thought through and elaborated in detail (Tichy 2009, p. 9).

Environment and Growth within the Context of the Post-growth Society or the Post-growth Economy

Following studies of the steady-state economy, a more recent discussion has arisen in connection with the approaches to the post-growth society or the post-growth economy, which likewise call for an economy without growth. The discussion on these two approaches reveals varying themes and emphases with regard to the relationship between the environment and growth. By way of example, the following comments are confined to a small sample of the findings (Hauff 2015, pp. 92 ff.). The connecting element in the two approaches to the ecological economy is the conservation and stabilization of nature and the ecological systems. Some publications concerning these approaches also discuss a stabilization of the social systems. The following quotation illustrates this: “The belief in the boundlessness of human expansion and needs, and trust in technological viability, inhibits the recognition that natural resources are finite, that the ecosystems are vulnerable and that increasingly more consumption scarcely creates greater happiness” (Seidl and Zahrt 2011, p. 9).

This establishes the basis of a call for a change in lifestyles, and, particularly in this context, changes in consumer behaviour as well, and points to a departure from the “growth compulsion” currently predominating in mainstream economics and politics. In this connection, reference is often made to the need for a transformation process which goes far beyond merely partial reforms. In the view of proponents of the post-growth society, in the industrialised countries economic growth has not proven to be a far-reaching solution to social problems since the 1970s. For example, economic growth is no longer a contributory factor for a high level of employment. Moreover, economic growth has not promoted a reduction, but by contrast has produced an increase in social inequalities and, despite positive growth rates, national debt has constantly risen. And economic growth is increasingly faced with saturated markets.

As a proponent of the post-growth economy, Jackson is one of the most well-known critics of exponential growth. In his book “Prosperity without Growth”, which has attracted a great deal of interest, he expresses the view that for highly developed national economies of the western world, prosperity without growth is no utopian dream, but a necessity in terms of financial and ecological policy. After coming to the realization that in rich nations basic needs are satisfied in abundance and an increase in consumer goods can scarcely further improve material comfort, he raises the question: “In a world of finite resources, constrained by strict environmental limits, still characterised by ‘islands of prosperity’ within ‘oceans of poverty’, are ever-increasing incomes for the already-rich really a legitimate focus for our continued hopes and expectations? Is there some other path towards a more sustainable, a more equitable form of prosperity?” (2013, p. 4)

In addition to green economic policy programmes, as, in some cases, were implemented after the financial crisis, by South Korea for example, he also calls for an ecologically oriented macroeconomy which is designed to lead to a “Green New

Deal”. In this connection he highlights the growth dilemma: on the one hand economic stability is to be maintained, while on the other hand the economy must be managed within the ecological boundaries. Ayres therefore calls for “a new growth engine, based on non-polluting energy sources and selling non-material services, not material products” (Ayres 2008, p. 292).

In this connection, models have been developed which, inter alia, target the need to reduce personal ownership as well as improving the use of capital resources increasing the material intensity of the economy. The basic concept here is to create and sell, instead of material products, dematerialized services such as the sale of energy services, for example heating, lighting and communication instead of energy from fossil fuels. This also includes the sale of mobility to replace the ownership of cars and the further development of recycling.

Environment and Growth within the Context of the Degrowth Approach and the Low-Growth Model

As a consequence of the concept of ecological economics, there was a development of additional approaches to the relationship between environment and growth, which will now be briefly introduced. In this connection the following comments will firstly focus on the degrowth approach and finally on the low-growth model. Whereas the proponents of the degrowth approach, at least in industrialized countries, call not only for an economy without growth but a reduction of growth, the proponents of the low-growth model base their concept on an economy without growth. They investigate the probable consequences of an economy without growth in the context of alternative macroeconomic scenarios.

A pioneer of the more recently established degrowth approach is the Parisian philosopher and economist Serge Latouche (2009). Proponents of the degrowth approach aspire towards a “fundamental transformation” as an alternative to economic growth. Consequently, this necessitates a reshaping of the sectors and institutions within society and the economy which are dependent upon growth and which stimulate growth, i.e. are “freed” from economic growth. This approach is therefore designed to overcome the existential dependence of many economic, as well as social, spheres from economic growth.

Analogously to the proponents of post-growth economics, degrowth proponents are particularly critical of the lack of awareness that natural resources are finite and that ecosystems are vulnerable and increasing consumption is scarcely conducive to greater happiness. They advocate a new paradigm for industrialized countries, in which connection it is evident that this relates not only to the relationship between growth and the environment, but that the social dimension of sustainable development, and thus society’s relationship with growth, also has to be incorporated. Some of the fundamental principles are as follows:

- Placing the emphasis upon the quality of life instead of the volume of consumption.
- Achieving fulfilment of the basic human needs of everyone.
- Striving towards social changes, based upon a range of individual and communal activities.
- A substantial reduction of the dependence upon economic activities, thereby creating more leisure time.
- Observance of the principles of equality, participatory democracy, safeguarding human rights and respect for cultural diversity.

The objective is therefore to eliminate the risks of growth. However, the proponents of this approach have as yet not analysed in sufficient detail the specific consequences of a reduction in growth. In this respect, their approach differs from the low-growth model.

The economists Victor and Rosenbluth (2007) state three reasons why governments of states with highly developed economies should consider alternatives to the existing economic model:

- There is a prevailing scarcity of resources.
- In highly developed states, growth detracts from social prosperity.
- In western industrialized countries, political objectives such as full employment and reduction of poverty can also be achieved without growth.

In this context, Victor reproaches many proponents of an economy without growth, or shrinking growth, for reaching their conclusions without applying relevant models or taking into consideration the empirical methods of the modern economy. By contrast, they restrict themselves much more to qualitative information in order to illustrate or prove their arguments. Victor's approach is therefore based upon a computer-aided model for the Canadian economy, with which he seeks to investigate the effects of different growth scenarios on macroeconomic indicators. His simulation model contains, amongst other things, the variables of consumption, public expenditure, investments, employment, trade and the volume of production. He presented three scenarios on the basis of statistical data for the Canadian national economy, thereby arriving at projections of how indicators such as the unemployment and poverty levels, the per capita GDP, the debt ratio and greenhouse gas emissions will develop during the period 2005–2035, depending on the rate of economic growth. He develops three scenarios (Victor 2008):

- **Scenario 1 (business as usual):** In this scenario, he assumes that the GDP trend will continue in a similar way to the last 25 years and that economic policy will not significantly change. With annual growth of 2.5%, social problems such as the unemployment rate would remain at roughly the same level, whereas poverty and public debt would increase and greenhouse gas emissions would rise by 80%.
- **Scenario 2 (no growth and low growth):** A characteristic feature of this scenario is that growth will slow down severely or come to a complete standstill. In

the absence of any compensatory political measures, the macroeconomic trend would be devastating. The per capita GDP would stagnate, and poverty, unemployment and debt would increase sharply, which would likely produce social unrest. He calls this situation a “no grow disaster”.

- **Scenario 3 (low growth):** This scenario shows that social prosperity can also be achieved without growth. He proceeds on the assumption that the per capita GDP will initially grow much more slowly and then completely stagnate from 2028 onwards. Measures will be taken by the state, such as income redistribution and other government programmes as well as a reduction of weekly working hours. As a consequence, unemployment and poverty levels will further increase in the first phase and then fall significantly below the base level up until 2035. Compared to 2005, debt and greenhouse gas emissions will in each case decrease by 30% and stagnate to a low level from 2018 onwards.

Victor presents the case for scenario 3, whereby this could be achieved through targeted political measures. In addition to a number of other measures, the reduction of total and average working hours plays a crucial role here. Alongside this latter measure, such action ought to also create a broader distribution of work to a larger number of people, which would positively influence the level of employment. However, he points out that in reality, these measures cannot be implemented to the full extent. These deliberations have recently been further developed by Victor and Jackson, in which connection they have examined the risks of growth and at the same time the minimization of the consequential risks of an economy without growth.

The Controversy from the Empirical Perspective

The relationship between growth and environmental pollution will now be examined on the basis of our own empirical research, which focuses primarily on the expanding sectors (von Hauff and Parlow 2014). This produces a differentiated analysis of which expanding sectors lead to environmental pollution. Furthermore, it enables an examination of whether environmental pollution in the expanding sectors is increasing or decreasing. These findings are of great relevance to a target-oriented environmental policy.

As part of this empirical research, the relationship between economic growth and economic pollution in 47 economic sectors in Germany for the period 1992–2010 was investigated. This focused on the CO₂/GDP relationship, in which connection some of the findings will now be presented. It is not surprising that the energy sector shows the highest CO₂/GDP ratio (see Fig. 2). This is explained by the fact that also in Germany, gas, oil and coal (including lignite) are at present still important raw materials for the production of energy. It is also evident that the processing industry in particular, which produces energy intensively, likewise creates a relatively high emission level. A consideration of the transport sector

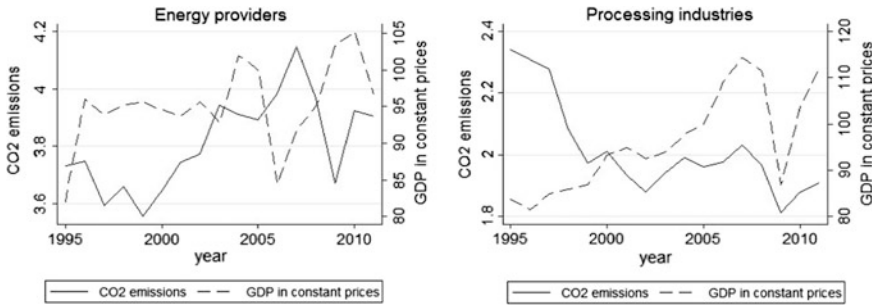


Fig. 2 Trends in CO₂ emissions and GDP—Energy providers and processing industries. *Source* Federal Statistical Office 2014

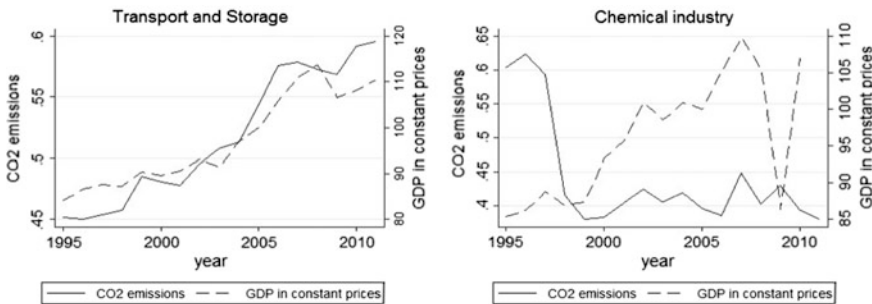


Fig. 3 Trends in CO₂ emissions and GDP—Transport and storage, and the chemical industry. *Source* Federal Statistical Office 2014

similarly shows a high CO₂/GDP ratio (Fig. 3). By contrast, the chemical industry demonstrates positive growth, while CO₂ emissions clearly decreased during this period. In conclusion: if the service sectors mentioned in the Introduction are also incorporated into the analysis of growing sectors, it is evident that only some growth sectors present relatively high environmental risks in terms of CO₂ emissions. Consequently, growth does not per se lead to environmental risks.

Conclusions

It has been possible to show that there is no simple answer to the question of whether economic growth leads to opportunities or risks. As has been demonstrated within the overall context of the controversy, if the macroeconomic indicator—GDP—is taken as a basis, a relatively clear focus can be placed upon the opportunities and risks of economic growth. In this connection, initial attempts to assess the economic consequences of an economy without growth within the context of

complex macroeconomic models or empirical methods, and to demonstrate how these consequences can be reduced or avoided through economic policy measures, seem particularly interesting.

If, on the other hand, the focus is placed upon the relationship between growth and the environment from the perspective of individual branches of the economy, a different approach emerges which has as yet been disregarded within the context of the controversy. There are a number of economic branches which lead to considerable environmental pollution and are seriously detrimental to the quality of life. This can produce risks, which from a political perspective should be recognized and reduced. There are, however, also growth sectors which are scarcely detrimental and are socially desirable. In this case, growth offers real opportunities for improving the quality of life. To this extent, the view that growth fundamentally represents a risk and is therefore to be rejected, is not expedient.

If growth is considered from the perspective of consumption, it has been possible to show that constantly rising consumption can contribute towards both a reduction in scarce resources and an impairment to well-being. This trend, which is increasingly apparent in economically prosperous and aspiring national economies, introduced the discussion of sustainable consumption. Growing consumption can thus become a social as well as an ecological risk.

From the perspective of sustainable development, this is ultimately still a question of the relationship of growth and justice, which to a large extent has not been addressed in this article. In this connection, there have recently been a large number of publications demonstrating that, despite growth, inequality has increased worldwide—particularly in terms of income. In addition to the most recent publications, for example, by Piketty (2014) and Fratzscher (2016), the Organisation for Economic Co-operation and Development (OECD) has paid close attention to this subject. The titles of two studies should be mentioned by way of example: “Mehr Ungleichheit trotz Wachstum?” [“More Inequality Despite Growth?”] (2008) and “Why Inequality Keeps Rising” (2011). Growth therefore clearly offers no opportunities for more distributive justice.

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