Chapter 2
The Impact of Structural Reforms: A Review of the Literature

Jante Parlevliet, Simon Savsek, and Máté Tóth

2.1 Introduction

The slowdown in trend growth rates following the global recession and the European sovereign debt crisis, and the constraints surrounding demand side policies have spurred interest in structural reforms. Structural reforms are typically defined as pro-competitive changes to the rules and institutions governing labour and product markets (but sometimes broader). While the leeway for demand side policies was considered limited, in recent years policymakers have often called for the introduction of deep-seated changes in the functioning of product and labour markets. According to some estimates, such reforms could boost the collective GDP of G20 countries by 2% in 5 years' time (OECD and IMF 2014). Similarly, as noted in Chap. 1, ECB President Mario Draghi frequently ended his introductory statements at press conferences following the ECB's Governing Council meetings with a call for structural reforms to boost growth and resilience of Eurozone economies (Draghi 2015).

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J. Parlevliet (✉)
Department of Economic Policy, De Nederlandsche Bank, Amsterdam, The Netherlands
e-mail: j.parlevliet@dnb.nl

S. Savsek
European Investment Bank, Luxembourg, Luxembourg
e-mail: s.savsek@eib.org

M. Tóth
European Central Bank, Frankfurt, Germany
e-mail: mate.toth@ecb.europa.eu

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These high expectations from structural reforms raise various critical questions, including:

- How can we properly measure reforms?
- What can we realistically expect from reforms in the long run?
- How can we identify in practice what gains can be attributed to reforms?
- Do structural reforms lead to immediate gains, or can they imply short-run transitional costs?

The goal of this chapter is to give a broad overview of the relevant literature on the impact of reforms, focusing on labour and product markets (hence excluding issues like education, the quality of government spending, etc.). To this end it provides a selective survey of a large literature from various disciplines, including empirical labour economics and macroeconomics. In doing so, it will also discuss different approaches that have been used to assess the impact of reforms, both empirical and theoretical. Several dimensions of structural reforms are not discussed in greater detail in this literature review.[1]

This chapter is set-up as follows. The next section provides an overview of approaches used to measure the impact of reforms, including a discussion of how empirical studies have dealt with the issue of endogeneity. Section 2.3 then discusses the results of empirical approaches to measure the impact of reforms, distinguishing between micro-based studies that tend to concentrate on a single reform and cross-country studies that often look at a series of reforms. Section 2.4 discusses the outcomes of theoretical approaches (mainly DSGE models). Section 2.5 briefly discusses the political economy of reforms. Finally, Sect. 2.6 concludes.

2.2 Approaches to Measuring the Impact of Reforms

A large literature has related labour and product market reforms to macroeconomic outcomes such as employment, productivity growth and GDP growth. We first discuss empirical approaches to estimating the impact of structural reforms, including ways to correct for endogeneity of reforms. We then continue with theoretical approaches, with a focus on DSGE models.

2.2.1 Empirical Studies and the Issue of Endogeneity

There is a vast empirical literature linking institutions or reforms to macroeconomic outcomes, both at the country level and across jurisdictions. Country studies

[1] For example, studies using changes in measures of economic freedom as a proxy for reform are neglected to large extent (see de Haan et al. 2006 for a discussion).

typically look at the impact of a single institution or reform, such as the retirement age, the duration of unemployment benefits and the ease of entry in product markets. Cross-country studies often look at series of reforms jointly, often using indices developed by the OECD.

Empirical studies aiming to identify the causal effects of reforms have to overcome several methodological issues. Of these, the endogeneity of reforms is perhaps the most serious. A large body of literature has established that institutions, such as labour laws, are not exogenous (or randomly assigned across countries) but are the result of historical specificities and social preferences. For instance, the legal origins of a country have an important influence on the regulation of employment contracts (Campos and Nugent 2012). Endogeneity is also an issue when the focus is on measuring the impact of *changes* to institutions over time, or reforms. Structural reforms are typically preceded by adverse economic conditions that create a political-economy environment where the introduction of reforms is more likely. For instance, a large body of literature has found that economic and financial crises facilitate the adoption of reforms (see Sect. 2.5).

Various approaches have been proposed to deal with this endogeneity issue. In micro-econometric studies, the state of the art is to use or attempting to imitate a natural experiment for identification. For instance, researchers have exploited arbitrary discontinuity in policies ("regression discontinuity design") (see e.g. Lalive 2007). Furthermore, when regulations are not binding to the same extent for all sectors, a difference-in-difference specification allows deriving the effect of reform policies on the basis of variation between sectors (see e.g. Bassanini et al. 2009; Bourlès et al. 2013). Moreover, when a variable can be found that correlates with the reform but not with the observed outcomes under study, an instrumental variable estimation is possible. For instance, Griffith et al. (2010) instrument the EU Single Market reforms with its ex ante estimated impact. An alternative route can be a treatment-effect approach involving a two-stage estimation procedure. For instance, Bordon et al. (Chap. 7) first estimate the probability of implementing structural reform with a probit model and then use these treatment effects of reforms in a second stage regression to correct for selection bias and more precisely evaluate the economic effects of labour and product market reforms.[2]

There are also some other challenges to estimate the impact of reforms. First of all, there can be non-linearities or threshold effects in the relationship between institutions and outcomes. For instance, very long duration of unemployment benefits has been found to diminish job search and increase unemployment duration (Lalive 2007). At the same time, very short unemployment benefits may lower

[2]Researchers have also used several other econometric techniques to deal with endogeneity. Bassanini and Duval (2006) estimate their model using a GMM specification in which policies/institutions are instrumented with their lags. Furthermore, thresholds can be imposed to lower the risk of endogeneity. For instance, Bouis et al. (2012) model a structural reform as a change in the institutional variable by at least two standard deviations of the average annual change. Focusing solely on these large "reform episodes" can limit endogeneity issues.

the efficiency of the subsequent job match and as such productivity (Caliendo et al. 2013). Similarly, it has been proposed that some employment protection can raise economic growth up to a certain level, but deterring economic growth when it becomes very rigid (Belot et al. 2007). Country studies can, in principle, deal more accurately with such threshold effects than aggregate studies.

Secondly, the impact of certain policies may depend on the wider institutional context. For instance, Bassanini and Duval (2006, 2009) find that active labour market policies can reduce the negative employment effect of generous unemployment insurance while Murtin et al. (2014) find that a high tax wedge is especially detrimental to employment in the presence of collective bargaining coverage extensions. Cross-country studies can to some extent control for the wider institutional context by including a series of institutions and institutional interaction terms. Unfortunately, there is not usually enough variation in the cross-country data to test for all possible policy interactions (Bassanini and Duval 2009).

Finally, proper measurement of reforms can be a challenge. Cross-country studies typically rely on OECD indicators to measure changes in structural policies as, for example, in the study by Égert and Gal (Chap. 3). One important advantage of this approach is that reform indicators are standardized across countries and can be therefore widely used in empirical cross-country applications. However, as these indicators typically quantify legislation as opposed to implementation they inevitably contain some measurement error. For instance, for institutions such as the minimum wage and employment protection the gap between *de jure* and *de facto* practices can be rather large (see e.g. Boeri and Jimeno 2005; Venn 2009). To address this issue, the narrative approach is sometimes used in empirical studies instead. For example, this approach is used in Duval et al. (2018), who identify the precise date of reform implementation and construct a broader cross-country and time-series coverage. However, the narrative approach incorporates at least some degree of subjectivity when deciding, for instance, on the significance of the reform measure.[3] And while employment and unemployment can be measured adequately, this is not the case for all metrics of labour market outcomes. For example, Bils (1985) and Solon et al. (1994) have argued that cyclical changes in the composition of employment may explain the apparently a-cyclical evolution of real wages. Properly controlling for such composition effects requires detailed micro-data (see e.g. Carneiro et al. 2012). Furthermore, in aggregate data it is sometimes difficult to recognize and differentiate between the impact of policies that may have observationally equivalent effects in the short run. For example, during the recent crisis, several euro area countries implemented substantial reform measures, but at the same time were also pursuing fiscal consolidation which makes it difficult to disentangle the impact of reforms.

[3] As an alternative, Wiese (2014) suggests using structural break filters in conjunction with a careful analysis of policy documents to identify structural reforms.

2.2.2 *Structural Model Based Approaches*

Structural model based—or theoretical—approaches to investigate the impact of structural reforms are an important complement to the empirical approaches. In these approaches the causal link between reforms and outcomes is not measured but assumed, thus—to the extent the underlying models are good enough approximations of the economies in question—endogeneity and confounding factors are less of an issue. While these approaches are not necessarily well suited to measure the exact quantitative impact of reforms, they can shed light on key propagation mechanisms and policy interactions at play.

Nowadays, the vast majority of the theoretical literature adopts DSGE models. The most widely used DSGE models typically feature Stiglitz-Dixit type monopolistic competition in both the goods and the labour markets. As a result, goods are priced with a mark-up over marginal costs and wages are characterized by a mark-up over the marginal rate of substitution between consumption and hours worked. In these models, structural reforms are typically captured as permanent negative shocks to mark-ups, representing more competition in product and labour markets resulting in higher output/employment and a lower price/wage level. Such an approach towards modelling the impact of structural reforms is, for example, employed in in't Veld et al. (Chap. 4), Pierluigi and Vetlov (Chap. 5) and Jacquinot et al. (Chap. 6). Thus, in DSGE frameworks reforms can be seen as measures aiming at reducing the distance to the frictionless first best allocation.

While shocking price and wage mark-ups may be a crude way of capturing complex product and labour market reforms, it can be thought of as a first approximation which captures a key element of most structural reforms: enhancing competition. However, product and labour markets often feature a complex web of interacting institutions, thus a model featuring price and wage mark-ups as the only imperfections targeted by structural reforms may provide limited insight into real world policy challenges.

By introducing more complex underlying rigidities and propagation mechanisms the impact of more specific structural reforms and more complex interactions can also be analysed. In this spirit, instead of relying on price and wage mark-ups, Cacciatore et al. (2016) consider a DSGE model with labour market search. In their framework the number of producers is endogenized through fixed entry costs. Mark-ups depend endogenously on the number of firms in the markets through a demand-side mechanism. In this case, the effect of a reform aimed at improving competition is simulated assuming a reduction in entry costs which boosts entry and reduces mark-ups. Thus, with respect to earlier studies, the reduction in mark-up has a deeper economic meaning and more grounded micro-foundations. Likewise, Colciago (Chap. 9) endogenizes both the number of producers and the unemployment rate. Price mark-ups are endogenously determined through a supply side mechanism, namely by introducing oligopolistic competition between (the endogenous number of) producers. Furthermore, Jimeno and Thomas (2013) capture collective bargaining mechanisms via sector level wage fixing in a context

where firm-worker pairs are subject to idiosyncratic productivity shocks. Of course, it is not only complexity that matters; in order to provide valid results, the frictions introduced in the model need to be relevant to the structural problem at hand.

It is worth noting that there are strong complementarities between theoretical and empirical approaches. In particular, the empirical literature on the impact of structural reforms can provide a first point of reference for calibrating theoretical models, in terms of coefficients, shock sizes and impulse responses. For example, disaggregated data can be used to estimate the impact of product market regulation on service sector mark-ups (see e.g. Thum-Thysen and Canton 2015), which in turn can help the calibration of the size of a non-tradable sector mark-up shock in response to an assumed regulatory change in a DSGE model. Empirical results are also crucial for creating a mapping between real-word reform measures and the shocks DSGE models can interpret.

2.3 An overview of Results from Empirical Studies

2.3.1 Micro-level Evidence

A large body of micro-econometric studies has analysed the impact of institutions and reforms on unemployment and productivity. It is beyond the scope of this chapter to review this literature in detail (see Jaumotte 2011; Boeri and Van Ours 2013; Blanchard et al. 2014; Boeri et al. 2015 for recent reviews). Rather, in this section, we highlight some main conclusions.

Overall, the micro-econometric literature has corroborated the following findings. First, product market deregulation—such as easier entry—tends to facilitate aggregate productivity growth. For instance, on the basis of UK firm-level data, Aghion et al. (2004) find that increased competition spurs productivity growth of incumbent firms. Furthermore, on the basis of firm-level data of OECD countries, Arnold et al. (2008) show that anti-competitive service regulations hamper productivity growth in ICT-using sectors, especially in a very productive segment. Additionally, Arnold et al. (2011) find that product market regulations that curb competitive pressures tend to reduce the productivity performance of firms. Furthermore, Bourlès et al. (2013), who look at the effect of product market regulation in sectors producing intermediary inputs on multifactor productivity in downstream sectors, find that regulation has significantly hampered productivity growth. In line with predictions from neo-Schumpeterian growth theory, this effect is particularly strong the closer firms are to the productivity frontier. Building on this framework, Cette et al. (2014) disentangle the effects of product market regulation (higher rents) and employment regulation (higher rent sharing of workers) on productivity growth. For most countries, the gains from product market deregulation outweigh those of employment protection deregulation.

Second, generous unemployment benefits (in both duration and its conditions) have been found to increase employment duration and unemployment (Tatsiramos and Van Ours 2014). At the same time, evidence for Germany indicates that very short benefits may hurt the quality of the subsequent job match (Caliendo et al. 2013). Using Austrian data, Lalive (2007) does not find an effect on job quality although short benefits may reduce the odds of transition into regular jobs.

Furthermore, evaluating European policies that reduced the retirement age with the aim of alleviating youth unemployment, Gruber and Wise (2010) do not find that the earlier exit of older workers has supported the employment prospects of the young. In turn, raising the retirement age has been found to boost employment, also in the short run (Cribb et al. 2014).

Fourth, high tax wedges reduce labour demand and supply and can as such reduce employment rates. On the demand side, high taxes increase cost for firms. On the supply side, they reduce take-home pay, negatively impacting labour supply. These distortions are also effected by the progressivity and different schemes of household income taxation (Eissa 1995; Disney 2000; Jongen et al. 2015).

In addition, a high minimum wage can reduce employment prospects especially for the young and lower skilled. At the same time, if employers have strong bargaining power vis-à-vis low-skilled workers, a minimum wage can improve earnings without compromising employment (see Boeri and Van Ours 2013; Boeri et al. 2015).

Probably most controversial is the role of employment protection legislation and collective wage bargaining. As to the first, stringent employment protection legislation (EPL) can be expected to dampen both job separations and hiring rates. In line with this, cross-country studies initially found ambiguous effects on employment and unemployment (e.g. OECD 2004). More recently however, micro-based work—which in principle can more accurately identify causal effects—found some employment effects. For instance, exploiting a difference-in-difference setting for American states Autor et al. (2006) report a negative effect from wrongful discharge law on employment rates. Yet, micro-based results for other countries indicate no robust effects on employment or employment flows (see e.g. Bauer et al. 2007 for Germany and Von Below and Thoursie 2010 for Sweden and Martins 2009 for Portugal). Hijzen et al. (Chap. 8) find that stricter EPL makes the unemployment rate more sensitive to shocks directly by promoting the use of temporary contracts, thereby reducing labour market resilience.

Furthermore, there is evidence that EPL deters firm growth. Exploiting a 1990 reform in Italy that increased EPL for smaller firms, Schivardi and Torrini (2008) find that small firms were more likely to remain small. For the same reform, Cingano et al. (2016) show that higher EPL resulted in an increase in the capital-labour ratio and a decline in total factor productivity in small firms relative to larger firms. Furthermore, several studies have confirmed that EPL influences the composition of employment, favouring permanent employment for prime age males and temporary jobs for other employees such as women, lower-skilled workers and immigrants (see e.g. Kugler et al. 2005 and Kahn 2007). This latter finding is corroborated by Égert and Gal (Chap. 3).

The literature has also investigated the effects of EPL on productivity growth. In theory, EPL can support productivity growth by facilitating investments in firm-specific skills but harm it by deterring radical innovations and reducing job effort. Most empirical studies have found that strict EPL hampers productivity growth. Using sector-level data of a set of OECD countries and a difference-in-difference framework, Bassanini et al. (2009) report that TFP growth is lower in industries where employment protection is binding, where their design suggests a causal effect. As a possible channel between EPL and productivity growth, Gautier et al. (2016) propose that higher employment protection discourages taking risky but on average higher rewarding investments. Furthermore, using harmonized firm-level data for 21 OECD countries, Andrews and Cingano (2014) find that stricter employment protection legislation makes the reallocation of resources across heterogeneous firms less efficiency enhancing.

The literature has also studied dimensions of collective bargaining. Several studies have investigated the impact of union membership on individual earnings. In general, older studies typically found significant premiums of union membership sometimes in the two-digit range. These studies, however, could not account for selection effects. On the basis of a regression discontinuity design, DiNardo and Lee (2004) find no wage effect of unionised firms in the United States. On the other hand, Breda (2015) looks at the wage difference between unionised and unionised firms in France and finds that workers in unionised firms enjoy a 2–3% wage premium.

At the macroeconomic level, wage growth that outpaces productivity developments can lead to competitiveness losses and translate into higher unemployment, unless mechanisms exist to internalise such costs. A well-known hypothesis is that such internalising mechanisms are strongest in case of decentralised bargaining—where union members are directly exposed to the consequences of excessively high wage claims—and fully centralised schemes—where the bargaining process is more likely to take macroeconomic externalities into account due to political economy considerations (Calmfors and Driffill 1988). Empirically, the impact of the degree of wage bargaining centralisation on employment is not straightforward. On the one hand, studies have found that firm-level bargaining supports employment growth. For instance, Dustmann et al. (2014) show that possibilities to opt out of sector-level agreements in Germany have facilitated employment growth. Furthermore, the widespread use of extensions of sector agreements in Portugal has been found to negatively affect employment (Martins 2014). In addition, Marotzke et al. (2016) show that collective pay agreements reduce the probability of downward wage adjustment in Europe, thereby also confirming previous studies on wage rigidities in Europe. Anderton et al. (2017) show that such wage rigidities seem to be particularly binding in downturns. On the other hand, macroeconomic outcomes seem to differ substantially within the group of countries where sector-level wage bargaining is dominant, probably because of large differences in the rules of the game (Blanchard et al. 2014; IMF 2016). The analysis of Hijzen et al. (Chap. 8) points to the potential beneficial effects of centralised or co-ordinated collective bargaining systems for labour market resilience.

Another feature of collective bargaining is the duration of contracts in the context of large economic shocks. Especially when contracts are bargained just before a shock, and do not contain clauses to deviate in case of hardship, they can endanger employment. This was also relevant in the recent crisis, where long contracts were found to exacerbate employment losses in Spain (Díez-Catalán and Villanueva 2015).

2.3.2 *Cross-Country and Cross-Reform Studies*

Using country-level data, Bassanini and Duval (2006) provide a comprehensive account of the impact of a series of structural policies and institutions (and interactions) on employment outcomes (similar results are presented in Bassanini and Duval 2009). They find that high and long-lasting unemployment benefits, high marginal tax wedges and high product market regulation (all captured by OECD indicators) increase structural unemployment. On the other hand, highly centralized or coordinated wage bargaining is associated with lower unemployment. Active labour market policies (ALMPs) do not significantly impact on unemployment, at least for the overall indicator, nor does employment protection or union density. These authors also investigate the impact of institutions on employment. An important aggregate finding is that high unemployment benefits and high tax wedges decrease employment. Similarly, they test whether institutions interact with shocks. Relatively robust findings are that high unemployment benefits amplify the adverse unemployment effect of a shock, while on the other hand high corporatism decreases this impact. As mentioned above, they also find some evidence of interaction effects. For instance, ALMPs can reduce the negative employment effect of unemployment benefits. Regarding the impact of a number of reform measures by aggregating over the effects on physical capital, employment and productivity through a production function, Égert and Gal (Chap. 3) show that product market deregulation has the largest overall single policy impact 5 years after the reforms. At the same time, a package of various labour market policies under study can have a considerably larger impact.

The empirical literature also studied the interaction between shocks and institutions. In a panel of 20 OECD countries, Blanchard and Wolfers (2000) find that this interaction is crucial to explain the rise in unemployment since the 1960s as well as the increased heterogeneity between countries. This notion follows also from the recent paper by Hantzsche et al. (2018), which investigates propagation of financial shocks in a country-sector panel of euro area countries. Authors report that responses to a financial shock are asymmetric depending on the sign of the shock, different in magnitude depending on the sectoral composition, and sensitive to labour market institutions, such as EPL and union density.

Bouis et al. (2012) present a systematic empirical assessment of the short-run impact of various structural reforms. They look at the effects of reform shocks on variables such as employment, unemployment, participation and GDP growth

over a 1–5 year horizon. They find no evidence of large short-run employment and growth costs of reforms. An exception is the reduction of employment protection of temporary workers; the authors find that in the short run this is associated with lower employment, participation and growth. At the same time, various reforms can yield significant short-run benefits. This is particularly true for unemployment benefit reform, which yields positive employment effects relatively quickly. By some indicators, there can be benefits in year 1–2 already, albeit small. These findings are in contrast with Cacciatore and Fiori (2016), who use panel VAR estimation for 20 OECD countries over the period 1981–2005 and provide evidence that labour and product markets deregulation involves potential short-run costs materialized by higher unemployment and lower output.

Bouis et al. (2012) furthermore find that the state of the economy matters, especially for the impact of unemployment benefit reform and employment protection of regular workers. While in the baseline scenario there are short-run employment gains (for reform of unemployment benefits) or at least no losses (for reform of employment protection), in a depressed economy reforms are associated with employment losses.

This underscores the potential role of other macroeconomic policies. For instance, the analysis of Bordon et al. (Chap. 7) points out that some structural reforms are best initiated in conjunction with supportive fiscal or monetary policy. This is also what Hijzen et al. find in their study of labour market resilience in the recent global financial crisis (Chap. 8).

Following the theoretical work of Blanchard and Giavazzi (2003), who demonstrated a degree of substitutability between product and labour market regulations in a general equilibrium setting, several studies have also empirically investigated this relationship. Estevão (2005), for example, finds that if product market regulation is low, the impact of lower labour costs on GDP is larger. It seems that ALMPs complements some other labour market institutions in facilitating employment (Estevão 2007). Berger and Danninger (2006) also report sizable interaction effects from both regulations. Positive interactions are also found in a case study by Annett (2007). Furthermore, Nicoletti and Scarpetta (2005), Bassanini and Duval (2006, 2009) and Bassanini et al. (2009) report that significant gains can be obtained by deregulating product and labour markets, suggesting complementarity between those types of regulations. However, not all empirical findings support this conclusion. For instance, Bouis et al. (2012) report that product market reforms might reduce employment and increase unemployment when employment protection is weak, suggesting some degree of substitutability between product and labour market regulations.

This relationship is still debated in the theoretical (structural model based) literature, which we present in the next section.

2.4 An Overview of Results from Structural Model Based Exercises

Structural models typically find large long-run gains from labour and product market reforms to output, consumption, investment and employment. For instance, based on simulations with the European Commission's QUEST model, in't Veld et al. find considerable long-run gains from moving structural policies in Italy, France, Spain and Portugal in line with the top performers in the EU (Chap. 4). This also goes for simulations of Pierluigi and Vetlov and Jacquinot et al. with the ESCB's EAGLE model reported in Chaps. 5 and 6.

However, there is more disagreement regarding the short-term dynamics. For example, Blanchard and Giavazzi (2003) point out that increasing competition in labour and product markets causes incumbent firms to disappear or decline, leading to a temporary decrease in employment and real wages. Kilponen and Ripatti (2006) underline that factors causing short-run costs are the wealth effects induced by a temporary reduction in profits triggered by the increase in competition, as well as the temporary increase in the real interest rate caused by the slowdown of expected domestic inflation induced by higher competition. Cacciatore and Fiori (2016) claim that product market deregulation increases unemployment due to a time-consuming reallocation of workers between shrinking and expanding firms. Moreover, product market deregulation requires new investments as new firms are entering the market and these needs to be financed by reducing consumption. On the other hand, labour market deregulation affects the hiring and firing incentives of existing firms, regardless of the number of firms in the market. While hiring new staff takes more time, immediate layoff of workers operated by incumbent firms temporarily raises unemployment and reduces GDP. For example, Jacquinot et al. (Chap. 6) show mutually reinforcing impacts from a combination of labour and product market reforms at the effective lower bound. However, Cacciatore et al. (2016) confirm complementarity between these regulations only in the short run, while substitutability between regulations seems to be present in the longer run. Therefore, this relationship seems to still be unclear from a theoretical perspective.

Some theoretical papers put the above results into perspective by showing that the short-run effects of structural reforms are uncertain and depend on the type of reform adopted (Cacciatore and Fiori 2016; Cacciatore et al. 2016) or even provide evidence of benefits in terms of GDP from reforms already in the short run. On the other hand, proper implementation seems to eliminate or significantly reduce possible short-term negative effects in some macroeconomic aggregates. As a matter of fact, Jacquinot et al. (Chap. 6) show that even though structural reforms may entail transitory output costs, those can be reduced or eliminated by an appropriate sequencing, cross-country coordination and supportive fiscal policy or monetary policy.

Cross-country spillovers induced by reforms to the rest of the world have also been investigated. These are typically found positive but small or insignificant. For example, in't Veld et al. (Chap. 4) show that compared to the 'acting alone'

scenario, jointly implementing reforms yields only minor additional benefits in terms of GDP. However, some studies reach different conclusions. For instance, Gomes et al. (2013) suggest that reform coordination across countries turns out to be very important, as it would work to the direction of eliminating macroeconomic heterogeneity across countries. This argument also follows from the analysis of Pierluigi and Vetlov (Chap. 5), which shows that spillovers from a euro-area wide implementation of a reform package can be very substantial. Due to their general equilibrium setup, DSGE models are particularly well suited to examine the interaction of different policy areas.

The short-to-medium term impacts of structural reforms do not only depend on the type and size of the reform shock, but also on the response of fiscal and monetary policy which in normal times react endogenously to the shocks hitting the economy. Thus, constraints on demand side policies can also influence the impact of structural policies.

DSGE frameworks have been used recently to examine the interaction of structural reforms and monetary policy, with the latter being constrained to react to the short-term effects of reforms. The constraint can come from a binding effective lower bound (ELB) on nominal interest rates or membership in a monetary union, where common monetary policy reacts to country-level developments only to a limited extent. While the long-run effects of reforms typically remain unaffected, constrained monetary policy can have a bearing on their short-term impact. For example, if monetary policy is not able to react to short-run deflationary effects of some reforms, the real interest rate will increase, which dampens the response of consumption and investment. In most models, the net short-run impact of reform shocks in the context of constrained monetary policy depends on the relative strength of the intertemporal substitution and permanent income or wealth effects. For a more detailed discussion see Chap. 6 of this book.

2.5 The Political Economy of Reforms[4]

Political economy considerations are important to understand what determines and hinders structural reforms. On the one hand, the uncertainty associated with the unequal distribution of gains and losses of reforms turns out to be the most significant hindrance of efficiency-enhancing reforms. On the other hand, there is evidence suggesting that policymakers should never waste a good crisis, especially because it tends to provide an accommodating environment for progress. Also, compensating the losers of reforms is important, but rather through bundling reforms than by means of direct monetary transfers.

One of the most pronounced obstacles for (structural) reforms is the uncertainty about the distribution of gains and losses of reforms. As a consequence, people

[4]We thank Patrick Kosterink for his input in writing this section.

tend to favour the *status quo*, implying that they are particularly wary of being worse off relative to the situation as is (Fernandez and Rodrik 1991). An interesting example thereof is workers opposing privatization, even though they know most will benefit in the end, because they do not know whether their individual skills will be demanded after the reform (de Haan et al. 2006). As such, uncertainty about the distributional pattern of reforms *ex ante* may hamper their occurrence, even while social welfare is expected to increase *ex post*.

Additionally, an unequal distribution of the costs of reforms amongst a polarized political landscape, make that structural change is less likely to happen. The argument is that socioeconomic groups, unevenly affected by the reform, have an incentive to delay the reform, in particular because by doing so they may shift a disproportionate share of its burden to other interest groups. So they effectively engage in a 'war of attrition', whereby they make a trade-off between the costs of delaying the reform against the gain from averting its potential costs. So, even though all parties may agree that reform is required, the disagreement about how the burden is to be shared may cause serious delays (Alesina and Drazen 1991).

Given these large obstacles to reforms, it is perhaps not surprising that several authors have found that crises make reforms more likely (Pitlik and Wirth 2003; Duval and Elmeskov, 2005; Agnello et al. 2015; Dias Da Silva et al. 2017). In times of economic distress, policymakers have to fight tooth to nail in order to keep the economy afloat. The economic situation as such may, in that regard, actually be helpful to bring about structural changes to support the recovery. That is to say, it will strengthen the insight of politicians that something needs to be done. Furthermore, crises tend to diminish the strength of interest groups which were formerly able to hinder the progression of reforms. And, finally, 'wars of attrition' may be shortened considerably in particular because dire economic circumstances alter the balance of pay-offs of the game, i.e. in general the costs of delaying reforms rise significantly (Pitlik and Wirth 2003).

A final insight from the political-economy literature is that compensating the losers of reform is important, but policymakers should rather do this by bundling reforms instead of through direct monetary transfers (Haggard and Webb 1994). In a world where there might be considerable uncertainty about the distributional consequences of reform, even direct compensation schemes may prove to be ineffective to incentivize economic agents to favour structural reforms. This is the case because direct compensation schemes are arguably time-inconsistent, in particular because the *ex post* majority in favour of the reforms may have an incentive to renege on the compensation arrangement agreed upon *ex ante* (Fernandez and Rodrik 1991). In fact, the identification of losers and winners *ex ante* remains an issue in practice. Bundling reforms such that potential losers from one reform would benefit from the prospective gains of other reform could overcome at least partly this problem. Furthermore, supportive fiscal policies may be used to soften possible costs, as was done in Germany at the time of the Hartz reforms (see Chap. 10).

2.6 Conclusion

The impact of structural reforms has been studied extensively in recent years and this literature review only provides a snap shot of the on-going directions and outstanding issues. Our tentative conclusions are the following.

First, with the development of new databases and modelling approaches, researchers and policy makers have become increasingly more confident about the impact of structural measures. However, in empirical work it is still hard to identify and disentangle the causal effects of reform measures due to selection bias and a wide range of confounding factors. Researchers have to make critical assumptions about the timing, channels or use imperfect indicators to eliminate the impacts of reforms. On the other hand, results from structural model based approaches depend crucially on modelling choices concerning *inter alia* the nature of structural rigidities, calibration of parameters and policy interactions. Yet, in both empirical and theoretical work there is broad consensus on long-run aggregate gains in terms of output and/or employment in response to most product market- and labour market reform measures.

Second, short-term effects of reforms are potentially more difficult to measure in the first place, while reforms are made to affect the long-run steady state of the economy. Therefore, interpreting their short-term impact should be done more cautiously. The literature review shows that proper implementation and timing play a key role in determining successfulness of reforms. Supportive demand side policies, where available, can to a large extent dampen possible short-term costs. In this context, it is rather unfortunate that reforms are typically introduced in crisis periods—when demand side policies can become constrained, while there are not many reforms implemented in good times.

Finally, the question on how to build institutions that will help bring about a sense of reform urgency also in normal times is probably the most difficult to answer. The literature reviewed here suggests that the bundling of reforms and accommodating fiscal policies may facilitate the adoption of reforms. Apart from this, we see a further need for academia and policy institutions to investigate the supply side issues. As an example, Chaps. 11 and 12 describe how analytical tools and the institutional role of the Netherlands Bureau for Economic Policy Analysis (CPB) helped advocating various labour market reforms in the Netherlands.

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