Chapter 2

What Makes Labour Markets Resilient During Recessions?

This chapter analyses the impact of selected labour market policies and institutions for labour market resilience, defined as the extent to which labour markets weather economic downturns with limited social costs. One of the main insights that emerges from this chapter is that policies and institutions that are conducive to good structural labour market outcomes also tend to be good for labour market resilience. In particular, co-ordinated bargaining institutions can contribute to both good structural performance and labour market resilience, while the intensive use of temporary contracts tends to be associated with both weaker structural outcomes and less resilience.
Key findings

All OECD countries have been severely affected by the global economic and financial crisis that began in 2008. But the social costs associated with the economic downturn have differed substantially across countries. To a large extent, this is due to the different degrees to which the decline in aggregate demand for goods and services translated into a reduced demand for labour and to differences in how the burden of adjustment has been shared across the workforce. However, income-support policies have also played an important role in shaping the social costs of the crisis. The main aim of this chapter is to analyse the role of structural policies for labour market resilience, defined as the extent to which labour markets weather economic downturns with limited social costs. While the main focus of this chapter is on labour market resilience, this should not be an isolated objective but be part of an overall policy framework that takes account of the role of labour market policies and institutions in both the short and longer term.

A first insight provided by this chapter is that structural policies and institutions matter for labour market resilience. Not only do they moderate the labour market impact of economic shocks, they also mitigate the impact of changes in labour earnings on household disposable income.

- Differences in policies and institutions can give rise to large cross-country differences in the overall impact of economic downturns on unemployment, labour income and earnings inequality. Experience from previous economic downturns suggests that a 1% decline in GDP increases the unemployment rate during the first four years by on average 0.15 of a percentage point in Japan but almost 0.6 of a percentage point in Spain. This difference results exclusively from differences in the policies and institutions that are considered in the analysis. Similarly, a 1% decline in GDP reduces total labour income by less than 0.5% in Belgium but by over 1% in Portugal. Simulation evidence further suggests that an adverse economic shock tends to increase overall earnings inequality in countries such as Canada and Spain where most of the adjustment takes the form of job losses, whereas in countries such as Portugal and the Netherlands, it tends to reduce earnings inequality, since most adjustment takes the form of reductions in working time or wages.

- Evidence from firm-level data suggests that policies and institutions accounted for a substantial part of the differences in the aggregate labour market impact of the recent economic downturn across countries. Accounting for cross-country differences in economic structures and the distribution of shocks across different types of firms substantially increases our ability to explain differences in aggregate labour market dynamics. Nevertheless, it is the variation in the adjustment behaviour of similar firms in different countries that accounts for the bulk of the cross-country variation in outcomes. This provides a first indication that differences in the policies and institutions that affect firm behaviour play an important role in explaining the aggregate labour market response to shocks. Further analysis shows that strict employment protection provisions for workers on permanent contracts reduces the importance of employment adjustments relative to that of
working time and wages, while a higher incidence of temporary work tends to be associated with more employment adjustment relative to working time and wages.

- The tax-benefit system plays a major role in mitigating the social costs of the labour market response to economic downturns for workers and their families. Micro-simulation evidence suggests that, in the absence of taxes and benefits, a 5% reduction in aggregate demand reduces average household income by 1% to 2% and increases income inequality. However, once taxes and benefits are taken into account, the proportional reduction in household income is 20 to 40% smaller and most of the increase in income inequality is unwound. To fully appreciate the role of the tax-benefit system for labour market resilience, a more comprehensive analysis is required that takes account not only of its social consequences, but also of how it affects the labour market response to economic downturns in the first place. To the extent that unemployment benefits increase the adverse labour market impact of economic downturns by increasing the persistence of the decrease in employment, as suggested by the macroeconomic analysis, this reduces the positive impact of unemployment benefits for labour market resilience.

A second insight is that policies and institutions that are conducive to good structural labour market outcomes are also good for labour market resilience. In general, countries with low levels of structural unemployment also tended to experience less of an increase in joblessness as a result of previous economic downturns. This implies that many of the recommendations in the Reassessed OECD Jobs Strategy (2006) for achieving good structural labour market outcomes are also likely to contribute to labour market resilience. In particular, two specific sets of policies tend to have similar implications for structural labour market performance and labour market resilience:

- **Co-ordinated wage-bargaining institutions can contribute to both good structural performance and labour market resilience.** More specifically, co-ordination appears to be important in achieving low structural unemployment rates and in mitigating the direct impact of shocks on employment by facilitating adjustments to wages and/or working-time. By increasing the responsiveness of real wages to changes in macroeconomic conditions, co-ordinated collective-bargaining institutions may reduce the need to adjust employment in response to negative output shocks. Moreover, such institutions may also be more likely to take account of any negative employment externalities that may be associated with collective wage bargaining.

- **Institutional settings that favour the use of temporary contracts, such as stringent employment protection provisions for regular workers, are associated with both weaker structural outcomes and less labour market resilience.** The adverse impact of temporary work on structural outcomes may reflect its positive impact on frictional unemployment and its negative impact on job quality. It adversely affects labour market resilience by increasing the unemployment response to output shocks and reinforcing the cyclical increase in earnings inequality. Apart from increasing the incidence of temporary work, strict employment protection for regular workers does not appear to have much of a direct impact on most measures of structural labour market performance or labour market resilience considered in this chapter. If anything, it may mitigate the impact of economic shocks on unemployment and earnings inequality by inducing firms to adjust more on the wage and working-time margins than on the employment margin.
Introduction

The global economic and financial crisis that erupted in 2008 severely affected all OECD countries. But the social costs associated with the economic downturn have differed significantly across the OECD. To an important extent, this reflects the different degree to which the decline in aggregate demand for goods and services translated into lower labour demand. It also reflects the way the burden of adjustment was shared across the workforce, i.e. differences in the extent of labour hoarding and the relative importance of alternative margins of adjustment (i.e. employment, working time and wages). For example, in countries such as Ireland, Spain and the United States, labour market adjustment has overwhelmingly taken the form of labour shedding. In other countries, where firms have tended to hoard labour such as Germany and Japan, much of the decline in employment has been avoided. In addition to differences in the way labour markets have adjusted in response to the decline in aggregate demand, income-support policies also played an important role in shaping the social costs of the crisis.

The substantial cross-country differences in the social consequences of the crisis raise important questions about the role of policies and institutions. This chapter analyses the link between structural policies and labour market resilience, with the latter defined as the extent to which labour markets weather economic downturns with limited social costs. This is done both from a macroeconomic perspective, by analysing the role of policies and institutions for aggregate labour market dynamics, and also from a microeconomic perspective, by focusing on the role of institutions for the adjustment behaviour of individual firms. To the extent that individual firms differ in terms of their adjustment technologies, cross-country differences in labour market adjustment may not just stem from differences in institutional settings, but also from differences in the distribution of shocks across firms and the composition of firms across countries. In addition to providing new empirical evidence, this chapter also draws out a number of lessons on how policies and institutions can be designed to achieve good labour market outcomes over the course of the business cycle.

The chapter is organised as follows. Section 1 defines labour market resilience and provides an overview of the way labour market outcomes have evolved during the crisis and economic recovery up to the last quarter of 2011. It also discusses the main policy and institutional reforms that OECD countries have undertaken in the 15 years preceding the global crisis. Using historical data from before the crisis, Section 2 analyses the role of policies and institutions for structural labour market outcomes and different aspects of labour market resilience from a macroeconomic perspective. An important question here is to what extent policies and institutions that are conducive to good structural labour market outcomes are also good for labour market resilience. Section 3 takes a microeconomic approach to labour market resilience by focusing on the adjustment behaviour of individual firms in response to shocks and its implications for the incomes of workers and their families. The final section sums up the chapter’s main insights and offers suggestions for further work.
1. The impact of the global financial crisis on labour markets and the role of policies: A first look

Defining labour market resilience

For the purpose of this chapter, resilient labour markets are defined as labour markets that weather economic downturns with limited social costs or, more formally, limited losses in worker welfare. Three features of this definition are worth highlighting:2

- Labour market resilience is defined in terms of worker welfare rather than productive efficiency. This implies that it takes a worker perspective rather than the perspective of firms. The two perspectives differ when firms and workers differ in their preferences to risk and their ability to smoothen income fluctuations. Workers are typically considered to be risk-averse since stable consumption paths are associated with higher welfare than more volatile consumption paths that follow the same long-term trend. Firms may be more likely to be risk-neutral since they are primarily concerned with long-term profits and productive efficiency. In addition to differing in their risk preferences, workers and firms also differ in their ability to smooth income fluctuations. This may be the case when they differ in their access to credit and/or insurance on private capital markets. Indeed, the difficulty of insuring individual labour market risks in private insurance markets provides an important economic rationale for the public provision of unemployment insurance and social assistance.

- In order to avoid taking a normative stance on how worker welfare is defined, this chapter focuses on a number of labour market outcomes that are likely to capture the main channels through which economic downturns affect worker welfare instead of adopting an explicit welfare function. These are: i) the change in the unemployment rate; ii) the change in total earnings; and iii) the way the earnings impact is distributed over the labour force.3 While unemployment and labour income changes both incorporate the effects of job losses, their welfare implications are likely be quite different. Unemployment often entails social costs that go beyond the loss of income by adversely affecting other outcomes such as health, crime and happiness. Labour income changes, for their part, not only capture the loss of earnings associated with job loss, but also those associated with reduced working hours and hourly wages. Earnings volatility is a concern when workers are risk-averse and insurance against earnings losses is incomplete.4 Moreover, earnings volatility may be considered to be more of a concern for workers with relatively low incomes as they typically have a more limited capacity to absorb the impact of income shocks on consumption.5

- Labour market resilience is defined with respect to shocks in output rather than its underlying source. The main justification for this is that output fluctuations, such as those experienced during the global financial crisis, largely reflect fluctuations in aggregate demand which may be considered the prime responsibility of macroeconomic policies (e.g. fiscal and monetary policy), while the main responsibility of labour market institutions and policies is to promote good labour market performance throughout the economic cycle. The main advantage of taking the level of aggregate demand as given is that the source of output fluctuations does not have to be modelled and the analysis can instead focus on the specific role of labour market policies and institutions. Conditioning on output fluctuations does, however, involve assuming that output fluctuations are driven by changes in aggregate demand rather than by changes in aggregate supply. While this seems reasonable in the context of the global financial crisis, this was not
always the case during previous downturns. Importantly, conditioning on output fluctuations rules out the possibility of hysteresis effects, i.e. the possibility that the cyclical increases in labour market slack become structural and hence reduce potential output.\(^6\)

There are different economic and social models that can be consistent with good labour market resilience. Labour markets may be more resilient because the average impact of shocks on workers is limited or because their distributional and unemployment implications are more limited. Moreover, labour market resilience is, in principle, consistent with very different labour-market dynamics: it may reflect a relatively strong initial response of labour market outcomes to shocks followed by a speedy recovery or a weaker initial response followed by relatively more persistence. The measures of labour market resilience used in this chapter generally take account of both direct and persistence effects.\(^7\)

It is important to emphasise that labour market resilience should not be an isolated objective but be part of an overall policy framework that takes account of the role of labour market policies and institutions in both the short and the longer term. Indeed, the objective of labour market resilience, i.e. the minimisation of temporary fluctuations in individual labour market outcomes, needs to be balanced against the maximisation of economic growth and good labour market performance in the longer term. However, little is known about the relationship between labour market resilience and good economic and labour market performance in the longer term.

**Box 2.1. The welfare costs of business cycles**

The welfare approach to labour market resilience in this chapter draws on a number of insights from the literature on the welfare costs of business cycles. In a provocative publication, Lucas (1987) analysed the welfare costs of business cycles by asking how much individuals would be willing to give up of their life-time consumption not to experience any macroeconomic volatility. Based on the existing estimates of risk-aversion in the literature and the actual pattern of consumption volatility in the United States, he calculated that individuals would be willing to sacrifice at most 0.1% of lifetime consumption, implying that the benefits of macroeconomic stabilisation are limited.

The publication of Lucas's findings has sparked an intense debate on the welfare costs of stabilisation and a number of studies have revisited his findings (see Barlevy, 2005, for an overview). One important issue in assessing the robustness of Lucas's findings is related to the appropriateness of the representative-agent assumption and the reliance on aggregate data. Studies that have maintained the representative-agent assumption but have made different assumptions with respect to: the degree of risk preferences; the functional form of utility; and the persistence of consumption, tend to confirm Lucas's earlier findings. The representative-agent framework, however, is problematic when the effects of business cycles on consumption are not equally distributed over the population. The welfare costs of business cycles are likely to be larger when: the consumption losses of downturns are unpredictable and concentrated on some individuals; earnings losses are highly persistent at the individual level; and those most affected have limited savings or access to credit. Krebs (2007) and De Santis (2007) provide two recent applications that depart from the
What makes labour markets resilient during recessions?

This sub-section provides an overview of the social costs of the recent downturn and subsequent slow recovery up to 2011 Q4 by focusing on its impact on unemployment and total labour income. It also describes the impact of the global financial crisis on different socio-economic groups in terms of employment and average hours worked. The latter is of interest in its own right, but also gives an indication of how the adjustment behaviour of firms affects the overall distribution of earnings across labour force participants. Cross-country differences in the social impact of the global financial crisis are substantial...

As a result of the global financial crisis, unemployment initially increased in all OECD countries, although the extent and duration of the increases differed greatly across countries. The OECD-wide unemployment rate increased from a post-war low of 5.6% in the first quarter of 2008 to a peak of 8.5% in the fourth quarter of 2009. While economic growth resumed in most countries towards the end of 2009, the recovery has not been sufficiently strong to cut unemployment to pre-crisis levels. Indeed, by the end of 2011, two years into the economic recovery, the OECD unemployment rate stood at 7.9%. Figure 2.1 documents the changes in the unemployment rate and total earnings that took place during the crisis, defined from the country-specific peak to the country-specific trough in GDP, and during the initial recovery, defined from the trough in GDP to the end of 2011 Q4.

- Unemployment (Panel A). In all OECD countries, with the exceptions of Germany and Poland, the unemployment rate increased during the crisis period, with the largest increases observed in Estonia, Ireland and Spain. During the economic recovery, the unemployment rate continued to rise for some time in most OECD countries before reaching its peak, reflecting the usual lag between unemployment and output as well as the unusually weak economic recovery (cf. Chapter 1). In Germany, the unemployment rate declined slightly during the crisis, since its initial rise was more than offset by a...
2. WHAT MAKES LABOUR MARKETS RESILIENT DURING RECESSIONS?

Subsequent decline. Poland also experienced a slight decline, reflecting the minor impact of the global crisis on aggregate demand.

- **Labour income (Panel B).** The cross-country pattern of changes in labour income during the crisis largely mirrors that of changes in unemployment, with larger income decreases occurring in countries with larger increases in unemployment.\(^\text{14}\) In countries with small increases in the unemployment rate during the crisis (less than one percentage point), labour income tended to increase, while in other countries with larger increases in

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**Figure 2.1. The change in unemployment and labour income by country during the crisis and initial recovery\(^a, b\)**

<table>
<thead>
<tr>
<th>Country</th>
<th>Change in Unemployment</th>
<th>Change in Labour Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEU</td>
<td>-2.5%</td>
<td>2.5%</td>
</tr>
<tr>
<td>POL</td>
<td>-4.0%</td>
<td>4.0%</td>
</tr>
<tr>
<td>KOR</td>
<td>-3.5%</td>
<td>3.5%</td>
</tr>
<tr>
<td>NOR</td>
<td>-5.0%</td>
<td>5.0%</td>
</tr>
<tr>
<td>AUS</td>
<td>-2.0%</td>
<td>2.0%</td>
</tr>
<tr>
<td>HUN</td>
<td>-6.0%</td>
<td>6.0%</td>
</tr>
<tr>
<td>JPN</td>
<td>-1.5%</td>
<td>1.5%</td>
</tr>
<tr>
<td>BEL</td>
<td>-3.0%</td>
<td>3.0%</td>
</tr>
<tr>
<td>ITA</td>
<td>-4.5%</td>
<td>4.5%</td>
</tr>
<tr>
<td>SVK</td>
<td>-1.0%</td>
<td>1.0%</td>
</tr>
<tr>
<td>AUT</td>
<td>-2.5%</td>
<td>2.5%</td>
</tr>
<tr>
<td>SWE</td>
<td>-5.0%</td>
<td>5.0%</td>
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<tr>
<td>UKR</td>
<td>-3.0%</td>
<td>3.0%</td>
</tr>
<tr>
<td>SVN</td>
<td>-4.0%</td>
<td>4.0%</td>
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<tr>
<td>NZL</td>
<td>-5.5%</td>
<td>5.5%</td>
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<tr>
<td>FIN</td>
<td>-3.0%</td>
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<td>CZE</td>
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<td>CAN</td>
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<tr>
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<tr>
<td>HUN</td>
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<td>USA</td>
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<td>2.0%</td>
</tr>
<tr>
<td>IRL</td>
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<td>4.0%</td>
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<tr>
<td>ESP</td>
<td>-5.5%</td>
<td>5.5%</td>
</tr>
<tr>
<td>EST</td>
<td>-3.0%</td>
<td>3.0%</td>
</tr>
<tr>
<td>OECD</td>
<td>-3.5%</td>
<td>3.5%</td>
</tr>
</tbody>
</table>

\(^a\) Countries are shown in ascending order by the percentage point change of the unemployment rate from the peak in real GDP to its trough.

\(^b\) The crisis is defined from the peak in real GDP to its trough whereas the recovery is defined from the trough in real GDP to the latest values available (2011 Q4 for the majority of the countries). Peak (trough) dates are defined as the start of the longest spell of consecutive decreases (increases) in real GDP since 2006 Q1. For details on the country-specific peak and trough dates, see Annex Table 2.A1.1 of OECD (2012b).

\(^c\) Total compensation of employees for Portugal.

\(^d\) OECD is the unweighted average of countries shown.

Source: OECD calculations based on OECD Main Economic Indicators Database and quarterly national accounts. [StatLink](http://dx.doi.org/10.1787/888932651104)
unemployment, labour income tended to decline by about 1% for each additional percentage point increase in the unemployment rate. In Italy, Japan and most central European countries, the impact of the crisis on labour income was substantially larger than may be expected on the basis of the average relationship between unemployment and total labour income across the OECD, while in Portugal and Spain, the impact on labour income was significantly smaller. During the recovery period, the negative relationship between income and unemployment changes is much weaker. This suggests that the dynamics of labour income and unemployment are rather different, possibly reflecting the greater persistence of adjustments in employment compared with those in working hours and wages.

... reflecting differences in the decline of aggregate output demand...

Figure 2.2 relates the cross-country variation in unemployment and labour-income changes during the crisis and initial recovery to the corresponding changes in GDP.

- **Unemployment (Panel A).** During the crisis, the unemployment rate increased on average across the OECD by one third of a percentage point for each additional percentage reduction in real GDP. This is somewhat less than implied by Okun’s law, which posits that a negative output shock of a given size increases unemployment by about half as much. However, when account is taken of the lagged response of unemployment to the decline in GDP, as is done in Section 2, the unemployment elasticity approaches 0.5. The lagged response of unemployment to the decline in GDP also explains why the net change in OECD-area unemployment was positive during the initial recovery. There are large differences in the unemployment response across countries. The main outlier was Spain where Okun’s coefficient approached two (in absolute value). In Canada, Estonia, Ireland, New Zealand and the United States, countries which experienced above-average unemployment increases, Okun’s coefficient was slightly above one half. In other OECD countries, it was less than one half and many of those countries experienced below-average increases in unemployment.

- **Labour income (Panel B).** During the crisis, total labour income declined on average across the OECD by 0.16% for each percentage reduction in GDP during the crisis. The proportional response of labour income to the decline in GDP during the crisis was largest in Estonia, Hungary, and Spain, where the change in labour income was approximately the same size as the decline in aggregate demand. This suggests that the ratio of output over the wage bill was broadly constant in those countries during the crisis. In all other countries, the responsiveness of labour income to GDP was less than one, reflecting declining labour productivity. During the recovery, the relationship between labour income and GDP becomes negative on average. This is largely driven by relatively large negative responses in a few countries (e.g. Denmark, Ireland, Slovenia, Spain and the United Kingdom). This most likely reflects the lagged impact of the crisis on employment and wages.

... as well as in the importance of different margins of adjustment

Figure 2.3 examines the differences in the evolution of unemployment since the start of the crisis in more detail by decomposing the change in unemployment during the crisis and the early recovery into five components: i) the change in the quality-adjusted labour productivity (simply measured as the ratio of output to the wage bill),\textsuperscript{16} ii) the change in average hourly wages; iii) the change in average hours worked; iv) the change in labour
force participation; and v) the change in output. A similar decomposition for total labour income can be found in Annex Figure 2.A1.1 of OECD (2012b). Furthermore, variance-decomposition methods are used to provide an indication of the share of the cross-country variation in the change in the unemployment rate that can be attributed to the change in GDP and the different margins of adjustment as well as the share of the cross-country
Figure 2.3. **Decomposing the change in the unemployment rate by country during the crisis and initial recovery**^{a, b, c}

A. The change in the unemployment rate during the crisis equals (all variables in % change):

\[
\text{Quality-adjusted hourly labour productivity} + \text{Real average hourly wage} + \text{Average hours worked} + \text{Labour force} - \text{Real GDP}
\]

B. The change in the unemployment rate during the recovery equals (all variables in % change):

\[
\text{Quality-adjusted hourly labour productivity} + \text{Real average hourly wage} + \text{Average hours worked} + \text{Labour force} - \text{Real GDP}
\]

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a) See note 17 for details on the methodology.
b) Countries are shown in ascending order by the percentage change of the unemployment rate during the crisis.
c) The crisis is defined from the peak in real GDP to its trough, whereas the recovery is defined from the trough in real GDP to the latest values available. Peak (trough) dates are defined as the start of the longest spell of consecutive decreases (increases) in real GDP since 2006 Q1. For details on the country-specific peak and trough dates, see Annex Table 2.A1.2 of OECD (2012b).
d) OECD is the unweighted average of countries shown.

Source: OECD calculations based on OECD Main Economic Indicators Database and quarterly national accounts.

[StatLink](http://dx.doi.org/10.1787/888932651142)
variation in Okun’s coefficient that can be attributed to each margin of adjustment. The results of the variance decompositions are reported in Annex Table 2.A1.3 of OECD (2012b).

- **The role of changes in aggregate demand.** During the crisis, the decline in GDP accounted for about three quarters of the rise in unemployment. The average decline in GDP across the OECD was 6.7%, accounting for about 1.7 of the 2.3 percentage-point increase in the unemployment rate. The largest decline in GDP was observed in Estonia, where it declined by over 20%, while Australia and Poland experienced declines in GDP of less than one percent. During the initial recovery, average GDP in the OECD regained 5.7%, making up most of the decline observed during the crisis, although its strength differs considerably across countries.

- **The role of changes in quality-adjusted labour productivity ("labour hoarding").** Labour hoarding, in the form of declining labour productivity, accounts for over half of the cross-country variation in Okun’s coefficient during the crisis. Labour hoarding, thus, played a key role in limiting the unemployment response to the decline in GDP. This reflects the tendency of employers to postpone or forego labour-input adjustments in order to avoid losing firm-specific human capital or incurring firing costs and subsequent hiring costs in the recovery. During the recession, labour hoarding was particularly important in Denmark, Finland, Slovak Republic and Sweden where quality-adjusted labour productivity declined by over 8%. By contrast, quality-adjusted labour productivity remained largely unchanged in Estonia, Hungary, Poland and Spain. The flipside of intensive labour hoarding during the crisis was that during the initial recovery labour productivity tended to recover quickly, reducing the job content of the recovery.

- **The role of changes in earnings per worker.** Adjustments in earnings per worker, which captures the combined role of average hourly wages and working-time adjustments, account for about a half of the cross-country variation in Okun’s coefficient, with the role of working-time and wage adjustments being approximately equally important:
  - **Average hours worked** tended to decline substantially during the crisis, almost 2% on average, thereby limiting the rise in unemployment. The biggest reductions were observed in Estonia, Ireland and Japan. The only country where average hours increased during the crisis was Spain. During the recovery, working hours only recovered to a limited extent. In the majority of countries, average hours were stable, while in two countries they returned to pre-crisis levels (e.g. Sweden, United States).
  - **Average hourly wages** tended to increase in all OECD countries during the crisis except Hungary, Poland and Estonia, reflecting a combination of pure wage-growth effects for those who stayed employed, and composition effects, due to the concentration of total hours reductions at the bottom end of the wage distribution (see Figure 2.4 below). During the initial recovery, average hourly wages continued to increase in about half the countries, while it declined in the other half and, in some cases, by a very large amount (e.g. over 10% Estonia, almost 5% in the United Kingdom). This phenomenon may reflect the possibility that wage adjustments follow changes in aggregate demand with a lag or that composition effects associated with labour-input adjustments during the crisis were partially reversed as labour markets started to recover.

- **The role of changes in labour force participation.** Changes in labour force participation do not account for much of the cross-country variation in Okun’s coefficient during the crisis (about 5%). The average change in labour force participation across the OECD was small. Changes in labour force participation tended to be more positive in countries with small
increases in unemployment and more negative in countries with large increases in unemployment. This is consistent with a discouraged-worker effect, which arises when unemployed workers leave the labour market due to a lack of suitable jobs (cf. Chapter 1 in this volume). During the crisis, the largest reduction in labour force participation was observed in Ireland which continued also during the recovery. In the recovery, a strong decline in labour force participation was also observed in Slovenia.

The rise in unemployment during the crisis varied considerably across countries due to differences in the size of the output shocks and the role of the different margins of adjustment. While differences in the size of the shock account for the bulk of the cross-country variation in unemployment during the crisis, differences in the role of quality-adjusted labour productivity and earnings per worker also played an important role. Labour hoarding in the form of reduced labour productivity and earnings per worker adjustments helped to limit the initial response of unemployment to the decline in GDP, but also reduced the job content of the recovery as firms tended to restore labour productivity and earnings per worker before hiring new workers. In countries, where much of the slack in demand has now been absorbed, one would expect employment to track changes in GDP more closely in the near future, strengthening the job content of the recovery.

The importance of cross-country differences in the evolution of unemployment relative to that of aggregate demand and in the role of different margins of adjustment during the crisis and the recovery raises important questions about the role of policies and institutions. However, it may also reflect the role of cross-country differences in the nature of the crisis, and in particular the distribution of shocks across different types of firms, as well as the role of cross-country differences in economic structure in terms of, for example, the industrial make-up of a country or the size distribution of its firms.

Job losses are more likely to increase overall earnings inequality, while the role of working-hours reductions is likely to be limited

In addition to affecting unemployment and total labour income, the labour-input adjustment behaviour of firms in response to economic shocks can also have important implications for the inequality of earnings across labour force participants since the relative importance of adjustments on employment, average hours and hourly wages is likely to affect how the burden of adjustment is being shared across the workforce. There are two main reasons for this. First, because employment reductions are necessarily limited to a segment of the workforce, thus increasing the share of the workforce that has no labour earnings, employment reductions have a tendency to increase the inequality of earnings across all labour force participants, while working-time and wage adjustments could, at least in principle, be evenly distributed over the workforce. Second, employment, hours and wage adjustments may differ in terms of their selectivity with respect to the ex-ante distribution of earnings. For example, differences in turnover costs, that is, the costs that employers incur when they replace existing workers with new recruits, may increase with earnings, since both turnover costs and earnings tend to increase with labour-market experience and skills. This implies that firms may find it more attractive to adjust labour inputs by reducing working hours or wages for workers with relatively high levels of prior earnings, while they may be more inclined to suppress jobs of workers with relatively low levels of earnings. Thus, the way firms adjust their labour inputs in response to economic shocks can have important implications for the distribution of earnings. This is of interest per se, but particularly because individuals with different earnings are likely to differ in
their ability to absorb earnings shocks. As a result, changes in the distribution of earnings can have important implications for the distribution of consumption and welfare and this raises important questions about the adequacy of the social safety net to absorb income shocks.

In order to shed some light on the implications of the global financial crisis for the distribution of earnings, Figure 2.4 decomposes the average change in total hours worked

Figure 2.4. **The change in employment and average hours worked by age, education and type of contract**

Percentage change

<table>
<thead>
<tr>
<th>A. Crisis</th>
<th>Youth (15-24)</th>
<th>Prime-age (25-54)</th>
<th>Older workers (55-64)</th>
<th>Low-skilled</th>
<th>Medium-skilled</th>
<th>High-skilled</th>
<th>Permanent workers</th>
<th>Temporary workers</th>
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a) Unweighted average of the following countries: Austria, Belgium, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Ireland, Italy, the Netherlands, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden and the United Kingdom. For further details by country, see Annex Figure 2.A1.2 of OECD (2012b).

b) The crisis is defined from the peak in real GDP to its trough, whereas the recovery is defined from the trough in real GDP to 2011 Q2. Peak (trough) dates are defined as the start of the longest spell of consecutive decreases (increases) in real GDP since 2006 Q1. For details on the country-specific peak and trough dates, see Annex Table 2.A1.1 of OECD (2012b).

across OECD countries into the corresponding changes in employment and working hours for a number of socio-economic groups, which differ substantially in terms of their average earnings.\textsuperscript{23} It shows, consistent with previous editions of the OECD Employment Outlook, that the decline in employment during the global financial crisis was heavily concentrated on youth and low-skilled workers, and to a lesser extent, on workers with temporary contracts.\textsuperscript{24} This suggests that employment reductions during economic downturns are likely to have important adverse consequences for earnings inequality. Not only do they increase the share of the workforce with zero labour income, but they are also concentrated on specific groups of workers who tend to have below-average earnings. Compared with the high degree of concentration of employment losses among specific socio-economic groups, working-hours adjustments appear to be much more evenly distributed. Thus, it does not appear to be the case, as was suggested above, that working-hours adjustments are concentrated among workers with more labour-market experience and higher levels of skills. If anything, working-hours reductions tend to be concentrated on youth, the low-skilled and temporary workers, similarly to employment losses, although, in the case of hours, differences across groups are very small. Given the fairly even distribution of working-time reductions across groups with different levels of average earnings, working-time reductions are most likely to reduce overall earnings inequality by narrowing the earnings gap between those out-of-work and those on reduced working hours.\textsuperscript{25, 26}

**The role of reforms prior to the crisis for structural outcomes and labour market resilience**

This section provides a brief overview of the nature of structural reforms that have been undertaken during the past 15 years in OECD countries and discusses their implications for structural labour market outcomes and labour market resilience.

Many OECD countries have engaged in important structural reforms during the 15 past years...

During the 15 years that preceded the global financial crisis, many OECD countries introduced important structural policy reforms to promote economic growth and job creation. Labour market reforms largely consisted of measures that sought to strike a better balance between providing an effective social safety net and reducing benefit dependency, as well as measures to reinforce labour market flexibility. While these measures were primarily intended to deal with structural labour market problems, they may also have an important impact on the transmission of economic shocks to labour markets.

Figure 2.5 provides an indication of the average direction of reforms using a selected set of policy indicators, as well as their dispersion across countries. The selected indicators relate to: the generosity of unemployment benefits (net and gross);\textsuperscript{27} the stringency of regulation of permanent and temporary contracts; the importance and nature of collective bargaining (coverage and the degree of co-ordination); and the tax wedge. The set of policies considered reflects the key variables that are used in the macro-analysis in Section 2.\textsuperscript{28} The figure provides two main insights. First, there appears to be a tendency towards less government involvement in labour markets and an easing of labour market institutions along the dimensions considered here. This is reflected by the negative average change along the indicators included in the figure. Second, there is a lot of...
2. WHAT MAKES LABOUR MARKETS RESILIENT DURING RECESSIONS?

heterogeneity in the nature and direction of reforms across OECD countries. This may reflect: the possibility that the optimal stance of policies and institutions for achieving high employment rates differs across countries; the presence of uncertainty about the role of policies and institutions; or the role of fiscal and political-economy considerations in motivating structural reforms. While the selected indicators provide a useful indication of the overall direction and heterogeneity of structural reforms in the OECD, they do not provide a fully comprehensive picture, as comparable time-series data are not available for all relevant policy areas. Among the most important omitted policy areas are activation measures and the regulation of working time. In Box 2.2, a more detailed qualitative discussion is given of the nature of structural labour market reforms from 1995 to the crisis.

Box 2.2. Structural reforms prior to the crisis

Most countries have sought to strike a better balance between social safety nets and benefit dependency by implementing effective activation measures. The essence of activation measures is the principle of “mutual obligations” where, in return for receiving benefits, benefit recipients are required to actively engage in job search and participate in active labour market programmes (ALMPs), enforced with the threat of benefit sanctions. Activation strategies represent a key component of the Reassessed OECD Jobs Strategy and have been shown to contribute to better labour market outcomes in countries which applied them effectively (OECD, 2006). The progressive implementation of activation strategies in a number of OECD countries might have had important implications for the unemployment impact of the crisis by speeding up the reintegration of job losers into the labour market. In addition to implementing activation strategies, a number of countries with previously generous unemployment benefits have sought to reduce benefit dependency by reducing replacement rates or limiting their maximum duration (e.g. Denmark...
Box 2.2. **Structural reforms prior to the crisis (cont.)**

and the Netherlands). However, several other countries have sought to strengthen the effectiveness of UI by increasing their generosity. Figure 2.5 shows that average gross benefit generosity, as measured by the average replacement rate during the first five years of unemployment, declined slightly on average during the period 1995-2007, but also that the relative stability of UB generosity hides considerable heterogeneity across countries.

Regulatory rules affecting job protection and working time have important implications for effective labour demand by increasing the cost of adjusting to changing economic conditions and are, therefore, of particular interest in the present context. With respect to employment-protection provisions for permanent contracts, there has been essentially no change in the average degree of protection, but there has been a slight reduction in its dispersion, as a number of countries with relatively high levels of protection reduced it (e.g. Austria and Spain), while it was increased in a number of countries with relatively low levels of protection (e.g. Australia and the United Kingdom). With respect to provisions regulating the use of temporary contracts, there has been a tendency to liberalise rules. As these measures have generally not been accompanied by similar reforms with respect to permanent contracts, this has often been associated with an increase in labour market segmentation. In the context of the global financial crisis, these reforms raise important questions about their implications for the strength of the unemployment response to the decline in aggregate demand and the way the burden of adjustment is being shared across the workforce. Since 1995, many OECD governments have enacted reforms that seek to expand the flexibility of employers in terms of working hours and to respond to demands of workers for more flexible working-time arrangements to enhance work-life balances (OECD, 2006). Measures that increase the flexibility of employers to adjust working hours relate to hours averaging, the use of overtime, and time-saving accounts. These regulatory changes may account for the relatively large adjustment of working time during the recession and the relatively weak response of unemployment to the decline in aggregate demand.

Similar to employment and working-time regulations, wage-setting institutions play an important role in determining the ability of firms to adjust their labour inputs in response to economic shocks. The importance and nature of collective bargaining is particularly relevant in this respect. In the large majority of OECD countries, the importance of collective bargaining, as measured by collective bargaining coverage, has declined since 1995 (cf. Chapter 3). This was driven by different factors in different countries, including: declining union density; the reduced role of automatic extensions of collective agreements to firms not represented by trade unions; and the greater use of opt-out clauses from collective agreements. An important indicator of the nature of collective bargaining is the degree of centralisation of wage bargaining (i.e. at level of firm, industry or country) and the degree of co-ordination. While major changes in the nature of collective bargaining have been fairly rare, there has been a tendency towards more decentralisation and less co-ordination, particularly in countries with high levels of centralisation and co-ordination. To the extent that changes in the importance and nature of collective bargaining have increased wage flexibility for firms, this may have contributed to limiting the rise in unemployment during the crisis. However, it is important to emphasize that collective bargaining arrangements do not just affect wage-setting, but also can have important implications for employment and hours flexibility. This may be particularly relevant in the context of an economic crisis during which trade unions may be more concerned with maintaining employment levels than usual.

* However, the recent economic downturn and sluggish recovery presents a major challenge to the activation strategies of many OECD countries as the sharp decline in the number of job vacancies and the rise in the number of job seekers threatens to undermine their effectiveness.
... with potentially important implications for structural labour market outcomes...

To the extent that the reforms in policies and institutions discussed above have strengthened work incentives and increased the adaptability of firms, these reforms are likely to have resulted in better employment outcomes. In order to get a first idea of the potential role of these reforms for structural labour market outcomes, Figure 2.6 presents the unemployment rate in 2007, at the onset of the crisis, as well as its minimum and maximum values during the period 1995-2007. It shows that in the large majority of countries, the unemployment rate was at its lowest level in 2007. The main exceptions are Luxembourg and Portugal where unemployment was at its maximum level during the period or close to it. The strong labour market situation at the onset of the crisis is likely to reflect not just favourable macroeconomic conditions, but also the influence of structural reforms enacted during the previous 15 years. Indeed, recent empirical evidence from aggregate cross-country panel data suggest that a sizeable part of the decline in the structural rate of unemployment can be attributed to the reforms of policies and institutions (OECD, 2006; Bassanini and Duval, 2009; Murtin et al., 2011). This will be discussed in more detail in Section 2.

Figure 2.6. Harmonised unemployment rates in OECD countries, 1995 Q1-2007 Q4

Percentage of total labour force

Note: Countries are ordered in ascending order of the minimum of their respective harmonised unemployment rates over the period.
Source: OECD calculations based on OECD Main Economic Indicators Database.

... as well as labour market resilience

An important question in the context of this chapter is to what extent the structural reforms discussed above also have made OECD labour markets better able to withstand the downturn or to recover more quickly. While it is not easy to draw strong conclusions based on the existing evidence about the role of structural reforms during the past 15 years for labour market resilience, previous work by Bassanini and Duval (2006); Bassanini (2011); and De Serres and Murtin (2011) suggests that the implementation of activation strategies and reduced generosity of unemployment benefits are most likely to have reduced the overall impact of aggregate demand shocks on unemployment. Moreover, past reforms,
particularly those reducing the stringency of employment protection for temporary contracts, are likely to have changed cyclical dynamics by reinforcing the initial unemployment response to negative shocks but also strengthening the subsequent drop in unemployment during the recovery. There is less evidence with respect to the role of policies and institutions that affect the flexibility of working time and wages.  

2. Macroeconomic analysis of the role of structural policies and institutions for labour market resilience  

Good labour market performance entails having high structural levels of employment and good-quality jobs, while limiting excessive labour market volatility over the business cycle. This section provides a detailed analysis of the role of policies and institutions for both structural labour market outcomes and labour market resilience. The empirical analysis in this section makes use of an unbalanced panel of quarterly data for the period 1982 Q1 to 2007 Q4 for 18 OECD countries. In order to analyse the role of policies and institutions, the following variables are considered: employment protection for regular workers, the share of temporary workers in employment, the average replacement rate of unemployment benefits, the coverage rate of collective bargaining agreements and a measure for the degree of co-ordination in collective bargaining. This set of variables closely resembles those included in the baseline specification of the empirical work by Bassanini and Duval (2006, 2009) that was conducted in the context of the Reassessed OECD Jobs Strategy of 2006. For details on the composition of the sample and the definition of variables, see Annex Table 2.A2.1 of OECD (2012b).

The role of policies and institutions for structural labour market outcomes  

The Reassessed OECD Jobs Strategy of 2006 provided a comprehensive analysis of the role of policies and institutions for achieving high structural employment rates and low structural unemployment rates. This section provides some new evidence by means of regressions that model the labour market outcomes of interest as a function of a set of policy and institutional variables as well as the cyclical change in output to control for business-cycle conditions. The analysis contributes to the existing evidence in two different ways. First, it updates the analysis of structural employment and unemployment in OECD (2006) and Bassanini and Duval (2006, 2009) using more recent data in order to assess to what extent structural reforms in the fifteen-year period prior to the crisis had contributed to the favourable employment situation in many OECD countries at the onset of the global financial crisis (see Figure 2.6). This also serves as a useful reminder of the role of structural policies and institutions in the longer term when assessing the role of policies and institutions for the sensitivity of labour market outcomes to aggregate demand shocks in the next sub-section. Second, in addition to looking at structural unemployment and employment rates, the analysis also considers the role of policies and institutions for total earnings and earnings per worker. In doing so, the analysis goes beyond the role of policies and institutions for the number of jobs by touching on issues related to job quality. This is also consistent with the analysis of labour market resilience in this chapter which places particular emphasis on earnings and earnings inequality in addition to unemployment.
The incidence of temporary work is associated with weaker structural outcomes, while wage co-ordination tends to be associated with stronger ones

Figure 2.7 summarises the main results on the role of policies and institutions for structural unemployment based on two slightly different specifications. The first specification, reported in Panel A, makes use of approximately the same policy and institutional variables as were included in the baseline specification reported in OECD (2006) and Bassanini and Duval (2006, 2009). This specification, therefore, allows one to compare the present results with the earlier evidence. As extending the sample from 2002, the end of the sample used by Bassanini and Duval (2006, 2009), to 2007 only has a limited impact on the overall composition of the sample, it is not surprising that the results are qualitatively similar. The tax wedge, the average replacement rate and the coverage rate of collective bargaining agreements are found to increase the structural rate of unemployment, while the degree of wage co-ordination in collective bargaining is found to reduce it. Employment protection does not have a statistically significant impact. In the specification reported in Panel B, the overall index of employment protection is replaced by an index of employment protection for workers with permanent contracts as well as a separate variable for the incidence of temporary work. Differentiating between workers with permanent and temporary contracts in this way is useful for shedding additional light on job-quality issues and the implications of the rising incidence of temporary work for labour market resilience. The results suggest that employment protection for regular workers does not have a statistically significant impact on unemployment, while a standard-deviation increase in the incidence of temporary work increases the structural unemployment rate by over two percentage points. The results for the other variables are

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**Figure 2.7. The role of policies and institutions for the rate of structural unemployment**

Effect of a one standard-deviation change of the indicated institution on the rate of structural unemployment, percentage-point change

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***, **, *: Statistically significant at the 1%, 5% and 10% level, respectively.

Source: OECD estimates. For full details on the results, see Annex Table 2.A2.2 of this chapter available online only at www.oecd.org/employment/outlook.

StatLink  ☞ http://dx.doi.org/10.1787/888932651218
qualitatively similar to the results in Panel A, although the role of collective bargaining coverage and the tax wedge are no longer statistically significant.

The results presented above on the role of policies and institutions for structural unemployment need to be interpreted with caution. First, some of the results are sensitive to the specification used. For example, the statistically significant effect of the tax wedge and collective bargaining coverage in Panel A disappears when moving to a slightly different empirical specification in Panel B. Second, the simple linear specification used here does not take account of the possibility that the impact of a change in a given policy or institution for structural unemployment depends on its current stance. Indeed, the linear specification used above suggests, in principle, that the optimal stance of a given policy or institution with a statistically significant estimated coefficient is either zero or infinite, depending on its sign. The results are, therefore, best seen as indicative only of the impact of relatively small changes in policy settings. Third, the specifications used do not allow for the possibility that the role of a given policy or institution depends on the settings of other policies and institutions, including some outside the labour market such as the degree of product market competition or investment in human capital. Indeed, OECD (2006) emphasises the potential importance of policy complementarities. For example, generous unemployment benefits tend to increase aggregate unemployment in the average OECD country, but not in countries with extensive ALMPs (Bassanini and Duval, 2009). This suggests that requiring unemployed job seekers to actively search for a job or participate in ALMPs can offset the negative effects of unemployment benefits on the incentives to search for a job or accept a job offer. Another example is the potential of co-ordination to offset the negative effects of bargaining coverage on employment (OECD, 1997; Layard and Nickell, 1999). These examples clearly illustrate that the importance of building coherent policy packages that are consistent with low levels of structural unemployment rather than focusing on individual policies and institutions.

Figure 2.8 provides further insights on the role of policies and institutions for structural labour market outcomes by focusing on the proportional impact of a one standard-deviation change in policies or institutions on trend labour income, employment and earnings per worker. As the sum of the implied percentage change in employment and earnings per worker equals the percentage change in total labour income, the discussion concentrates largely on the results for employment and earnings per worker. Collective-bargaining coverage and the average UB replacement rate reduce employment, but increase earnings per worker, although the latter effect is only statistically significant for collective-bargaining coverage. This may reflect the possibility that workers use their bargaining power to negotiate higher wages. The negative effect of the replacement rate on employment could reflect the role of unemployment benefits in reducing work incentives or alleviating liquidity constraints, which prevent workers from having to accept the first job offer they receive. However, the absence of a significant positive effect on earnings per worker may indicate that unemployment benefits do not have a major impact on raising the reservation wage (i.e. the wage for which benefit recipients are willing to work). The degree of co-ordination of collective bargaining is found to increase employment, without reducing earnings per worker, suggesting that co-ordination may help to internalise the potentially adverse effects of collective bargaining on employment. The incidence of temporary work is negatively correlated with employment, presumably because it increases frictional unemployment by increasing worker turnover, as well as
2. WHAT MAKES LABOUR MARKETS RESILIENT DURING RECESSIONS?

Earnings per worker, reflecting its negative impact on job quality. These findings also imply that the incidence of temporary work has a negative impact on total labour income.

Structural reforms account for a significant part of the change in structural labour market performance since the mid-1990s

As discussed in Section 1, many OECD countries have engaged in important structural reforms during the past 15 years. Previous work by Bassanini and Duval (2009) and Murtin et al. (2011) has shown that structural reforms have the potential to lower unemployment rates. Figure 2.9 relates actual changes in unemployment rates, employment and earnings per worker between 1995 and 2007 to the changes in those variables that may be attributed to changes in policies and institutions over the same period, based on the regression results reported in Figure 2.7, Panel B and Figure 2.8. The results indicate a significant positive relationship between actual and predicted changes for all three labour market outcome variables. This indicates that the changes in policies and institutions that took place in different countries during the past 15 years had a significant effect on labour market outcomes. The role of changes in policies and institutions, however, is not overwhelmingly positive. In about half of the countries in the sample, changes in policies and institutions are predicted to have had a favourable impact on labour market outcomes, while in the other half such changes may have made matters worse. Given the heterogeneity in the structural reforms documented in Figure 2.5, this finding is hardly surprising. Countries characterised by structural reforms that contributed to better labour market outcomes along all three dimensions are Australia, Denmark, Finland, Ireland, Norway, Spain, the United Kingdom and the United States.

The role of policies and institutions for labour market resilience

Using the same dataset as was used for the analysis of structural labour market performance, this sub-section analyses the role of policies and institutions for labour market resilience by focusing on the sensitivity of the unemployment rate, total earnings...
and earnings inequality with respect to output changes. To this end, a series of dynamic panel data models are estimated which specify the change in a given labour market outcome as a function of its first lag, the change in output, a set of policies and institutions and a set of interaction terms of the lagged dependent variables and the change in output with each policy or institution. The analysis focuses on three different aspects of labour market resilience, namely the medium-term impact of a 1% decline in aggregate demand on i) the unemployment rate; ii) total labour income; and iii) the inequality of earnings across labour force participants. Since the analysis takes output as given, it does not consider the role of policies and institutions for hysteresis. Box 2.3 provides details on the methodology, whilst Figure 2.10 presents the main results. It provides the following insights:

Box 2.3. Analysing labour market resilience at the macrolevel

In order to assess the degree of labour market resilience in OECD countries before the crisis, a series of dynamic panel data specifications are estimated using quarterly data for the pre-crisis period. The results are used to assess the impact of output shocks on the unemployment rate, log total earnings and earnings inequality. In each case, the focus is on the medium-term impact, defined as the average impact during the first four years after the shock in output, to capture the impact of output shocks on labour market outcomes over the course of a typical business cycle (usually considered to be three to five years).

Empirical model

In order to analyse the cross-country variation in the responsiveness of the labour market outcome of interest (y) with respect to changes in aggregate demand (x) that can be attributed to differences in labour market institutions and policies (z), the following dynamic panel data model is estimated:

\[ \Delta y_{it} = \alpha_0 + y_0 \Delta y_{it-1} + \sum_{Z=1}^{Z} \gamma_2 \Delta y_{it-1} (z_{it} - z) + \beta_0 \Delta x_{it} + \sum_{Z=1}^{Z} \beta_2 \Delta x_{it} (z_{it} - z) + \sum_{Z=1}^{Z} \delta_2 (z_{it} - z) + \eta_i + \epsilon_{it} \]
where institutions and policies are expressed as a deviation from the sample mean, \( \eta \) represents a full set of country dummies to control for country-specific trends and \( \varepsilon \) refers to an independent error term. The coefficient \( \beta_0 \) gives the average marginal effect of an output shock on the outcome variable of interest when policies and institutions are at their sample mean, while \( \gamma_0 \) gives the average level of persistence for the outcome variable of interest.

**Measuring the impact of aggregate demand shocks on unemployment and total earnings**

The medium-term impact of aggregate demand shocks on the unemployment rate and total earnings can be measured in net or in gross terms. The net impact, \( NB_{16} \), is defined as the cumulative impact of a 1% change in output on the variable of interest in terms of its difference during the first sixteen quarters since the shock:

\[
NB_{16} = \sum_{s=1}^{S=16} \beta_0 Y_0^{s-1} + \sum_{s=1}^{S=16} \sum_{z=1}^{Z} \beta_2 Y_2^{s-1} (z_i - z)
\]

where \( s \) refers to the number of quarters since the shock in output and \( z \) the set of policies and institutions. The cumulative impact of the difference gives the net effect in levels between \( t = t \) and \( t = t + 16 \). This measure, therefore, does not take account of dynamics over the interval. The gross impact, \( GB_{16} \), is defined as the average impact of a 1% change in output on the variable of interest in terms its level over the first sixteen quarters since the shock:

\[
GB_{16} = \sum_{s=1}^{S=16} \frac{(S-s)}{S} \beta_0 Y_0^{s-1} + \sum_{s=1}^{S=16} \sum_{z=1}^{Z} \frac{(S-s)}{S} \beta_2 Y_2^{s-1} (z_i - z)
\]

The gross elasticity captures not just the impact on the level of the variable of interest, but its impact during the entire interval. This measure, therefore, takes account of differences in dynamics and, as such, provides a useful metric for analysing the social cost associated with output shocks.

The medium-term impact is evaluated at: i) the average level of policies and institutions within each country to obtain the country-specific impact (Figure 2.10); ii) the average level of policies and institutions in the sample to get the average impact and the change in the average impact after increasing one policy or institution at a time by one standard-deviation (Figure 2.11).

**Measuring the sensitivity of earnings inequality to aggregate demand shocks**

Comparable time-series data that measure overall earnings inequality across labour force participants are not readily available. It is, therefore, not possible to estimate the same empirical model for earnings inequality as was done for the unemployment rate and log total earnings. The implications of output shocks for the distribution of earnings are, therefore, simulated using output elasticities of unemployment, employment and earnings per worker along with specific assumptions on the adjustment process. This is discussed in detail below.

A benchmark measure of overall earnings inequality was constructed first. This can be done either using micro or macrodata. While microeconomic data yield more precise inequality estimates, these are only available for a subset of the countries considered here. As the interest here is not to report inequality measures, but merely to illustrate how differences in the adjustment process can affect the overall distribution of earnings, inequality measures were constructed based on aggregate data. More specifically, data on earnings by decile for employed workers were used to calculate approximate Gini indices of earnings inequality among those in work. Using data on unemployment rates, these Gini indices were then converted into overall indices that measure the degree of earnings inequality across all labour force participants, following Atkinson and Brandolini (2006).
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Policies and institutions account for substantial cross-country differences in labour market resilience

- The implied medium-term impact of a 1% decline in GDP on the unemployment rate gives an indication of the duration-adjusted impact of output shocks on the unemployment rate by taking account of both amplification/mitigation effects, i.e. the contemporaneous response of unemployment to output shocks, and persistence effects, i.e. the speed of adjustment towards its long-term trend (Panel A). The estimated average medium-term impact of a 1% decline in GDP on unemployment is somewhat below 0.5. However, there is considerable variation across countries, with the unemployment impact being almost four times as large in the country where it has traditionally been the largest (e.g. Spain) as in the country where it has been the smallest (e.g. Japan).

- The average medium-term impact of a 1% decline in GDP on total earnings to output shocks (Panel B) captures the combined impact of shocks on employment and earnings per worker. The results indicate that the medium-term impact is generally between –1 and –0.5, except in Portugal, where it is about –1.3, reflecting the traditionally high degree of wage flexibility in that country and in Belgium where it is about –0.4, implying that both employment and earnings per worker are relatively insensitive to changes in the business cycle. Differences in the cross-country ranking compared with Panel A, reflect cross-country differences in the importance of the sensitivity of earnings per worker to output shocks (e.g. average hours and hourly wages) and labour force participation.

- The implications of a 1% decline in GDP on earnings inequality are simulated by making a number of specific assumptions on the adjustment process in relation to the earnings distribution and assuming that unemployed workers receive unemployment benefits (see Box 2.3). The results indicate that a decline in output increases earnings inequality in countries where the employment impact dominates, but that it decreases it in countries where the earnings per worker effect dominates. Given the estimated output elasticities, the employment effect is stronger, the lower the generosity of unemployment benefits.

Pervasive temporary work and generous UB benefits have a tendency to reduce labour market resilience, while co-ordination in collective bargaining may improve it

The cross-country variation in the different aspects of labour market resilience in Figure 2.10 is entirely driven by differences in institutional settings. Figure 2.11 provides an
2. WHAT MAKES LABOUR MARKETS RESILIENT DURING RECESSIONS?

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indication of the role of specific policies and institutions for each aspect of labour market resilience.48

- Employment protection for regular workers does not appear to have major implications for market resilience. If anything, it mitigates the adverse medium-term impact of a 1% decline in GDP on unemployment and earnings inequality and reinforces that on total earnings. While it may have a weak tendency to reduce the sensitivity of unemployment and employment to output shocks (not statistically significant), it does increase the sensitivity of earnings per worker to output shocks, which may indicate that firms adjust more on hours and wages if the cost of making employment adjustments increases. However, the direct effect of employment protection on the sensitivity of different labour market outcomes may not reveal the whole story since it could also have indirect effects by promoting the use of temporary contracts (see below).

- The share of temporary workers may reflect the role of regulations with respect to the use of temporary contracts, but also the stringency of employment protection with respect to regular workers as this affects incentives for the use of temporary contracts (Blanchard and Landier, 2002; Boeri, 2011; Cahuc et al., 2012).49 An increase in the share of temporary workers reinforces the adverse impact of a 1% decline in GDP on unemployment and earnings inequality in the medium-term (the latter effect is due to the positive role of temporary work for the output elasticity of employment). It does not affect the sensitivity of total labour income since its tendency to increase the sensitivity of employment is partially offset by a reduction in the sensitivity of earnings per worker.

- The tax wedge has no impact on any of the aspects of labour market resilience considered here. However, it does have important implications for the time profile of the labour-market response to shocks by reducing the contemporaneous sensitivity of earnings and employment to output shocks, while increasing their persistence (not reported).

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Figure 2.10. Aspects of labour market resilience by country
Implied average impact over first sixteen quarters of a 1% decline in real GDP

<table>
<thead>
<tr>
<th>Country</th>
<th>A. Unemployment rate</th>
<th>B. Total earnings</th>
<th>C. Earnings inequality</th>
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<td>JPN</td>
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Note: Countries ordered by ascending order of the implied percentage change in the unemployment rates.
Source: OECD estimates. See Box 2.3 and Annex Table 2.A2.3 of this chapter available online only at www.oecd.org/employment/outlook.
StatLink | http://dx.doi.org/10.1787/888932651275
2. WHAT MAKES LABOUR MARKETS RESILIENT DURING RECESSIONS?

The average unemployment benefit replacement rate reduces labour market resilience in terms of total earnings (i.e. all else equal, a higher rate is associated with a larger decline in earnings in response to a negative output shock) and earnings inequality (but this effect is small). This is due to the positive impact of the average replacement rate on employment persistence (and therefore total earnings persistence). This probably reflects the role of unemployment benefits for job-search intensity or reservation wages. However, these effects are small.

Collective-bargaining coverage does not have an impact on any of the three measures of labour market resilience. However, there is some evidence that it affects the time profile of the inequality response by increasing the sensitivity of employment to contemporaneous shocks and by reducing employment persistence.

The degree of wage co-ordination in collective bargaining plays a positive role for all three aspects of labour market resilience. In all three cases, this reflects the role of wage co-ordination for employment. It reduces the direct impact of output shocks on employment, but increases persistence somewhat. As the direct effect dominates the persistence effect, its effect is positive for all three measures of labour market resilience considered here. This suggests that wage co-ordination can help to preserve jobs in the context of negative output shocks either by increasing the ability of firms to hoard workers or by enhancing the flexibility of wages. As the estimates do not suggest an impact of co-ordination on the sensitivity of earnings per worker, it is most likely to reflect an increased ability to hoard.

To what extent can the dynamic panel data model be used to predict the evolution of the unemployment rate and earnings across countries beyond 2007 Q4? A first indication can be obtained by comparing the actual average impact for each labour market outcome between 2007 Q4 and 2011 Q4 with the out-of-sample predicted average impact from the empirical model based on data up to 2007 Q4 (Figure 2.12). The correlations between the actual and predicted impacts are positive and statistically significant for both the...
unemployment rate and total earnings. For most OECD countries that experienced an average increase in the unemployment rate in the four years since 2007 Q4, the model has a tendency to over-predict the actual average increase in the unemployment rate, suggesting that the actual increase in unemployment relative to the evolution of output was smaller than might have been expected on the basis of historical patterns (for countries located above the 45 degree line). However, the empirical model substantially under-predicts the unemployment impact in Spain and Ireland and to a lesser extent also in the United States. In terms of earnings, the pattern is broadly similar. The actual earnings impact during the four years since 2007 Q4 tended to be more positive/less negative in most OECD countries, providing further evidence that the social costs of the global financial crisis may have been smaller than what might have been expected on the basis of historical patterns. Australia, Belgium, Ireland, the Netherlands and the United States are the main exceptions, with the actual change in earnings being less positive than predicted for Australia and the Netherlands and more negative for Ireland and the United States.

While the dynamic panel data models allow one to explain a considerable part of the cross-country variation in labour market adjustment patterns, the presence of substantial forecast errors for some countries raises the question of what, apart from the evolution of output during the crisis and structural policy settings before the crisis, accounts for the break from historical experience. Three key factors are discussed below:

● The analysis does not take account of all the policy and institutional changes that have taken place during the period before the global financial crisis, even though these changes may have had important implications for labour market resilience (see Section 1). One important development that is not captured by the analysis relates to the progressive implementation of activation strategies in many OECD countries. This is not only likely to have contributed to achieving record-low unemployment rates at the onset of the crisis, but is also likely to have helped job losers get back into work more quickly during the crisis than otherwise would have been the case. This may be particularly relevant in explaining forecast errors for countries such as Germany, Sweden and the United Kingdom. The reason for not directly accounting for ALMPs in the analysis is that measures of the intensity of ALMPs tend to be very sensitive to the business cycle. Other important policy and institutional developments that are not accounted for in the present analysis, but may be important for labour market resilience, relate to reforms that have increased the flexibility of working hours and wages.

● The analysis also does not take account of policy developments since the start of the global financial crisis. The crisis and the subsequent need for fiscal consolidation have acted as important catalysts for structural reforms, particularly in countries where reforms were most needed. Major structural reforms have been undertaken with respect to most areas of labour market policy. For example, employment protection for workers on open-ended contracts has been reduced in Greece, Portugal and Spain. Collective bargaining has been decentralised in countries such as Italy, Finland and Spain, by giving more room to firms opt out of collective agreements or enter into firm-level agreements. Moreover, the large majority of OECD countries has implemented one or several temporary measures in response to the crisis in an effort to mitigate its social cost (OECD, 2009, 2010, 2011). Policy measures that were widely shared across countries and are likely to have contributed to labour market resilience include the allocation of
additional resources for job-search assistance and expanding short-time work schemes or establishing new ones. The role of short-time work in preserving jobs has been particularly important in countries such as Germany, Italy and Japan (Hijzen and Venn, 2010; OECD, 2012a).

- The macroeconomic analysis does not take account of differences in the distribution of shocks across firms or differences in the composition of firms. To the extent that firms differ in the way they adjust to shocks, cross-country differences in labour market adjustment may not just stem from differences in institutional settings, but also from differences in the distribution of shocks across firms and the composition of firms across countries. For example, in Germany and Japan, the bulk of the decline in output demand during the crisis was concentrated in manufacturing, whereas the construction sector was hit particularly hard in countries such as the Ireland, Spain and the US. Since firm-specific human capital tends to be less important in construction than in manufacturing, construction firms tend to adjust their labour inputs more quickly in response to falling output demand. As a result, cross-country differences in the distribution of demand shocks may account for some of the observed differences in aggregate labour-market adjustment patterns across counties.54 Given the specific nature of the crisis in the three countries for which large forecast errors were observed, this may indeed be an important part of the story. This is analysed in detail in Section 3.

Figure 2.12. Comparing the actual and predicted evolution in unemployment and earnings across countries

Predicted and actual average change of the variable of interest between 2007 Q4 and 2011 Q4

A. Unemployment rate
   Percentage-points change

B. Total earnings
   Percentage change

**, *: Statistically significant at the 5% and 10% level, respectively.
Source: OECD estimates.
**The role of policies and institutions for good overall labour market performance**

Countries with lower unemployment rates before the crisis also tended to experience smaller increases in unemployment during economic downturns

A key question is to what extent policies and institutions that are conducive to good structural labour market outcomes are also good for labour market resilience. While this is a complex question, a natural starting point to address it is to relate structural labour market outcomes before the crisis to the evolution of labour market outcomes during the crisis and the recovery. This is done in Figure 2.13, which relates the average unemployment rate between 1995 and 2007, i.e. a simple measure of the structural unemployment rate, to the sensitivity (elasticity) of the unemployment rate to output shocks, i.e. the implied medium-term impact on unemployment following a 1% decline in GDP. These medium-term elasticities are used rather than the actual evolution of unemployment since they control for differences in the size of the decline in aggregate demand. The main insight from Figure 2.13 is that countries that had low structural unemployment rates during the period 1995-2007 also appear to have had relatively resilient labour markets measured in terms of unemployment. This is reflected by the large and significant positive correlation between the two measures in Figure 2.13.\(^{55}\) This may indicate that policies and institutions that are conducive for good structural labour market outcomes are also good for labour market resilience.

**Figure 2.13. Achieving good labour market performance over the course of the business cycle**

A comparison of structural unemployment outcomes and labour market resilience (measured in terms of unemployment)

![Graph showing correlation between structural unemployment rate and average unemployment impact of output shock.](http://dx.doi.org/10.1787/888932651332)

\(^{***}\): Statistically significant at the 1% level.

Note: Structural unemployment rates are calculated by adjusting the unemployment rate for the state of the business cycle. The average unemployment impact of an output shock is calculated as in Figure 2.10. See Box 2.3 for details.

Source: OECD estimates.
Apart from looking at the correlation between structural and cyclical unemployment outcomes, one may also use Figure 2.13 to identify different country groupings. With the help of cluster analysis, five different groups were identified. A first group of countries, consisting of Austria, Japan, the Netherlands and Norway, performs well in terms of both structural outcomes and labour market resilience. A second group of countries combines low structural unemployment levels with moderate levels of volatility. This group of countries consists of Denmark, the United Kingdom and the United States, all economies with high level of labour market flexibility. The third group of countries combines labour market resilience with moderate levels of structural labour market outcomes. This group consists of a rather diverse set of countries, including Australia, Ireland, Portugal and Sweden. The fourth group of countries tends to have similar levels of resilience as groups two and three, but higher structural levels of unemployment. This group includes Belgium, Canada, France, Italy, Germany and Finland. Spain stands out from the other groups with both relatively high levels of structural unemployment and low levels of labour market resilience. While the precise definition of the country groupings should only be considered as suggestive as the classification is sensitive to the definition of structural and cyclical labour-market performance, as well as the statistical implementation of cluster analysis, the contrast between groups two and three suggests there may be potentially interesting policy trade-offs between structural performance and labour market resilience.

3. Microeconomic analysis of the role of structural policies and institutions for labour market resilience

This section provides a more detailed analysis of the role of policies and institutions for labour market resilience by making use of comparable firm-level data for 19 OECD countries for the period 1993 to 2009. The main objective of the analysis is to assess the role of institutions and policies in moderating the impact of the crisis on labour market outcomes, while allowing for differences in the distribution of shocks and economic structure across countries. The analysis proceeds in three steps. First, a detailed account is given of: cross-country differences in economic structure (labelled “structure heterogeneity” and measured by labour-shares); the distribution of output shocks across different types of firms (labelled “shock heterogeneity” and measured by the output growth rate of each firm type); and the responsiveness of labour inputs to output shocks (labelled “response heterogeneity” and measured by the output elasticity of each firm type). Variance-decomposition methods are used to assess the relative contribution of each source of heterogeneity in explaining the cross-country variation in aggregate labour-market outcomes between 2008 and 2009. The share of the cross-country variation that may be attributed to response heterogeneity is interpreted as an upper bound on the potential role of policies and institutions. Second, the role of specific policies and institutions for response heterogeneity is analysed by relating cross-country differences in the responsiveness of labour inputs to output shocks to differences in institutional settings, while controlling for shock and structure heterogeneity. The analysis considers employment protection, the incidence of temporary work and collective wage bargaining. Third, using micro-simulation methods, the implications of the way firms adjust in response to shocks for different dimensions of worker welfare are assessed, consistent with the welfare perspective on labour market resilience adopted in this chapter. The analysis considers two dimensions of worker welfare: average household income and
income inequality. Income effects are calculated both in market and net terms, i.e. before and after taking account of taxes and benefits.

**The relative importance of structure, shock and response heterogeneity for labour input adjustment**

Within-country heterogeneity is captured by stratifying the dataset along two key dimensions: *firm size* (small, medium-sized, and large) and *industry* (construction, manufacturing and services).\(^59\) While the use of these groups may ignore some differences in labour adjustment across firms within cells, the use of a coarse cell structure makes it easier to highlight the main messages of the descriptive analysis. For the econometric analysis of policies and institutions, which is presented in the next sub-section, more detailed size and industry classes will be used. Before discussing the results from the decomposition, the degree of cross-country heterogeneity along each of the three dimensions is documented.

**Differences in labour-input adjustment reflect a combination of structure, shock and response heterogeneity**

Figure 2.14 provides a brief account of the importance of differences in economic structure across countries in terms of the size and industry of firms in 2008.

- **Firm size** (Panel A). Small firms with less than 20 employees accounted for over half of the overall level of employment in countries such as Italy and Portugal, whereas small firms accounted for less than one third of employment in Denmark, Finland, Germany and the United Kingdom. By contrast, large firms, defined as firms with more than 250 employees, accounted for less than 20% of employment in Italy and Portugal, while they accounted for about 40% of employment in Finland, France, Germany and the United Kingdom.

- **Industries** (Panel B). In 2008, construction accounted for more than 15% of employment in Estonia, Portugal and Spain, countries where the unemployment impact of the crisis tended to be relatively strong, while it accounted for less than 10% in countries such as Belgium, Germany and the Netherlands, countries in which the unemployment impact was relatively small. Manufacturing accounted for over one-third of employment in Central and Eastern European countries (CEECs), about 30% in Finland, Germany and Italy, and less than 20% in the Netherlands, Norway, the United Kingdom and the United States. Services accounted for over 70% of employment in the Netherlands, the United Kingdom and the United States, while it accounted for just over one-half of employment in CEECs.

Figure 2.15 documents the degree of shock heterogeneity by focusing on the decline in output demand between 2008 and 2009 across size groups, industries and countries. Since cross-country differences in the decline of GDP during the global financial crisis were already discussed in Section 1, the discussion here concentrates on differences in the distribution of shocks between different types of firms within countries.\(^60\)

- **Firm size** (Panel A). In the majority of countries, medium-sized firms were disproportionately affected by the decline in output. In a few countries, including in Germany, Hungary and Sweden, the decline in output was concentrated among large firms. This is consistent with other evidence for Germany that negative output shocks were concentrated on large exporting firms (Möller, 2010). Small firms were the least affected in the large majority of countries.
Industry (Panel B). In the large majority of countries, manufacturing was most affected by the crisis. The bias towards manufacturing is particularly striking in Germany, where output declined by almost 20% in manufacturing, but less than 5% in any of the other sectors. Other countries in which the output decline in manufacturing was at least twice as important as in any of the other sectors include France, Hungary, Italy, Spain and Sweden. In a few countries, the output decline was concentrated in construction, including in Estonia, Portugal and the United States, all countries with an above-average unemployment response to the crisis.
Figure 2.15. **Differences in output shocks across countries, industries and firm size groups (“shock heterogeneity”)**
Percentage change in real output, 2008-09

A. Cross-country differences in output shocks across size groups

B. Cross-country differences in output shocks across industries


StatLink: [http://dx.doi.org/10.1787/888932651370](http://dx.doi.org/10.1787/888932651370)

Figure 2.16 documents the responsiveness of labour input to output shocks in terms of the elasticities of employment and earnings per worker to output across countries, industries and firm-size groups.61

- **Countries** (Panel A). On average across countries, the elasticities of employment and earnings per worker are fairly similar, with the sensitivity of employment to output shocks being slightly larger than that of earnings per worker (first column on the right). This implies that, at least in terms of cross-country averages, contemporaneous adjustments on the extensive (e.g. employment) and intensive margin (e.g. average hours worked and wages) to output shocks account for an approximately equal share of total labour-cost adjustment. However, there is considerable heterogeneity in the
responsiveness of labour inputs across countries, with a significant negative correlation between the output elasticities of employment and earnings per worker. This implies that firms that adjust jobs more readily tend to adjust less on the intensive margin. The contemporaneous output elasticity of employment is highest in countries such as Denmark and the United States, while it is lowest in CEECs and Japan. The earnings per worker elasticity is highest in Hungary, Japan and Poland, while it is lowest in Italy, Portugal and Spain.

- **Industries** (Panel B). The responsiveness of employment to output is highest in construction and lowest in manufacturing, while the responsiveness of earnings per worker is highest in manufacturing and lowest in construction. The differences in
estimated elasticities are quantitatively large, with the employment (earnings per worker) elasticity in construction being about twice as large (small) as that in manufacturing. These differences are likely to reflect the different nature of production technologies in terms of the importance of firm-specific human capital (e.g., manufacturing) and seasonal flexibility (construction), resulting in potentially large differences in the skill composition of the workforce and the incidence of non-standard contracts.

- Firm-size groups (Panel B). Differences in the responsiveness of labour inputs across size groups are less pronounced than those across industries. According to the figure, the output sensitivity of both employment and earnings per worker increases with firm size. This is at odds with the traditional view that employment in small firms is more sensitive to output shocks than employment in large firms, because the former find it more difficult to hoard labour during periods of weak product demand due to financial constraints (Sharpe, 1994). This argument predicts that the sensitivity of both employment and earnings per worker to output should decline with size. However, the traditional view that small firms hoard less during a downturn has recently been challenged by Moscarini and Postel-Vinay (2011). They argue that large firms have weaker incentives to retain workers during a downturn since they tend to be more productive and offer higher wages and, as a result, find it easier to recruit new workers during a recovery. This argument is, in principle, consistent with the positive relationship between the sensitivity of employment and firm size, but does not explain the positive relationship between earnings per worker and firm size.

The above analysis documents important differences across countries in the composition of firms, the distribution of shocks and the responsiveness of labour inputs across firms. This suggests that accounting for structure and shock heterogeneity may be important for understanding the aggregate labour market impact of the global financial crisis.

The role of policies and institutions in explaining cross-country differences in the impact of the crisis on labour markets is potentially large

In order to examine the role of structure, shock and response heterogeneity for the way in which labour markets have been impacted by the global financial crisis, the cross-country variation in aggregate labour-market dynamics between 2008 and 2009 is decomposed into components that can be attributed to the different sources of heterogeneity. For each source of heterogeneity, its contribution to the overall variance is calculated both without and with interaction effects. The contribution of one source of heterogeneity without interaction effects is assessed by focusing on the variance that remains after “switching” off the two other sources of heterogeneity. For example, in the case of response heterogeneity, this involves calculating how much of the cross-country variance is explained once shocks and employment shares are set to their average values across countries. The advantage of measuring the contribution of a specific source of heterogeneity in this particular way is that it can be attributed exclusively to a single source. However, the drawback of not taking account of the role of interaction effects is that a potentially important share of the cross-country variation is left unexplained. The contribution of one source of heterogeneity with interaction effects is obtained by assessing its contribution to the overall variance without switching off the two other sources of heterogeneity. For example, in the case of response heterogeneity, its
contribution for the overall variance is calculated using actual values for shocks and employment shares. The drawback of this measure is that the interaction effects cannot be attributed to a single source of heterogeneity.\(^{66}\) The importance of the interaction terms gives an indication of the value-added of using disaggregate information for explaining aggregate labour market dynamics.\(^{67}\)

The results from the decompositions are presented in Figure 2.17. Response heterogeneity appears to be the most important factor in explaining the cross-country variation in the change of employment and earnings per worker during the crisis. It explains about 50% of the cross-country variation in employment and 20% of the variation in earnings per worker when the role of interaction effects is ignored. After allowing for interaction effects, its contribution goes up to over 80% of the cross-country variation in both employment and earnings per worker changes. Shock heterogeneity without interaction effects explains less than 10% of the cross-country variation in employment and hardly anything of the variation in earnings per worker. When taking account of interaction effects, shock heterogeneity accounts for 50% of the cross-country variation in employment and almost 70% of that in earnings per worker. The role of structure heterogeneity is negligible irrespective of whether interaction effects are accounted for or not. The results provide two key insights. First, the relative importance of response heterogeneity suggests that differences in policies and institutions across countries account for a potentially large part of the cross-country variation in aggregate labour dynamics during the crisis. Second, using disaggregate information can greatly enhance one’s ability to explain differences in aggregate labour market dynamics. This is neatly illustrated by the share of the cross-country variance that can be attributed to the role of interaction effects across different dimensions of heterogeneity.

Figure 2.17. **Decomposition of cross-country variation in labour market adjustment during the crisis, 2008-09**

![Graph showing decomposition of cross-country variation in labour market adjustment during the crisis, 2008-09](image)


StatLink: [http://dx.doi.org/10.1787/888932651408](http://dx.doi.org/10.1787/888932651408)
The role of policies and institutions for the labour-input adjustment behaviour of firms

This sub-section analyses how employment protection, the incidence of temporary work and collective wage bargaining (CWB) impact on the way firms adjust their labour inputs in response to output shocks. A major challenge when trying to identify the role of policies and institutions for the labour-input adjustment behaviour of firms is that institutions are typically defined at the country level and that the cross-country variation in one institution is often correlated with that of other institutions. This makes it difficult to isolate the role of a single institution using the cross-country variation in the data. The present analysis focuses, therefore, instead on the within-country variation in the data. In the case of employment protection, this is achieved by focusing on the role of exemptions from national settings for small firms. In the case of temporary work and collective wage bargaining, this is achieved by comparing its incidence/coverage rate across different groups of firms. A two-stage approach is adopted to assess the role of policies and institutions for the labour-input adjustment behaviour of firms. In the first stage, the elasticities of employment and earnings per worker with respect to output are estimated using firm-level information for each country and cell. The cell structure is defined separately for each set of institutional variables in order to maximise the within-country variation in the data on institutions. The purpose of the second stage is to quantify the role of selected policies and institutions for the output elasticity of employment and earnings per worker. See Box 2.4 for further details.

Box 2.4. Assessing the role of policies and institutions for the way firms adjust their labour inputs in response to shocks

First-stage estimates of the elasticity of employment and earnings per worker with respect to output

To estimate the elasticity of labour input with respect to output, the following dynamic equation was estimated:

\[ l_{it} = y_{it-1} + \beta y_{it} + \eta_i + \epsilon_{it} \]

where \( l_{it} \) denotes the log-level of labour input (employment or earnings per worker) in firm \( i \) in year \( t \), \( y_{it} \) denotes the log-level of output in firm \( i \) in year \( t \), \( \eta_i \) denotes firm-fixed effects and \( \epsilon_{it} \) denotes an error term. Both labour inputs and output are expressed in logs. The empirical model is consistent with a model with quadratic adjustment costs for employment. The elasticities \( \beta \) are estimated separately for each industry and firm size combination within a country. The industry and firm size classification is determined by the variation in the institution of interest. This implicitly involves assuming that elasticities are homogeneous within cells. Estimations are conducted using Difference GMM to account for the endogeneity of output and lagged labour inputs (Arellano and Bond, 1991).

Second-stage estimates of the role of employment protection (EP) for labour input adjustment

To estimate the effect of EP on the responsiveness of employment and earnings per worker to output shocks, the following regression was run:

\[ \beta_{kjs} = \alpha_1 EPR_{ks} + \alpha_2 EPC_{ks} + \mu_k + \eta_j + \omega_s + \epsilon_{kjs} \]

where \( \beta_{kjs} \) denotes the first-stage estimates of the employment and earnings per worker elasticities by country \( k \), industry \( j \) and firm size \( s \). \( EPR_{ks} \) denotes the stringency of employment protection provisions with respect to individual dismissals of regular workers and \( EPC_{ks} \) denotes the stringency of provisions with respect to collective dismissals. The variables \( \mu_k \), \( \eta_j \) and \( \omega_s \) control for country- industry- and firm-size
Employment protection reduces the sensitivity of employment to output shocks, but increases that of earnings per worker

The majority of OECD countries exempt small firms from some or all country-wide employment protection requirements. The analysis here exploits the resulting...
within-country variation to examine the role of employment-protection provisions with respect to individual and collective dismissals for the responsiveness of labour inputs to output shocks.\textsuperscript{71} In order to ensure that the results only relate to exemptions with respect to employment-protection provisions and not other differences in adjustment behaviour that may be related to firm size, the analysis incorporates countries without firm-size exemptions to capture the independent effect of firm size.\textsuperscript{72} The results are reported in Figure 2.18. They indicate that provisions with respect to individual dismissals have a tendency to reduce the output elasticity of employment, while they appear to increase the sensitivity of earnings per worker to output shocks. Collective dismissal provisions have no detectable effect on the labour input adjustment behaviour of firms. A one standard-deviation increase in the stringency of individual dismissal provisions, which roughly corresponds to an increase in the level of employment protection from Japan to France, would result in a 3 percentage-point reduction in the responsiveness of employment to output shocks and an 11 percentage-point increase in the responsiveness of earnings per worker to output shocks. These results suggest that more stringent employment-protection provisions for regular employees induce firms to adjust less on the extensive and more on the intensive margin.

Employment protection rules are also likely to have an important impact on the use of temporary contracts (Blanchard and Landier, 2002; Boeri, 2011; Cahuc et al., 2012). Employment protection provisions with respect to regular contracts increase incentives to make use of temporary contracts, while employment protection provisions with respect to temporary contracts regulate their use. In order to capture the impact of employment protection on the adjustment behaviour of firms that comes about through its impact on the incidence of temporary work, Panel B analyses the role of the incidence of temporary work for the adjustment behaviour of firms. It shows that, as one would expect, the employment sensitivity of temporary workers with respect to output shocks is substantially higher than that of regular workers. There is some indication that the increased sensitivity of employment reduces the sensitivity of earnings per worker in response to shocks. However, the difference in the sensitivity of earnings per worker to shocks between permanent and temporary workers is not statistically significant.

The impact of collective wage agreements on the labour-input adjustment behaviour of firms may depend on the broader institutional environment

The analysis of the role of collective wage bargaining agreements for the labour-input adjustment behaviour of firms takes account of both their pervasiveness by looking at the coverage rate of CWB agreements across firms within detailed cells (defined in terms of firm size and industry) as well as an important aspect of their nature by taking account of the predominant level of centralisation/decentralisation at which they are negotiated. More specifically, the analysis focuses on the role of CWB agreements that are negotiated at, respectively, the firm-level or higher levels of negotiation (i.e. industry or country). A key feature of the analysis is that it allows for differences in the role of bargaining across different groups of countries: a group of countries characterised by flexible labour markets, low levels of CWB coverage and a predominance of firm-level bargaining (Group 1: Estonia, Poland and the United Kingdom) and a group of countries that have less flexible labour markets, high levels of CWB coverage and a predominance of bargaining at the industry or country levels (Group 2: Belgium, France, Italy and Spain). The main justification for distinguishing between these two groups of countries is that the role of CWB coverage is
Figure 2.18. **The effect of employment protection on the responsiveness of employment and earnings per worker to output shocks**

Output elasticities of employment and earnings per worker

A. Employment protection

- Stringency of dismissal rules at sample average (individual and collective)
- One standard-deviation increase in stringency of individual-dismissal rules from sample average (EPR)
- One standard-deviation increase in stringency of collective-dismissal rules from sample average (EPC)

B. The incidence of temporary work

- Average output elasticity with incidence of temporary work at the sample average
- Output elasticities for permanent workers
- Output elasticities for temporary workers

*, **, ***: statistically significant at the 10%, 5% and 1% level, respectively.


likely to depend on its broader institutional context (Aidt and Tzannatos, 2008). For details on the methodology, see Box 2.4.

Figure 2.19 compares the average employment and earnings-per-worker elasticities that result when the coverage rates of firm and higher-level CWB agreements are set at their sample means with those that result when the coverage rates are increased, one-by-one, by one percentage point from their sample means. In general, the results suggest that more pervasive collective bargaining mitigates the effect of output shocks on employment in Group 2, but has either no effect or reinforces the impact of output shocks on employment in Group 1. The results with respect to earnings per worker are very weak. If anything, the results suggest that CWB coverage increases the responsiveness of earnings per worker to shocks in Group 2, while it reduces it in Group 1. However, the effects are small and generally statistically insignificant. The differences in the estimated impact of CWB coverage on the labour input adjustment behaviour of firms across the two groups of countries may indicate that its role depends on the broader institutional environment in which collective bargaining takes place. However, it may also reflect the role of specific features of the bargaining process that are not taken into account in the present analysis. Whether collective bargaining agreements are negotiated at the firm-level or at higher levels does not appear to matter in any of the two groups of countries.
The implications of the adjustment behaviour of firms for household income and its distribution

This sub-section uses detailed micro-level data on individual workers and households from EU-SILC to simulate the implications of the adjustment behaviour of firms in response to output shocks for different dimensions of worker welfare, consistent with the welfare perspective on labour market resilience adopted in the remainder of the chapter. The adjustment behaviour of firms in response to shocks is characterised by means of estimated output elasticities for employment and earnings per worker that vary by region, industry, firm size and type of contract. The implications of the adjustment behaviour of firms for workers are examined by computing the implied earnings change of a given output shock for each worker in EU-SILC, whilst making specific assumptions on the way employment and earnings per worker changes are distributed within cells. Following Bargain et al. (2011) and similar to the analysis in Section 2, it is assumed that employment changes are randomly distributed within cells and that earnings per worker changes are uniformly distributed across workers who remain employed within cells. After computing the implications of the adjustment responses by firms for individual earnings, one can also compute the implications for market household incomes (before taking account of taxes and benefits) and net household incomes (after taking account of taxes and benefits), which is more appropriate from a welfare perspective. The analysis focuses on two dimensions of worker welfare: average changes in household income and changes in income inequality. For simplicity, the analysis abstracts from differences in output demand. 


StatLink: http://dx.doi.org/10.1787/888932651446
shocks across countries and firms by assuming a uniform reduction in output demand for the market sector of 5%.81

The tax-benefit system plays a major role in mitigating the adverse impact of economic downturns on disposable income...

Figure 2.20 represents the simulated changes in average household income before and after taxes due to a uniform 5% reduction in aggregate demand. Cross-country differences in simulated market income changes are not easy to interpret as they reflect a multitude of factors including: the adjustment behaviour of firms in response to shocks; the employment rate (since it increases the fraction of households that is exposed to labour income shocks); the size of the public sector (this reduces the fraction of households exposed to labour income shocks because public-sector workers are assumed not to be affected by changes in aggregate demand); and household composition. In addition to the factors that affect market income changes, cross-country differences in net income changes also reflect differences in the role of the tax-benefit system across countries. The results indicate that market income declines following a 5% reduction in aggregate demand range from just over 1% in Belgium, Estonia and Spain to around 2% in the Nordic countries, the Netherlands and the United Kingdom, possibly reflecting the role of high employment rates. Similarly, simulated declines in net income range from 0.7% in Belgium to 1.4% in the United Kingdom. The tax-benefit system reduces the average impact of aggregate demand shocks on household income in all countries considered, reflecting their role as automatic stabilisers. The absorptive capacity of the tax-benefit system is smallest in Estonia, Spain and the United Kingdom (about 20%) and largest in Denmark, the Netherlands, Norway and Slovenia (40% or more).82

Figure 2.20. The simulated impact of economic downturns on household income

Implied impact of a 5% reduction in aggregate demand

Note: Countries shown in ascending order of the absolute change in net household income.
a) Absorptive capacity is defined as the change in market income minus the change in net income as a share of the change in market income.


StatLink:  http://dx.doi.org/10.1787/888932651465
... and income inequality

Figure 2.21 shows the simulated changes in household income inequality due to a 5% reduction in aggregate demand measured in terms of the Gini coefficient. The results are reported separately for changes in income inequality that derive from, respectively, changes in employment status of one or more of the household members (Panel A), changes in average earnings for those who remain employed in a household (Panel B), and changes in total labour earnings within a household (Panel C). Panel A shows that employment reductions in response to a decline in aggregate demand have a tendency to increase market income inequality, but that the tax-benefit system tends to mitigate the increase in income inequality. Panel B shows that the impact of average earnings adjustments for market income inequality tends to be relatively small and may be positive or negative. However, once the role of the tax-benefit system is taken into account, income inequality decreases as a result of earnings per worker adjustments. This most likely reflects the progressivity of the tax system in many OECD countries. Panel C shows that the joint impact of employment and average-earnings adjustments for income inequality tends to be positive due to the dominant role of employment changes for inequality. These results illustrate that the way firms adjust in response to shocks can have potentially important implications for the change in income inequality and, consequently, social welfare, particularly in countries where the role of the tax-benefit system in offsetting increases in income inequality is relatively limited. However, in most countries, a significant part of the rise in inequality is offset by the tax-benefit system.

The above analysis provides two main insights. First, the way firms adjust in response to output shocks can have important implications for average incomes and income inequality and, hence, aggregate worker welfare. Second, it underlines the importance of taking account of the tax-benefit system when assessing the role of economic downturns for worker welfare. In the countries considered here, the tax-benefit system absorbs 20 to 40% of the proportional reduction in household income and also tends to offset more than half of the increase in income inequality. Hence, the tax-benefit system substantially mitigates the social impact of recessions and acts as an important automatic stabiliser of aggregate demand.

An important issue is to what extent the present conclusions, and, particularly, the inequality impact of the way firms adjust in response to shocks, are genuine or driven by the specific modeling assumptions used. The analysis shows that when job losses are random within cells, this will have a tendency to increase income inequality, while earnings-per-worker reductions tend to have the opposite effect when these are distributed evenly within cells. This raises the questions whether the assumed patterns of employment and earnings-per-worker adjustments are realistic and whether with more realistic assumptions the same patterns would result. The descriptive statistics in Section 1 provide suggestive evidence that employment losses tend to be highly selective in practice, even in the context of a severe economic downturn, whereas working-time adjustments tend to be more evenly distributed. The ideal way to address this would be to estimate the labour adjustment responses of firms for more detailed groups of workers and firms. Unfortunately, this is not possible with the available data. Another possibility would be to assess the sensitivity of the results to alternative assumptions on the way the costs of adjustment are distributed within cells. For example, one might assume that job losses are purely selective in the sense that the lowest-earning workers are the first to lose their jobs in a recession. However, this is likely to reinforce the inequality impact of employment changes and, thus, would not change the qualitative results presented here.
Figure 2.21. **The simulated impact of economic downturns on household income inequality**

Implied impact of a 5% reduction in aggregate demand on income inequality (percentage-points of Gini index 0-100)

Note: Countries shown in ascending order of the overall induced change in net income inequality.


StatLink: [http://dx.doi.org/10.1787/888932651484](http://dx.doi.org/10.1787/888932651484)
Conclusions

One of the main insights that emerges from this chapter is that policies and institutions that are conducive to good structural labour market outcomes also tend to be good for labour market resilience. In general, it appears that countries with low levels of structural unemployment also tended to experience less of a cyclical increase as a result of the crisis. This finding implies that many of the recommendations in the Reassessed OECD Jobs Strategy of 2006 for achieving good structural labour market outcomes are also likely to contribute to labour market resilience.

Beyond suggesting that policy packages that are consistent with good structural labour market performance are also broadly consistent with labour market resilience, this chapter also sheds new light on the role of a number of specific structural policies and institutions. On the positive side, co-ordinated collective bargaining arrangements may be an important factor in achieving low structural unemployment rates, while mitigating the direct impact of shocks on employment and facilitating wage and/or working time adjustments. Improving our understanding of the way industrial relations can contribute to good labour market performance is an important avenue for further research. On the negative side, institutional settings that implicitly promote the use of temporary contracts, such as stringent employment protection provisions with respect to regular workers, are associated with weaker structural outcomes, possibly reflecting their impact on frictional unemployment and their negative impact on overall job quality. They also result in less labour market resilience by increasing both the unemployment response to output shocks and reinforcing cyclical increases in overall earnings inequality. Apart from affecting the incidence of temporary work, employment protection for regular workers does not appear to have much of a direct impact on most measures of structural labour market performance or labour market resilience that are considered in this chapter. If anything, it mitigates the impact of economic shocks on unemployment and earnings inequality by inducing firms to adjust more on the wage and working-time margins than on the employment margin.

The chapter also leaves a number of important issues for future work. First, the analysis does not take account of policy developments since the start of the global financial crisis. However, the large majority of OECD countries have implemented one or several temporary measures in response to the crisis in an effort to mitigate its social cost. Moreover, the crisis and the subsequent need for fiscal consolidation have acted as important catalysts for structural reforms, particularly in countries where reforms were most needed. It will be important to assess the role of these temporary measures for labour market resilience and monitor the role of structural labour market reforms for labour market performance in the longer term. Second, the chapter does not consider the potential impact of the crisis on labour market hysteresis, that is, the possibility that part of the cyclical increase in unemployment becomes structural. While this is unlikely to change the main conclusions of this chapter, this represents a highly important issue in the present context in which the recovery in aggregate demand remains rather weak in many OECD countries, raising the risk of hysteresis. As more recent data become available, the scope for analysing the risk of hysteresis as a result of the global financial crisis will increase.
2. WHAT MAKES LABOUR MARKETS RESILIENT DURING RECESSIONS?

Notes

1. This chapter is based on an EC-funded project on “The role of policies for labour market resilience” (VS2010/0617 – SI576449). In addition to considering the role of structural policies and institutions, this project also examines the role of active and passive policies, including short-time work schemes, over the business cycle. See OECD (2012a) for further details.

2. Given the welfare focus of the definition of labour market resilience adopted in this chapter, it is possible to draw several parallels with the more established literature on the welfare costs of business cycles. This literature is discussed in Box 2.1.

3. To the extent that social welfare may be related to the earnings/incomes of individuals, the present analysis may be consistent with various perspectives on social welfare. The implications of aggregate shocks for social welfare in the purely utilitarian tradition, where social welfare is defined as the simple sum of individual utilities, proxied by income, may be assessed by focusing on the implications of aggregate shocks for total earnings. The implications of shocks for social welfare à la Sen (defined as the product of average income and one minus the Gini coefficient), may be gauged by focusing on their consequences for average earnings and earnings inequality. The way inequality is measured in this chapter does not allow for a Rawlsian interpretation of social welfare (based on the poorest person in society), since this would require focusing specifically on the implications of shocks for the incomes of the poorest segment of the population, which is not done here.

4. Since the tax-benefit system helps to insure workers against negative earnings losses in many OECD countries, it would arguably be more appropriate to focus on net incomes, after taxes and benefits, rather than earnings. As suitable up-to-date data on net incomes are not available, the emphasis in this chapter will be on earnings. However, Section 3 assesses the implications of the adjustment behaviour of firms in response to shocks for the incomes of households before and after taking account of taxes and benefits. See also Venn (2011) for an analysis of the role of the tax-benefit system for moderating the impact of individual earnings changes on household disposable income in different OECD countries.

5. This represents a form of counter-cyclical inequality averseness, since greater earnings volatility among individuals at the bottom-end of the distribution gives rise to counter-cyclical earnings inequality, whereas greater volatility at the top-end gives rise to pro-cyclical earnings volatility.

6. The main difficulty is that one would have to allow for differences in the trend before and after economic shocks as well as the way policies and institutions affect the impact of shocks on the trend.

7. The microeconomic analysis in Section 3 only takes account of direct effects.

8. Country coverage in this sub-section was limited to countries with quarterly data on GDP, labour income and unemployment.

9. It does not take account of differences in the trend across countries. This is done in the econometric analysis of Section 2.

10. Appropriate up-to-date data on earnings or income inequality are not yet available.

11. Since earnings are closely related to wealth and, therefore, the ability of individuals to cope with economic shocks, the concentration of earnings losses in the bottom end of the earnings distribution can have important implications for consumption and worker welfare and raises potentially important questions about the effectiveness of the social safety net.

12. In countries where historically low unemployment rates at the onset of the crisis partly reflected bubbles in financial and housing markets, it may not be realistic to expect unemployment rates to return their pre-crisis levels. Nevertheless, the economic recovery to date has not been sufficiently strong to make more than a dent in the cyclical rise in unemployment in the majority of countries.

13. For country-specific details on the data used in this section and the definition of peaks and troughs, see Annex Table 2.A1.2 of OECD (2012b).

14. The correlation coefficient during the crisis is –0.8 and –0.4 during the recovery.

15. Deviations from the average relationship are likely to reflect cross-country differences in the evolution of labour force participation and earnings per worker.

16. The term quality-adjusted labour productivity is used as shorthand for hourly labour productivity divided by the wage bill. The ratio of hourly labour productivity to the wage bill represents a form of quality-adjusted labour productivity since it takes account of changes in the composition of the
2. WHAT MAKES LABOUR MARKETS RESILIENT DURING RECESSIONS?

workforce that affect hourly labour productivity. The ratio of hourly labour productivity to the wage bill also represents the inverse of the wage share in national income. Chapter 3 analyses the long-term evolution of the wage share before the crisis as well as its main determinants.

17. The change in the unemployment rate can be decomposed as follows:

$$\Delta U_{LF} \approx \Delta \log \frac{Y}{EHW} + \Delta \log \frac{EHW}{EH} + \Delta \log \frac{EH}{E} + \Delta \log LF - \Delta \log Y$$

where $U$ refers to the number of persons unemployed, $LF$ to the number of participants in the labour force, $E$ to the number of persons employed, $H$ to average hours worked and $W$ to the hourly wage. This decomposition can be derived by noting that

$$\frac{\Delta U_{LF}}{LF} = -\Delta \log \left(\frac{E}{1 - \frac{1}{LF}}\right) = -\Delta \log \left(\frac{E}{1 - \frac{1}{EHW\frac{EH}{E}}\frac{1}{LF}}\right) = \Delta \log \frac{1}{Y\frac{EHW\frac{EH}{E}}{LF}}.$$ 

It is straightforward to extend the decomposition to account for population changes, but for expositional purposes this was not done here.

18. The variance decomposition makes use of the fact that the variance of the change in unemployment rate across countries equals the sum of the covariance terms of each component with the change in unemployment rates. The contribution of each component is calculated as the covariance of this component over the variance of the unemployment rate. As the decomposition is based on a log approximation, but particularly, because the data for different indicators come from different sources (e.g. national-accounts and labour-force survey data), the sum of the components does not perfectly correspond to the variance of the change in the unemployment rate. The shares are normalised to net out the role of the residual.

19. See Daly et al. (2011) for an analysis of the relative importance of pure wage growth and composition effects for the evolution of median earnings in the United States over the business cycle.

20. This is also likely to capture hours reductions which do not translate into earnings reductions.

21. Part of this reflects the role of return migration following the steep jump in unemployment.

22. Turnover costs not only depend on firm-specific skills but also on the type of contract. More specifically, turnover costs for workers on temporary contracts tend to be much lower than those for workers on open-ended contracts. This is important in the present context since there is a high incidence of temporary contracts among low-paid workers.

23. Since appropriate data on wages by socio-economic group are not available, the decomposition focuses on total hours rather than total earnings.

24. The extent to which employment adjustments are concentrated on workers with temporary contracts is very sensitive to the choice of start and end points over which changes are calculated. This is due to the tendency of firms to lay off temporary workers first in a downturn but also to rehire them disproportionately early in the recovery. See Chapter 1 for further details on the evolution of employment by socio-economic groups.

25. Moreover, working hours appear to have stabilised or even started to recover, suggesting that the distributional implications of employment adjustment may not only be more negative, but also more persistent than those associated with average hours reductions.

26. For further details on the impact of the global financial crisis on income inequality, see Jenkins et al. (2010).

27. Gross replacement rates compare the level of benefits with the level of a person’s earnings before becoming unemployed, while net placement rates take into account taxes paid and other benefits received by the unemployed. Gross replacement rates are most relevant when documenting the key parameters of UB programmes, whereas net replacement rates are most relevant from a behavioural perspective. The econometric analysis uses net replacement rates to the extent possible. The evolution of gross replacement rates is used to extend the sample of net replacement rates backwards from 2001.

28. As discussed in Section 2, this set of variables closely resembles those included in the baseline specification of the empirical work by Bassanini and Duval (2006, 2009) that was conducted in the context of the Reassessed OECD Jobs Strategy of 2006.

29. In the case of Portugal, this is likely to reflect the gradual decline in international competitiveness since joining the euro.

30. Note, however that empirical studies of labour market resilience typically focus on the temporary labour market effects of cyclical shocks. They focus either directly on the cyclical component of the labour market outcome of interest or implicitly assume that labour market outcomes eventually
return to their long-term trend. As a result, these studies do not account for the possibility that cyclical shocks have permanent effects on the labour market, so-called “hysteresis” effects. While there are good reasons for limiting the scope of labour market resilience in these studies to the temporary effects of output shocks, the possibility of hysteresis also deserves attention, particularly in the context of a severe recession. Chapter 1 of this publication provides a tentative assessment of the extent to which the cyclical rise in unemployment has become structural.

31. “Unbalanced panel” in this case means that the time-series for each country do not span the same period. However, the data cover for each country at least the period 1995 Q4 to 2007 Q4.

32. The main reason for limiting the analysis to the pre-crisis period is that information beyond 2007 is not yet available for most of the institutional variables used in the analysis. Out-of-sample predictions are used to assess how labour market outcomes would have evolved had institutional settings remained at the 2007 values.

33. In addition, all regressions control for unobserved characteristics that are either constant over time or common across countries by means of country and time fixed effects.

34. Different from Bassanini and Duval (2006, 2009), the present analysis uses adjusted bargaining coverage instead of union density, the net replacement rate instead of the gross replacement rate and a categorical measure of wage co-ordination that allows for five different levels instead of a dichotomous indicator.

35. In principle, it would make sense to allow for a hump-shaped relationship between co-ordination and unemployment as suggested by Calmfors and Driffill (1988). They posit that both co-ordinated/centralised wage bargaining systems and unco-ordinated/decentralised wage bargaining systems can be consistent with good labour market outcomes, while intermediate systems are likely to perform less well. More co-ordinated/centralised systems may lead to better outcomes because such systems can facilitate internalising negative bargaining externalities with respect to employment. On the other hand, in the case of unco-ordinated bargaining at the firm level, competitive pressures from other firms in the same industry can provide strong incentives for wage moderation. The specific role of low co-ordination for labour market outcomes could not be assessed here due to the absence of sufficient variation in the low co-ordination variable over time. See Aidt and Tzannatos (2008) for an overview of the empirical evidence on the Calmfors-Driffill hypothesis.

36. The incidence of temporary work is used instead of the stringency of employment protection provisions with respect to temporary contracts because of concerns over the importance of their enforcement in practice. The main reason why enforcement issues are of particular concern in the context of temporary contracts is that incentives for enforcement are likely to be weak as workers and firms often share a mutual interest in their non-enforcement. As a result of these enforcement problems, it has sometimes been difficult to establish a negative relationship between the incidence of temporary work and the stringency of employment protection provisions with respect to temporary contracts. Bassanini et al. (2010) provide empirical evidence that shows this is, indeed, related to the problem of enforcement.

37. While it is possible that the positive relationship between temporary work and unemployment reflects to some extent the impact of unemployment on the incidence of temporary work, it does not reflect the possibility that countries with high levels of unemployment introduced reforms to facilitate the use of temporary contracts in effort to reduce unemployment. The inclusion of country-fixed effects ensures that identification is achieved solely on the basis of the variation over time. The standard deviation of the incidence of temporary work in the sample is about 7 percentage points.

38. Fiori et al. (2012) and Murtin et al. (2011) provide evidence of a number of other examples where policy complementarities are important. Fiori et al. (2012) show that product market deregulation is more effective at the margin when labour market regulation is high, while Murtin et al. (2011) find that the adverse effect of the tax wedge on unemployment tends to larger in countries where wage bargaining takes place at the sectoral level.

39. Relaxing the assumption that the role of a given policy or institution is non-linear or depends on the nature of policies and institutions is likely to render the results rather sensitive to their precise specification and is considered to be beyond the scope of this chapter.

40. As a robustness test, the same regressions were also estimated for log earnings per capita and the employment rate. The results are qualitatively very similar.
41. Another reason for focusing directly on employment and earnings per worker is that the expected impact of policies and institutions in many cases goes in opposite directions (except in the case of the incidence of temporary work), which reduces the likelihood of obtaining statistically significant results when focusing on earnings.

42. More generous UI benefits may also create moral-hazard effects by reducing incentives for workers and firms to preserve job matches.

43. The correlation between actual and predicted changes in unemployment is 64% and statistically significant (Figure 2.9, Panel A), slightly lower than the correlation of 69% reported in Bassanini and Duval (2009). Controlling for changes in actual unemployment rates due to the changes in the business cycle does not make a major difference.

44. Country-fixed effects are included to capture country-specific trends.

45. The medium-term impact is defined here as the average impact over the first sixteen quarters since the shock in order to capture the impact of output shocks on labour market outcomes over the course of a “typical” business cycle (usually considered to be three to five years). The sixteen-quarter period also corresponds to the period from the start of the crisis to the end of 2011 that is used to compare the out-of-sample forecasts with actual labour market developments.

46. The long-term semi-elasticity of the unemployment rate with respect to GDP is also about 0.5, consistent with Okun’s law.

47. One may simulate the impact of output shocks on overall earnings inequality using different assumptions on the degree of selectivity with respect to employment and earnings per worker adjustments. For example, one might assume that employment losses are entirely concentrated at the bottom end of the earnings distribution. This would reinforce the differences across countries in Figure 2.10, but would not add any major new insights.

48. Further analysis on the role of structural reforms during the period 1995-2007 suggests that they had not much of an impact on the unemployment response to the global financial crisis. About two-thirds of the countries in the sample experienced a slightly larger unemployment response as a result of structural reforms, while in the remainder past reforms mitigated the response. In all countries, the quantitative difference between the predicted change in unemployment based on 1995 settings and that based on 2007 settings is small compared with the overall predicted increase in unemployment. In terms of earnings, there is little indication that total earnings losses in response to economic downturns have increased as a result of past reforms.

49. A scatter plot that relates the incidence of temporary work to the stringency of employment protection provision with respect to open-ended contracts suggests a strong positive and statistically significant relationship (OECD, 2004; Boeri, 2011). For more robust empirical evidence on this relationship, see Autor (2003), Kahn (2007) and Centeno and Novo (2011).

50. The analysis implicitly assumes that there is a monotonic relationship between co-ordination and the elasticity of interest. Complementary regressions that include dummies for low and high levels of co-ordination instead of the current co-ordination variable suggest that this assumption is appropriate.

51. Aidt and Tzannatos (2008) argue that co-ordination is consistent with labour market resilience because in more co-ordinated regimes real wages tend to be more responsive to economic shocks. As a result, it is possible that employment is less sensitive to negative output shocks, while persistence may also be less since wages adjust more readily to changes in labour market conditions. Empirical studies by Blanchard and Wolfers (2000) and Bassanini and Duval (2006) confirm that co-ordination has a tendency to reduce the direct effect of macroeconomic shocks in line with the evidence presented here. The latter also show that co-ordination is associated with more unemployment persistence. One possible explanation for increased unemployment persistence despite more real wage flexibility may be that co-ordination also induces more adjustment on labour productivity and working time and that these margins recover before employment in the initial phase of a recovery (see discussion in Section 1). Aidt and Tzannatos (2008) further provide some discussion of the role of specific features of co-ordination for labour market performance. They suggest that informal and formal co-ordination can lead to similar outcomes, but also that informal co-ordination is more likely to break down in turbulent economic times. Moreover, employer co-ordination may be more relevant than employee co-ordination for labour market performance, possibly because more centralised employers’ organisations may be more effective in controlling wage drift than their employee counterparts.
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52. The correlation coefficients are, respectively, 0.6 and 0.4. The correlation between actual and predicted earnings is considerably lower than that for unemployment. In part, this is because of the relatively poor performance of the model to predict the evolution of earnings per worker.

53. Spain is not an exception in terms of total earnings as the model not only under-predicts employment changes but also over-predicts earnings per worker adjustment for Spain.

54. Similarly, the credit crunch that was associated with the economic downturn may have affected some firms more than others. For example, the credit crunch may have particularly affected firms that rely to an important extent on external financing or firms that differ in their access to credit (which tends to be related to firm size).

55. The correlation coefficient is 0.61 and statistically significant at the 1% level. The correlation coefficient is not very sensitive to the concept of structural unemployment (NAIRU, unemployment rates adjusted for the business cycle) and the time period over which unemployment rates are averaged.

56. The cluster analysis is implemented using hierarchical clustering with complete linkage.

57. The main data source for the analysis is ORBIS, a dataset collected by Bureau van Dijk, which provides comparable information from balance sheets and income statements for firms across many OECD and non-OECD countries. The Statistics Department of the OECD has carried out extensive consistency checks and cleaning of the data (see Ragoussis and Gonnard, 2012, for details). For the purposes of this project, the OECD/ORBIS dataset was complemented with previous vintages of ORBIS and Amadeus (the "European edition" of ORBIS) to increase the time-horizon of the data. The cleaning procedure developed by the Statistics Department was applied to these earlier datasets and extended to take account of specific issues in relation to the present analysis. The data do not allow one to consider entry and exit. The firm-level data are (almost) exclusively used for the estimation of output elasticities of labour demand for different groups of firms. For aggregation purposes, the data were combined with a number of nationally representative datasets with information on the value of output, output deflators, employment and the number of firms from SDBD, STAN, and LFS. For further details, see Gal et al. (2012).

58. Amongst others, this involves assuming that policies and institutions do not affect the volatility of output and the size and industry structure of the economy.

59. This involves implicitly assuming that adjustment technologies are homogeneous within each of these size-industry cells.

60. The annual changes in output demand between 2008 and 2009 may not always give an accurate picture of the impact of the crisis across countries and industries. This is particularly important for countries in which the crisis started in late 2007. In general, these also tended to be the countries with significant housing bubbles.

61. These elasticities are estimated separately for each firm size, industry and country cell using dynamic panel data models that take account of the potential endogeneity of output and employment shocks. The elasticities in Figure 2.16 refer to simple average across cells. Coefficients on the lagged dependent variable are also of interest, but not discussed here, as the main purpose is to explain the short-term impact of the crisis on labour markets. For further details on the econometric model, see Box 2.3.

62. Small firms tend to have shorter credit histories; tend to be subject to higher levels of idiosyncratic risk; and are less likely to have adequate collateral (Gertler and Gilchrist, 1994).

63. While the focus in the literature appears to have been limited to adjustments on the extensive margin, the same argument should also apply for earnings per worker.

64. Descriptive statistics based on firm-level data for a large number of European countries in OECD (2010) are consistent with the results presented here.

65. The analysis only takes account of continuing firms and, thus, does not consider the role of output shocks for entry and exit. As entry and exit may be particularly important for small firms, the current estimates may underestimate the total impact of shocks on employment.

66. As a result, the three components attributed to each source of heterogeneity can exceed one.

67. For further details on the methodology, see Gal et al. (2012).

68. For instance, in countries with a stronger tradition of protecting worker rights, employment protection may be stringent and the role of trade unions more important.
69. Firm policies on hours may also have an impact on the way they adjust their labour inputs in response to output shocks. However, regressions that relate the variation in the incidence of overtime and long-term working time accounts across countries, industries, firm-size groups to the variation in labour input elasticities suggest that these variables do not have a detectable impact on the labour-input adjustment behaviour of firms.

70. Most commonly, small firms are exempt from additional notification or procedural requirements when undertaking collective dismissals. In addition, several countries reduce or remove severance payments, notice periods or the risk of being accused of unfair dismissal for small firms. Some other countries also apply blanket exemptions (Venn, 2009).

71. A number of previous country studies have exploited the firm-size exemptions to study the economic implications of employment protection provisions (see Venn, 2010, and references therein). However, this appears to be the first study to do this on a cross-country basis.

72. A potential criticism to identifying the effect of employment protection from firm-size exemptions is that high-volatility firms with a high responsiveness of labour inputs to output shocks have an incentive to stay below the firm-size threshold, thus potentially leading to an upward bias in the estimated effect of employment protection. However, this is unlikely to be a major issue in practice. Firm-size distributions reported in Gal et al. (2012) do not reveal strong evidence of selection around the firm-size thresholds. Moreover, as a robustness check, the empirical model was re-estimated while including a proxy for the average employment volatility within a cell to control for any changes in composition that may result from self-selection (average employment volatility is measured by the standard deviation of employment over time for each firm averaged across firms within a cell). The results are very similar, suggesting that selection effects are unlikely to drive the results reported here.

73. In an alternative specification, the role of CWB coverage and how this depends on the mode of collective bargaining was analysed in more detail. This specification explicitly differentiates between the role of coverage and the nature of bargaining. The results of this specification do not suggest much of an independent effect of coverage on average, but provide a weak indication that CWB coverage reduces the sensitivity of employment to output and increases that of earnings per worker when bargaining is done predominantly at the central level.

74. Theoretical models of wage bargaining focus on the efficiency properties of equilibrium employment and real wage levels. Right-to-manage models postulate that workers bargain over wages, while the decision about the level of employment is at the firm’s discretion. The equilibrium is Pareto-inefficient and employment is lower than in the absence of collective wage bargaining (Nickell and Andrews, 1983). In efficient-bargaining models, unions and firms bargain simultaneously over wages and employment levels, yielding an efficient outcome in which underemployment disappears (McDonald-Solow, 1981). The results for Group 2 are inconsistent with the predictions from so-called “right-to-manage” models, which suggest that trade unions only care about wages and not about employment, but may be consistent with efficient bargaining models in which trade unions take account of the potentially adverse employment implications of wage bargaining and exercise restraint on wage claims in order to save jobs.

75. Re-estimating the model on a larger set of countries, which includes Germany and Portugal, yields similar qualitative results. However, these results are not presented here as including Germany and Portugal also required making a number of data imputations, which raises legitimate concerns about the reliability of the data used for those two countries.

76. The analysis in this sub-section was conducted by the OECD Secretariat in collaboration with Andreas Peichl and Sebastian Siegloch (IZA).

77. More specifically, the analysis makes uses of the 2009 wave of the European Union Statistics on Income and Living Conditions (EU-SILC). The aim of EU-SILC is to collect harmonised and comparable multidimensional survey data on income poverty and social exclusion for EU member countries as well as Norway and Iceland. The survey is representative for the whole population in each country due to the construction of population weights at the household and individual level.

78. This involves first estimating the output elasticities using the estimation procedure in Box 2.4 by region, industry and firm size. In a second step, the output elasticities by region, industry and firm size are related to the incidence of temporary work using data from the EULFS. The estimated correlations are used to construct output elasticities that vary region, industry, firm size and type of contract.

79. Equivalent household incomes are calculated based on the modified OECD equivalence scale.
80. Net household incomes are calculated using country-specific tax regressions. Using detailed individual budget curves for each household in each country, this involves running regressions of observed net income on a polynomial of market income, a vector of non-income factors (e.g., marital status, number and age of children) as well as interactions between both. The non-income factors and their interactions with the market income variables capture the country-specific non-linearities in the tax system. The fit of the tax regression is extremely good with R-squared values ranging from 0.89 to 0.96 across countries.

81. This corresponds roughly to the peak-to-trough average decline in real OECD GDP during the crisis.

82. This is defined as the difference between the change in market and net income as a share of the change in market income. In the literature, this is also referred to as the “normalised tax change” (Auerbach and Feenberg, 2000) or the “income stabilisation coefficient” (Dolls et al., 2012).

83. This is consistent with previous findings by Bargain et al. (2011) who conduct similar micro-simulations for Germany as well as the macroeconomic analysis in Section 2 of this chapter. Job losses increase inequality by increasing the fraction of the labour force without labour income. Earnings per worker reductions tend to reduce inequality because they only affect those with positive labour incomes.

84. Note that the present findings may understate the implications of output shocks for inequality when the adverse impact of job loss goes beyond that of the loss of income by adversely affecting future employability, health and happiness.

85. The implications of the simulations are unambiguously positive as the analysis does not take into account the effects of the tax-benefit systems for the way firms adjust to shocks (labour demand) and the incentives for work (labour supply). The macroeconomic analysis in Section 2 suggests, however, that while the implications of the tax wedge on labour market resilience are likely to be limited, the generosity of unemployment benefits may reduce it by increasing the persistence of employment. Thus, to fully appreciate the role of the tax-benefit system for labour market resilience, a more comprehensive analysis is required that would take account not only of its social consequences, but also its labour market effects.

References


2. WHAT MAKES LABOUR MARKETS RESILIENT DURING RECESSIONS?


