Including Institutions

Boosting Resilience in Europe
Including Institutions

Boosting Resilience in Europe
# Contents

9  Acknowledgements  
10  Countries and Regions  
11  Abbreviations  
13  Executive summary  

17  Overview  
18  Part One:  
18    Inclusive growth  
24  Part Two:  
24    Including institutions to build resilience in Europe  
25  Resilience to shocks in the eurozone  
26  The real exchange rate is not a policy instrument  
26  Resilience in the EU  
28  Convergence, business cycle synchronization and the real exchange rate  
29  Low-income protection  
29  Labor market conditions  
31  Private sector conditions  
31  Trust and inequality  

37  Part One:  
37    Inclusive Growth  
39  Strong and balanced growth  
44  Shared growth  
44    The spatial dimensions of growth: across countries and regions  
48  Has growth fed into the well-being of low-income households?  
51  The evolution of income inequality and links to labor market shifts  

57  Resilience at the household level  
60  Policies to support inclusive growth through household resilience  
61  Fiscal policy  
62  Social protection  
63  Labor market policies
Part Two: Building resilience in the EU

Dealing with shocks in the eurozone
Why adopt the euro?
The eurozone experience
Eurozone institutional architecture: a work in progress
The resilience of inclusive growth in the EU (2004 – 2014)
An optimal currency area indicator: business cycle synchronicity
Protecting low-income households
Labor market conditions
Product and service market institutions
Can a flexible exchange rate policy compensate for weak institutions?
Trust

Conclusions

Annex 1: Data used in the convergence and resilience analysis
Annex 2: Poor-weighted growth elasticities
Annex 3: A deeper look at low-income thresholds
Annex 4: EU members and eurozone accession
Annex 5: Results on Beta- and Sigma-convergence
Annex 6: Optimal currency area indicators
Annex 7: Business cycle dynamics and their relationship to selected institutional variables
Annex 8: Grouping of countries by exchange rate regime type
Annex 9: Additional figures and table

References
Boxes

- **Box O.1** The euro experience to date
- **Box 2.1** The European Monetary System
- **Box 2.2** Adherence to the Maastricht criteria was not strictly enforced
- **Box 2.3** Eurozone institutional “architecture”
- **Box 2.4** Zimbabwe’s attempts to control the real exchange rate
- **Box 2.5** Selecting theoretically, economically and statistically significant institutional variables
- **Box 2.6** Description of the variables used in the heatmap
- **Box 2.7** Portugal — Capital flowing downhill
- **Box 2.8** Bulgaria: how a lack of wage flexibility led to job losses
- **Box 2.9** The cooperative cure for the Dutch disease
- **Box 2.10** Belgium: Keeping the real exchange rate competitive by decree
- **Box 2.11** Italy: collective bargaining led to devaluations and rising unemployment
- **Box 2.12** Labor market regulation and cooperative employer-worker relations
- **Box 2.13** Germany’s real exchange rate adjustments through firm-level wage moderation
- **Box 2.14** Poland’s successful weathering of the crisis
- **Box 2.15** Screening and selecting measures of trust
- **Box 2.16** Greece — the high costs of lack of trust in institutions

Figures

- **Figure O.1** Country convergence stalled post-2009, regions diverged
- **Figure O.2** Output per capita and median incomes were hardest hit in Southern Europe and have yet to recover their 2007 levels, contributing to the stalling of the convergence machine
- **Figure O.3** Income and employment levels in Southern Europe were hardest hit and have yet to recover, and growth rates across the EU are still below their pre-crisis levels
- **Figure O.4** Public debt has risen to the extent that the space for a fiscal policy response to a new crisis has been significantly reduced
- **Figure O.5** Shift in the geography of those under €23 per day towards Southern Europe. Half of this population continues to be found in Central Europe however
- **Figure O.6** Amplification of growth and contraction on bottom 20 contrasts with a relatively stagnant but protected middle class
- **Figure O.7** Substantial variation in the extent to which periods of contraction are passed through to poorer household
- **Figure O.8** Trust in institutions and people (Eurobarometer)
- **Figure 1.1** Output per capita and median incomes were hardest hit in Southern Europe and have yet to recover to their 2007 levels
- **Figure 1.2** Growth rates across the EU are still below their pre-crisis levels
- **Figure 1.3** Private consumption remains the leading growth driver
- **Figure 1.4** Investment remains low, particularly in Southern Europe
41 Figure 1.5 Firm investments have dipped since 2008 but have contributed to rising investment in Western Europe

42 Figure 1.6 Savings are trending upward, supporting improvements in external balances.

42 Figure 1.7 Majority of imbalances that had built up in the pre-crisis boom years have been corrected

43 Figure 1.8 Strengthened fiscal performance helped limit the increase of debt

43 Figure 1.9 Revenue increase stood behind improved fiscal performance

43 Figure 1.10 The effects of the crisis have held back productivity growth, in particular in Southern Europe

44 Figure 1.11 Public debt levels, which increased during the crises, are slower to improve

46 Figure 1.12 Long-term convergence between 2004 and 2014 has been strongest at the national level

46 Figure 1.13 While Central European countries continued to converge to those in Western Europe, the divergence of countries in Southern Europe fed into the stalling of the convergence machine

47 Figure 1.14 Country convergence stalled after 2009, and regions diverged. Convergence processes appear to have resumed after 2015

49 Figure 1.15 The share of the population with incomes under €23 a day declined from 27 to 23 percent between 2004 and 2016. It is projected to further decline to 18.5 percent by 2020

49 Figure 1.16 The number of people living in low income households dropped by 20m between 2012 and 2017 and is expected to decline by a further 10m by 2020

50 Figure 1.17 Shift in the geography of the population living under €23 per day 2011 pps towards Southern Europe. Half of this population continues to be found in Central Europe however.

50 Figure 1.18 The share of the population living under €23 a day 2011 pps is projected to decline across the 10 countries with the highest rates in 2016, with the sharpest declines forecast in Poland and Slovakia

52 Figure 1.19 The average level of inequality in eu-28 countries has remained broadly stable between 2006 and 2016. At a country level, more countries have seen stable or falling inequality than rising inequality.

53 Figure 1.20 Countries with lower initial inequality measures recorded declines in the degree of redistribution while those with higher initial inequality recorded increases

54 Figure 1.21 The earnings of 25 to 29-year-old workers born after 1983 were substantially affected during the crisis in Southern Europe, but relatively protected in Northern Europe. While the starting wages of these younger workers continued to be suppressed in 2016, the gradient with age had returned

56 Figure 1.22 Part-time work accounted for nearly a quarter of all employment in Western Europe in 2017 and has become more prevalent in Southern Europe since 2008

56 Figure 1.23 Temporary work is for the most part involuntary, reflecting an inability to find permanent employment

57 Figure 1.24 Hours worked have been on the decline since 2000, reflecting decreasing hours worked in full-time employment as well as increasing part-time work and female employment

58 Figure 1.25 In Western Europe the incomes of the bottom 20 percent of households were sheltered from the crises compared to better-off households, while in Southern Europe bottom 20 percent incomes have seen the greatest reduction.

59 Figure 1.26 Amplification of growth and contraction on bottom 20 percent of the distribution contrasts with a stagnant but relatively protected middle class
Growth tends to be shared with poorer households but there is more variation in the extent to which periods of contraction are passed through to poorer households.

Automatic stabilizers contributed the most to changes in redistribution between 2007 and 2014.

Welfare states with a more limited coverage of poorer households were unable to protect these households from the crises, even if spending on social protection was high overall.

Conceptual framework: Shocks, the real exchange rate, institutions and inclusive growth.

Population movements contribute little to economic convergence.


Duration (until turning point) vs. depth (percentage decline of pre-crisis incomes) of the incomes of median and bottom 20 percent of households.

Collective bargaining coverage and unemployment resilience.

Employment protection and output resilience.

Cross-country differences in employment protection and their changes over time.

Pass-through rate of contractions to incomes (y-axis) by employment protection index (x-axis).

Ease of doing business score and output resilience.

Cross-country differences in ease of doing business scores and their changes over time.

Product Market Regulations index.

Contribution to PMR changes (2013 vs 2008, additive decomposition).

PMR — Gap to the frontier.

Product Market Indicator.

Contribution to Product Marker Indicator changes (2016 vs 2007, additive decomposition).

Product Market Indicator — Gap to the frontier.

Real GDP per capita growth, percent.

Employment growth, percent.

Trust in institutions and resilience.

Trust in institutions (Eurobarometer).

Income inequality and trust/institutional variables.

Comparison of living standards in Austria, USA, Ireland and Spain (2016).

Elasticity of growth of different deciles relative to average household disposable income growth, by region.


Share of the population living under 5.50 USD PPP.

Number of individuals who live under 5.50 USD PPP.

Share of population living under 5.50 USD PPP, by grouping and country in 2006 and 2016.


Real GDP per capita growth.

Employment growth rate.

Government investment.

Gross income shares, 2016.

Earnings shifts over time for those aged 25 – 29.
Map

45 Map 1.1 GDP per capita varies substantially across the regions of Europe

Tables

27 Table O.1: “Heatmap” of outcomes and institutions that support resilience in the EU (2004 – 14)
81 Table 2.1 “Heatmap” of resilience in the EU and institutions that support it (2004 – 2014)
116 Table A 1.1 Description of data used in the Convergence and OCA analysis
116 Table A 1.2 Description of data used for the institutional analysis
123 Table A4.1 EU Members and Eurozone Accession
124 Table A5.1 $\beta$-convergence
125 Table A5.2 Test for $\sigma$-convergence
128 Table A6.1 OCA Index
130 Table A7.1 Persistence of output and unemployment shocks (quarters)
131 Table A7.2 Volatility (standard deviation) of output and unemployment
132 Table A7.3 Persistence of output shocks and institutional variables
133 Table A7.4 Output volatility and institutional variables
133 Table A7.5 Persistence of unemployment shocks and institutional variables
134 Table A7.6 Unemployment volatility and institutional variables
135 Table A8.1 Country exchange rate groupings
139 Table A9.1 Heatmap with scores
Acknowledgements

This report was produced by the following core team: Reena Badiani-Magnusson; Rogier van den Brink and Emilia Skrok (co-TTLs); Michal Tulwin; Paul Corral Rodas; Jonathan Karver; Paulina Holda and Anna Karpets; together with Hans-Helmut Kotz (Harvard University and Goethe University) and Guenter Beck (University of Siegen). Managerial guidance and direction were provided by Arup Banerji (Regional Director, EU Member States), Lalita M. Moorty (Regional Director EFI, Europe and Central Asia) Gallina Andronova Vincelette (MTI Practice Manager, Europe and Central Asia) and Carlos Silva-Jauregui (Poverty and Equity GP, Europe and Central Asia). Valuable inputs were contributed by Josip Funda; Stella Ilieva; Roumeen Islam; Matija Laco; Melanie Marie Laloum; Desislava Nikolova; Catalin Pauna and Ivan Torre.

The peer reviewers were Martin Raiser (Country Director, World Bank); Ivailo Izvorski (Lead Economist, World Bank); José Leandro (Director Policy, Strategy and Communication, DG Economic and Financial Affairs, European Commission); Helge Berger (Assistant Director in the Research Department, IMF), Laura Papi (Head of the Emerging Economies Division in the European Department, IMF), and Petia Topalova (Deputy Unit Chief in the European Department, IMF). Comments were also provided by David Sondermann of the European Central Bank, Peter Benczur of the Joint Research Centre of the European Commission, Stefano Filauro of DG Employment, Social Affairs and Inclusion, and Eric Meyermans and Anneleen Vandeplas of DG Economic and Financial Affairs.

Comments were also provided by participants at workshops organized by the European Central Bank (Sep. 10, 2019) and the European Commission’s Directorate-General for Economic and Financial Affairs (Sep. 11, 2019). Further valuable feedback was provided by the Bulgarian Ministry of Finance and the Economic Research and Forecasting Directorate of the Bulgarian National Bank, the Romanian Ministry of Public Finance, the National Bank of Romania, the Croatian National Bank, the Office of the Prime Minister of Croatia and the participants at the workshop organized by the World Bank in Bucharest (Oct. 18, 2019).
## Countries and Regions

<table>
<thead>
<tr>
<th>Region</th>
<th>Country</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Europe (NE)</td>
<td>Denmark</td>
<td>DK</td>
</tr>
<tr>
<td></td>
<td>Estonia</td>
<td>EE</td>
</tr>
<tr>
<td></td>
<td>Finland</td>
<td>FI</td>
</tr>
<tr>
<td></td>
<td>Latvia</td>
<td>LV</td>
</tr>
<tr>
<td></td>
<td>Lithuania</td>
<td>LT</td>
</tr>
<tr>
<td></td>
<td>Sweden</td>
<td>SE</td>
</tr>
<tr>
<td>Western Europe (WE)</td>
<td>Austria</td>
<td>AT</td>
</tr>
<tr>
<td></td>
<td>Belgium</td>
<td>BE</td>
</tr>
<tr>
<td></td>
<td>France</td>
<td>FR</td>
</tr>
<tr>
<td></td>
<td>Germany</td>
<td>DE</td>
</tr>
<tr>
<td></td>
<td>Ireland</td>
<td>IE</td>
</tr>
<tr>
<td></td>
<td>Luxembourg</td>
<td>LU</td>
</tr>
<tr>
<td></td>
<td>Netherlands</td>
<td>NL</td>
</tr>
<tr>
<td></td>
<td>United Kingdom</td>
<td>UK</td>
</tr>
<tr>
<td>Southern Europe (SE)</td>
<td>Cyprus</td>
<td>CY</td>
</tr>
<tr>
<td></td>
<td>Greece</td>
<td>EL</td>
</tr>
<tr>
<td></td>
<td>Italy</td>
<td>IT</td>
</tr>
<tr>
<td></td>
<td>Malta</td>
<td>MT</td>
</tr>
<tr>
<td></td>
<td>Portugal</td>
<td>PT</td>
</tr>
<tr>
<td></td>
<td>Spain</td>
<td>ES</td>
</tr>
<tr>
<td>Central and Southeast Europe (CEE)</td>
<td>Croatia</td>
<td>HR</td>
</tr>
<tr>
<td></td>
<td>Czech Republic</td>
<td>CZ</td>
</tr>
<tr>
<td></td>
<td>Hungary</td>
<td>HU</td>
</tr>
<tr>
<td></td>
<td>Poland</td>
<td>PL</td>
</tr>
<tr>
<td></td>
<td>Slovak Republic</td>
<td>SK</td>
</tr>
<tr>
<td></td>
<td>Slovenia</td>
<td>SI</td>
</tr>
<tr>
<td></td>
<td>Bulgaria</td>
<td>BG</td>
</tr>
<tr>
<td></td>
<td>Romania</td>
<td>RO</td>
</tr>
<tr>
<td>Countries outside the European Union</td>
<td>Canada</td>
<td>CA</td>
</tr>
<tr>
<td></td>
<td>Iceland</td>
<td>IS</td>
</tr>
<tr>
<td></td>
<td>Japan</td>
<td>JP</td>
</tr>
<tr>
<td></td>
<td>Korea, Republic of</td>
<td>KR</td>
</tr>
<tr>
<td></td>
<td>New Zealand</td>
<td>NZ</td>
</tr>
<tr>
<td></td>
<td>Norway</td>
<td>NO</td>
</tr>
<tr>
<td></td>
<td>Switzerland</td>
<td>CH</td>
</tr>
<tr>
<td></td>
<td>United States of America</td>
<td>US</td>
</tr>
</tbody>
</table>
Abbreviations

AMECO Annual macro-economic database of the European Commission’s Directorate General for Economic and Financial Affairs
AROP At Risk of Poverty
BGN Bulgarian lev
BNB Bulgarian National Bank
BRRD Bank Recovery and Resolution Directive
CAB Cyclically Adjusted Balance
CCE Conseil Central de l’Économie
EC European Commission
ECB European Central Bank
EFSF European Financial Stability Facility
EMS European Monetary System
EMU European Monetary Union
EPL Employment Protection Legislation
ERI II Exchange Rate Mechanism II
ESM European Stability Mechanism
EU European Union
EU-SILC EU Statistics on Income and Living Conditions
FDI Foreign Direct Investment
GDP Gross Domestic Product
IMF International Monetary Fund
NUTS Nomenclature des Unités Territoriales
OCA Optimal Currency Areas
OECD Organization for Economic Co-operation and Development
OMT Outright Monetary Transactions
PAM Public Accountability Mechanisms
PMR Product Market Regulations
PPP Purchasing Power Parities
PPS Purchasing Power Standards
RER Regular Economic Report
SGP Stability and Growth Pact
SOE State Owned Enterprise
SSM Single Supervisory Mechanism
TFEU Treaty on the Functioning of the European Union
TFP Total Factor Productivity
WEO World Economic Outlook
WB World Bank
The 2008 crisis marked the beginning of a lost decade for many countries — and many people — in the EU. The crises of 2008 and 2012 halted, and in some countries undid, a decade of growth and economic convergence across the EU. The crises tested Europe’s resilience: its capacity to respond to, and rebound from, shocks. Some countries proved remarkably resilient, with growth back on track after a few quarters and populations largely shielded from the downturns. Others, however, recorded growth and employment recessions that lingered long after the crises first began. In too many countries, citizens’ trust in their institutions was affected, because of the way these crises permeated the lives of many people, in particular the bottom deciles of the income distribution.

This report argues that the economic shocks revealed large differences in the resilience of individual economies, associated with differences in the quality of country-level institutions that shaped the absorption and response to these shocks. The report is in two parts. Part One uses an inclusive growth framework that assesses the trends in economic growth, the sharing of that growth, and its resilience. Part Two looks closer at a key aspect of resilience: what are the key institutions that affect an economy’s resilience or capacity to respond to shocks.

Europe’s “convergence machine” stalled in the wake of the 2008 and 2012 crises, to only (partially) recover after 2015. Europe’s growth record in the early 2000s was strong and helped worse-off countries catch up with those that were better-off. After 2015, although convergence between countries did resume, it was slower than before, and mainly driven by Central Europe. At the same time, continuing a process that had started in the early 2000s, divergence between regions within countries has continued to worsen.

This report finds that in many European countries, growth was shared with low-income households; but these households were shielded less well during downturns. During the crises, the poorest fifth of households in both Central Europe and Southern Europe saw deeper drops in incomes and for longer periods than the median household. But while the share of low-income people in Central Europe has now decreased after the recovery, it has increased in Southern Europe.

Strong and balanced growth is needed to reignite real convergence within the EU, to improve the welfare of European people, especially the poorest. This places a priority on reforms that enhance productivity, encourage private sector investment, prepare workers for continuously evolving labor markets and support lagging regions. Economic absorption can be promoted by policies that support the stabilization of output and consumption. For this, rebuilding fiscal buffers in high-debt countries and reducing vulnerabilities in the financial sector are key. In addition, the deep adverse impact of the last crises on a number of countries calls for reforms that strengthen the resilience of their economies.

The report puts a special emphasis on a country’s membership of the European Monetary Union (EMU) — the eurozone. This is because eurozone members (and the countries that fixed their currencies to the euro) could not use their own short-term monetary and nominal exchange rate policies to absorb the shocks emanating from the global financial crisis and the eurozone crisis. And since the European Monetary Union’s institutional “architecture” was still incomplete, and the Stability and Growth Pact set strict limits on a member’s fiscal response, individual eurozone members had to rely largely on the adjustments of their real exchange rates — the relative price of domestic versus international goods and services.
The report finds that resilience of inclusive growth varied across EU countries, when faced with the global financial crisis of 2008 and the euro crisis of 2012, because of the quality of institutions. This is because the real exchange rate is not a policy instrument — it is an outcome of the institutions that govern the markets where goods and services are traded, with significant variation in quality across the EU.

Resilience of inclusive growth, in this report, is measured by assessing how output, unemployment and the incomes of the “bottom 20 percent” households responded to the crises. The inclusive growth perspective matters, because the duration and volatility of unemployment and income shocks were significantly greater than for output across the EU. For instance, differences in the “half-life” of output shocks range from 1 to 6 quarters, but for unemployment these range from 1.5 to more than 20 quarters.

Resilience and the quality of key institutions is strongest in Western Europe, and weakest in Southern Europe, with Central and Eastern Europe occupying an intermediate position. In Western Europe, the crises did not undermine inclusive growth in a major way. However, in Northern Europe, the Baltics rebounded rather well, but their policy and institutional mix was nonetheless associated with significant volatility in output, unemployment and incomes. In Central Europe, Poland and Romania were relatively resilient, with Croatia less so. Finally, in Southern Europe, Spain and Greece were among the least resilient in Europe. The median households in Greece saw an income decline of 40 percent; the bottom 20 percent suffered a decline of 50 percent.

This report finds that boosting resilience of EU member states should start with improving the “real exchange rate institutions”. For instance, if a country improves its labor market conditions to the same extent as was done by recent reformers (for instance as seen in Portugal between 2008 and 2012) or if a country improves the quality of regulatory environment for business, measured by the World Bank’s ease of doing business indicator by 10 points (as was done by Poland between 2010 and 2014), it can expect an economically significant improvement in its resilience.

Does a flexible exchange rate compensate for a weak policy mix? Poland and Romania (both with floating exchange rates) scored comparatively well on outcome resilience — even though their business cycle synchronicity and their institutional mix would have suggested otherwise. A plausible hypothesis would be that, in the short run, the flexible nominal exchange rate compensated for their “real exchange rate institutions” that were weak. But this report’s analysis does not conclusively establish benefits of a flexible nominal exchange rate in the long run — where international experience suggests that the choice of exchange rate regime matters little for small, open economies. And, in any case, EU members are legally obliged to adopt the euro, unless exempted by treaty.

While the real exchange rate is not a policy instrument, stakeholders can, in a cooperative and coordinated effort, influence the adjustment path — in particular for wages and unemployment — in response to an economic shock. This report describes several instances where this was the case. It also highlights cases where such coordination was absent, leading to a loss of resilience. Given what is at stake during times of crisis, economic stakeholders (government, labor and business) can strive to coordinate the adjustment of the real exchange rate in such a way that a pattern of shock absorption and rebound is created that is fair, inclusive and protects the poor — a resilient and inclusive outcome. However, the feasibility of arriving at such a cooperative outcome depends on the levels of trust that exist between the stakeholders — at the national and firm level.

This report places a special emphasis on the role of societal trust — which lowers the transactions costs of economic agents’ market participation by lowering the costs of information, contracting, and enforcement. And higher trust also allows stakeholders to adopt a longer-term view in their negotiations. Levels of trust in institutions change over time: they grow or erode. This report finds that trust and
resilience reinforce each other. An increase in citizens’ trust in institutions of the magnitude recently experienced in Sweden reduces the half-life of an unemployment shock by four quarters. Conversely, a decrease in trust levels of the magnitude experienced by Spain and Greece increases it by six quarters. And low levels of trust in institutions make it difficult to effectively implement reforms: passing a new law or a regulation may have no real impact. Effective reform requires building citizens’ trust in the fairness and efficiency of these institutions. Without such trust-building over time, formally reforming institutions is pointless.

For Europe’s least resilient countries, this implies (re-)building trust among the stakeholders through constructive dialogue in order to create a virtuous circle between trust in institutions and resilience. This could mean initiating stakeholder dialogue at the national, regional and firm level to jointly design, implement and monitor faster and deeper institutional reform. Failure to do so undermines trust, and hence resilience, even further, making the next crisis even more difficult to navigate.

Finally, boosting resilience does not by itself create long-term growth in incomes. Ultimately, resilience and flexible and coordinated real exchange rate adjustments are short-term measures to cushion shocks and support adjustment. They need to be accompanied by measures that foster long-term productivity growth. But boosting resilience does create the space to undertake such structural reforms and build the trust to implement them effectively.

Note

Arguably, some countries faced smaller shocks than others, but it would be difficult to distinguish whether they exogenously arrived as small or whether they were small because of resilient institutions.
Overview
Part One: Inclusive growth

EU member states have a common policy objective to deliver inclusive growth to their populations. Part One of this report monitors recent trends in inclusive growth, using three standards, notably growth that is: strong and balanced, shared across society, and resilient to economic shocks. This emphasis is mirrored in the European Pillar of Social Rights from 2017 which focuses on growth that supports inclusion and leads to sustainable improvements in social outcomes and living standards across all groups and people.

Europe’s growth record in the early 2000s was strong and helped worse-off countries and regions to catch up with those that were better-off: the EU was a “convergence machine”. Output growth across the EU was strong in those early years and was passed through to median household incomes. The share of the population living in low-income households by EU standards (defined as incomes below 60 percent of the EU median income in 2011) plummeted by an average of 35 percent across countries between 2004 and 2008. Economic differences across countries and regions narrowed in the early 2000s, as countries and regions with initially lower incomes caught up with those with higher incomes. This supported convergence across countries and regions within the EU (Figure O.1).

However, the convergence machine sputtered and stalled in the wake of the 2008 and 2012 crises. The convergence process was interrupted by the global financial crisis and the euro-zone crisis. While catch-up continued after 2009, the speed of catch-up between 2009 and 2015 was less than half that seen between 2000 and 2007. The catch-up that was seen was driven by countries in Central Europe, while divergence occurred in Southern Europe due to the extensive impact of the crises in these countries. In addition, the variation in GDP per capita across EU countries stopped declining (Figure O.1) and reversed at the sub-national level during the crises: the dispersion of per capita GDP levels at the regional level increased.

Progress was interrupted across all EU member states, but the impact of the crises on economies and people varied considerably from country to country. Some countries proved resilient to the economic shocks while others struggled to regain their pre-crisis output, employment and income levels. Median
household incomes dropped by approximately 5 percent between 2007 and 2014 on average across EU countries but by 13 percent in Southern Europe (Figure O.2). Importantly, labor markets have taken longer to recover than output (Figure O.3), as even the most resilient economies have seen periods of falling employment and escalating youth unemployment.

**Figure O.2** Output per capita and median incomes were hardest hit in Southern Europe and have yet to recover their 2007 levels, contributing to the stalling of the convergence machine

<table>
<thead>
<tr>
<th>a. Real GDP per capita, by region. 2007=100</th>
<th>b. Real median household income per capita, by region. 2007=100</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Graph A" /></td>
<td><img src="image2.png" alt="Graph B" /></td>
</tr>
</tbody>
</table>

*Note:* Population average across countries. Data for 2018–2020 are AMECO forecasts. Projections denoted with F.
*Source:* Eurostat, World Bank calculations.

*Note:* Population weighted across countries. Projections denoted with F.
*Source:* World Bank estimates using EU-SILC data, excluding Germany.

The process of convergence partially restarted after 2015 as the recovery in Southern Europe took hold. The first signs of convergence resuming were seen in 2016, when national and regional (NUTS-2) level dispersion once again began to narrow compared to their 2015 levels. However, GDP per capita and employment in 2018 remained below their pre-crisis levels in 5 countries.

**Spatial dispersion has been rising within countries.** The widening of incomes across regions has been most pronounced among countries in Central Europe, but an increase in regional dispersion can be detected across almost all countries. This increased within country dispersion partly reflects higher growth rates for (NUTS-3) regions with higher GDP per capita, which have grown faster than the EU average. The rise of within-country dispersion paused briefly while convergence processes at the national level stalled. But, with the resumption of national convergence, the processes that result in increased dispersion within countries have resumed.

**Economic momentum in the EU is slowing down.** GDP per capita growth was still strong at 1.8 percent in 2018, albeit easing from its 2017 peak as part of the broader global slowdown. GDP per capita growth rates in Europe are now starting to fall below those in the United States (2.1 percent), which was not the case in the previous 2 years. Private consumption, supported by stronger labor markets, has been the main driver of growth. This has been reinforced more recently by a stronger contribution from investment, making growth patterns more balanced. Yet, investment levels remain low, close to 20 percent of GDP in the EU, and 17 percent on average for Southern Europe. The contribution from net exports has been declining. Only in Western Europe did exports have a marked positive impact on growth in the last two years. Most importantly, productivity growth has rebounded only recently in Central and Northern Europe while it remains weak in the other two regions. This raises concerns about the sustainability of long-term growth.
**Figure O.3** Income and employment levels in Southern Europe were hardest hit and have yet to recover, and growth rates across the EU are still below their pre-crisis levels

Real GDP per capita and employment growth

![Graph showing real GDP per capita and employment growth](image)

*Note:* Dotted line indicates that income level stayed below the pre-crisis level (pre-crisis level: average 2004–08). Unweighted average across countries.

*Source:* Eurostat, World Bank calculations.

Fiscal policy responses to the crisis have contributed to rising public debt. This in turn may limit the scope of policy responses in the event of a new shock. The fiscal policy response to the crisis translated into substantially widening fiscal deficits and public debt increases. While fiscal balances have been largely restored and most EU countries have fiscal deficits below the three percent of GDP limit, the accumulated public debt remains worrisome (above 80 percent of GDP in the EU and above 113 percent in Southern Europe, Figure O.4). In some cases, the space for a fiscal policy response in the event of a new crisis has been dangerously reduced and, in some cases, may not exist at all.

**Figure O.4** Public debt has risen to the extent that the space for a fiscal policy response to a new crisis has been significantly reduced

Public debt, percent of GDP

![Graph showing public debt, percent of GDP](image)

*Note:* Unweighted average.

*Source:* Eurostat, World Bank calculations.

External imbalances built-up in the pre-crisis boom years have been significantly reduced. Yet this mainly reflects subdued local absorption or low investment relative to higher savings. All regions have recorded a surplus in their current account balances in recent years — and in the case of some countries in Northern, Central and Southern Europe this demonstrates a remarkable turnaround from seemingly engrained deficits. There are some outliers however, most notably large current account surpluses in Germany, the Netherlands and Denmark that have barely gone down.
The share of low-income households by EU standards rose from 21 to 25 percent during the crisis but is projected to have returned to pre-crisis levels in 2017 and to continue falling to 18 percent in 2020. As the EU endured two contractions between 2008 and 2012, the share of the population earning under €23 per adult equivalent per day increased in most EU countries and particularly in Southern Europe. As a consequence, the number of people under €23 per day rose from 88 million in 2008 to 105 million in 2013. The turning point was reached in 2013 for the EU as a whole and in Southern Europe in 2014. In Central Europe the turning point was reached earlier — in 2012 — and has contributed to a sizeable 24 percent drop in the share of those on low incomes. Continued growth in Central and Southern Europe is expected to have fed into further declines, and to reduce the number of people below €23 per day to 87 million in 2017.

The divergent paths to recovery from the crisis have fed into a shift in the spatial distribution of people with low income by EU standards towards Southern Europe. However, the bulk of this population continued to be found in Central Europe in 2016. Deteriorating conditions in Southern Europe contributed to a shift in the spatial profile of the low-income population: Southern Europe housed just under a fifth of this population in 2006 (22 percent), rising to nearly one in three in 2016 (31 percent). The share living in Central Europe declined from 63 percent in 2006 to 53 percent in 2016 over the same period. Since countries in Central Europe are projected to grow at a faster pace than those in Southern Europe, we project a continuation of these spatial shifts.

Figure O.5 Shift in the geography of those under €23 per day towards Southern Europe. Half of this population continues to be found in Central Europe however.

The crises highlighted divisions between income groups in how they respond to periods of growth and contractions. Both responses feed into inclusive growth, and they allow us to understand whether growth dynamics are supportive of both higher household incomes and inclusion.
The incomes of the middle-class\(^3\) have shown signs of relative stagnation during times of growth. Since they’ve been better protected than average households during contractions, this has helped to reduce the impact of the crises on their incomes. But, in the long-term, this group has seen lower than average growth\(^6\). These patterns of middle-class stagnation during periods of growth are seen in Western, Northern and Southern Europe but are not visible in Central Europe where the growth of the middle class has tracked average growth. Middle class households have — again in relative terms compared to other income groups — been more resilient to the crises.

In contrast, the incomes of poorer households across Europe have been highly responsive to changes in the economic environment — both through bad times as well as good. The same high responsiveness to growth that can help propel households out of poverty also subjects them to substantial vulnerability during downturns. Income growth of the bottom 20 percent of the expenditure distribution outperformed average growth both during times of expansion (positive mean growth) and contraction (negative mean growth) (Figure O.6). Worse-off households are more likely to benefit during periods of growth than

**Figure O.6 Amplification of growth and contraction on bottom 20 contrasts with a relatively stagnant but protected middle class**

Elasticity of growth to average household disposable income growth, by decile

Note: The analytical approach used to conduct this analysis is detailed in Annex 2. The elasticities of decile level growth to average growth uses variation across EU-28 member states, excluding Germany, and are represented as simple averages. The coefficients are statistically higher than 1 for deciles 1, 2 and 10, and are statistically lower than 1 for deciles 5 through 9. Positive mean growth coefficients are statistically different from negative growth coefficients for decile 7, but not for other deciles.

average households — contributing to the sharp pre-crisis decline in low-income shares. But during peri-
ods of contraction, the median household (and above) was more sheltered than worse off households. In
Southern countries, the incomes of the bottom 20 percent of the income distribution dropped by 25 percent,
while the income of the average household fell by 13 percent. This is reflected in a “whale curve”, where
the households at the “tail end” of the distribution in Europe (and, to a smaller extent, those at the top)
are the most exposed to volatility, while the middle of the distribution is relatively less affected by expan-
sions or contractions.

It is not always the case that worse-off households experience more economic volatility than others.
While poorer households in several Southern and Central countries saw a sharper and more prolonged
drop in incomes than average households, their incomes were relatively shielded in others, for exam-
ple in Austria, the Czech Republic and France. The countries that amplified the impact of the crises to
poorer households include Bulgaria, Estonia, Greece, Italy, Lithuania, Portugal, Romania and Slovenia
(Figure O.7). And in Cyprus, Italy, Spain and Greece the effects on incomes are still visible nearly a decade

**Figure O.7** Substantial variation in the extent to which periods of contraction are passed through
to poorer household

Pass-through of positive and negative periods of growth by country, using poor-weighted average income concept

*Note:* The analytical approach used to conduct this analysis is explained in greater detail in Annex 2. The point estimates displayed depict country level responsiveness of poor weighted disposable income growth (using a general mean with alpha equal to 1) to average household disposable income growth. Only countries for which more than one period of negative growth was registered are included; Sweden, Poland and Malta are removed for this reason. Germany is omitted due to the lack of data. Coefficients for negative growth are statistically significant different from 1 for the Czech Republic, Denmark, Estonia, France, Great Britain, Greece, Italy, Lithuania, Latvia, Portugal, Romania and Slovenia.

Later: median as well as bottom 20 household incomes in 2016 were still below their pre-crisis levels. In Southern Europe, this was linked to a rise in part-time and temporary work and a decline in average hours worked — particularly for younger cohorts who have seen their earnings and employment prospects drop more than other groups. However, in Northern and Western Europe, including the UK and the Netherlands, the impact was more pronounced for better-off households or at least more evenly distributed across the population.

Fiscal and labor market policies have played a central role in the resilience of households to crises. In some countries, social protection structures and labor market policies were not able to effectively cushion the impact of the crises on the more vulnerable. This can be seen in three ways. First, high levels of spending on social assistance do not appear to be sufficient to ensure effective social protection for worse-off households. Countries characterized by low social assistance coverage of the poorest 20 percent despite high levels of social protection spending — Italy, Spain, Greece — exposed poorer households more to contractions than welfare states characterized by high social protection spending and high coverage of the poorest 20 percent — France, Finland and Austria. In addition, many EU countries cut social assistance spending during the crisis which, combined with the design of the programs, sometimes contributed to an increase in poverty. Second, countries that spend less on labor market measures — either active or passive — protect poorer households less during contractions. Third, countries with stricter employment regulations protect poorer households less, on average during economic recessions, than those with more flexible regulations. These issues are explored in greater depth in part two.

Part Two:
Including institutions to build resilience in Europe

Two shocks — the global financial crisis of 2008 and the subsequent euro crisis of 2012 — interrupted progress in economic convergence across Europe. Countries within the European Monetary Union — the eurozone — faced a challenge: they had relinquished their own national monetary and exchange rate policies to deal with macroeconomic shocks. Within a monetary union, a “one-size-fits-all” policy response to a shock is the only option left for all members. If all members are exposed to the same shock and their economies respond in a similar way, a common response would work well and boost resilience. However, a common monetary response may work well for the average country but would be too loose or too tight for any country that is not “average”. The degree to which economies would be resilient when faced with a shock would differ.

As it turned out, there were substantial differences in how resilient Europe’s economies were. For instance, differences in the persistence of shocks, captured as the time it takes for the shock to be halved (half-life), range from 1 to 6 quarters for output and from 1.5 to more than 20 quarters for unemployment. In the following, we investigate what institutions (at the country level) can help to cushion an economic bust and set the stage for a rapid rebound that is economically inclusive in terms of growth, employment and incomes. The first part of the RER assessed these trends through the lens of inclusive growth. The second part looks closer at one aspect: what are the institutions that affect an economy’s resilience or capacity to respond to, and rebound from, shocks in an economically inclusive way. Inclusion, in this report, is measured by assessing how output, unemployment and the incomes of the “bottom 20 percent” households responded to the crises.
The “double dip” crisis of the last decade tested the resilience of the eurozone severely (Box O.1). Several reforms were made at the level of the monetary union to strengthen its institutional architecture. First, the European Stability Mechanism (ESM) was established in 2012 to help member states facing financial difficulties. However, the first line of defense remains that individual countries should run fiscal policies to allow them to absorb and counteract a shock. However, these should be executed within the strict parameters on inflation, deficits and debt set out within the Stability and Growth Pact. Second, the European Central Bank has now taken over the supervision of systemically important banks in the eurozone: cross-border capital flows are now much better regulated. However, it remains difficult for financial markets to diversify risks and absorb shocks across the eurozone. For instance, there is no “federally” backed resolution mechanism, there is no common deposit (re-)insurance scheme and progress towards a single capital market would benefit from a uniform regulatory, taxation and insolvency framework, with a single capital market supervisor. The above “missing” pieces could explain why in the US, 60 percent of shocks to output of a specific state are smoothed by US-wide fiscal, credit and capital markets channels, while in the eurozone only 20 percent of such shocks are absorbed in this way.

The movement of workers across national borders helped to cushion the shock, but to a limited extent. Only 4 percent of the EU population can be considered “mobile” defined as living in another member state other than their own. In addition, whereas the freedom of movement is a core freedom of the EU, in practice many professions restrict entry by foreigners in a “guild-like” fashion. Overall, between 2000 and 2016, only 5 percent of the observed catching-up process between European economies — convergence — could be attributed to population movements. Given the above, this leaves the real exchange rate — the price of domestic goods and services relative to international prices — as the main adjustment mechanism for individual countries in response to a shock.

Box O.1 The euro experience to date

Why become a member of the European Monetary Union and adopt its currency — the euro? European economies were typically small and very open to trade, so they preferred stable exchange rates. They also wanted capital to flow freely across borders. The euro would eliminate currency exchange costs and risks, and investors would move capital from parts of the euro area where it had low returns to those parts of the euro area where it had the highest expected returns. The euro would also bring lower inflation and more price transparency, leading to more intra-European trade.

During its first decade, the euro was widely seen as a success. Interest rate spreads between countries — indicators of country risk — were almost eliminated. Private capital flowed freely from north (the “core”) to south (the “periphery”), where it financed large current account deficits of between 8 to 10 percent of GDP. However, the investments were not funding investments that increased productivity, but instead went into real estate and private and public borrowing for consumption.

While the nominal exchange rate was “irrevocably” fixed, the real exchange rate was of course not. In several countries, the capital inflows were of such magnitude that local inflation rose. Local prices rose faster than international ones: the real exchange rate appreciated. For local borrowers, this made it look easier and easier to service their loans. At one point — at the height of the “bubble” — real interest rates (nominal interest rates minus inflation) turned negative, pushing even more borrowing into speculative investment in real estate and consumption.

When the 2008 global financial crisis hit, a decade of “capital flowing downhill” in the euro area came to a sudden stop. The real exchange rate appreciation in the periphery had led to a loss of international competitiveness, undermining borrowers’ capacity to service their debts. When these risky and incorrectly priced loans held by inadequately capitalized banks were transferred to the public sector, the markets perceived that these additional liabilities could not be shouldered. Two crises hit Europe in short succession: a sovereign debt crisis and a banking crisis.
The real exchange rate is not a policy instrument

The real exchange rate is set in a large array of markets and therefore difficult to influence by policymakers. If a country has a flexible nominal exchange rate, an appreciation or deprecation of the currency would quickly send a consistent price signal across all markets. In the eurozone, however, the shock needs to be translated into movements of domestic prices relative to international prices in a large array of markets without the help of such a consistent price signal. If it is a positive shock, wages (and profits) should increase. If it is a negative shock, wages (and profits) should fall.

Under a fixed exchange rate, the downward adjustment of domestic prices ("internal devaluation") can be difficult: nominal wages would need to fall, which can be psychologically, socially and politically very challenging. Alternative (equally unattractive) options include reducing working hours or outright dismissal. The latter becomes problematic if the recession is prolonged and workers remain unemployed for long periods, which could lead to a loss of skills and to long-term unemployment (hysteresis). Finally, the internal devaluation would need to happen economy-wide, with difficult coordination and distributional challenges. However, this is a short-term story. In the medium term, prices and quantities will adjust to the new market conditions, regardless of the exchange rate regime. This is why, especially for small, open economies, the choice between a fixed and a floating regime matters little in the long run.

Resilience in the EU

This report identified the “real exchange rate institutions” that were statistically associated with the resilience of inclusive growth in the EU during the 2004–2014 period. The findings shed light on the institutions that govern the adjustment of the real exchange rate and their association with the capacity to absorb shocks and facilitate a rebound that could be characterized as “inclusive” — a rebound combining growth, employment and increased incomes of the bottom 20 percent. The variables selected captured the main characteristics of the macroeconomic trends and the institutions that affected the flexibility of labor and product markets, the levels of trust and the magnitude of inequality. The selection of the explanatory variables was screened for theoretical, economic and statistical relevance. This included various measures of fiscal policy, banking sector characteristics, the labor market, private sector conditions and governance. The final selection was retained for use in this report.

Resilience challenges were faced by both euro and non-euro, as well as by older and newer EU members alike. Resilience in the EU differs significantly between member states (euro and non-euro). We measure the duration (half-life of the shock, measured in quarters) and depth (dispersion, measured as the standard deviation) of output and unemployment shocks and rebounds over time. Duration and depth vary across the EU, including within the eurozone. The differences are large. Differences in the half-life indicator range from 1 to 6 quarters for output and from 1.5 to more than 20 quarters for unemployment. The standard deviations of output and unemployment range from around 0.5 to 5.

Resilience and institutional variables are combined to form a “heatmap” (Table O.1). A “heatmap” brings together this report’s empirical results, assigning EU members values from “green” (most resilient) to “red” (least resilient) (first row of Table O.1). The outcome variable (economic resilience) is based on an index that aggregates trends in convergence, output, unemployment and household income. The policy and institutional variables combine several dimensions of shock response and economic rebound: the extent to which low income households are protected, labor market institutions allow for flexibility, and the private sector can and does adjust. The trust variable captures citizens’ trust in the country’s institutions. In this way, we associate the outcome variables with the policy and institutional variables that could “explain” the outcomes, if supported by trust.
The results describe the euro area experience during the last decade: if an economy cannot use the nominal exchange rate as a shock absorber and its monetary policy to temper booms and counteract busts, the flexibility of the real exchange rate takes center stage. This implies strengthening the institutions that assist in absorbing a shock and facilitating a strong rebound. Empirically, boosting resilience across the EU would be based on a policy mix that reduces income inequality, protects low incomes, creates flexibility in labor markets (but supported by collective bargaining and active labor market policies), supports private sector competition (while ensuring the ease of doing business) and strengthens trust in institutions, reinforcing resilience in a virtuous circle. In parallel, there is an important role for fiscal policy, mainly through automatic stabilizers and social protection (see Part One of this report).

Stronger resilience is supported by better real exchange rate institutions. There is a stronger concentration of “greens” on resilience variables and the underlying policies and institutions in the left side of the regional panels, while the “reds and oranges” dominate in the right side of the regional panels. Resilience and institutions are overall strongest in Western Europe and weakest in Southern Europe. However, several exceptions exist. First, Poland’s resilience is quite strong, on par with the Netherlands and Denmark, but with weaker institutions. Romania and Bulgaria also record relatively strong resilience with institutional indices that are below the EU average. In addition, a traditional optimal currency area indicator — business cycle synchronicity — would not have predicted the relative strength of Poland’s and Romania’s resilience in the face of the crises of the last decades. Ireland has a weak resilience track record but is now supported by a “greener” policy mix, suggesting less challenges going forward.
Overall, Western and Northern Europe exhibit strong resilience. These economies benefit from relatively strong institutions, with some exceptions. Both Belgium and Austria are examples of small, open economies that benefited from European integration, while euro adoption did not materially alter their monetary policy options. Sweden is not in the eurozone and is floating its currency. France scores relatively less well on private sector conditions and is an outlier in this “neighborhood” when it comes to trust in institutions. Germany’s protection of low incomes is below its peers. The UK also faces challenges on labor market conditions and trust in institutions.

Many Central European countries exhibited considerable resilience during the crises. Poland proved very resilient during the crisis but has overall weaker real exchange rate institutions than its peers: it seems to compensate for these (at least in the short term) through a flexible exchange rate. The Czech Republic’s economy is “in sync” with the eurozone’s core and its global value chains. It also protected low-income groups relatively well. However, this group still suffers from low levels of trust in institutions, creating challenges for reform effectiveness going forward. And while Romania (with little business cycle synchronicity with the euro area’s core) and the Czech Republic have flexible exchange rates that could function as short-term palliatives, Bulgaria does not.

Southern Europe’s resilience and policy mix is relatively weak. Households in Greece, Spain and Italy lived through some of the worst and longest falls in incomes in Europe. Households in Greece saw the greatest overall decline from pre-crisis income levels, with median households seeing a 40 percent decline and the bottom 20 percent of households seeing a 50 percent drop in incomes. While progress is made on some key policy variables (e.g. active labor market policies in Spain, better product market regulation in Italy and Portugal), the overall policy mix needs strengthening. Moreover, in all four countries, collective bargaining is relatively prominent, but it is not underpinned by trust in institutions which makes reaching a cooperative solution between the social partners more difficult. (This combination is also found in France and could create difficulties to reach a coordinated approach to real exchange rate adjustment when confronted with an economic shock.)

Europe’s least resilient economies are a mix of Central and Southern Europe countries. The overall policy and institutional mix in this group needs strengthening to improve resilience before the inevitable next crisis hits. Weak institutions, weak resilience and low trust can create a vicious, “scarring” cycle. Fortunately, Portugal has made substantial institutional improvements since the crises, while trust in institutions is in the “green”. Others made progress on some key policy variables (e.g. active labor market policies in Spain, better product market regulation in Italy). Reform is particularly urgent for Hungary, Croatia, Spain and Greece, as their citizens’ trust in formal institutions is among the lowest in the EU.

Convergence, business cycle synchronization and the real exchange rate

After 2008, convergence in the EU stalled at the national and reversed at the sub-national level, undermining resilience. The effectiveness of a common monetary policy should benefit from increased convergence between member states. Resilience should improve. However, as discussed in Part One of this report, post-2008 trends in the EU make improving resilience more difficult. At the national level, convergence has stalled.

More business cycle synchronicity does not necessarily imply stronger resilience. Countries were ranked according to the strength in the correlation of their cyclical output gaps: the darker the color, the stronger the correlations (Table O.1). The eurozone core (Austria, Belgium, Finland, France, Germany, and the Netherlands) exhibit significant correlations of their business cycles and demonstrate relatively strong resilience. However, the Czech Republic has relatively strong synchronicity but is weaker on resilience,
while Italy and Slovenia are highly “in sync” but show weak resilience. Finally, Romania’s economy is weakly synchronized with the euro area, but demonstrates average resilience.

Real exchange rate pressures within the EU are significant. This report updated the traditional OCA index. It found that Croatia and Romania exhibit indicator values today that are similar to pre-euro Italy and Portugal (two countries that turned out to lack resilience during the crisis). In contrast, Bulgaria would face relatively little real exchange rate pressures: its index level is comparable to pre-euro Netherlands. Moreover, as the history of the eurozone attests, endogeneity — institutional improvement by virtue of being a member of the eurozone — is not a given: while the OCA index indeed improved for Austria, Belgium, Finland and the Netherlands after they adopted the euro, the index worsened for Greece, Ireland and Spain. In other words, additional variables need to be considered for successful participation in the monetary union.

Low-income protection

In most countries, the duration or depth of the crisis was longer for bottom 20 percent than for median households. The first part of this report assessed these trends in detail. It demonstrated that countries with high social protection spending directed towards old age and health, but limited spending devoted to poverty-targeted policies and programs, faced deeper poverty increases and longer periods of recovery. However, such poverty-targeted programs are largely absent or have insufficient coverage in many countries in the EU, including in the eurozone.

Social protection programs need to reach the poor, cover enough households and be responsive to additional enrollment during times of need. Social protection programs targeted to the poor and active labor-market policies should ensure that the lower income groups — most of which are typically found in lagging regions — are protected and supported in their adjustment to inevitable shocks. From a macroeconomic perspective, they support “liquidity-constrained” households — this should amplify the fiscal multiplier. Effective social protection can assist in absorbing shocks and help ensure a rebound that is economically inclusive and builds trust.

Labor market conditions

Institutions that allow wages — an important determinant of the real exchange rate — to adjust, improve resilience. Wages enter the real exchange rate directly, but also indirectly through their impact on local inflation rates: the institutions that govern wage-setting behavior therefore play an important role in responding to shocks. More wage flexibility is, on average, associated with better resilience.

The most resilient economies of the EU are all underpinned by sound labor market conditions. In these countries, labor market institutions combine flexibility with active labor market policies, while benefitting from collective bargaining institutions that yield outcomes that support resilience. For instance, our results suggest that a country with a 20 percentage points higher collective bargaining coverage (the difference between Finland and Spain in 2018) tends to have a 1 ¼ quarter shorter half-life of an employment recession — a change of economic significance given that the mean half-life is around 10 quarters.

However, labor market institutions need to be seen in context, as rigidities in one aspect can be compensated by flexibility in another. For instance, rigid employment protection in several western European economies, when combined with high wage flexibility, does not result in worse unemployment trends. And when collective bargaining is buttressed by high levels of trust, resilience is boosted. Conversely, high levels of collective bargaining in a context of low wage flexibility and lack of trust undermines resilience.
High levels of employment protection reduce resilience. Of all the labor market variables tested for this report, the level of employment protection (EPL) is strongly associated with a loss of resilience in terms of the length of the recession. Changes over time can be considerable, suggesting the potential for policy reform. A country which reduces its EPL score by 0.6 (as was done by Portugal between 2008 and 2012) can look forward to a decline in the half-life of its economic crisis by around one quarter.

Countries with stricter employment regulation protect poorer households less during economic recessions. Recall the findings from the first part of this report, which were arrived at by observing the “pass through” of economic growth trends onto household income distribution. Across the EU, there was little difference in the extent to which periods of growth were passed through to poorer households, but substantial difference in the extent to which the growth contraction during the crisis was passed through to poorer households. In countries with stricter employment protection, poorer households were 60 percent more exposed to contractions than those in countries with more flexible regulations. However, more flexible labor markets can also have the opposite effect, depending on the support to the reemployment of workers through active labor market policies.

However, several member states combine high levels of employment protection and strong resilience. This is the case for member states producing at the higher ends of the value chain and characterized by high levels of trust and cooperation. In Germany, for instance, even though there is a high level of employment protection, the flexibility of wage-setting is high, because of the specific governance structure of the German labor market institutions, including those at firm level. Firms’ competitiveness in the value chain depends on investments made in the highly specialized and firm-specific skills of its workers: firing them during a recession can become prohibitively costly, because of the costs of searching and re-training of new workers. German-style cooperation can allow labor markets to absorb the shock without substantial job losses, but with a flexible response of wages instead.

Similarly, collective bargaining approaches between labor unions, business, government can be effective if these stakeholders have a shared understanding of the economic challenge they face and can agree on a mutually beneficial solution. While the real exchange rate is not a policy instrument, experience from several EU members shows that their economic stakeholders (government, business and labor) have at times been able to influence and coordinate real exchange rate movements. Such a coordinated response boosts resilience if the economic stakeholders can agree on the macroeconomic challenges and their solution. This presupposes high levels of trust, which then strengthens further if the economic rebound is successful.

This could explain why, on average, collective bargaining is associated with more employment resilience. A country with a 20 percentage points higher collective bargaining coverage reduces the half-life of unemployment shocks by 1 ½ quarters — a reduction of economic significance given that the mean half-life is around 10 quarters. The impact of collective bargaining on unemployment volatility is similarly economically significant.

However, if trust is low, and stakeholders cannot agree on the macroeconomic challenge they are facing, collective bargaining can lead to more job losses and less resilience. This was the case for Croatia, Greece and Spain, where above-average coverage of collective bargaining was associated with very long unemployment episodes after a shock. The capacity of economic stakeholders to arrive at cooperative solutions based on trust can be traced back to history. For instance, Italy and Spain have a weaker capacity to arrive at a coordinated, cooperative response to shocks by the key stakeholders (government, business and labor) than is the case for countries such as the Netherlands and Germany. This weaker capacity to deliver cooperative solutions in countries such as Italy or Spain can be traced back to the history of labor market regulations and the state’s attitude towards labor unions.
Active labor market policies boost resilience. We find that spending on active labor market programs was positively associated with household resilience. However, many countries in Central and Southern Europe have labor market policies that are skewed towards passive measures (such as income support and early retirement) rather than towards active labor market programs that support workers to quickly return to employment after job loss and helping workers retain their jobs.

Private sector conditions

Better private sector conditions are associated with stronger resilience. Europe’s most resilient economies boast policies and institutions that make it easier to do business, avoid excessive product market regulation, help enforce contracts and resolve insolvency efficiently. In Austria, the Netherlands, Denmark, Finland, Germany and the UK sound private sector policies and institutions are positively associated with resilience. This is much less so for Romania, the Czech Republic, Bulgaria, Hungary, Slovenia, Croatia and Greece.

Differences in the ease of doing business across the EU are still significant. However, reforms can narrow such differences relatively fast, as demonstrated by Poland, the Czech Republic, Slovenia, Latvia, Portugal and Lithuania over a four-year period. On the other hand, several eurozone members, as well as several euro candidates score low on the index and show only modest improvements.

Lack of competition and rigid, unnecessary product and service market regulations limit the private sectors’ capacity to respond to, and rebound from, shocks. The higher the level of competition, the faster market prices (and the real exchange rate) will adjust to the new economic context. And open, competitive markets also support recovery by facilitating a speedy entry of new, and exit of old, firms. Conversely, lack of competition implies high mark-ups and market power, counteracting both price and wage responsiveness.

This would explain the positive association between levels of competition and resilience found by this report. If a country improves the quality of regulatory environment for business as measured by World Bank’s ease of doing business indicator by 10 points (as has been done by Poland between 2010 and 2014), it reduces the half-life of a given economic shock by around one quarter. Given an average half-life of GDP shocks in our sample of slightly below three quarters, this amounts to a sizeable reduction.

Rapid improvements in private sector conditions are also feasible politically. This was demonstrated by Poland, the Czech Republic, Slovenia, Latvia, Portugal and Lithuania over a four-year period. Among the less resilient economies, Romania, Bulgaria, Hungary, Italy, Slovenia, Latvia, Croatia, Spain and Greece all have significant room for improvement.

Trust and inequality

Higher trust levels improve overall economic efficiency. In general, trust lowers the transactions costs of economic agents’ market participation by lowering the costs of information, contracting, and enforcement. Low trust results in higher user cost of capital, putting a damper on capital expenditures. And with a low level of trust, the cost of business transactions can be very high, even if there is a legal system in place that can enforce contracts. Even stock market participation is lower in countries with a lower level of trust. High levels of trust in institutions should not be confused with strong trust in family ties. Such societies may accept selfish behavior outside the family network more readily, leading to less generalized trust outside the family circle. Measures of “generalized trust” increase when formal institutions perform better.
Countries with more trust are more resilient. An increase in the Eurobarometer’s “trust in institutions” indicator of the size recently experienced in Sweden is associated with a reduction in the half-life of a shock to the unemployment rate by four quarters. Similarly, a decrease in its score by 1.5 — as observed in Greece and Spain over the sample period (Figure O.8) — suggests that their shock half-lives have increased by six quarters. And according to this report’s estimates, a change in the Eurobarometer’s “Trust in people” indicator by 2 (as seen in Italy, Spain, Romania or Hungary) will impact the volatility of unemployment rate 1.2 percentage points. This number is economically significant, given that the mean volatility takes a value of around 2 percentage points.

In addition, a faster and more inclusive rebound in turn increases trust, creating a virtuous cycle. Conversely, a protracted recession undermines trust. Not only were trust measures lower in Southern Europe than in Northern Europe (with Southern Europe hit much harder by the crisis than Northern Europe), Southern Europe’s trust levels also worsened considerably during the last decade of economic crises (Figure O.3). This underlines the need to strengthen the resilience of inclusive growth in the face of economic shocks: failure to do so risks lowering trust levels, which undermines economic performance over the longer term even further.

An increase in inequality reduces trust and leads to less resilience, creating a vicious cycle. A high degree of inequality undermines trust. If an economic shock causes an increase in inequality, trust is reduced, in turn making the economic rebound more difficult. The negative correlation between trust and inequality is strong. Rising inequality also undermines long-term growth and would make economic convergence more difficult to achieve.
More resilience boosts trust in institutions, while less resilience destroys it. Levels of trust in institutions do change over time: they accumulate or decumulate. More resilience in the face of a significant economic challenge creates trust. Recent experience in the EU shows that levels of trust in institutions do change over time. Trust in institutions and resilience reinforce each other. Going forward, this means (re-)building trust among the stakeholders through dialogue and action, so that the real exchange rate adjustment when the next shock hits will create a virtuous circle between trust in institutions and resilience. Failure to do so undermines trust and resilience, making the next crisis even more difficult to navigate. However, institutions can be difficult to change: impactful institutional reforms are rarely done “with a stroke of the pen”. Effective reform requires building citizens’ trust in the fairness and efficiency of these institutions. This could mean initiating stakeholder-dialogue at national, regional and firm-level to jointly design, implement and monitor faster and deeper reform of the formal institutions. Without it, reform is pointless and risks ending up as a set of de jure “formal” institutions, unable to replace the informal institutions in place.

Finally, boosting resilience does not create long-term growth. Ultimately, resilience and flexible and coordinated real exchange rate adjustments are devices to cushion shocks, support adjustment. They need to be accompanied by measures that foster long-term productivity growth. But boosting resilience does create the policy and fiscal space to undertake such structural reforms and build the trust to implement them effectively.

Notes

1 EC, 2017a.
2 GDP per capita was below its 2007/08 levels in 2018 in Greece, Cyprus, Italy, Luxembourg and Finland while employment remained below its 2007/08 levels in Denmark, Greece, Cyprus, Italy and Ireland.
4 The shift in the spatial distribution of low-income households is not as visible when using national at risk of poverty (AROP) measures, since these capture strongly relative measures of poverty whose thresholds adjust on a yearly basis with median incomes. This is explored in greater depth in Jenkins (2018).
5 We define the middle class as those in the 40th and 80th percentiles of the disposable income distribution.
6 The slower than average growth of those in the middle of the distribution — the 40th to 80th percentiles of the disposable income distribution — can be seen in population weighted estimates of growth across EU member states by percentile. When population weights are removed — each country has the same weight — middle class growth rates are similar to average growth rates.
7 High social protection spending refers to the percentage of spending devoted to social protection expenditures in GDP. We follow the second Regular Economic Report (World Bank 2015) in dividing member states into four social protection categories according to their spending on social protection overall and the coverage of their social assistance systems for the poorest quintile. These countries are able to cover a significant portion of the bottom quintile (around 80 percent on average) through their social assistance programs. The social protection system includes a more balanced mix of programs with basic elements that buffer against different risks (e.g., risk of unemployment, of disability, of poverty).
8 We follow World Bank (2015) in using the median expenditure on social protection and median coverage of the bottom 20 in social assistance programs in 2004 as a cut-off for separating countries into high and low social protection categories.
9 The ESM can give fiscal support in case one of its member states is threatened with a “sudden stop”: a sudden loss of access to financial markets. ESM support is not automatic, it is conditional: it comes with a strict macroeconomic adjustment program that would need to be negotiated and agreed to first. It is not intended to serve as an automatic counter-cyclical fiscal policy instrument. Instead, this is the remit of individual member states.
10 That is, bank failures of systemically important institutions could still endanger the fiscal sustainability of the respective sovereign. This is the so-called bank-sovereign debt nexus.
To assess the synchronicity in economic dynamics across countries we first extract the business cycle component from the underlying data on economic activity and then measure the strength of co-movements in these series. To identify business cycles, we follow the most widely used approach in this respect and determine them as “deviation cycles”, i.e. as deviations of economic activity from an estimated trend. To estimate the trend, we apply the Hodrick–Prescott (1997) filter. To check for robustness, we also used the Christiano–Fitzgerald (2003) filter. Results were not significantly affected by the choice of the filter. To measure the strength of co-movement we compute simple correlation coefficients.

Combining variables from the World Bank’s Doing Business survey with data on competition from the Global Competitiveness Report data, we also developed a measure of product market performance. Poland and Italy are countries with the largest improvements in recent years. Bulgaria, Croatia, Cyprus, Greece, Hungary, Malta, Slovakia, and Romania score low on the efficiency of their product markets.
Part One:

Inclusive Growth
EU member states have a common policy objective to deliver inclusive growth to their populations. Part One of this report monitors inclusive growth, and puts forward a framework for doing this. This focus is mirrored in the European Pillar of Social Rights¹ from 2017 which focuses on growth that supports inclusion and leads to sustainable improvements in social outcomes and living standards across all groups and people. This reflects a growing concern of the long-lasting and uneven scars of the crises on people across Europe. It speaks to the need to closely monitor the inclusiveness of growth, and to design policies that tackle growing income inequalities, within-country regional divergence and support the resilience of household incomes, particularly of poorer households, in times of need.

This report captures inclusive growth using three standards, notably growth that is: (i) strong and balanced, (ii) shared across society, and (iii) resilient to avoid gains being swept away².

1. **Strong and balanced**: whether the pace of growth has been close to the productive potential of the economy and whether the structure of growth has been balanced, notably through avoiding the buildup of external and domestic imbalances.

2. **Shared**: whether gains have been shared across regions, people and groups, most notably whether growth has fed through to higher incomes, lower inequality and better employment opportunities across all groups³. This report examines inequality through both vertical (across households and individuals) and horizontal (across groups and regions) lenses⁴.

3. **Resilient**: whether the economy and its households can absorb and recover from shocks, allowing previous gains to be maintained. We place special emphasis on whether worse-off households (who typically have fewer savings and channels for cushioning their living standards in response to changing economic and employment conditions) are shielded during periods of contraction and whether they participate in the rebound.

The subsequent sections follow the framework to explore how developments in growth have supported reductions in poverty, shifts in inequality and jobs. A discussion of resilience from an economy-wide perspective can be found across all three dimensions of monitoring since the way countries have responded to the global financial and eurozone crises in the last few years plays a fundamental role in characterizing both their GDP and household income growth paths.

**Labor and social policy needs to balance flexibility with security.** This topic is taken up in greater depth in the final section that examines the policy structures that may support household resilience. Labor flexibility is needed to facilitate economic adjustment during downturns, supporting workers and firms to find solutions that reduce long-term impact of shifts in economic conditions on employment and unemployment. Social policy is needed to provide adequate security through income protection to those who have fallen behind due to changes in labor market conditions, so that job separation does not lead to entrenched poverty and long-term unemployment.
**Strong and balanced growth**

Strong and balanced growth is needed to reignite real convergence within the EU. This makes the reforms that enhance productivity, encourage private sector investment and prepare workers for continuously evolving labor markets a priority. In addition, the deep reaction of a number of countries to the last crises calls for reforms that strengthen the resilience of their economies. Economic absorption can be promoted by policies that support the stabilization of output and consumption. For this, rebuilding fiscal buffers in high-debt countries and reducing vulnerabilities in the financial sector are key. Finally, economic recovery can be enhanced through reforms that allow price changes or factor reallocation processes, discussed in the second part of this report.

The sustained growth seen in Europe in the 1990s and early 2000s was interrupted first by the global financial crisis and subsequently by the euro zone crisis. The depth and persistence of these crises varied substantially across the EU. This can be seen from an economy-wide perspective by looking at GDP per capita (Figure 1.1 a) and from a population perspective by examining median household disposable incomes per capita (Figure 1.1 b).

In terms of GDP, Central Europe was less affected by the crises than Northern and Southern Europe. In Central Europe, the output shock was smaller than in the rest of the EU and the recovery was very fast (Figure 1.1), with GDP per capita in many countries not shrinking below pre-crisis levels. These economies have proved the most resilient to the economic shocks. The swift rebound was driven mostly by Poland: the only EU country to avoid a technical recession in the aftermath of the financial crisis. The impact of the crisis in Northern Europe was most pronounced in the Baltic states, with Latvia and Estonia’s GDP shrinking by 20 percent. In Southern Europe, Greece was worst affected with GDP per capita contracting by 24 percent. The slump has been prolonged in Southern Europe where GDP per capita is predicted to return to its pre-crisis level only beyond 2020.

**Figure 1.1** Output per capita and median incomes were hardest hit in Southern Europe and have yet to recover to their 2007 levels

a. Real GDP per capita, by region. 2007=100

b. Real median household income per capita, by region. 2007=100

---

Note: Weighted average across countries. Data for 2018–2020 are AMECO forecasts.
Source: Eurostat, World Bank calculations.

Note: Weighted average across countries. Data for 2017–2020 are World Bank forecasts.
Source: World Bank estimates using EU-SILC data.
In Southern Europe, median household incomes mirrored the substantial GDP shifts, while in Northern Europe a distinct cushioning of the impact of the crises on households was seen. At the EU level, median household incomes dropped by approximately 5 percent between 2007 and 2014 before growth resumed. By way of contrast, median incomes in the US dropped by 10 percent during the Great Recession. In Southern Europe, median household incomes dropped further and displayed a greater sluggishness than GDP per capita in their recovery. For example, in Greece disposable incomes per capita declined by approximately 38 percent between 2007 and 2014 — figures that are of a comparable magnitude to the drops in income seen in the US during the Great Depression. While they recovered slightly between 2013 and 2016, median household incomes continued to be 36 percent below their pre-crisis levels in 2016. By contrast, median incomes in Poland did not drop during this period and, in the case of Sweden, the shifts in output per capita at the macro level did not pass through to the income of median households.

Currently, Europe’s post-crisis growth recovery is slowing down. GDP per capita growth was still strong at 1.8 percent in 2018, albeit easing from its 2017 peak (2.2 percent) as part of the broader global slowdown. GDP per capita growth rates in Europe are now starting to fall below those in the United States (2.1 percent), which was not the case in the previous 2 years. Central Europe has remained the leader with a catch-up growth rate of 4.6 percent (Figure 1.2), the highest regional rate, though still below its pre-crisis GDP per capita growth rate. Western and Northern Europe returned to pre-crisis levels fast, despite slower growth rates than the years preceding the financial crisis. Southern Europe’s growth rate, at 2.4 percent, was only slightly faster than that in Western Europe (2.3 percent), but still displayed progress towards regaining its pre-crisis GDP levels.

Private consumption is the leading driver of growth, casting doubt on future resilience. In Central Europe, private consumption contributed about 2.5 percentage points to GDP growth in 2017 and 2018, supported by recovering labor markets with unemployment rates coming down. In Southern and Northern Europe the contribution of private consumption was also strong in the last two years, being responsible for about half of the GDP increase. Government consumption also provided a positive contribution to growth, but of a much smaller magnitude (Figure 1.3). In the past, consumption has not proven to lead to a resilient European growth pattern.
A slowdown in world trade and weakening demand from China have contributed to a declining contribution of net exports to growth. Only in Western Europe did exports have a marked positive impact on growth in the last few years (Figure 1.3). Significant current account surpluses, such as those recorded in Germany and the Netherlands, contribute to broader trade tensions between the US and the EU. They also point to structural problems: a high surplus of German and Dutch savings compared to relatively low levels of domestic investment.

Investment remains stubbornly low, delaying a more resilient recovery going forward. Overall, investment has yet to return to pre-crisis levels in Europe (Figure 1.4). While Western Europe maintained investment levels of a similar magnitude before and after the crises, countries in Central and Northern Europe appear to have stabilized at a lower level. The good performance of investment in Western Europe comes from strong investment by firms that, since 2013, has been higher than before the crises (Figure 1.5).
Investment levels in Southern Europe are still recovering from the pronounced and prolonged drops seen between 2008 and 2014: they are still 7–8 percent of GDP lower than in the first half of the 2000s.

However, savings are trending upward, supporting improvements in external balances. During the crisis period, savings fell across the EU (Figure 1.6). Currently, in all regions except Southern Europe, saving rates have returned to pre-crisis levels, while Central Europe has seen a significant improvement (already starting in 2010) over and above its pre-crisis levels. In Southern Europe, saving rates had already been dropping before the crisis. Fueled by the large inflows of credit and the resulting rise in inflation, the real exchange rate appreciated, while real interest rates were turning negative on the back of the substantial fall in nominal interest rates following the adoption of the euro (see Part 2 of this report). These trends undermined the incentives to save in Southern Europe.

Higher savings are helping to correct the imbalances that had built up in the pre-crisis boom years. Since 2013, all regions recorded a surplus in their current account balances (Figure 1.7), constituting progress towards a more balanced growth pattern. In Central and Northern Europe, the main adjustment was achieved through reduced trade deficits in goods. In Southern Europe, the adjustment took place mainly through a growing trade surplus in services (mainly tourism): it almost tripled compared to the pre-crisis period. However, since 2011, current account surpluses have barely declined in Germany, Denmark or the Netherlands, and have remained above 6 percent of GDP — the upper threshold specified in the Macroeconomic Imbalance Procedure.

Fiscal balances have also largely been restored. Countercyclical fiscal policy in the crisis period helped to absorb shocks, translating into a sharp widening of fiscal deficits across all EU countries. Since 2009–2010, fiscal balances have been largely restored with overall and structural deficits narrowing (Figure 1.8). This has been achieved through important cuts in current expenditure (more than 50 percent of the adjustment), tax revenue increases but also small cuts in capital spending and increases in other revenues in Central Europe (Figure 1.9). As a result, all countries had fiscal deficits below 3 percent of GDP in 2018 except Cyprus (4.8 percent of GDP) and Romania (3.0 percent of GDP).
However public debt levels increased substantially during the crisis and have been slower to improve, limiting fiscal space going forward. Public debt increased in Southern Europe from 70 to almost 120 percent of GDP. In Central and Northern Europe, public debt jumped by more than 70 percent (relative to GDP). While improved fiscal performance in the last few years (thanks to increased revenue) helped to reverse these trends, the increases recorded in 2009–14 largely limit any space for countercyclical fiscal policy in the face of a new crisis.

Total factor productivity growth remains weak in Southern Europe, raising concerns about the sustainability of long-term growth. Productivity growth is strong, however, for Central and Northern Europe, in particular after 2015 (Figure 1.10). In Southern Europe, total factor productivity (TFP) growth has made
The policy agenda to promote strong and balanced growth in the EU is not a new one. Strong growth is needed to reignite the path towards further real convergence in the EU. Thus, reforms that enhance productivity, encourage private investment and prepare workers for the requirements of continuously evolving labor markets should be a priority. However, given the experience of the last decade, reforms that strengthen the resilience of the EU’s economies are also called for. Better economic absorption can be promoted by policies that enable the stabilization of output and consumption through government intervention and the use of private saving or borrowing. For these, rebuilding fiscal buffers in high-debt countries and reducing vulnerabilities in the financial sector are key. Stronger economic recovery can be enhanced through adjustments in the real exchange rate that improve competitiveness through price changes or factor reallocation processes. These issues are discussed in the second part of this report.

The policy agenda to promote strong and balanced growth in the EU is not a new one. Strong growth is needed to reignite the path towards further real convergence in the EU. Thus, reforms that enhance productivity, encourage private investment and prepare workers for the requirements of continuously evolving labor markets should be a priority. However, given the experience of the last decade, reforms that strengthen the resilience of the EU’s economies are also called for. Better economic absorption can be promoted by policies that enable the stabilization of output and consumption through government intervention and the use of private saving or borrowing. For these, rebuilding fiscal buffers in high-debt countries and reducing vulnerabilities in the financial sector are key. Stronger economic recovery can be enhanced through adjustments in the real exchange rate that improve competitiveness through price changes or factor reallocation processes. These issues are discussed in the second part of this report.

**Shared growth**

The report now turns to examining the extent to which growth has been shared, focusing on shifts in the spatial dispersion in incomes, low-income households, inequality and labor market conditions.

**The spatial dimensions of growth: across countries and regions**

Spatial dispersion in GDP per capita across the EU continues to be large. Economic activity is never spread evenly across regions within a country, but the extent of variation in activity matters for inclusion, growth prospects and social cohesion. Long-term convergence has contributed to the catching up of initially worse-off regions and countries. However, spatial dispersion in GDP per capita (Map 1.1) and living standards remains substantial. And these differences in incomes across regions are linked to social outcomes and opportunities. Leading regions in a country have on average 2.3 times the GDP per capita
of the poorest region in their country\textsuperscript{12}, and one in four EU residents lived in a region (NUTS-2) with GDP per capita below 75 percent of the EU average in 2015\textsuperscript{13}. Moving to more disaggregated regions (NUTS-3), we see more substantial variation emerging. For example in Bulgaria GDP per capita in PPS terms\textsuperscript{14} in 2017 was below 30 percent of the EU average in just under a third of NUTS-3 regions while it was just above average in the capital region.

\textbf{Map 1.1} GDP per capita varies substantially across the regions of Europe

2015 GDP per capita (PPS) at sub-national (NUTS-2) level for EU countries (excl. UK)

\begin{verbatim}
0 \leq 10,000
10,000 \leq 17,500
17,500 \leq 25,000
25,000 \leq 40,000
40,000 \leq 170,000
\end{verbatim}

\textit{Note}: Per capita GDP (in purchasing power standard adjusted form) at regional (NUTS-2) level.

\textit{Source}: World Bank estimates using GDP per capita in PPS terms from Eurostat. A detailed description of the data used is given in Annex 1.
The spatial dispersion seen in 2000 has narrowed due to substantial long-term economic convergence across countries and regions in the EU. This has contributed to rising living standards in areas with initially lower GDP per capita. Overall, the EU has achieved high levels of convergence between worse and better-off countries and sub-national regions. It is appropriately labelled the “convergence machine”. For instance, the three countries with the lowest GDP per capita in 2000 (in PPS terms) — Bulgaria, Romania and Latvia — saw the ratio of their average GDP per capita to the EU average rise from 30 percent in 2000 to 61 percent in 2018. This convergence was achieved through faster growth in output, and despite the labor force migration seen across and within countries during this period.

**Figure 1.12** Long-term convergence between 2004 and 2014 has been strongest at the national level

Average growth rate versus initial per capita GDP at the national and sub-national levels

<table>
<thead>
<tr>
<th>a. National</th>
<th>b. NUTS-2</th>
<th>c. NUTS-3</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Graph" /></td>
<td><img src="image2" alt="Graph" /></td>
<td><img src="image3" alt="Graph" /></td>
</tr>
</tbody>
</table>

*Note:* Figure 1.12 plots average annual growth rates between 2004 and 2014 against the (log) level of per capita GDP in 2004, correspondingly, graphs are in log or ratio scales. The left panel depicts national data, the medium panel considers NUTS-2 and the right panel presents NUTS-3-level data.

*Source:* World Bank estimates using GDP per capita data from Eurostat. A detailed description of the data used is given in Annex 1.

During the crises, the convergence machine went into reverse across Southern and parts of Central Europe. Countries with lower initial GDP per capita in 2004 tended to grow faster than relatively richer countries between 2004 and 2014. This process (beta-convergence) continued almost uninterrupted after the financial crisis for most of Central Europe, but not for Southern Europe — where we saw before the crises a substantial misallocation of capital towards non-tradable sectors (construction, real estate) — which diverged from Western Europe between 2009 and 2015 (Figure 1.13).

**Figure 1.13** While Central European countries continued to converge to those in Western Europe, the divergence of countries in Southern Europe fed into the stalling of the convergence machine

Per capita output relative to Western Europe (GDP per capita, PPS, WE=100)

<table>
<thead>
<tr>
<th>Year</th>
<th>CEE</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>37.0</td>
<td>86.9</td>
</tr>
<tr>
<td>2001</td>
<td>42.7</td>
<td>86.0</td>
</tr>
<tr>
<td>2002</td>
<td>51.4</td>
<td>88.1</td>
</tr>
<tr>
<td>2003</td>
<td>55.5</td>
<td>79.6</td>
</tr>
<tr>
<td>2004</td>
<td>56.9</td>
<td>76.8</td>
</tr>
<tr>
<td>2005</td>
<td>61.6</td>
<td>79.1</td>
</tr>
</tbody>
</table>

*Note:* Population weighted averages.

*Source:* AMECO, World Bank calculations.
The speed of catch-up between 2009 and 2015 was half that seen between 2000 and 2007. While lower-income economies have continued to see — on average — faster growth than richer countries, at the national level, the speed of catchup (beta convergence) between 2009 and 2015 was less than half that seen between 2000 and 2007. In addition, the speed of convergence is much weaker at the sub-national levels: it is lower at the NUTS-2 level, and even more limited at the NUTS-3 level (the slope of the regression line is flatter) and more heterogeneous (the data points are more spread out) (Figure 1.12).

Moreover, during the crises the dispersion of GDP per capita levels across regions began increasing — there was sigma divergence. With the beginning of the recovery in Southern Europe, the process of sigma convergence at the EU level resumed, albeit at a reduced pace. The reduction of dispersion in GDP per capita across countries and regions that has been seen since 2000 (sigma convergence) stalled in 2009, resulting in sigma-divergence (Figure 1.14). This contributed to the widening of regional disparities in GDP per capita, employment and unemployment rates. The first signs of convergence resuming were seen in 2016, when national and regional (NUTS-2) level dispersion once again began to narrow compared to their 2015 levels. However, GDP per capita and employment in 2018 remained below their pre-crisis levels in 5 countries, accounting for approximately a fifth of the population of the EU — highlighting the contrast in progress seen across member states.

**Figure 1.14** Country convergence stalled after 2009, and regions diverged. Convergence processes appear to have resumed after 2015

Coefficient of variation of GDP per capita, PPS, at the national and sub-national (NUTS-2 and NUTS-3) level.

**Note:** The analysis is conducted using GDP per capita (in PPS terms) at the national, NUTS-2 and NUTS-3 levels. Across-country coefficients of variation are population weighted. Within-country analysis is unweighted and uses NUTS-3 level data.

**Source:** World Bank estimates using Eurostat data (dataset identifiers nama_10r_2gdp and nama_10r_3gdp).

**Spatial dispersion has been rising within countries.** Regional dispersion in GDP per capita at the NUTS-2 and NUTS-3 level is significantly higher than across-country differences and, at the NUTS-3 level, it has risen considerably since 2000. When we look within countries at how dispersion in GDP per capita has changed over time, we find a widening of the coefficient of variation across NUTS-3 regions. This widening has been most pronounced among countries in Central Europe, but an increase in regional dispersion can be detected across almost all countries. The rise of within-country dispersion paused briefly while convergence processes at the national level stalled. But, with the resumption of national convergence, the processes that result in increased dispersion within countries have resumed. The increased dispersion noted within countries partly reflects higher growth rates for regions with high GDP per head, which have grown faster than the EU average.

**The divergence at the subnational level matters because regions that are already lagging risk falling behind even further.** It is a matter of concern that the rapid catching-up process of Central and Eastern European
countries has been accompanied by increasing dispersion within these countries. If there are large differences of output within a country, the cost of operating for firms in lagging regions should be lower (e.g. lower wages, rents or land prices) to improve their competitiveness and in this way accelerate their catch up with the more prosperous regions. However, if countries have wage-setting policies operating at the national level that do not reflect local reservation wages, or large differences in the business environment, infrastructure and access to health and education, the competitiveness of the lagging regions will be negatively hampered. An economic shock can then trigger an acceleration of permanent labor migration to the more prosperous regions (and possibly beyond, to other countries). This would undermine future economic growth in the lagging regions. While migration is to be expected as part of the dynamics of structural transformation and comparative advantage, if labor moves because inward investment is constrained by a lack of competitiveness unrelated to comparative advantage, the lagging region risks falling behind permanently.

Has growth fed into the well-being of low-income households?

This report tracks the share of the population with low-incomes by EU-standards — those with disposable equivalized income of less than €23 per adult equivalent per day in 2011 PPS. This common and fixed EU-wide concept of low income enables the monitoring of convergence in low-income shares and the shifts in living standards among the worse-off in the EU. The approach used for setting the low-income threshold — at 60 percent of EU median income in 2011 — mirrors national concepts of the population at risk of poverty (AROP), which are based on 60 percent of national contemporary median income. But the approach differs from national AROP concepts in two key ways. First, the low-income by EU standards threshold captures a common EU-wide metric and standard for what it means to live in relative deprivation. This allows for monitoring of low-income populations using EU standards to be conducted on an equivalent basis across countries. Second, the low-income threshold is anchored in 2011 living standards — fixing the threshold to the 2011 median income — rather than mirroring annual shifts in median incomes. This allows for tracking the low-income population over time using a constant threshold, anchored in 2011.

During the global financial crisis and the ensuing eurozone crisis, the share of the population under €23 a day increased from 21 percent in 2008 to 25 percent in 2012. Projections indicate that the low-income share returned to pre-crisis levels in 2017 and it is anticipated to continue falling to 18 percent in 2020. As countries endured two contractions between 2008 and 2012, the share of those under €23 a day increased in most EU countries and particularly in Southern European countries. A turning point was reached in 2013 for the EU as a whole and in 2014 for Southern Europe. At the EU level, the share is predicted to fall to 20 percent in 2017, falling for the first time since the crisis below its 2008 levels. Continued growth in Central Europe, which has the highest share of the low-income by EU standards population, and a resumption of growth in Southern Europe is anticipated to support an improvement in the living standards of the worst-off in Europe and reduce the share of this population to 18 percent by 2020.

Post-crisis reductions in the low-income share was driven by growth in Central Europe which saw progress resume in 2012, earlier than other parts of Europe. The share of the population under €23 a day recorded a 24-percentage point drop between 2006 and 2016, moving nearly 17m people above the low-income threshold. The percentage of the population under €23 a day is projected to decline to 39.3 percent in Central Europe by 2020, from a starting point of 65.3 percent in 2006. However, the decline since the global financial crisis has been slower than in the earlier periods due to slower growth rates.

In Southern Europe, the share of the population under €23 a day is projected to remain above pre-crisis levels until at least 2020. Most countries in Southern Europe saw sharp increases in their low-income shares, contributing to a 50 percent increase in the share of those with low-incomes by EU standards between 2008 and 2013. The impact of the crises on poorer populations has also been long-lasting: the share under €23 a day
continued to be 30 percent higher in 2016 than in 2008. And in a number of countries, notably Cyprus, Greece, Italy and Spain, the share of those under €23 a day is projected to remain above 2008 levels even in 2020.

**Figure 1.15** The share of the population with incomes under €23 a day declined from 27 to 23 percent between 2004 and 2016. It is projected to further decline to 18.5 percent by 2020

![Graph showing the share of the population with incomes under €23 a day](image)

*Note:* a. Croatia added to the data. * Projection.
*Source:* World Bank calculations using AMECO and EU-SILC data, excluding Germany.

**Figure 1.16** The number of people living in low income households dropped by 20m between 2012 and 2017 and is expected to decline by a further 10m by 2020

![Graph showing the number of people living in low income households](image)

*Note:* a. Croatia added to the data. * Projection.
*Source:* World Bank calculations using AMECO and EU-SILC data, excluding Germany.

Low-income shares in Central Europe have converged to those of Northern and Western Europe, although they continue to remain substantially higher, while in Southern Europe they diverged until 2015. This has fed into changes in the spatial distribution of low-income households and a rising share found in Southern Europe. Greece, which went through an exceptionally steep and sustained economic downturn, has shifted from having a below-average share of the population under €23 a day in 2007 to having the fourth highest share in 2016 (Figure 1.18). In contrast some Central European countries, such as Poland, Slovakia, the Czech Republic, Bulgaria and Romania, achieved significant and sustained declines over the same period. As a consequence, the geographic concentration of those living under €23 a day in 2011 PPS has shifted towards Southern Europe, climbing from 22 percent of all low-income households in Europe in 2007 to 31 percent in 2016. In 2007, nearly two thirds (64 percent) of low-income households lived in Central Europe while in 2016 these countries accounted for just over half (53 percent)
of these households. Due to faster projected growth rates in Central than Southern Europe, these shifts in the spatial distribution of low-income households are expected to continue.

**Figure 1.17** Shift in the geography of the population living under €23 per day 2011 PPS towards Southern Europe. Half of this population continues to be found in Central Europe however.

Share of low-income population under €23 a day per adult equivalent by grouping and country in:

- **a. 2006**
- **b. 2016**

Note: Croatia’s indicator uses the low-income share estimate from the 2009 income year, the first year of data from the EU-SILC available.

Source: World Bank analysis using the EU-SILC, excluding Germany, from the 2007 and 2017 survey years, which correspond to the 2006- and 2016-income years, respectively.

**Figure 1.18** The share of the population living under €23 a day 2011 PPS is projected to decline across the 10 countries with the highest rates in 2016, with the sharpest declines forecast in Poland and Slovakia.

The share of the population living under €23 a day in 2016 and 2020 for the 10 countries with the highest shares in 2016.

Note: The estimates for all countries can be found in Annex 9.

Source: World Bank calculations using AMECO and EU-SILC data, excluding Germany.
The evolution of income inequality and links to labor market shifts

The EU is home to many of the world’s most equally distributed societies. Just under half (14) of the 30 countries in the world with the lowest Gini coefficients of disposable income inequality are found in the EU. The Gini coefficient is a standard measure of inequality or dispersion of incomes, taking a value of 0 if everyone has the same income and 1 if one person has all the income. There are however countries whose most recent inequality indicators place them nearer the average of the global distribution — notably Bulgaria, Lithuania, Spain and Portugal. Inequality can negatively impact growth, especially when combined with lower opportunities for mobility among low-income groups or households.

Inequality between all people of the EU-28 is higher than the average of national inequality indicators, although it has fallen between 2006 and 2016. This reflects the considerable dispersion of absolute incomes seen across the countries and regions of Europe as well as the convergence that is being seen across these areas, discussed in greater depth above.

Yet inequalities in disposable incomes have widened within most EU countries since the late 1980s. Even in this context of relative equality on a global scale, inequalities in incomes widened within many EU countries between the late 1980s and early 2000s. The average Gini coefficient increased from 26 in the late 1980s to 31 in the early 2000s. The biggest increases were seen during the shift from planned to market economies in Central Europe and the Baltic states. The rise in inequality during this period can also be seen in a widening gap between the richest and the poorest 10 percent. Inequality in Southern Europe — already substantial in the early 1990s by EU standards — remained stubbornly high.

And, although inequality measures at the EU level appear to have broadly stabilized since the mid-2000s, they have done so at higher levels than those seen in the late 1980s and 1990s. Inequality indicators in the EU-28 have remained quite stable since the accession of the newest member states in 2007 and 2013: the average Gini Coefficient of Inequality in the EU-28 moved slightly from 30.6 in 2006 to 30.7 in 2016, and the share of income for better- and worse-off households — using the income quintile share ratio of the top 20 percent to the bottom 20 percent in each country — has inched up slightly from 5.0 in 2006 to 5.1 in 2016. While inequality levels in most countries are only marginally different from those seen in 2006, they are higher compared to the levels of inequality seen in the late 1980s and 1990s.

This stability at the EU level however masks differences under the surface. Just over a third of countries have seen rising inequality in the decade between 2006 and 2016. The Gini coefficient of inequality increased by more than 5 percent in just over a third of member states (10 of the 28) displaying counter-cyclical Gini coefficient movements. Just under a quarter of countries (6 out of 28) saw a decline of 5 percent or more, while the remaining 12 countries registered limited or no changes. These contrasting movements have implied that EU level inequality indicators have remained fairly constant despite sometimes large shifts being seen at the country level: for example, between 2006 and 2016, Gini coefficients fell by 5 percentage points in Romania, while they rose by 4.9 percentage points in Bulgaria.

Changes in inequality at the country level can be broadly linked to three factors: uneven impacts of the crises across the income distribution, fiscal policy shifts and structural changes in labor markets. Sometimes these factors counterbalance each other resulting in a limited shift in inequality overall — for example shifts in fiscal policy have been used to reduce the impact of the crises on poorer households and on inequality more broadly. But in other circumstances, these factors have been compounded resulting in changes in inequality.

First, poorer households have been more affected during the crises, reflecting counter-cyclical trends in inequality that have yet to revert to their pre-crisis levels in some countries. The distribution of incomes — and hence inequality levels — was affected in a number of countries in which poorer
households saw greater reductions in their disposable income during the crisis period than median or better-off households. In many of these countries, inequality measures displayed countercyclical tendencies as inequality levels rose as output and median incomes fell. And in some of these countries, for example in Cyprus, Italy and Spain, Gini coefficients have yet to return to their pre-crisis levels.

Second, the degree of fiscal redistribution shifted only slightly. When we look at the average across EU Member States, we see that the extent to which fiscal policy is redistributive has only shifted slightly, becoming slightly less redistributive between 2006 and 2017. This can be seen in Figure 1.20, which examines the changes in fiscal redistribution on the y-axis. The extent of fiscal redistribution is measured by taking the Gini coefficient over gross income — income before all taxes are levied and transfers made — and comparing this to the Gini coefficient over disposable income, after direct taxes have been paid and transfers made. We do this for two points in time — 2007 and 2017 — and then compare the difference between the two.39
Between 2007 and 2017, countries with initially higher inequality rates have moved towards redistributing more while those with initially lower inequality rates have moved towards redistributing slightly less. This can be seen in Figure 1.20, which compares initial inequality levels to the change in redistribution seen between 2007 and 2017. A clear pattern can be seen between the degree of initial inequality and shifts in redistribution over time. The countries with the lowest inequality indicators in 2007 have become slightly less redistributive over time: of the 10 countries with the lowest disposable income Gini’s in 2007, 7 have seen their fiscal systems deliver less redistribution in 2017. In contrast, among the countries with the highest Gini coefficients, the degree of redistribution has remained stable or slightly increased in 6 out of 10. This topic is explored further below, notably examining whether the shifts in redistribution were due to reactive policy changes or due to the existing framework of policies applied to changing needs — for example, automatic stabilizers that respond to changes in employment conditions or demographic shifts that affect the extent of redistribution.

Third, labor market forces contribute to changes in market income inequality. These forces include the two trends that have redefined the nature of work in Europe: technology-linked shifts in workforce structure and a move towards more non-standard employment. The most prominent example of changes in occupational structure relates to the integration of technology in the workplace, which has been linked
to job polarization and shifts in the demand for skills. Inequality of labor incomes is also likely to be highly affected by a shift towards non-standard work arrangements, which is particularly visible for younger workers and can be seen across countries.

Labor income accounts for the majority of household income across countries and labor market forces are central to the evolution of income inequality. Labor income (which includes income from earnings and self-employment) accounted for an average of 63 percent of household income in 2016, ranging from a low of 58 percent in Finland to a high of 70 percent in Slovakia. And labor income contributed more to inequality than its share of incomes — signaling that it is a dis-equalizing source of income. Inequality of income from labor earnings accounted for nearly 90 percent of total inequality of gross incomes at a country level in 2016 (WB estimates).

Between 2006 and 2016, labor earnings inequality in Southern Europe rose sharply, due to falling earnings, declining employment opportunities and a rise in non-standard forms of work (temporary and part-time contracts). These forces particularly affected those under the age of 30. In Southern Europe,

**Figure 1.21** The earnings of 25 to 29-year-old workers born after 1983 were substantially affected during the crisis in Southern Europe, but relatively protected in Northern Europe. While the starting wages of these younger workers continued to be suppressed in 2016, the gradient with age had returned.

Earnings of 25 to 29 year-olds by age and year of birth.

**a. SE, college graduates**

**b. NE, college graduates**

*Note:* Population weighted. Income years are reported.

*Source:* World Bank estimates using the EU-SILC, excluding Germany.
younger cohorts saw their earnings drop significantly, while employment opportunities contracted and shifted towards more flexible forms of work. The contrast with labor market responses for younger cohorts in Northern Europe is striking. Figure 1.21 shows average earnings of 25–29 year olds in Southern and Northern Europe by age and birth cohort in a given year. Post-2008, earnings and employment at age 25 dropped in Southern Europe, and the earnings gradient seen as incomes increase with age shallowed out. While the earnings gradient returned again for those born after 1990, earnings levels had not recovered. In contrast, in Northern Europe employment declines were more restrained, the earnings gradient with age continued to be seen throughout this period and earnings fell to a more limited extent. In Southern Europe, young workers saw a rise in the share of employment under non-standard contracts. This reflects strongly dualized labor markets where most of the adjustment burden was carried at the margin by the younger, less protected cohorts. As a result, the Gini coefficient of labor market income rose sharply in Southern Europe, from 28 in 2006 to 35 in 2016 for those aged 25–29. It declined moderately in Northern, Western and Central Europe over the same time horizon, however.

There are substantial differences across Europe in employment patterns and in the prevalence of non-standard work, defined as temporary contracts and part-time work. In Southern and Central Europe, the rise in non-standard employment during the crisis was largely involuntary, reflecting labor market constraints to finding full-time work or permanent contracts. Four observations emerge:

First, across Europe, employment rates have risen markedly and are at their highest level ever recorded. The employment rate in the EU reached 73.2 percent in 2018 and 73.5 percent in Q1 in 2019, the highest rates ever recorded. These rates vary significantly across countries, from 83 percent in Sweden to 60 percent in Greece. Employment rates in the EU grew most for older workers and more slowly for younger cohorts, whose employment rates have not yet recovered their 2008 levels: the employment rate of 15 to 24 year olds in 2018 (35 percent) continued to be slightly below its 2008 level (37 percent), while employment rates for 50 to 64 year old surpassed their 2008 levels by 10 p.p. in 2018 (56 percent in 2008 compared to 66 in 2018).

Second, the incidence of non-standard forms of employment is highest in Northern and Western Europe but has risen most sharply in Southern Europe. Although standard employment continues to be by far the most common form of employment type in the labor force, there has been a marked increase in non-standard forms of work, defined as temporary contracts and part-time work, across Europe (Figure 1.22). The share of non-standard employment in Southern Europe rose from 20 percent in 2002 to 28 percent in 2018, and from 13 to 16 percent in Central Europe. In Western Europe, the 4-percentage point rise in employment rates between 2002 and 2016 was driven by non-standard work. These shifts have been greater for women and for younger cohorts, for example the share of non-standard work among total employment has risen from 14 to 23 percent among 25 to 29-year olds over the same time period, and in Southern Europe from 30 to 48 percent.

Part-time work is more prevalent than temporary work in Western and Northern Europe. It accounts for a considerable share of total employment — 24 percent in Western Europe and 18 percent in Northern Europe in 2017, compared to only 6 percent in Central Europe. The high rates of part-time work in some member states — such as 47 percent in the Netherlands and 28 percent in Austria in 2018 — also reflect historical differences between countries in the prevalence of flexible working arrangements, and in the availability and use of formal child care. For example, in the Netherlands the share of women aged 30–34 working part-time has nearly tripled since the mid-1980s and has supported the doubling of the employment-to-population ratio of this demographic.

Third, part-time work has become increasingly involuntary in Southern Europe and among younger workers across Europe. Temporary employment is predominantly involuntary across Europe and for all demographics. The share of temporary and part-time work that is involuntary from a labor market
perspective can be seen in Figure 1.23. Involuntary part-time work remains significant — ranging from 20 percent of all part-time work in Western Europe to just over 60 percent in Southern Europe. It increased sharply in Southern Europe and among younger workers during the crises, and remains elevated. Temporary work is more likely to be considered involuntary than part-time work across all countries. In four countries — Spain, Croatia, Italy, Cyprus and Portugal — at least four out of five temporary employees declare being involuntarily so. In all of these countries at least one in six employees is under a temporary contract and among youth (15–24) these figures rise to more than one in two. This partly reflects labor market duality and a deterioration in the access to permanent employment linked to a deterioration in the aggregate labor market conditions, with adjustment costs born most strongly by new hires and younger workers entering labor markets.

**Figure 1.23** Temporary work is for the most part involuntary, reflecting an inability to find permanent employment

Percentage of part-time and temporary work that is reported to be involuntary for 20–64-year olds

---

**Note:** Characterizing part-time work into “voluntary” and “involuntary” components is done on the basis of labor market constraints, notably whether the individual reported taking a part-time or temporary job due to a full-time or permanent contract not being available.

**Source:** World Bank estimates using the EU Labor force survey.
Fourth, there has been a general trend towards fewer hours worked across Europe since 2002. This decline sped up since 2008 in Northern, Southern, and Central Europe (Figure 1.24). Hours worked in Central European countries continued to be on average 10 percent higher than those seen in countries in Western Europe in 2018 but declined by nearly 1.2 hours between 2008 and 2018. This trend towards fewer hours worked can be seen across Europe and is partly a reflection of female labor force participation, with the average female employee working on average 5 hours less than male employees in 2018. It is also linked to increased participation of older workers who are slightly more likely than average to work part-time, and due to rising non-standard work.

**Figure 1.24** Hours worked have been on the decline since 2000, reflecting decreasing hours worked in full-time employment as well as increasing part-time work and female employment

Actual number of weekly hours worked in main job among the employed

Source: Eurostat, indicator lfsa_ewhais

---

**Resilience at the household level**

The global financial crisis and eurozone crisis highlighted differences across EU member states in the resilience of households: their ability to absorb and recover from a common shock. They demonstrated the considerable variation in the extent to which these crises affected the lives of citizens, and in particular the way they filtered down to the worse-off in each country. In this section, we explore resilience from a household perspective. The next sub-section then turns to policies that can support inclusive growth through greater household level resilience. Part Two explores economy-level resilience and the institutions that have supported the ability of economies to absorb and recover from shocks. It also extends the analysis in this section by bringing together the household level measures of resilience introduced in this section with the institutional structures that support resilience.

Since 2007, the incomes of worse-off households declined more and took longer to recover than the incomes of average or better-off households. There’s a distinct asymmetry in responses. This can be most clearly seen in Southern Europe, but also holds true in Central and Northern Europe. In Southern Europe, the incomes of the bottom 20 percent of the income distribution dropped by 25 percent, while the income of the median household fell by only 13 percent (Figure 1.25). Incomes for the bottom 20 percent also contracted for a longer time period than elsewhere in the EU. At a country level, the patterns of a sharper decline for the bottom 20 percent of households can be seen in Bulgaria, Cyprus, Italy, Greece, Romania and Spain. In Southern Europe, this was partly linked to a rise in part-time and temporary work and a decline in average hours worked—particularly for younger cohorts, an issue taken up earlier. However, in Northern and Western Europe, including the UK and the Netherlands, the impact was
greater for better-off households or at least more evenly distributed across the population. In Part Two, we summarize the depth and duration of the income declines depicted in Figure 1.25 for median and bottom 20 households, and then use these summary statistics to assess household level resilience to the crises.

**Figure 1.25** In Western Europe the incomes of the bottom 20 percent of households were sheltered from the crises compared to better-off households, while in Southern Europe bottom 20 percent incomes have seen the greatest reduction.

Household income per capita in PPP terms by region (2007=100)

The “whale curve” indicates that households at the “tail end” of the income distribution have seen more volatility in their incomes. Income growth of the bottom 40 percent of the expenditure distribution outperformed average growth during times of expansion (positive mean growth) and underperformed it during contraction (negative mean growth) (Figure 1.26). The “whale curve”, shows that the households at the “tail end” of the distribution in Europe (and, to a smaller extent, those at the top) are the most exposed to volatility, while the middle of the distribution is relatively less affected by expansions or contractions.

The resilience patterns reflect an amplification of the crises to worse-off households, whose incomes rose more than those of average households during periods of growth and similarly fell more during contractions. Worse-off households were more likely to benefit during periods of growth than average
households, contributing to the sharp pre-crisis decline in low-income shares. But during periods of contraction, the median household (and above) was more sheltered than worse-off households, who also took longer to recover than average or better-off households. For example, in Southern European countries, the incomes of the bottom 20 percent of the income distribution dropped by 25 percent, while the income of the average household fell by 13 percent.

**Figure 1.26 Amplification of growth and contraction on bottom 20 percent of the distribution contrasts with a stagnant but relatively protected middle class**

Elasticity of growth to average household disposable income growth, by decile

---

Middle-class households have been more resilient to the crises than worse-off households. But they have shown signs of relative stagnation during times of growth. Since they have been relatively better protected than average households during contractions, this has helped to reduce the impact of the crises on their incomes. But, in the long term, this group has seen lower than average growth. These patterns of middle-class stagnation during periods of growth are seen in Western, Northern and Southern Europe but are not visible in Central Europe where the growth of the middle class has, on average, tracked average growth. These results reflect earlier findings on the poor growth performance of middle-class segments, showing lower growth rates among this group and increased vulnerability to poverty in absolute terms.

---

*Note:* The analytical approach used to conduct this analysis is explained in greater detail in Annex 2. The elasticities of decile level growth to average growth use variation across EU-28 member states, excluding Germany, and are represented as simple averages. The coefficients are statistically higher than 1 for deciles 1, 2 and 10, and are statistically lower than 1 for deciles 5 through 9. Positive mean growth coefficients are statistically different from negative growth coefficients for decile 7, but not for other deciles.

*Source:* World Bank estimates using annual data from EU-SILC over 2003 and 2016 income years.
Policies to support inclusive growth through household resilience

Several EU member states (predominantly in Southern, Central, and Baltic countries) amplified the impact of the crises on poorer households. Growth can be considered to be “shared” if during periods of expansion worse-off households see their incomes rise proportionately or more than proportionately with the incomes of the average household. This is depicted in Figure 1.27 below on the y-axis: if a country’s “pass-through rate” rises above the horizontal line it shows a greater propensity to share this growth during times of expansion. The analysis below shows that growth could be categorized as having been shared in most countries, with Hungary being an outlier in terms of the lower-through rate of growth to lower-income households.61

Member states in Western and Northern Europe exhibit a greater propensity to shield households from declining incomes during contractions. During periods of contraction, when average household incomes

Figure 1.27 Growth tends to be shared with poorer households but there is more variation in the extent to which periods of contraction are passed through to poorer households.

Pass-through of positive and negative periods of growth by country, using poor weighted average income concepts

Note: The analytical approach used to conduct this analysis is explained in greater detail in Annex 2. The point estimates displayed depict country level responsiveness of poor weighted disposable income growth (using a general mean with alpha equal to 1) to average household disposable income growth. Only countries for which more than one period of negative growth was registered are included; Sweden, Poland and Malta are removed for this reason. Germany is omitted due to the lack of data. Coefficients for negative growth are statistically significant different from 1 for the Czech Republic, Estonia, France, Great Britain, Greece, Italy, Lithuania, Latvia, Portugal, Romania and Slovenia.

are declining, worse-off households are considered to have been “resilient” compared to the average household if they see a more limited decline in incomes compared to average households.

The four countries that share growth the most with worse-off households also amplify contractions the most. Bulgaria, Romania, Portugal and Italy all display tendencies of “amplification”, in which downturns and periods of growth more than proportionately feed through to lower-income households. The same high responsiveness to growth that can help propel households out of poverty also subjects them to substantial vulnerability during downturns. The longer-term implications of these patterns were severe in Italy and Portugal: the duration and depth of contractions, combined with their high degree of pass-through to worse-off households, meant that the bottom 20 percent of households in both countries did not see an improvement in real incomes per capita between 2006 and 2016. By contrast, in both Romania and Bulgaria lower-income households did see improvements in their real income per capita as these countries experienced shorter periods of contraction.

Welfare and labor market models differ considerably throughout Europe, with visible impacts on how downturns have been transmitted to average and bottom 20 households. Well-targeted and responsive social protection systems can be highly effective for supporting household resilience. The composition of social protection spending is key for shielding poorer households during downturns: countries with high social protection spending directed towards old age and health but limited spending devoted to responsive poverty-focused programs are unable to provide poorer households with the security needed during downturns. Social assistance programs need to reach the poor, cover enough households and be responsive to additional enrollment during times of need. These programs complement the other institutional and policy suggestions needed to support resilience, discussed further in Part Two.

Fiscal policy

To what extent have worse-off households been protected from market swings through countries’ systems of taxes and transfers? First, EU member states reduce the impact of market income inequality substantially through taxes and transfers. The average Gini coefficient of market income inequality stands at about 58 in 2017, while the coefficient of disposable income is only 29.62. This implies a fiscal redistribution of incomes of 29 points, which stands out internationally. Most other economies have much less fiscal redistribution: Japan, 16 Gini points; Australia, 15; the United States, 11; Switzerland, 9; and the Republic of Korea, 5 Gini points.

Fiscal redistribution changed during the crises. The change in redistribution by country between 2007 and 2014 was plotted on the y-axis of Figure 1.20 and can be decomposed into two parts. First, changes in market income can automatically trigger fiscal redistribution. For instance, an increase in unemployment due to an economic shock will automatically increase the volume of unemployment benefits, and thus the amount of fiscal redistribution. These policies and programs belong to automatic stabilizers and are part of the market component of redistribution. Second, policies and programs can change as a response to the economic shock, and they can be active or discretionary. For instance, unemployment benefits can become more generous, or tax rates can be made more progressive. In this category, fiscal redistribution changes as a result of policy reform.

Automatic stabilizers explain most of the observed variation in changes in fiscal redistribution for the period 2007 to 2014. Southern European countries were deeply affected by the financial crisis and saw large increases in fiscal redistribution. However, these were mostly driven by automatic stabilizers, supported further by a smaller contribution of active tax and transfer policies, namely through increases in tax rates for the richer deciles in the context of budget consolidation.
Including institutions: Boosting resilience in Europe

Policy reform contributed much less to the changes in fiscal redistribution between 2007 and 2014. And in Hungary, Poland and the Czech Republic, the policy response to the crisis increased inequality. This was mostly due to the transition to flat-tax regimes in these countries: they reduced the tax burden on richer deciles and households with labor income, whilst increasing it for the poorer deciles.

Social protection

Social protection can shield households during periods of contraction. We quantify this by comparing the response of disposable income before and after transfers of lower-income groups to changes in average incomes. This analysis points towards transfers reducing the amplification of shocks for worse-off households by approximately 20 percent.

High levels of spending on social assistance are not sufficient to ensure effective social protection for worse-off households. While EU countries are among the biggest spenders on social protection in the world, some countries were unable to provide effective protection for their poorest citizens. Countries characterized by low coverage of the poorest quintile by social assistance despite high levels of social spending can be labeled “truncated welfare states.” They exposed poorer households more to contractions than welfare states characterized by high social protection spending and high coverage of the poorest quintile (Figure 1.29). In addition, many EU countries cut social assistance spending during the crisis which, combined with the design of the programs, sometimes contributed to an increase in poverty. In sum, cuts in social assistance spending and in redistribution more broadly during the crisis did not help ameliorate the increase in poverty and exacerbated inequality.
Part One: Inclusive Growth

Small balanced welfare states

Truncated welfare states

Large balanced welfare states

Limited welfare states

Figure 1.29 Welfare states with a more limited coverage of poorer households were unable to protect these households from the crises, even if spending on social protection was high overall

Relationship between spending on social assistance and protection of poorer households during crises, by spending and coverage of social protection systems

Labor market policies

Alongside supportive social protection systems, labor market regulations have played a central role in determining economic resilience at the economy and household level. Countries with stronger wage protection and job security, benefiting insiders, have seen longer and deeper downturns and, on average, stricter employment regulations have translated into deeper impacts on poor households, often labor market outsiders. Interesting lessons emerge from those countries that do not follow the path of the average — like Germany or Austria — with strict employment regulations that are complemented by high wage flexibility (because of firm-level governance that supports a coordinated approach to avoid job losses).

Labor market spending is also strongly associated with households’ resilience to the crises. Active labor market policies include training, employment incentives, supported employment and form part of the
“flexicurity” principle of supporting workers who have been affected by shifting demand to retain their jobs or quickly return to employment after job losses. Labor market policy in most of the countries in Central and Southern Europe is skewed towards passive measures (such as income support and early retirement) rather than towards active labor market programs that support workers to quickly return to employment after job loss and help workers to retain their jobs. We find that countries that spend less on labor market policies overall, regardless of whether active or passive, pass through periods of contraction to worse-off household incomes to a greater degree but that active spending has a slightly greater impact in shielding worse-off households during contractions.

These labor market policies and other institutional structures are examined in greater depth in Part Two, which focuses on the formal and informal rules of the game that support resilience in the EU.

Notes

1. EC, 2017a.
2. The framework for inclusive growth monitoring in the EU has been adapted from existing diagnostic structures (Ianchovichina and Gable, 2011; Anand et al, 2013; Prosperity Commission 2018). In the context of multiple downturns, we deviate from the earlier literature in explicitly including an understanding of resilience from both a macro and a micro perspective.
4. Vertical inequality captures disparities across households or individuals. It can be separated into inequalities between and within groups — for example, differences in living standards within and across the countries in the EU. Horizontal inequality refers to inequality between groups. These groups may be culturally defined (or constructed), such as racial, ethnic, or religious groups; they may be defined by situation, such as regional location or age; or they may be defined based on economic criteria, such as occupation. See Stewart (2009) for more detailed discussion of horizontal inequalities.
5. A technical recession is when the economy records two consecutive quarters of GDP contraction.
6. The regression analysis that underlies this result is explored in greater detail in the resilience section.
8. Vertical inequality captures disparities across households or individuals. It can be separated into inequalities between and within groups — for example, differences in living standards within and across the countries in the EU. Horizontal inequality refers to inequality between groups. These groups may be culturally defined (or constructed), such as racial, ethnic, or religious groups; they may be defined by situation, such as regional location or age; or they may be defined based on economic criteria, such as occupation. See Stewart (2009) for more detailed discussion of horizontal inequalities.
9. A technical recession is when the economy records two consecutive quarters of GDP contraction.
10. The regression analysis that underlies this result is explored in greater detail in the resilience section.
12. Vertical inequality captures disparities across households or individuals. It can be separated into inequalities between and within groups — for example, differences in living standards within and across the countries in the EU. Horizontal inequality refers to inequality between groups. These groups may be culturally defined (or constructed), such as racial, ethnic, or religious groups; they may be defined by situation, such as regional location or age; or they may be defined based on economic criteria, such as occupation. See Stewart (2009) for more detailed discussion of horizontal inequalities.
13. A technical recession is when the economy records two consecutive quarters of GDP contraction.
14. The regression analysis that underlies this result is explored in greater detail in the resilience section.
16. Vertical inequality captures disparities across households or individuals. It can be separated into inequalities between and within groups — for example, differences in living standards within and across the countries in the EU. Horizontal inequality refers to inequality between groups. These groups may be culturally defined (or constructed), such as racial, ethnic, or religious groups; they may be defined by situation, such as regional location or age; or they may be defined based on economic criteria, such as occupation. See Stewart (2009) for more detailed discussion of horizontal inequalities.
17. Using volume indices of real expenditure per capita in PPS (EU-28=100), indicator prc_ppp_ind.
18. EC, 2017b.
Calculations based on World Development Indicators, using the most recent data available for each country.

23 Convergence typically implies that catching up countries show higher inflation rates, with prices of their non-tradables rising faster than those in internationally exposed sectors: the real exchange rate appreciates slowly over time. This is the Balassa-Samuelson effect.

24 Jenkins (2018) and Goedemé et al. (2019).

25 The approach used in this report — to construct an EU level low-income threshold based on 60 percent of EU median equivalized incomes in PPS terms — is based on Atkinson (1998), discussed in Jenkins (2018). Atkinson proposed that an EU wide common reference point could be examined by using a weighted average of national and EU poverty lines. A common EU line places a weight of 1 on EU level poverty lines, the approach used in this report and in Goedemé et al. (2019). The threshold used is close to the one reported in the 4th Regular Economic Report (World Bank 2018c), which followed the method of Jolliffe and Prydz (2016). Annex 3 replicates the analysis in this text to show how sensitive the analysis is to using alternative poverty lines, notably those benchmarked on upper-middle income countries globally ($5.50 in 2011 PPP terms) and adopting a higher benchmark that could be considered a threshold for those who are no longer vulnerable to poverty ($15 in 2011 PPP terms).

26 Central Europe accounts for 30 percent of the population of Europe. Therefore the population of Central Europe continues to be disproportionately represented among the low-income population, despite the substantial recent progress made.

27 Household surveys may understate inequality due to typically underrepresenting the richest households and people. Taking into account top incomes in household survey-based measures increases inequality considerably in a number of EU-28 countries, most notably raising the Gini by more than 5 points in France, the United Kingdom, and the Slovak Republic and by 20 points in Belgium (World Bank, 2018). The concentration of income among the top 1 and 10 percent has grown in many — but not all — countries in the EU. The trends seen in Europe are substantially more limited than those seen in the US, and this is the case even for the countries with the highest concentration of income in the hands of the top 1 percent. Wealth inequality is higher than income inequality and has not moved in parallel for the countries for which evidence is available (WID, 2018). Piketty (2014) argues that returns to capital have tended to exceed the rate of economic growth, resulting in a greater concentration of wealth in the hands of a few and a declining share of labor income.

28 Calculations based on World Development Indicators, using the most recent data available for each country.

29 WID, 2018.

30 A Gini coefficient of income inequality within the EU-28 shows the level of dispersion in living standards across all people in the EU, regardless of where they live. It amounts to treating the EU as if it were one country. In 2016, the EU-wide Gini coefficient was 35.9 compared to the average of national Gini coefficients of 30.7. And the gap between the rich and the poor in the EU is wide. The richest 10 percent of the EU-28 population, excluding Germany, population have disposable incomes per capita which are close to 16 times those of the poorest 10 percent of the EU-28. The richest 10 percent of individuals in the EU-28, excluding Germany, hold 27 percent of the total disposable income in the union, whereas the poorest 10 percent of individuals hold less than 2 percent.

31 Income inequality for the EU-28 as a whole was falling until 2008 but stabilized during the period of the crises (Filauro 2018). The decline in EU-28 level income inequality appears to have resumed again in 2015.

32 World Bank, 2018a.

33 Milanovic, 1998.

34 Fredriksen, 2012.

35 Eurostat indicator icl_diz reported using income years rather than survey years. The figure reported for 2006 is for the EU-27, since data for Croatia are not available for this year. In 2016, the data reported are for the EU-28, but the indicator for the EU-27 takes the same value of 30.7.

36 Eurostat indicator icl_diti (S80/S20) reported using income years rather than survey years. The figure reported for 2006 is for the the EU-27, since data for Croatia is not available for this year. In 2016, the data reported are for the EU-28, but the indicator for the EU-27 takes the same value of 5.1.

37 World Bank, 2018a.

38 For example, De Agostini, Sutherland and Tasseva (2014) find that fiscal policy changes in 2008–2013 in Ireland, Greece, France, Italy, Latvia, Romania and the UK had a broadly progressive impact. The same can be seen in Portugal and Spain, with the exception of the bottom decile in these two countries. In contrast, changes in fiscal policy during this same period were seen to be “pro-rich” in Germany. Fiscal redistribution between 2007 and 2014 was also found to have increased in most Western European countries, with policy changes driving the shifts seen (Bussolo et al. 2019).
Countries with declining degrees of redistribution — as seen in Hungary and Sweden — see a fall in the extent of redistribution over time. Those with rising degrees of redistribution over this period — such as Greece, Latvia and Portugal — have seen an increase in redistribution over time.

EC, 2018; World Bank, 2018a,b.

Income shares by country can be found in Annex 9.

Employment and earnings patterns for 25–29 year olds in other regions can be found in Annex 9.

See, for example, the case of Portugal, Centeno and Novo, 2012.

EC, 2019.

This paragraph uses Eurostat indicator lfsa_ergan.

This reflects differences in the flexibility offered to workers to adjust along intensive margins, students working part-time while studying or doing vocational training, and apprenticeships that can act as stepping stones into the labor market. Thus, these forms of employment can also represent more flexible labor arrangements that may be desired to support life transitions.

In the Netherlands, 46.8 percent of 20–64 year olds reported working part time in 2018 and in Austria the respective figure was 28.2 percent, using Eurostat indicator tesem100.

In addition, part-time work is also conducted in combination with studying in a number of Northern and Western European countries. In Netherlands, approximately 60 percent of 15–19-year-olds reported working in 2002, and a full 85 percent of those working was in part-time employment. In Southern and Central Europe, by contrast, employment rates for 15–24-year-olds were below 10 percent in most countries in 2002 and most of those employed were employed full-time.

EC, 2019.

Characterizing part-time work into “voluntary” and “involuntary” components is done on the basis of labor market constraints, notably whether the individual reported taking part-time or temporary job due to the fact that a full-time or permanent contract is not available. There may of course be non-labor market impediments, for example lack of access to affordable child-care or health related work limitations, that could lead to selecting a contract type that could be deemed to be a constrained choice.

Involuntary part-time employment is an indicator included under sno-8 in the EC’s reflection paper “Towards a Sustainable Europe by 2030”.

Felgueroso et al., 2018.

Similar patterns can be seen by examining the elasticity of growth of different deciles to average shifts by region (Annex 2). The bottom 20 percent of households are more responsive to growth — and contractions — in Southern and Central Europe and are more protected in Western and Northern Europe.

We use and extend a method from Foster and Szekeley (2008) to examine whether the incomes of those who are worse- or better-off in a country grow at a faster speed than the average growth seen over that period. This allows us to say whether growth has fed through more than proportionately to the poorest segments of society on average across EU countries.

We define the middle-class as those in the 40th and 80th percentiles of the disposable income distribution.

The slower than average growth of those in the middle of the distribution — the 40th to 80th percentiles of the disposable income distribution — can be seen in population weighted estimates of growth across EU member states by percentile. When population weights are removed — each country has the same weight — middle class growth rates are similar to average growth rates.


OECD, 2019.

Hungary has also seen the share of total disposable income accruing to the bottom 10 percent and those below average declining between 2003 and 2016, while the share of incomes held by those with above-median incomes has risen over the same period.

World Bank estimates using EUROMOD.

Bussolo et al., 2018.

Bussolo et al., 2018.

We follow the second Regular Economic Report (World Bank 2019) in dividing member states into four social protection categories according to their spending on social protection overall and the coverage of their social assistance systems for the poorest quintile. The cut-offs for high- and low-groups are determined using median social protection expenditure and social assistance spending on bottom 20 households.
Part Two:

Building resilience in the EU
The purpose of the special section of this Regular Economic Report (RER) is to assess what economic institutions individual EU member states should focus on to improve their resilience when faced with economic shocks. The focus is on the institutions that, given the legal obligation of member states to adopt the euro, can substitute for an independent exchange rate and monetary policy when an economy is hit by a shock. These are the institutions that allow for adjustments of the real exchange rate — the relative price of “local” (i.e. non-traded) goods and “foreign” (i.e. traded) goods.

The report focuses on the formal and informal institutions that allow the real exchange rate to perform the adjustment-to-shocks role, with an emphasis on whether the adjustment creates an inclusive growth pattern after shock absorption and economic rebound. The assessment of inclusive growth is made by assessing the trends in output, unemployment and income growth. The key institutions empirically identified by the analysis are the extent to which low income households are protected, the functioning of labor markets, the quality of the business environment and the trust citizens have in the functioning of their countries’ institutions.

Part Two is structured as follows. The first section retraces the original economic arguments for euro adoption. The second section explains how eurozone members face exogenous shocks, as a monetary union and individually. The third section describes the “architecture” of the eurozone as it currently stands. The fourth section empirically identifies the institutions at the country level that were economically and statistically associated with boosting resilience in Europe. The report concludes by making institutional reform suggestions that EU member states could take to strengthen their resilience inside and outside the eurozone.

**Dealing with shocks in the eurozone**

Before adopting the euro, countries could use national monetary and exchange rate policies to deal with shocks by tempering economic booms or cushioning economic busts. However, when countries joined the European monetary union, they could no longer independently use these policy instruments: there would be a “one-size-fits-all” response to a shock. This could be right on average but, if the shock did not affect each country in the same way, risked loosening monetary policy in one country and tightening it in the other, possibly inappropriate in both cases.

After joining the eurozone, what other measures, both at the supra-national as well as at the national level could be deployed when, due to a shock, the domestic consumption of a country is suddenly higher than its production so that a current account imbalance arises? Three policy options presented themselves. First, workers could move from depressed to booming countries. This has indeed been the case in Europe, but to a lesser extent than, say, in the us. However, if workers do not move back as soon as the economy they left behind starts to rebound, the rebound would be constrained by the loss of human capital, as migration is mostly undertaken by skilled and resourceful individuals. Second, booming countries could transfer resources to stimulate the economy in the depressed countries. This is not an option for the eurozone. In the run up to the adoption of the euro, politicians from the “core” countries of Europe forcefully argued that the euro would never become a “transfer union” and hence the agreement on the Stability and Growth Pact (SGP), which focuses on preventing the emergence of macroeconomic imbalances.

Thirdly, countries could ensure that their real exchange rate — the price of their domestic goods relative to international prices — could adjust flexibly. An economy hit by a negative shock to its current account balance requires lower wages (and profits) to bring it back into balance: “an internal devaluation”\(^2\). This adjustment would be achieved through changes in prices and quantities in labor markets; product and services markets; and financial markets. Such an internal devaluation — a depreciation of the real
exchange rate — makes the economy more competitive. Improved competitiveness should then attract new investment and create economic growth. During the rebound thus created, the real exchange rate would start to appreciate again. The more effective this process of absorption and rebound, the more resilient an economy is. Resilience — shock absorption and rebound — is governed by the institutions that help to adjust prices and quantities.

The conceptual framework below traces how shock absorption and rebound translate into an inclusive growth outcome, as determined by institutions (Figure 2.1). We look at how output, unemployment and the incomes of the bottom 20% responded to the crises. More specifically, the resilience of inclusive growth, in this report, is measured using the depth and persistence of the crises on output, unemployment and the incomes of the poorest 20% of households. Institutions are the organizations and the “rules of the game” that govern the economy’s responses to the shock and its aftermath.

**Figure 2.1 Conceptual framework: Shocks, the real exchange rate, institutions and inclusive growth**

Institutions enter the adjustment process in two ways. First, the existing labor, product and financial markets are in and of themselves institutions that determine how and to what extent prices and/or quantities adjust to a shock. These institutions determine the degree of flexibility an economy has. They are the functional substitutes of the nominal exchange rate. Second, institutions enter into the process in another way: they “translate” these adjustments into particular patterns of growth and the associated income distribution. For instance, some labor market institutions may facilitate burden sharing between employers and employees, while protecting jobs. Others, for instance active labor market policies, may support job transitions among low-income workers and reduces the risk that they become employed for long periods by assisting them in finding alternative employment.

Institutions include those that are formal and informal. Formal institutions are the formal “rules of the game” and the organizations that enforce them. However, they may not work or may be incomplete. These rules are always embedded in an environment of informal institutions, with somewhat different rules and mechanisms of enforcement and dispute settlement. For instance, when the formal economy is unable to deliver goods and services due to inappropriate policies, firms and workers often create informal markets to cater to their needs. The market exchange rate then gets set in these informal markets, rather than in the formal markets.

Informal institutions include the social mechanisms of governance and culture that shape the interaction between the stakeholders. They are the institutions that underwrite the trust that is necessary for economic stakeholders to collaborate and achieve collective solutions. These institutions allow for
the accumulation of social capital. They have also been referred to as “social infrastructure”⁴. As we will see below, they also play a role in the adjustment of the real exchange rate in response to an economic shock and in the type of rebound that follows it.

Why adopt the euro?

Why become a member of the European Monetary Union and adopt its common currency? The euro was launched in 1999. It has now been adopted by 19 countries and around 340 million citizens, making it the world’s second most important currency and one of the EU’s most visible symbols in support of economic integration. Today, three quarters of the eurozone’s population support the euro — the highest level since its adoption⁵.

EU Member States are legally obliged to adopt the common currency, unless explicitly exempted from this Treaty provision. The UK and Denmark are exempt. This leaves seven member states to still meet their obligation: Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania and Sweden.

What made the members agree to make the common currency obligatory? The euro was a key building block of the European integration that started in the aftermath of the Second War. Therefore, the euro’s first objective was to forge more political unity so as to protect peace in Europe. However, there were also economic arguments in favor of the euro.

The euro would lower inflation. In the 1970s, after the unraveling of the Bretton Woods’ fixed exchange rate system and two oil-price shocks, many EU countries had very high inflation rates — some of 20 percent or more, often fueled by so-called “competitive” devaluations. Anchoring monetary policies in a European fixed exchange-rate mechanism was seen as the answer to these inflationary spirals (Box 2.1). And to underwrite the stability of the common currency, a set of fiscal rules was adopted under the Stability and Growth Pact of 1997. It contained the “Maastricht criteria” (see below). The rules were put in place to protect the common currency from inflationary public spending and unsustainable debt accumulation in the budgets of its members. This worked: since the euro’s introduction, euro area inflation averaged about 2 percent. Price stability meant that citizens’ purchasing power and the value of their savings were better protected than before.

Box 2.1 The European Monetary System

During the 1970s, diverging national inflation rates caused widespread exchange rate instability. The uncertainty was detrimental to trade in goods and services. In 1979, the European Monetary System (EMS) was established: a system of fixed but adjustable rates anchored around the Deutsche Bundesbank’s tight monetary policy stance. To keep exchange rates within the pre-defined margins of fluctuation (for most: plus or minus 2.5 percent), members had to follow the Bundesbank’s course (or let their currencies depreciate). Over time, and after numerous exchange-rate adjustments, the EMS’s constraints became ever more binding. Through ‘tying their monetary hands’ (Giavazzi, Pagano 1988), members’ rates of inflation and their dispersion fell throughout the 1980s. However, the macroeconomic implications of German re-unification led to very uneven pressures on the exchange rates. In September 1992, speculative attacks led to the unraveling of the EMS.

The euro would bring more price transparency to the single market. Consumers, shops and suppliers would more easily compare prices across borders and find the best price for a product or service. And they would not need to take account of currency exchange costs and the risk of fluctuating exchange rates. More transparency and less uncertainty would lead to more cross-border trade and investment.
and, as the ultimate purpose, increase consumer surplus. Intra-eurozone trade indeed increased after the introduction of the euro.\(^6\)

**The euro would bring more international trade.** The euro area would become a large and open trading bloc. For foreign companies, doing business in the euro area would become more attractive: they could now access a large market using one currency. Euro area companies, especially those from smaller member states, would also benefit: using the euro they could now more easily reap the economies of scale or scope arising from participating in the global economy. This reduced uncertainty and therefore the costs of covering against global currency fluctuations.

**The euro would provide better access to capital.** The euro gave a large boost to the integration of financial markets across the euro area. Capital would flow more easily because exchange rate risks disappeared. This would boost cross-border investment and allow investors to move capital to those parts of the euro area where it had the highest expected returns.\(^7\) This indeed happened, however with, as we will see below, inadequate risk adjustment and far-reaching unintended consequences, as country risk had not disappeared with the exchange rate risk.

**The euro would put an end to the unsustainable “beggar-thy-neighbor” competitive devaluations.** The establishment of the customs union and later the common market (with its harmonized set of regulations) had made it impossible for countries to use tariffs, quotas or non-tariff barriers to protect domestic producers. But there remained a concern that some countries could be tempted to use devaluation to achieve the same goal, at least in the short term.\(^8\) Such “beggar-thy-neighbor” policies could spiral into a race to the bottom between devaluing countries, making everybody worse off. To prevent this, countries should “bind their hands” by adopting a common currency.\(^9\) This would also boost investors’ confidence with respect to their long-term investments, because exiting such a common currency would be prohibitively difficult.

**The euro was the logical conclusion of free capital flows and stable exchange rates.** EU members had opted for freedom of movement of capital as one of the “four freedoms” in the Rome Treaty of 1957 and implemented it by the Single Act of 1985. They had also agreed to fix their exchange rates under the European Monetary System. However, a country cannot have free capital flows, a fixed exchange rate and an independent monetary policy at the same time.\(^10\) For instance, if a central bank would lower its interest rate to boost the domestic economy, capital would flow out of the country to more remunerative places. This higher demand for foreign currency and higher supply of domestic currency would lead to a depreciation of the domestic currency. Since EMS members wanted to avoid such exchange rate pressures, the adoption of a common monetary policy with a common currency was the logical policy conclusion.\(^11\)\(^12\) This was the logic behind the “one market, one money” principle.

**Finally, since most of the members of the eurozone were small, open economies, adoption of the euro would not make a substantial difference in the medium and long-run.** For these economies, giving up their independent exchange rate and monetary policies would not be very costly. For instance, if the central bank of a small, open economy would lower interest rates to boost growth, this would lead to a devaluation, which could lead to higher exports over time. However, the devaluation would also lead to higher import prices and, given the large weight of imports in the GDP of small, open economies, this would have a large effect on inflation. The inflation triggered by higher import prices would spill over to domestic prices (prices of non-traded goods and services), undoing the short-run impact of the devaluation by leading to an appreciation of the real exchange rate—the relative price of traded versus non-traded goods. This would unravel much, if not most, of the earlier devaluation. These were the economic arguments in favor of the euro, which was adopted by the first batch of countries in 1999.
The eurozone experience

The first decade of the Euro was a success. This was a view shared by governments and markets alike. Until the fall of 2009, spreads between government bonds of member states had been more or less continuously falling to a very narrow band. And the European Monetary Union seemed to protect the smaller member states — with their thin capital markets — from the vagaries of international hot money. That was a protection the European Monetary System had not been able to provide during its existence from 1979 to 1998. Under that earlier system of fixed exchange rates, the temptation to renege on the exchange rate peg during times of crisis often proved irresistible, given national objectives and circumstances.

The second decade was marked by the global financial crisis of 2008 and its “double dip” aftermath, which came to be known as the “euro crisis”\textsuperscript{13}. The experience of the euro demonstrated that adopting the euro entailed much more than giving up one’s national currency. Resilience — the capacity to prevent, respond to and rebound from a shock — proved remarkably uneven across the eurozone, even for member states that were fully abiding to the Stability and Growth Pact. How and why did this happen?

Preventing the need for fiscal transfers by adhering to the Stability and Growth Pact. The Treaty on European Union, concluded at a meeting of the European Council in Maastricht, the Netherlands, in December 1991 and approved in February 1992, had included a “no bail-out” clause. The clause was meant to align incentives, mitigate moral hazard, and prevent the need for fiscal transfers between member states in case of crises. To ensure “no bail out”, the Maastricht Criteria spelled out five targets for a set of nominal monetary, fiscal and exchange rate variables to be achieved by member states aspiring to join the eurozone\textsuperscript{14}:

1. Inflation must be no more than 1.5 percent higher than the average of the three EU member states with the lowest rate\textsuperscript{15}.
2. Fiscal deficit not to exceed 3 percent\textsuperscript{16}.
3. Debt to GDP should not exceed 60 percent\textsuperscript{17}.
4. Member states must have successfully joined the Exchange Rate Mechanism II (ERM II) for at least two years.
5. Long-term interest rates should be no more than two percent higher than the average of the three EU member states with the lowest rate of inflation\textsuperscript{18}.

Arithmetically, meeting the Maastricht Criteria would produce the “ideal” eurozone member. It was based on the following calculus: assume a GDP growth rate of 3 percent, an inflation rate of 2 percent and a fiscal deficit of 3 percent. In this economy, debt as a share of GDP stabilizes (by force of arithmetic) at 60 percent, which happened to be the average debt ratio of the members of the European Community at the time of the negotiations\textsuperscript{19}. If all member states could be cloned like this, no sovereign bailouts would be needed, provided the markets accepted the 60 percent as sustainable. Monitoring procedures were put in place, consisting of a preventive arm and a corrective arm with the possibility of penalties.

However, adherence to the Maastricht criteria was not strictly enforced\textsuperscript{20}. If no exceptions had been made, more than half of the member states would have been denied eurozone membership\textsuperscript{21}. For current euro candidates, the report card is also mixed. Setting aside Sweden, of the six non-euro area EU members that are not exempted from joining by treaty (Bulgaria, Croatia, Czech Republic, Hungary, Poland and Romania), two do not meet the inflation target, two do not meet the interest rate target, and two do not meet the debt ceiling target\textsuperscript{22}.

Individual member states’ automatic fiscal stabilizers needed to substitute for the loss of an independent monetary policy. However, under the provisions of the Stability and Growth pact as well as the Fiscal Compact, they are only available when budget deficits are below 3 percent. This limits counter-cyclical fiscal leeway. Recessions hence might last longer, and resilience is thus reduced\textsuperscript{23} \textsuperscript{24}.
Box 2.2 Adherence to the Maastricht criteria was not strictly enforced

Before adoption, the criteria were not adhered to in several cases. The ratio of public debt to GDP was limited to 60 percent. However, when the Treaty was negotiated (1991) the public debt of Belgium and Italy was above 100 percent of GDP, and Greece’s debt was just under 100 percent of GDP. For these countries, there was no credible convergence path that would have reduced their debts to 60 percent of GDP by 1997. However, the Treaty had left room for interpretation. In the run up to 1998, when adherence to the criteria was to be assessed, several member states also tried to mask the true state of their convergence by applying creative accounting methods. This was the case for Italy and Greece, but also for Germany (which in 1998 suggested revaluing its gold reserves and accounting this as revenues) and France (which pondered whether to include the pension debt of the postal agency in its accounts). Several countries implemented short-term fiscal and monetary tightening measures to temporarily meet the criteria ahead of 1998.

After introducing the common monetary policy, the fiscal criteria, as now laid out in the Stability and Growth Pact, were also not consistently observed. Portugal and Spain used the euro accession as an external anchor for reforms, but once in, they did not stick to their commitments. And when, in 2002 and 2003, France and Germany had to deal with economic downturns, they refused to implement restrictive policies to meet the deficit criterion. Portugal did the same. The EU Commission started procedures against the three violators, but the Council of Ministers stopped these. No sanctions were applied.

The creation of the eurozone made capital flow “downhill” to the poorer members of the eurozone. The advent of the euro had triggered large capital flows and reduced the spreads on sovereign bonds to near zero. Before the euro, markets had estimated that there was a risk that countries would renege on their fixed exchange rate peg to the German Mark in difficult times. This showed up as an interest premium over German bonds — the spread. It covered the risk of devaluation. The advent of the euro reduced these spreads dramatically. Initially, these loans came about because the elimination of currency risk resulted in a more attractive rate of return on capital in several countries with substantial catching-up potential. The euro produced more cross-border investment, as had been predicted and hoped for. Until the summer of 2008, spreads of member states vis-à-vis the benchmark (the German Bund) were even narrower than between Canadian provinces and, in some cases, even negative. From 2001 to 2008, financial markets charged almost the same risk premium on Greek and German government bonds. The euro had effectively eliminated the spreads. At the time, this was widely seen as a success of the euro. Within what were now deeply integrated inter-bank money markets, Irish, Spanish and Portuguese private sectors went on a borrowing binge, financed by their own domestic banks which, however, were borrowing in turn from French and German banks.

However, as interest rates decreased, the rapidly growing capital flows fueled higher and higher domestic investment and consumption: the real exchange rate appreciated as domestic inflation rose. Private capital flows started financing national current account deficits of between 8 and 10 percent. While the nominal exchange rate was fixed for good, the real exchange rate was not. It started to appreciate. And this made it easier and easier to service the loans: the real interest rates (nominal interest rates minus inflation) in countries such as Spain, Ireland or Portugal dropped substantially below those in Germany. A cycle of even more borrowing, investment, consumption and real exchange rate appreciation established itself.

The increased capital flows were not funding investment that would lead to higher productivity and improved competitiveness. Instead, the bulk of the investments went into real estate and private and public borrowing for consumption. Real estate bubbles started to form in several countries. Net external debt positions rose rapidly, and they were unhedged as currency risk — nominal exchange rate risk — was absent. However, “real exchange rate risk” was not: real exchange rate appreciation led to a loss of international competitiveness.

When the 2008 global financial crisis hit, a decade of substantial “capital flowing downhill” in the euro area came to a grinding halt. Almost overnight, markets concluded that there had been a massive...
misallocation of resources into overpriced non-tradables, mainly real estate. In other words, markets pushed for a sharp re-adjustment of the real exchange rate.

The banking crisis quickly turned into a sovereign debt crisis, starting a “doom loop”. When the bubble burst, the liabilities of the inadequately capitalized banks were transferred to the public sector, in order to prevent the banking system from imploding. Markets sometimes judged the sovereign not to be able to take on these debts, sending sovereign bond rates soaring, which in turn negatively affected the banking sector. Recall that the ECB was explicitly forbidden from lending to the sovereign: euro borrowing in effect turned out to be “foreign” borrowing, because the eurozone’s bank was not the lender of last resort of the eurozone members.

Within the European Union, the eurozone was particularly affected as a result of its deep and unhedged financial integration. In Germany, the Netherlands and Belgium, the liabilities of the “too big and too inter-connected to fail” banks were underwritten or taken over by their respective governments in an orderly fashion. However, in some other countries, given the magnitude of the misallocation, creditors suddenly deemed the external debt position to be unsustainable. Where the markets perceived that these additional liabilities could not be shouldered, sovereign debt crises broke out, as was the case for Greece, Ireland, Portugal and Spain. “Double drowning” was an apt description: as the banks drowned, governments came to the rescue, risking drowning themselves. These crises broke out at different levels of relatively modest departures from the Maastricht-SGP fiscal deficits and debt-to-GDP ratios. By late 2009, when Greece revealed that its true public-sector deficit and debt position were far worse than it had reported, the euro suddenly faced two crises: a banking crisis and a sovereign debt crisis — the euro crisis.

Maastricht had not adequately assessed the potential risks of cross-border banking activities. Experience demonstrated that in deeply integrated markets, a banking crisis in one country could easily spill over into other countries. The Maastricht convergence criteria had included certain institutional reforms for the banking sector at the national level, such as making central banks independent. And the Delors Report had been prescient about the inefficiency of capital markets after euro adoption: the interbank money markets would not price in the country risks or were counting on an implicit sovereign guarantee from member states. But the Maastricht agreement had not anticipated the many coordination, accountability and regulation issues that would emerge in the monetary union with decentralized banking supervision. When the crisis broke out, it demonstrated that the coordination mechanisms deemed to govern cross-border banking in the monetary union were not up to the task. In addition, institutions with regard to accounting rules differed substantially between the members of the monetary union. And even when formal rules were identical, the operational interpretation and enforcement of the rules and informal institutions were not.

Did labor migration assist in dealing with economic shocks? An important substitute for an independent monetary policy could be the movement of workers across national borders. In theory, EU member states’ labor markets could assist in absorbing exogenous shocks by moving labor from high to low unemployment areas. To what extent did this happen?

In Europe, cross-border labor mobility is relatively low. It is lower than in the US and Australia, and more similar to labor mobility in Canada, which has an analogous language barrier. As a result, only 4 percent of the EU population can be considered “mobile”: they live in another state than their own. But this hides stark differences: only one percent of Germans, but about 20 percent of Romanians do.

The mobility of labor within the EU is also still very much constrained by “guild”-like entry and conduct restrictions in the various member states. Whereas the freedom of movement is a core freedom of the EU, in practice many professions restrict entry by foreigners. This creates additional barriers to labor migration as a response to regionally concentrated, permanent economic disruptions. To be
sure, language barriers do play a role, as does the lack of portability of pensions and healthcare benefits. Moreover, qualification requirements and certification procedures create an additional constraint. In particular in services, making up over 70 percent of euro area GDP, entry and conduct regulations are often overly restrictive. The 2016 EU Regular Economic Report No. 3 focused on this largely unfinished reform agenda of creating a single market for services.

As a result, population movements within the EU contribute little to economic convergence, even over longer periods. The economic convergence or catching-up process can be decomposed into two components: the first capturing population movement to lower and higher income countries and regions, and the second capturing catching-up growth in GDP per capita. Between 2000 and 2016, only 5 percent of the observed catching-up process could be attributed to population movements. Population movement accounted also for only 7 percent of the decline in the coefficient of variation (i.e. the standard deviation divided by the mean — a measure of variability) between 2000 and 2008 (Figure 2.2).

![Figure 2.2 Population movements contribute little to economic convergence](image)

**Figure 2.2 Population movements contribute little to economic convergence**

Decomposition of the decline in coefficient of variation into that due to changes in population compared to changes in GDP per capita

Note: World Bank estimates using purchasing power standard (PPS) per inhabitant at the national and NUTS-2 level (dataset identifier: nama_10r_3gdp). The decomposition is conducted by comparing the coefficient of variation using yearly population weights compared to holding population weights fixed at the beginning of the period (2000 or 2008). The comparison of these figures gives an estimate of the amount of dispersion that could be linked to population movement. Note that this estimate can be considered to be a lower bound since population shifts contribute to changes in GDP and also feed through directly to GDP per capita.


Is labor migration in response to economic shocks an optimal short run economic response? Within the EU, a recent study shows, large emigration of talent can have a negative impact on the “sending” member states and depress economic growth by reducing the productivity of the smaller and less-skilled workforce. Given its costs, only the adjustment to a permanent change in the national (or regional) economic perspectives could justify migration on a larger scale. Even then, this would imply running the risk of depleting a nation (or region) of its labor force, often particularly high-skilled labor, which would limit future regional growth opportunities.

**Eurozone institutional architecture: a work in progress**

The eurozone’s institutional architecture was significantly strengthened as a result of the crises of the last decade. The crisis triggered reforms in key areas of the EMU. For instance, it became clear that the EMU needed a centralized, discretionary, fiscal backstop (but with strong conditionality), and stronger banking supervision under a single supervisory mechanism, complementing the centralized rule-setting (already in existence before the crisis) with centralized implementation. The current institutional set up is summarized in Box 2.3.
In response to the euro crisis, the eurozone now benefits from the European Stability Mechanism (ESM) — a budget support facility for member states in serious financial difficulties. In case of a shock that affects only a particular country or affects countries unevenly, fiscal transfers to the affected countries can be an effective substitute for independent monetary policy. The ESM built on the experience of the support given by the EU, the ECB and the IMF (the “troika”) to Greece, Ireland, Portugal and Cyprus during the crisis. The ESM can give fiscal support in case one of its member states risks losing access to financial markets, that is, if it is threatened with a “sudden stop.” However, ESM support is conditional, not automatic. Conditional means that it comes with a strict macroeconomic adjustment program that would first need to be negotiated and agreed to between the stakeholders. It is not intended to serve as a counter-cyclical fiscal policy instrument.

The current institutional set up could still leave eurozone members individually exposed to potentially large exogenous, idiosyncratic and asymmetric shocks. When fiscal space is limited, and banks own large amounts of debt of their sovereign, the risk of the “doom loop” looms, materializing in negative feedback from banks to sovereigns and back from sovereigns to banks. With deeply integrated banking and capital markets (an objective of the union), the spillovers of such shocks could be severe.

However, cross-border capital flows are now better regulated through centralizing the supervision of systemic banks within the new banking union, which has centralized the supervision of systemic banks. In 2014, the ECB, charged by the EU Council, established the Single Supervisory Mechanism (SSM). Under the SSM, the ECB, together with the national authorities, directly supervises the 125 significant banks of all euro area countries, covering about four fifths of euro area bank assets. Participation in the SSM is now automatic for all euro area members, including new ones, but not part of the formal criteria for euro adoption, simply because it did not exist at the time of the Maastricht Treaty (the treaty did not foresee the types of banking sector issues that would arise).

The banking union and the single capital market are work in progress. Today, most observers agree that a monetary union without a banking union and capital markets union would be vulnerable, at least in times of crises with cross-border repercussions. This marks a substantial shift in policy consensus within a matter of years. Going forward, other institutional elements under discussion include the shared

---

**Box 2.3 Eurozone institutional “architecture”**

**Fiscal union (incomplete):**
- Prevention of the need for fiscal transfers between member states (Stability and Growth Pact)
- European Stability Mechanism provides budget support for countries in financial difficulty, but with strict conditionality and not automatically

**Banking union (incomplete):**
- Centralized supervision of large banks, underwriting safety and soundness
- No fully backed single resolution fund (to manage failing institutions)
- No common deposit insurance

**Single labor market (incomplete):**
- Freedom of movement of labor...
- But subject to several barriers (language, portability of social insurance, “guild-like” entry and conduct restrictions in many professions)

**Single capital market (incomplete):**
- Freedom of movement of capital...
- But cross-border stock and corporate bond market investments constrained by lack of a common regulatory, taxation and insolvency framework and supervisory authority
underwriting of retail deposits, for instance through a euro area wide deposit insurance scheme. This could also include reaching agreement on a mutualized backstop to the Single Resolution Fund — like the Federal Deposit Insurance Corporation in the US, which is “backstopped” by the U.S. Treasury — or another, comparable reinsurance mechanism. Finally, a single capital market would be buttressed by a uniform regulatory, taxation and insolvency framework and a single capital market supervisor.

Given the architectural incompleteness of the European Monetary Union, resilience is mainly determined by the institutions that govern the real exchange rate. The absorption relies on how these institutions translate the shock into movements of the national and regional prices relative to international prices and how the impact is distributed across incomes and regions. The rebound is determined by how the institutions shape the pattern of income and jobs growth after the recession.

**The resilience of inclusive growth in the EU (2004 – 2014)**

What institutions could improve the speed of adjustment and the pattern of economic growth created during the economic rebound? In the following, the institutions that could improve resilience are identified based on recent experience. The report also assesses whether they are amenable to change in the short and medium run. In this way, the report focuses on what eurozone members can change and control through implementing structural and institutional reforms.

Absorption and rebound played out differently across the EU’s member states depending on the institutional set-up of each country. Different growth patterns emerged, characterized by differences in the depth of the shock, the speed of the rebound, the extent to which growth was shared among income groups and whether households, most notably the poor and vulnerable, are protected. When hit by an exogenous shock, the common “one-size-fits-all” monetary policy of the eurozone created adjustment challenges for individual countries. Given the current institutional “architecture” at the EU level, meeting these challenges mostly fell on national adjustments of the real exchange rate.

However, the real exchange rate is not a policy instrument: it is a market outcome, representing the relative price of “domestic” (non-traded) and “foreign” (traded) goods and services. It defines the competitiveness of a country (or a region within a country) vis-à-vis the rest of the world (or the rest of the country). It is set in thousands of markets. After euro adoption, member states face exogenous shocks without having recourse to a devaluation of the nominal exchange rate. The nominal exchange rate, if market-based and flexible, can function as a short-term “shock absorber”. However, if the shock persists, the real exchange rate will adjust, regardless. This is because the influence of the central bank’s policy rate or direct interventions in the foreign exchange market on the prices and quantities in these markets is limited at best. The (extreme) case of Zimbabwe illustrates this point vividly (Box 2.4).

**Box 2.4 Zimbabwe’s attempts to control the real exchange rate**

Zimbabwe, starting in the late 1990s, attempted to prevent depreciation of the nominal exchange rate, while extremely loose monetary and fiscal policies were put in place. It resulted in widespread parallel market activity, where the “real” prices of goods and money were set, as goods at official prices were severely rationed. Even a series of nominal devaluations were unable to keep up with the much larger adjustments of the real exchange rate in these parallel markets, until the domestic currency was entirely abandoned in favor of a multitude of foreign currencies in 2009. The case of Zimbabwe illustrates that the real exchange rate is ultimately set in markets, not by the central bank.
The real exchange rate is difficult to control by policy makers. How it reacts depends on the institutions that govern the markets in which prices are set. In this report, we will label these institutions the “real exchange rate institutions”. The real exchange rate institutions determine how employers and firms respond to shifts in market demand. For instance, whether the response is mainly through price or through quantity changes, and whether the recovery puts the economy (back) on an inclusive growth path. For instance, some firms could be able to cushion the impact of shocks through wage flexibility rather than through the outright firing of workers. This could make the recovery easier for both firms and workers. Or, if firm bankruptcy or firing of employees is unavoidable to regain competitiveness, are there institutions in place to support workers navigate job losses, helping them to regain employment swiftly and reskill if necessary?

This report identifies empirically which “real exchange rate institutions” were associated with resilience in the EU during the 2004 – 2014 period. Two exogenous shocks hit Europe: the global financial crisis and the euro crisis. However, these shocks had different impacts across the EU. We look for institutions that are associated with a pattern of shock absorption and rebound that could be characterized as “inclusive”. We measure an economy’s resilience as a combination of: its convergence trend; the speed with which it absorbs a shock to its GDP and stabilizes its growth; the speed with which it reduces and stabilizes unemployment after a shock; and the depth of decline of household incomes for the poorest 20 percent of the population and their time to recovery. The policy and institutional variables capture low income protection, labor market conditions, private sector conditions and citizens’ trust in the institutions of their country. The institutional variables were selected on the basis of economic theory and empirical evidence, and their potential for change and reform (Box 2.5).

Box 2.5 Selecting theoretically, economically and statistically significant institutional variables

In this report, the resilience of inclusive growth is operationalized as a combination of the responses of output, unemployment and households incomes to economic shocks. The selection of the explanatory variables was done through a screening process based on their theoretical and economic and statistical relevance. For instance, convergence and business cycle synchronicity are the standard indicators of an optimal currency area derived from economic theory. The extent to which low income households were protected was calculated in Part 1. Then, a large number of variables that measured fiscal policy, banking sector characteristics, the labor market, private sector conditions and various aspects of governance were selected based on theory, but then screened by testing their economic and statistical significance. For instance, theoretically, variables such as levels of public debt and non-performing loans should be assumed to matter, but they failed to show statistical significance. Conversely, a variable could show statistical significance, but have parameter values that influenced resilience only very minimally. The final selection of variables is listed in the heatmap and discussed in the text.

Resilience and policy and institutional variables are combined to form a “heatmap”. The heatmap summarizes the results by combining the outcome variables (convergence, output, unemployment and low income) with the policy and institutional variables that could “explain” the outcomes. The heatmap uses the level of resilience to rank the member states from strongest (green) to weakest (red) from left to right (Table 2.1). The description of the variables is in Box 2.6. The institutional variables capture the average values over the period.

Resilience and the quality of the “real exchange rate institutions” is strongest in Western Europe, and weakest in Southern Europe, with Central and Eastern Europe occupying an intermediate position. Stronger resilience is supported by better real exchange rate institutions. There is a stronger concentration of “greens” on resilience variables and the underlying policies and institutions in the left
Table 2.1 “Heatmap” of resilience in the EU and institutions that support it (2004 – 2014)

<table>
<thead>
<tr>
<th>Outcome variables, Resilience of inclusive growth</th>
<th>WE</th>
<th>NE</th>
<th>CEE</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate indicator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Economy level resilience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Convergence</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.2 Output half-life</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.3 Output volatility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.4 Unemployment half-life</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.5 Unemployment volatility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Household income resilience</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1 Income duration</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.2 Income depth</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leading indicator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. OCA indicator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1 Business cycle synchronicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Inequality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1 Income inequality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Low income protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1 Pass-through</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2 Transfer/tax system eff.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.3 Social protection exp.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.4 Social prot. exp. bott 40</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Labor market indicators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1 ALMP/PLMP - % GDP</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.2 CBC</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.3 EPL</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.4 Part-time work</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.5 Hiring and firing costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.6 Wage flexibility</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Private sector conditions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.1 Ease of doing business</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.2 Product market regulation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.3 Enforcing contracts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.4 Insolvency procedures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Trust</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.1 Trust in institutions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: This table summarizes the economic outcomes and institutional variables econometrically assessed in this report. They are color-coded. For each variable, the cell containing the “best” value (relative to the other countries) is colored in dark green and the cell containing the “worst” value is colored in strong red. Intermediate colors indicate intermediate values. A description of the variables is provided in Box 2.6. For each individual variable, a score from 0 to 4 is assigned to each country. A country gets a score of 0 when its variable value belongs to the 20 percent worst performing values of this variable (judged by the regression outcomes), a value of 1 if it falls into the range between the lowest performing 20 percent to 40 percent, and so on. The values for the outcome variable “Aggregate indicator” are computed by summing the scores for all individual outcome variables and then dividing by the number of variables. Indicators for all countries are generally based on the same number of variables. Exceptions are indicated in Box 2.6.
Box 2.6 Description of the variables used in the heatmap

Resilience:

- Convergence: Indicates whether the average growth rate between 2004 and 2014 was above, close to or below the growth rate implied by the OLS estimation of β-convergence (Annex 6).
- Output half-life: Number of quarters required for an output shock to reduce to half its initial value.
- Output volatility: Standard deviation of the business cycle component of output log deviation of GDP from its trend.
- Unemployment half-life: Number of quarters required for a shock to unemployment to reduce to half its initial value.
- Unemployment volatility: Standard deviation of the unemployment rate.
- Income duration: Number of years required for bottom 20 household income to reach its turning point after the Global Financial Crisis.
- Income depth: Maximum drop of bottom 20 household income after the Global Financial Crisis.

Note: For Germany and Croatia no information on income duration and depth is available.

Optimal currency area indicator:

- Business cycle synchronicity: Correlation coefficient of a country’s business cycle with the eurozone business cycle.

Policy and institutional variables:

Low income protection:

- Income inequality: Ratio of household income at the 20th to the income at the 80th percentile of the income distribution.
- Pass-through: Response of the incomes of poorer households to periods of contraction. A response greater than one implies that poorer households see their incomes contract more than the average household during these periods. Estimates cover the period of 2004 – 2016 using EU-SILC data.
- Transfer/tax system efficiency: Percentage reduction or increase in poverty as a result of the fiscal system. Estimates are calculated using EUROMOD and the EU-SILC, for the 2007 income year. Poverty is measured using national at-risk-of-poverty measures.
- Social protection targeting: percent of social assistance expenditure going to the bottom 40 percent in 2008, using EU-SILC data. For more detail on the construction of this indicator, see World Bank (2015).

Note: For Germany, Poland and Sweden no information on the variable “pass-through” is available, for Germany and Croatia no information on the variable “social protection targeting” is available.

Labor market conditions:

- ALMP/PLMP — Expenditure on active/passive labor market programs (as percentage of GDP).
- CBC: Collective bargaining coverage (in 2008).
- EPL: Value of the OECD’s employment protection legislation indicator for permanent contracts.
- Part-time work: percent of employers conducting part-time work. From the EU Labor Force Survey.
- Firing costs: Weighted average of notice and severance period for redundancy dismissal (in weeks) from the World Bank’s Ease of Doing Business using an average dismissal across tenure periods.
- Wage flexibility: Response coefficient of wage to unemployment.

Note: For Bulgaria and Romania, no information on the variable “EPL” is available, for Croatia and Lithuania values for 2014 or 2015 were used (rather than period averages).

Private sector conditions:

- Ease of doing business: World Bank’s Ease of Doing Business score (aggregate measure).
- Product market regulation: Scores of the OECD’s “Barrier to Entrepreneurship” indicator.
- Enforcing contracts: Scores of the World Bank’s “Enforcing Contracts” indicator.
- Insolvency procedures: Scores of the World Bank’s “Resolving Insolvency” indicator.

Note: For Croatia, no information on the variable “Ease of Doing Business” was used in the estimations.

Trust in institutions:

- Aggregate index constructed from replies to Eurobarometer’s survey questions assessing the trust in a country’s institutions.
half of the panel, while the “reds and oranges” dominate in the right hand of the panel. Recall that this report’s definition of the strength of resilience and the underlying institutions is based on a relative ranking within the EU.

In Western Europe, Belgium and Austria were the most resilient. Even though their banking sectors were hard hit by the global financial crisis, this did not undermine inclusive growth in a major way. However, both Belgium and Austria do below average on social protection spending on the bottom 40 percent. They are both examples of small, open economies that benefited from European integration, while euro adoption did not materially alter their monetary policy options. Belgium’s case also underscores that institutions need to be seen in context: rigid employment protection and reasonable firing costs, and relatively inefficient product markets — which make its economy less resilient — are compensated by several “green” labor market institutions (good opportunities for part-time work, and high wage flexibility) — which make it more resilient. Similarly, Austria has low hiring and firing costs and high wage flexibility which makes it more resilient.

France, the Netherlands, Germany, the UK and, more recently, Ireland, showed resilience by benefiting from strong institutions. The Netherlands suffered a somewhat longer output and median income recession than would be predicted by its favorable policy mix. France is resilient when it comes to unemployment challenges, but scores relatively less well on household income resilience, while it lacks the trust in institutions characteristic of most Western European countries. Belgium, France, the Netherlands and Germany combine strong employment protection — which reduces resilience — with part-time work options and wage flexibility — which boost resilience. In Germany this is because of its unique firm-level governance that supports a coordinated approach to avoid job losses. The UK faces resilience challenges on unemployment: these are associated with low spending on active labor market policies. And Ireland had a weak resilience track record but reformed its institutions rapidly and is now supported by a “greener” policy mix, suggesting less challenges going forward.

In Northern Europe, Sweden stands out. It has “green” institutions, while not in the eurozone and floating its currency. The Baltics rebounded rather well, but with high volatility in output, unemployment and incomes. This would explain why a country like Latvia was often seen as having successfully dealt with the crises — because it continued to converge — but shows up relatively less resilient in the heatmap.

Central Europe shows mixed results. However, Poland and Romania were relatively resilient, Croatia less so. However, Poland’s employment resilience is not strong and its “real exchange rate institutions” show a mixed picture. Poland seems to compensate for these (at least in the short term) through a flexible exchange rate (Box 2.14). The Czech Republic, Bulgaria and Hungary are also newer members of the EU that exhibited considerable resilience during the crises. Both Romania and the Czech Republic showed relatively strong performance with respect to employment. However, in Romania, household incomes were less resilient than in the Czech Republic, which also protected low-income groups considerably well. Slovenia undertook significant reforms during the period, and recorded a number of institutional “green shoots”.

Overall, Central Europe suffers from low levels of trust in institutions, creating challenges for reform going forward. Romania and Bulgaria’s highly unequal income distribution could further complicate these challenges. And while Romania (with little business cycle synchronicity with the euro area’s core) and the Czech Republic have flexible exchange rates that could function as a short-term compensation, Bulgaria does not.

In Southern Europe, Spain and Greece were among the least resilient in Europe. While progress was made on some key policy variables (e.g. active labor market policies in Spain, better product market regulation in Italy and Portugal) the overall policy mix needs strengthening. The overall policy and
including institutions: Boosting resilience in Europe

Institutional mix in Southern Europe needs strengthening to improve resilience before the inevitable next crisis hits. Weak institutions, weak resilience and low trust create a vicious, “scarring” circle, emphasizing the urgency to redouble the reform efforts going forward. Fortunately, Portugal has made substantial institutional improvements since the crises, while trust in institutions is in the “green”. Others have made progress on some key policy variables (e.g. active labor market policies in Spain, better product market regulation in Italy). Reform is particularly urgent for Spain and Greece, as their citizens’ trust in formal institutions is among the lowest in the EU.

Does a flexible exchange rate compensate for a weak policy mix? For instance, Poland’s resilience is quite strong, on par with the Netherlands and Denmark, but with weaker institutions. Romania and Bulgaria also record relatively strong resilience, but with institutions that tend toward the “red” zone. And a traditional optimal currency area indicator — business cycle synchronicity — would not have predicted the relative strength of Poland’s and Romania’s resilience in the face of the crises of the last decades. A plausible hypothesis would be that the flexible nominal exchange rate compensates for the weaker policy mix. This could also explain the relatively positive outcome performance of Romania, a floater with a weak policy mix, vis-à-vis for instance Slovenia, a newer EU and eurozone member with relatively strong institutions and business cycle synchronicity with the eurozone core, but weak resilience.

The results describe the euro area experience during the last decade: if an economy cannot use the nominal exchange rate as a shock absorber and its monetary policy to temper booms and counter-act busts, the flexibility of the real exchange rate takes center stage. This implies strengthening the institutions that assist in absorbing a shock and facilitating a strong rebound. Boosting resilience across the EU would be based on a policy mix that reduces income inequality, protects low incomes, creates flexibility in labor markets (supported by collective bargaining and active labor market policies), supports private sector competition (while ensuring the ease of doing business) and strengthens trust in institutions. In the following sections, we investigate in more detail the policy and institutional setting that is associated with the resilience patterns described above and shown in the heatmap.

An optimal currency area indicator: Business cycle synchronicity

The more the economies of a monetary union are in sync, the more effective a common one-size-fits-all monetary policy and exchange rate policy will be in fostering resilience. This is why business cycle synchronicity has always been considered a core criterion for an optimal currency area. The more synchronicity, the more a common monetary policy will be effective in achieving its stabilization task. Conversely, the less synchronicity, the more the real exchange rate will need to absorb the shock. Annex 7 provides the details of the analysis.

This report finds no completely consistent association between business cycle synchronicity and resilience. Countries were ranked according to the correlation of their cyclical output gaps: the darker the color, the stronger the correlations (Figure 2.3). The correlation with resilience is positive, but with notable exceptions. First, while Poland is strongly resilient, its business cycle synchronicity is much weaker. It shares this pattern with Romania. Other Central and Southeastern European countries show relatively more synchronicity, but less resilience: Czechia, Bulgaria, Croatia and Hungary. Italy and Slovenia are highly synchronized with Europe’s core, but less resilient. Except for Italy, Southern Europe is poorly synchronized with the eurozone’s core. Business cycle synchronicity is strongest among the “core” EU countries: Germany, France and Austria.
When the economies within the eurozone are not “in sync”, real exchange rate pressures emerge. This happens because of shocks that do not impact all member states (asymmetric shocks) or different responses to common shocks. When the nominal exchange rate is gone for good (or ‘irrevocably fixed’), differences between the economies need to be absorbed by movements in relative prices of tradeable to non-tradeable goods: the real exchange rate. In the literature, the optimal currency area (OCA) index is used to measure such pressures.

**Figure 2.3** Correlation patterns across national business cycles (quarterly GDP, 2000 – 2017)

*Note:* Figure 2.3 graphically depicts correlation coefficients between the cyclical components of the countries listed to the left and above the matrix. The colors express the size of the correlation as indicated by the legend to the right of the matrix. Business cycle components are retrieved using a Hodrick-Prescott filter.

*Source:* World Bank estimates.

An updated Optimal Currency Area index for the six countries in line to adopt the euro suggests that Bulgaria, the Czech Republic and Hungary would face relatively little real exchange rate pressure. The intuition behind the OCA index is that the greater the similarities between economies, the higher the index and the more appropriate a “one-size-fits-all” monetary policy. Conversely, the lower the index, the larger the role for real exchange rate adjustments in absorbing shocks. The updated OCA index for the euro candidates (Bulgaria, Croatia, the Czech Republic, Hungary, Poland and Romania, found in Table A6.1) suggests that Bulgaria, the Czech Republic and Hungary would face relatively little real exchange rate pressures. Their OCA index scores are comparable to Austria, Belgium and the Netherlands.
before they adopted the euro in 1999. However, Croatia, Poland and Romania exhibit OCA index values like those of Italy or Portugal before 1999. In other words, the OCA analysis suggests that additional variables need to be taken into account to assess the criteria for successful participation in the monetary union.

**However, could joining the euro in and of itself lead to a reduction in real exchange rate pressures?** The political leaders who created the euro believed that this would be the case. The union would function as an external anchor that would accelerate domestic reforms towards convergence. Such “endogeneity” of EMU membership would be the result of closer integration and the stronger incentives for policy reform once a country was in the common currency area. Empirically, this has been reported for Austria, Belgium, Finland and the Netherlands. However, the OCA index actually worsened for Greece, Ireland and Spain after the adoption of the euro. Endogenous adjustment in response to the new institutional setting was also not found for France, Italy and Portugal. The case of Portugal is illustrative for the challenges faced (Box 2.7). Given the hard lessons learned by several older eurozone members which exhibited similar OCA index values before euro adoption as some of the prospective euro adopters today, endogeneity cannot be taken for granted.

### Box 2.7 Portugal — Capital flowing downhill

Starting in the mid-1990s, Portugal grew more rapidly than its prospective eurozone partners. The high growth reduced unemployment, but it was also associated with a persistent and widening current account deficit. The gap was filled by an inflow of capital, attracted to Portuguese markets by the interest rate spread. To leverage their bets, investors bought longer durations, thus speeding up the shrinking of nominal interest rate spreads.

By the 2000s, Portugal’s economy stagnated. The earlier capital flows did not translate into sustained growth. Capital was being misallocated, in particular to non-tradables (even though there was no housing boom such as in Ireland and Spain). At the same time, ever tighter labor markets translated into a growth of nominal wages above stalling productivity growth, reducing Portugal’s competitiveness. Fiscal policy was strongly procyclical. By 2001, the current account imbalance reached 9 percent, up from 0 in 1995.

### Figure B2.7.1 Portugal, 1995 – 2007

When the euro crisis hit in 2010, the access to low-interest rate funds (mainly from banks from the eurozone’s core) abruptly stopped. This obliged Portugal — as Greece and Ireland before — to apply for assistance through the “Troika” (EC, ECB and IMF). This came with comprehensive conditions attached. And given that there was no currency to devalue, the current account could only be rebalanced through a strong compression of imports. This shock to aggregate demand inevitably morphed into a deep recession: a widening output gap and a dramatic increase in unemployment.

In hindsight, a real exchange rate depreciation (functional substitute for the needed change in the nominal exchange rate) by bringing nominal wages in line with the level of productivity to boost competitiveness would have been preferable. However, this would have had to overcome the “insider-outsider” characteristics.
Protecting low-income households

In most countries, the duration and depth of the crisis was worse for the bottom 20 percent than for the median households. Output and employment resilience are strongly linked to income resilience among poorer households — but large differences are seen across countries in both duration and depth. For instance, Greece, Spain and Italy lived through recessions that were almost as bad for the median as for the bottom 20 percent of households. Households in Greece saw the greatest overall decline from pre-crisis income levels, with median households seeing a 40 percent decline and the bottom 20 percent of households seeing a 50 percent drop in incomes. In Italy, although the decline in incomes affecting the bottom 20 percent of households was more limited than in Greece, it took longer for incomes to reach a turning point and start to rise again (Figure 2.4).

**Figure 2.4** Duration (until turning point) vs. depth (percentage decline of pre-crisis incomes) of the incomes of median and bottom 20 percent of households

- a. Median household income
- b. Income of bottom 20 percent of households

*Note:* Figure 2.4 plots the persistence (length) of median household income (left panel) and income of the bottom 20 percent (right panel) deviations from trend/mean vs. the volatility (depth) of the two variables.

*Source:* World Bank calculations.

Social protection programs targeted to the poor and active labor-market policies should ensure that the lower income groups are protected and supported in their adjustment to inevitable shocks. The first part of this report demonstrated that countries with high social protection spending directed towards old age and health, but limited spending devoted to poverty-targeted policies and programs, faced deeper
poverty increases and longer periods of recovery. However, such poverty-targeted programs are largely absent or have insufficient coverage in many countries in the EU, including in the eurozone. Social protection programs need to reach the poor, cover enough households and be responsive to additional enrollment during times of need. From a macroeconomic perspective, they support “liquidity-constrained” households — this should amplify the fiscal multiplier. Effective social protection can assist in absorbing shocks and help ensure a rebound that is economically inclusive.

**Labor market conditions**

**Institutions that allow wages to adjust can avoid job losses.** Wages are an important component of the real exchange rate: they enter the real exchange rate directly, but also indirectly through their impact on local inflation rates. Without wage flexibility, shock absorption will lead to job losses, which can lead to hysteresis and prolong the recovery. The case of Bulgaria applies (Box 2.8). This is also further illustrated by the heatmap: Bulgaria scores very low on labor market conditions.

**Box 2.8 Bulgaria: how a lack of wage flexibility led to job losses**

Starting in 1996, Bulgaria suffered a full-blown banking, currency and economic crisis. One third of the banks were closed. The currency devalued rapidly, and inflation looked to spiral out of control. To halt the crisis, Bulgaria fixed its exchange rate in the most radical fashion: it introduced a “currency board” in 1997. It meant that the central bank committed to, when demanded, exchange levs to DMs at a fixed rate. The Bulgarian lev was pegged to the German Mark (DM) at the exchange rate of BGN 1000 = DM 1. When the eurozone started operating in 1999, the DM was simply replaced with the euro, without any change in exchange rate policy. The currency board arrangement had borne fruit quickly: annual inflation had subsided from 4-digit territory in early 1997 to single digits by mid-1998. Macroeconomic stability had been restored, and the economy gradually rebounded. After the introduction of the euro, high foreign capital inflows and booming domestic credit caused growth to accelerate, peaking at 7.3 percent in 2007. However, in that same year, inflation would exceed 10 percent due to rapid wage growth (20 – 25 percent in 2007 and 2008) and credit-fueled consumption (credit expanded at a clip of 50 percent per year). The current account deficit widened to reach a peak of 24 percent of GDP, but was covered entirely by capital inflows. Inevitably, the real exchange rate appreciated sharply, undermining Bulgaria’s competitiveness. The bubble burst in 2008, triggered by the global financial crisis.

The toll on workers was high. The employment rate fell by 5 percentage points between 2008 and 2012. More than half a million jobs — one fifth of total employment — was lost. Unemployment doubled within 5 quarters, from 5.0 percent in Q4 2008 to 10.2 percent in Q1 2010.

Real exchange rate adjustment was mainly achieved by job shedding and deflation. Part-time work remained limited, while average wages kept increasing at double-digit rates in 2008-2009. Wages grew, because even in 2008 the government continued to increase the so-called minimum social insurance incomes and the minimum wage, ignoring the global recession warnings. And since the first jobs to go were typically low-paid and unskilled, the statistical effect was an increase of the average wage. In the end, GDP recovered to its pre-crisis level in 2013, while it took the labor market four more years to reach its pre-crisis rate of employment.

- a. In mid-1999, the Bulgarian authorities decided to redenominate the Bulgarian lev; thus, 1000 old levs were replaced by 1 new lev. As a result, the new fixed exchange rate of the Bulgarian lev to the DM became 1:1. As soon as the euro replaced the DM, the Bulgarian lev was automatically re-pegged to the euro at the rate of EUR 1 = BGN 1.95583 in tune with the DM-EUR conversion rate.
- b. Another proinflationary factor in 2008 was the poor agricultural harvest and increased demand for Bulgarian food products from neighboring countries.
- c. Apart from credit, consumption was also fuelled by rapid employment and wage growth.
- d. Average gross wage growth was 19.5 percent yoy in 2007 and 26.5 percent yoy in 2008. Credit to households and non-financial enterprises grew at an year-on-year rate of more than 50 percent in H2 2007 and H1 2008, while the CA deficit peaked at 24 percent of GDP in 2007 before moving down to 22 percent the following year.
Better labor market conditions are associated with stronger resilience. Sweden and Finland stand out: overall and employment resilience are supported by sound labor market institutions. And among the heretofore less resilient economies, Ireland now benefits from significantly improved labor market institutions. In France, Romania, Italy and Greece collective bargaining and employment protection are prominent, but not underpinned by trust in institutions. This combination could create difficulties to reach a cooperative solution between the economic stakeholders when confronted with an economic shock (Box 2.11).

Labor market institutions need to be seen in context, as rigidities in one aspect can be compensated by flexibility in another. For instance, rigid employment protection in several western European economies, when combined with high wage flexibility, does not result in worse unemployment trends. And when collective bargaining is buttressed by high levels of trust, resilience is boosted. Conversely, high levels of collective bargaining in a context of low wage flexibility undermine resilience.

Economic stakeholders have at times been able to avoid job losses by coordinating real exchange rate movements. Recall that we had earlier argued that the real exchange rate is not a policy instrument, because it is set in thousands of markets. Coordination is thus difficult to achieve. However, if done in such a way that the adjustments support improved competitiveness, they can be an effective policy instrument. For instance, collective bargaining approaches with the participation of labor unions, business and government can be effective if these stakeholders can come to a shared understanding of the economic challenges they face and if they are willing to cooperate to arrive at a solution that would benefit all74.

Quasi-independent policy analysis institutions that create transparency and foster stakeholder dialogue around the economic impacts of policies have a longstanding and positive track record. In the Netherlands, this is the Centraal Plan Bureau, and in Germany, the (probably less effective) Finanzplanungsrat. It goes without saying that this demands a high level of trust in such institutions and the bargaining platforms that underly such coordinated solutions. Conversely, if there is no stakeholder consensus on the challenges and little trust in implementing solutions, collective bargaining can be detrimental and aggravate job losses75.

Three examples illustrate these points: the cooperative cure to the Dutch disease, real exchange rate adjustment by decree in Belgium and Italy’s ineffective approach to collective bargaining. In the Netherlands, the tri-partite Wassenaar agreement of 1982 between business, labor and government put an end to the previously prevailing wage spiral triggered by the Dutch disease. Such cooperative behavior (later to become known as the Polder Model) was strongly incentivized by the country’s fixed exchange rate with the German Mark and the resulting inability to conduct an independent monetary policy (Box 2.9). In Belgium, a coordinated effort by the economic stakeholders to keep wages competitive vis-à-vis its trading partners was later enshrined in law — a real exchange rate objective by decree (Box 2.10)76.
Box 2.9 The cooperative cure for the Dutch disease

In the late 1950s, a large field of natural gas was discovered in the Groningen province, in the north-eastern part of the Netherlands. Briefly afterwards, the prevailing system of wage-setting, providing for moderation, loosened and the “cradle-to-grave” welfare state was substantially expanded. As a result, inflation rose, and with it the real exchange rate.

Exports lost pace relative to imports. The current account, reflecting the underlying loss in competitiveness, widened. Still, on the back of the continuous flow of revenues from gas export, the Dutch guilder remained strong. In fact, too strong for export and import competing firms. By the end of the 1970s and after two oil price shocks, manufacturing exports were in bad shape. Unemployment was high and inflation persistently higher than those in its neighbors and competitors. However, collective bargaining agreements were automatically indexed to inflation, resulting in a “wage-price spiral” — a vicious cycle. And public sector spending on untargeted welfare programs resulted in ever-increasing budgetary deficits.

This period, starting in the mid-1970s, came to be known as the “Dutch Disease”. However, a decade later, talk was of the Dutch miracle: the “Polder Model”. How did this happen? The remarkable turnaround was created by an accord between the economic stakeholders — the “social partners”. This 1982 Wassenaar agreement was facilitated by the Stichting van de Arbeid (the Labor Foundation): a cooperation platform of employers and labor unions. It produced a program combining centrally-led wage moderation vis-à-vis Holland’s main competitor — Germany — including through shorter working hours.

Devaluation might have been an option. However, devaluation vis-a-vis the Germany Mark would likely have been ineffective for an economy that was highly open and integrated with its main competitor and neighbor. In addition, the stakeholders understood that the Dutch disease was not a temporary problem to be solved by devaluation, but rather a structural one and therefore beyond the reach of monetary and exchange rate policy. The agreement was about sustainably improving competitiveness by keeping wage increases continuously below productivity gains and below German wages — the main competitor. In other words, the policy implemented was that of a coordinated targeting of wages in order to put downward pressure on the real exchange rate — a competitive devaluation that was to be sustained.

The Wassenaar agreement is an example of a Dutch institution that embodies a consensus-oriented, practical approach to collective problems. Some would trace the historical origins of such institutions to the collective action that created and maintained the “polders”: the below sea-level, flood-prone lands reclaimed from the sea, starting as early as the 11th century. This is where the notion of Polder Model comes from. This could also explain why Dutch political consensus is highly evidence-based and data-driven: agreeing on the facts, first, helps forge consensus, later. This is also evident in an institution inspired (and led for a long time) by Jan Tinbergen (the first winner of the Nobel prize for economics): the Central Planning Bureau. The CPB does not plan. Instead, it evaluates the economic and fiscal impacts of political platforms and proposals, functioning as an impartial arbitrator and thus laying the groundwork for political compromise and consensus.


Box 2.10 Belgium: Keeping the real exchange rate competitive by decree

Since the mid-1970s, Belgian unemployment had risen rapidly, because of a wave of plant closures, which also produced negative consequences for public sector budgets. As in the Netherlands, 1982 proved to be the turning point. A stabilization plan was introduced, consisting of salary caps, budget cuts and, different from the Netherlands, an 8 percent devaluation relative to the German Mark (the anchor currency of the EMS). Moreover, going forward, a wage norm that set limits to wage increases beyond inflation was established, with the trajectory of wages in Belgium’s major trading partners as the ceiling. In other words, the wage norm attempted to keep the real exchange rate competitive.

In addition, a Conseil central de l’économie (cce), consisting of employers’ and employees’ representatives, was charged to assess Belgium’s competitiveness and, if need be, suggest remedies. Finally, in 1989, the Law to safeguard competitiveness was introduced, allowing the government to intervene in case wages — a key component of the real exchange rate — threatened to undermine competitiveness. In 1996, this essentially legal macroeconomic framework was further tightened. Based on a joint report of the cce and the Conseil national
A centrally coordinated response can be highly effective if the economic stakeholders (government, business and labor) can agree on the problem and its solution. This presupposes high levels of trust, which would get further strengthened if the economic rebound is successful. By contrast, Italy’s collective bargaining between employers and labor resulted in automatic wage indexation to inflation, which produced unsustainable devaluations and rising unemployment.

If underpinned by trust, collective bargaining is associated with more employment and household income resilience. The presence of collective bargaining could be an indication of cooperative behavior by the economic stakeholders. On average, we indeed find a positive relation for both the length of the shock and its volatility. The results suggest that a country with a 20 percent higher collective bargaining coverage reduces the half-life of unemployment shocks by 1½ quarters — a reduction of economic significance given that the mean half-life is around 10 quarters. The impact of collective bargaining on unemployment volatility and the size of household income deviations is similarly economically significant — 20 percent higher collective bargaining coverage reduces the depth of income shocks by 2 percentage points compared to a mean depth of 9 percent.

However, if trust is lacking, collective bargaining can lead to less resilience. Croatia, Greece and Spain have above average coverage of collective bargaining, but very long unemployment episodes after a shock. Italy also provides an example of collective bargaining with adverse effects on resilience (Box 2.11)77. Conversely Romania has low collective bargaining coverage and low trust, but relatively short employment recessions (Figure 2.5)78. Finally, since the mid-2000s Germany’s collective bargaining coverage has been lower than for several of its western European neighbors — we give a possible explanation below (Box 2.12). The differences among the outcomes of collective bargaining across the EU seem related to the levels of trust (see section below) and the historic roots of employer-worker relations79.
Italy’s resilience was severely tested by the two crises of 2008–9 and 2011–12— it recorded a slow and incomplete recovery. Observers point to “the institutional and culture environment” that is not conducive to foster firms’ activities and promote policy and institutional reforms (Visco 2018, p. 16).

Sources: Visco, 2018; Bugamelli et al., 2018.

**Figure 2.5** Collective bargaining coverage and unemployment resilience

- **a. Half-life of unemployment**
- **b. Volatility of unemployment**

**Note:** The figure plots our measures for persistence (half-life) and volatility in unemployment against the degree of collective bargaining coverage.

**Source:** World Bank calculations and European Trade Union Institute.

The capacity of economic stakeholders to arrive at cooperative solutions can be traced back to their historical roots. For instance, Italy and Spain seem to have a weaker capacity to arrive at a coordinated, cooperative response to shocks by the key stakeholders (business, labor and government) than is the case for countries such as the Netherlands and Germany. This weaker capacity of social partners to deliver such cooperative solutions can be traced back to the history of the state’s attitude towards labor unions (Box 2.12).

**Box 2.12** Labor market regulation and cooperative employer–worker relations

State regulation of labor markets can undermine the quality of labor relations. Research finds a negative interaction between the existence of cooperative labor relations and the existence of a state–mandated minimum wage. Its cause can be traced back to history and the state’s attitude towards unions. Three types of states can be distinguished. First, states that were hostile to the development of unions and consequently prone to the direct regulation of labor markets: France, Italy, Spain and Portugal. Second, neutral states: Belgium, Denmark, Norway, Sweden and Finland, the UK and Ireland. And third: states that encouraged labor unions: Austria, Germany, the Netherlands and Switzerland. This history seems to influence today’s capacity of the economic stakeholders of reaching cooperative solutions to economic challenges based on trust.

**Source:** Aghion, Algan and Cahuc, 2011; Crouch, 1993

**High levels of employment protection reduce resilience.** On average, higher employment protection in the EU seems to have the opposite intended effect. Typically, the OECD’s Employment Protection Legislation (EPL) is associated with a loss of resilience in terms of the length of the recession (Figure 2.6, left panel) while reducing its volatility (Figure 2.6, right panel). A country which reduces its EPL score by 0.6 (as was done by Portugal between 2008 and 2012) can look forward to a decline in the half-life of its economic crisis by around one quarter. Given an average half-life of slightly below three quarters (Table 7.1) this amounts to a sizeable reduction. The EPL indicator shows pronounced differences between the EU...
member states for which the data are available (left panel, Figure 2.7). Changes over time can be considerable, e.g. for Portugal and Greece (right panel, Figure 2.7) suggesting the potential for policy reform.

**Figure 2.6** Employment protection and output resilience

a. Half-life of output vs. EPL  
b. Volatility of output vs. EPL

![Graph showing employment protection and output resilience](image)

*Note:* The figure plots this report’s measures for persistence (half-life) and volatility in output against the scores of the OECD’s Employment Protection Legislation (EPL, version 3).

*Source:* World Bank.

**Figure 2.7** Cross-country differences in employment protection and their changes over time

![Graph showing cross-country differences in employment protection](image)

*Note:* The figures plot the scores of the OECD’s Employment Protection Legislation (EPL, version 3). The left panel represents sample averages (between 2008 and 2012), the left panel depicts differences in the indicator between 2008 and 2012.
Higher employment regulation is also associated with a loss of resilience of poorer households after a shock. Countries with stricter employment protection may want to temper the firing of labor during contractions, but the same restrictions could delay hiring during the recovery. This could explain why, across the EU, there is little difference in the extent to which periods of positive growth are passed through to the incomes of poorer households, but, in countries with the highest employment protection, poorer households are 60 percent more exposed to contractions than those in countries with the most flexible regulations\[^{83,84}\]. In the latter, this could reflect a prominent policy mix of promoting labor market flexibility while actively supporting the reemployment of workers: the “flexicurity” approach.

**Figure 2.8** Pass-through rate of contractions to incomes (y-axis) by employment protection index (x-axis)

Higher employment regulation is also associated with a loss of resilience of poorer households after a shock. Countries with stricter employment protection may want to temper the firing of labor during contractions, but the same restrictions could delay hiring during the recovery. This could explain why, across the EU, there is little difference in the extent to which periods of positive growth are passed through to the incomes of poorer households, but, in countries with the highest employment protection, poorer households are 60 percent more exposed to contractions than those in countries with the most flexible regulations\[^{83,84}\]. In the latter, this could reflect a prominent policy mix of promoting labor market flexibility while actively supporting the reemployment of workers: the “flexicurity” approach.

However, several member states combine high levels of employment protection and resilience. This seems to be the case for countries that support stakeholder coordination and cooperation in dealing with shocks and the resulting adjustment challenges (e.g. Belgium, Germany, the Netherlands). Such cooperation can allow labor markets to absorb the shock without substantial job losses, but with a reduction in wages instead. For instance, even though Germany has a high level of employment protection, the flexibility of wage-setting at the firm level is high, because of the specific governance structure of labor market institutions at the firm level — a reason for Germany’s resilience over the years\[^{85}\]. These governance structures foster long-term trust and relationships that are beneficial for employers that invest in the specialized skills of their workers. Such firms’ competitiveness is to a large degree based on co-specialized human capital with firm specific skills. Firing can then become prohibitively costly, because of the costs of searching and (re-)training. The value of such fixed investments in human capital is likely to be higher for high value-added economic activities (Box 2.13).

**Box 2.13** Germany’s real exchange rate adjustments through firm-level wage moderation

In the fall of 2008, all open, export-exposed economies were hit particularly hard. Given its deep integration into international trade, Germany, not unlike Korea and Japan, was of course at the forefront. In the following year, its GDP fell by some 5 percent, exports — by more than 40 percent. Baden-Württemberg, a highly export-oriented German Land (of 11 million inhabitants), registered the deepest shock in terms of loss of demand. Unemployment, however, barely budged. Firms kept labor on board. This was seen by some commentators as a German miracle. For firms however, labor “hoarding” — instead of firing — was a rational response.

Many of these firms, typically of a medium size only, are highly specialized. Operating in niches, to reap benefits of scale nonetheless, these firms must internationalize. They also employ highly specialized labor, requiring high investment in firm-specific training. A high turnover of staff to absorb economic shocks would lead to a costly loss of investment in these firm-specific skills, both by employers and employees. Instead, to avoid layoffs, these stakeholders opted to deploy short-time working schemes funded out of unemployment insurance budgets (co-financed by employers and employees).
Active labor market policies combined with wage and job flexibility (part-time work) boost resilience. We find that spending on active labor market programs was positively associated with household resilience: pass-through rates of contractions were softened for worse-off households in countries with higher shares of GDP devoted to active labor market spending. The effect of active labor market programs in supporting job relocation was of course a function of responsive labor demand. If unemployment benefits and support to regain employment are inadequate, more flexible labor markets (with their increased job turnover and income insecurity) can have the opposite effect and deepen the negative impacts of contraction. To avoid this, many Western and Northern European countries combine wage flexibility and part-time work options with spending on active labor market programs. This is far less common in Central and Eastern Europe, which often have labor market policies that are skewed towards passive measures — such as income support and early retirement — rather than towards active labor market programs that support workers to quickly return to employment after job loss or retain their jobs.

Countries that spend more on labor market measures — either active or passive — protect low income households more during contractions. On average, Western and Northern European countries spend more on labor market policies than the Central and Eastern European countries and the Baltics. The variation ranges from more than 3 percent of GDP in Denmark in 2016 to less than 0.5 percent of GDP in Romania (Annex 2). We find a strong relationship between spending on labor market policies — both active and passive — and household resilience. The results indicate that a 20 percent increase in labor market spending translated into a 1 percentage point or 10 percent reduction in the depth of income reductions for median households. And the results are even stronger for the bottom 20 percent of households, who see a 1.2 percentage point or 9 percent reduction in the depth. And the majority of this reduction is driven by active labor market spending.

In summary, in countries with higher resilience boast sound labor market conditions. In these countries, labor market institutions combine flexibility with active labor market policies, while benefiting from collective bargaining institutions that yield outcomes in support of resilience.

Most other member states face significant challenges in improving labor market institutions. Romania, for instance, does not complement collective bargaining with high levels of trust and wage flexibility. Bulgaria gets low marks across several labor market indicators. More recently, Portugal, and to a lesser extent Spain and Croatia, have significantly improved their labor market institutions.

Product and service market institutions

Better private sector conditions are also associated with stronger resilience. Europe’s most resilient economies boast policies and institutions that make it easier to do business, avoid excessive product market regulation, help enforce contracts and come to closure on insolvency efficiently. Sound private sector policies and institutions are positively associated with resilience in Austria, the Netherlands, Denmark, Finland, Germany and the UK. This is much less so for Romania, the Czech Republic, Bulgaria, Hungary, Slovenia, Croatia and Greece.
Lack of competition and product and service market regulations that are anti-competitive and not in the public interest limit the private sector’s crisis response and rebound. The higher the level of competition, the faster market prices will adjust to the new economic context. Conversely, lack of competition implies high mark-ups (due to market power), counteracting both price and wage responsiveness. When faced with a negative shock, firms reset their prices more frequently in a more competitive environment. In other words, the more competition, the higher the flexibility of the real exchange rate. This also matters for the economic rebound.

From a short-term employment perspective, adjustments in prices by firms (resulting in lower profit margins or mark-ups) is a more desirable shock response than adjustments through firm closure. Firm closure leads to layoffs, which could make the economic rebound more difficult if the unemployment episode is lengthy — workers may lose their skills or high-skilled workers may move away permanently. Of course, from a long-term employment perspective, firm closures and layoffs can also have benefits, facilitating a wider economic restructuring. In this context, open, competitive markets again support recovery and restructuring by allowing a speedy entry of new, and exit of old, firms. All these factors explain the positive association between levels of competition and resilience.

Countries with higher scores in the World Bank’s ease of doing business indicator tend to have much higher output resilience. The index components measure a set of entry and exit variables that, taken together, can be seen as a measure of the ease or difficulty with which business can react to economic opportunities and challenges. The relationship between the half-life of an output shock and the score of the indicator is statistically and economically significant (Figure 2.9). A quantitative assessment suggests, that if, for instance, a country improves its indicator score by 10 points (as done by Poland between 2010 and 2014) it reduces the half-life of a given economic shock by around one quarter. Given the average half-life of GDP shocks in our sample of slightly below three quarters this amounts to a sizeable reduction.

Figure 2.9 Ease of doing business score and output resilience

a. Half-life of output vs. EoDB
b. Half-life of output vs. PMR

Sources: The figure plots this report’s measures for resilience of output against the scores of the World Bank’s ease of doing business indicator.
Differences in the ease of doing business across the EU are still significant. However, reforms can narrow such differences relatively fast, as demonstrated by Poland, the Czech Republic, Slovenia, Latvia, Portugal and Lithuania over a four-year period. However, several eurozone members, as well as several euro candidates score low on the index and show only modest improvements (Figure 2.10).

**Figure 2.10** Cross-country differences in ease of doing business scores and their changes over time

The OECD’s product market regulation captures similar trends. The economic crisis triggered significant product market regulation reforms in several countries. Between 2008 and 2013, the largest improvements were recorded in Greece and Portugal (Figure 2.11). This trend is particularly important in the case of Greece, as it still remains among the OECD countries with the strictest product market regulations. In Poland, the improvement was mainly due to the changes in barriers to entrepreneurship (Figure 2.12). In Spain, progress was more modest, with barriers to entrepreneurship even increasing. Still, in most countries the largest gap to the frontier (defined by the Netherlands and the UK) lies in barriers to trade and investment (Figure 2.13). Bulgaria, Croatia, Cyprus, Latvia, Lithuania, Malta and Romania score low on product market regulations. However, product market regulations are amenable to relatively fast change over time.
Figure 2.11 Product Market Regulations index

Note: Product Market Regulations (PMR) indicator originally varies from zero to over three and higher indicator denotes lower flexibility. To simplify comparison between the PMR (OECD) indicator and other indicators (Product Market Indicators based on Doing Business and Global Competitiveness Report data) PMR data has been transformed to uniform distribution on (0,1). After data transformation higher values (close to 1) denote higher flexibility (“the higher the better”).

Figure 2.12 Contribution to PMR changes (2013 vs 2008, additive decomposition)

Figure 2.13 PMR — Gap to the frontier

Source: OECD, Product Market Regulation Database; World Bank calculations.

Combining variables from the World Bank’s Doing Business (DB) survey with data on competition from the Global Competitiveness Report (GCR) data, we developed a measure of product market performance. Poland recorded strong improvement between 2007 and 2016. Poland and Italy are countries with the largest improvements in recent years (Figure 2.14). While in Poland all variables contributed to the improvement (Figure 2.15), in Italy more than a half of contribution came from a lower extent of market dominance. The frontier is set by Belgium and the UK (Figure 2.16). Bulgaria, Croatia, Cyprus, Greece, Hungary, Malta, Slovakia, and Romania score low on the efficiency of their product markets.

More competition and more efficient product and service market performance increase resilience and are amenable to relatively fast policy reforms. More competition allows markets to adjust faster, while less competition slows this process of real exchange rate adjustment. During the rebound, a flexible real exchange rate also allows existing and new firms to respond quicker to the new price signals.
Private sector conditions vary along the resilience ranking in roughly similar ways as labor market conditions. The most and the substantially resilient economies in the EU score well on private sector policies and institutions. Again, Poland is an outlier: it shows higher resilience than its institutions would suggest. Among the less resilient economies, Estonia, Lithuania and Ireland stand out as having relatively favorable private sector conditions. Romania, Bulgaria, Hungary, Italy, Slovenia, Latvia, Croatia, Spain and Greece all have significant room for improvement.
Can a flexible exchange rate policy compensate for weak institutions?

Before the advent of the euro, several EU member states regularly, but ultimately unsuccessfully, used competitive devaluations to compensate for their macroeconomic imbalances. Domestic inflation made their goods and services more expensive than those of their competitors and led to market pressure on the nominal exchange rate to devalue. However, while such devaluations seemed helpful to restore competitiveness in the short run, they proved ineffective without the accompanying structural and fiscal reforms necessary to sustainably improve the macroeconomic balances and international competitiveness.

Within the EU today, there are several member states that, to varying degrees, let their exchange rate float and be determined by market forces — the “floaters”, while others either have the euro or have fixed their exchange rate to the euro — the fixers. How did the two groups — the floaters and the euro/fixers — absorb the 2008 shock (and the subsequent euro crisis) and rebound from it? How long did it take the two groups to return to the pre-crisis (2007/8) income per capita and employment levels?

On average, the floaters were more resilient weathering the 2008 crisis. The GDP per capita of the floaters returned to its pre-crisis level three years earlier than the fixers. Employment in the economies with floating currencies had already rebounded in 2012, while on average, the other EU countries (eurozone members and those having fixed exchange rates) have still not recovered their pre-crisis employment rates (Figure 2.17 and Figure 2.18).

Poland is a case in point, demonstrating above-average resilience, even while its labor market and private sector institutions were still relatively weak. Poland was the only country in the EU not to suffer a GDP contraction in 2008. It allowed its currency to devalue when the 2008 shock hit. As a result, real wages — an important component of the real exchange rate — fell significantly, even while nominal wages did not (Box 2.14).

Whereas changing the nominal exchange rate means changing one price — the price of the currency — only, internal devaluation means changing all prices included in the national price basket. This internal devaluation would need to happen economy-wide, which poses considerable coordination problems. It would mean reducing nominal wages, possibly differentially between different labor markets.

**Figure 2.17** Real GDP per capita growth, percent

**Figure 2.18** Employment growth, percent

_Note:_ Dotted line indicates that income per capita level stayed below the pre-crisis level, equal to 2007/2008 average per capita income. The fixed group contains eurozone, fixed exchange rate regime countries and managed floating regimes with low flexibility. Simple average.

*Source:* Eurostat, World Bank calculations.

_Note:_ Dotted line indicates that employment level stayed below the pre-crisis level equal to 2007/2008 average employment. The fixed group contains eurozone, fixed exchange rate regime countries and managed floating regimes with low flexibility. Simple average.

Obviously, this creates psychological, distributional and political tensions. Other options include reducing working hours or outright dismissal. The latter becomes problematic if the recession is prolonged and workers remain unemployed for long periods, which could lead to a loss of skills and employability and hence to long-term unemployment (hysteresis). All in all, internal devaluation can therefore be psychologically, socially and politically very challenging. This could be the main reason why, on average, the eurozone members and countries that fix their currency to the euro are hit harder and take longer to recover, both with respect to GDP and employment.

However, the benefits of a flexible exchange rate regime as a medium or long-term policy instrument are limited. Devaluation does offer a short-term, effective response to deal with shocks. It creates a rapid, economy-wide stimulus to boost exports which, for an open economy, could set the stage for a quick recovery. And a currency devaluation makes prices of domestic goods and services fall instantaneously and economy-wide, across all relevant markets. Such an adjustment is relatively efficient from the standpoint of transaction costs. Finally, politically, socially and psychologically, the implicit distributional implications of such an adjustment seem less challenging than the adjustment options available under a fixed exchange rate regime. However, in the medium term, the real exchange rate will adjust to the new economic situation, regardless of the exchange rate regime in place. It is in that sense that the choice of exchange rate regime is immaterial.

**Trust**

Trust contributes to the accumulation of social capital, impacting economic performance and resilience. Trust lowers the transactions costs of economic agents’ market participation by lowering the costs of information seeking, bargaining and contracting, and monitoring and enforcement. Trust also allows economic agents to take a longer term view of negotiations and contemplate inter-temporal trade-offs that benefit both parties in the long run. The political scientist Robert Putnam famously hypothesized that today’s differences in efficiency between regional governments in Italy were directly related to historical variations in cooperation, participation, social interaction and trust — together
constituting a measure of “social capital” \textsuperscript{92,93–94}. The higher the stock of accumulated social capital, the more localities hold political leaders accountable for the welfare of the community\textsuperscript{95}. Economic relations are always embedded in social relations and can play a role as coordination devices between economic stakeholders when faced with economic shocks\textsuperscript{96–98}.

**Trust in institutions improves economic efficiency.** The relationship between trust and institutions is recursive and self-reinforcing: the more citizens trust the country’s institutions, the better these institutions will work, in turn creating even more trust in them. On the other hand, with a low level of trust in institutions, institutions’ effectiveness suffers, lowering trust levels even further. Low trust causes the transactions costs of business contracting to increase, even if there is a legal system in place that can enforce contracts. Low trust results in higher user cost of capital, putting a damper on capital expenditures. Even stock market participation is lower in countries with a lower level of trust\textsuperscript{99}.

High levels of societal, or generalized, trust should not be confused with high levels of trust within family networks found in many traditional societies. Such societies may accept selfish behavior outside the family networks more easily, leading to less generalized trust in people outside the family circle\textsuperscript{100}. Measures of “generalized trust” (trust in people you do not know) increase when formal institutions perform better (so that these can be used effectively if you face a betrayal of your trust in others). Conversely, a worsening of institutions leads to a loss of trust.

**Trust can be measured.** Levels of trust and social capital can be measured by scoring levels of agreement to opinion survey statements. Similar survey results exist on “individualism” versus “collectivism”\textsuperscript{101}, or the importance of family ties\textsuperscript{102}. A quantitative index of trust in institutions was created for this report (Box 2.15). Trust measures are lower in Southern Europe than in Northern Europe while, on the whole, they worsened considerably during the last decade of economic crises (Figure 2.19).

**Box 2.15  Screening and selecting measures of trust**

Drawing from the Eurobarometer survey, we tested several variables, including an aggregate index, using the replies to the survey questions that covered trust in private, public and political institutions. We also considered the question on trust in politicians from the Global Competitiveness Index.

In addition, following Guiso et al. (2012), we looked at measures of levels of civic capital. We used data from the World Values Survey and created an updated version of the aggregate indicator by Guiso et al. (2012). We also created a variable describing the trust people invest in their fellow citizens drawn from the Eurobarometer’s survey.

After this screening process, we selected, based on economic and statistical significance, the variable that captured the trust of a country’s residents in the functioning of its institutions as measured by the Eurobarometer survey.

**Trust can change, with trust and resilience reinforcing each other.** When we interact the differences in countries’ levels of trust and resilience indicators, we find statistically and economically significant relationships supporting the positive correlation between trust and resilience (Figure 2.19)\textsuperscript{103}. Countries with more trust in their institutions experience faster adjustment processes after a given economic disturbance and lower fluctuations of output and unemployment\textsuperscript{104}. A faster and more inclusive rebound in turn increases trust, creating a virtuous cycle. In the EU, trust levels rose between 2004 and 2014 in countries that were the most resilient (Sweden, Poland and Germany). By contrast, trust levels fell in countries that were least resilient (Greece and Spain). This underlines the need to strengthen resilience: failure to do so lowers trust levels, which undermines resilience even further, making weathering the next crisis even more difficult.
The most resilient economies benefit from higher levels of trust in institutions. The outliers among countries with relatively strong resilience are France and, to a lesser extent, Poland and the UK. Conversely, among the less resilient economies, Estonia, Portugal and Ireland nonetheless show considerable trust in institutions. However, the least resilient economies clearly suffer from the lowest trust in institutions (Table 2.1).

Countries characterized by higher trust values demonstrate more output and household income resilience. If trust in institutions increases by one unit — as observed for Sweden — the half-life of an output shocks declines by a half quarter. Compared to the average half-life of three quarters, this is economically significant. A deterioration of this trust index by 1.5 units — as has occurred in Spain and Greece — is associated with a higher half-life of three fourth of a quarter. Similarly, we see that a one unit increase in trust measures reduces the depth of the shock to median incomes by 1.3 percentage points. A slightly greater impact — 1.6 percentage points — is seen for the bottom 20 percent of households. In both cases, these impacts are economically significant, compared to an average depth of 9 and 14 percent for median and bottom 20 percent of the households respectively.

Box 2.16 Greece — the high costs of lack of trust in institutions

Until the mid-2000s, Greece’s growth rate was between 4 and 6 percent and consistently above the eurozone average: Greece was rapidly converging.

However, Greece’s convergence was driven by substantial capital inflows and characterized by strongly rising current account deficits until 2008 and real exchange rate appreciation until 2010.

Since then, Greece, obliged by assistance programs with substantial conditionalities, has followed a series of adjustment programs that focused on reducing macroeconomic imbalances, bolstering competitiveness through labor and product market reforms and improving productivity.

The Greek economy was hard hit — the hit to GDP was in the order of 25 percent — and the adjustment was unevenly distributed. Poverty rates rose to unprecedented levels. Youth unemployment skyrocketed.
Trust impacts the persistence and volatility of unemployment fluctuations in an even stronger way. An increase in the Eurobarometer’s “trust in institutions” indicator of the size recently experienced in Sweden is associated with a reduction in the half-life of a shock to the unemployment rate by four quarters. Similarly, a decrease in its score by 1.5 — as observed in Greece and Spain over the sample period — suggests that their shock half-lives have increased by six quarters. The mean half-life is around 10 quarters. The findings for the relationship between size of unemployment fluctuations and institutions suggest statistically and economically significant links which are much more pronounced than for output. Strong linkages are also found for our measures of civic capital. According to our estimates, a change in the Eurobarometer's “Trust in people” indicator by 2 (as seen in Italy, Spain, Romania or Hungary) will impact the volatility of the unemployment rate by very sizeable 1.2 percentage points. This number is large, given that the mean volatility takes a value of around 2 percentage points.

Figure 2.20 Trust in institutions (Eurobarometer)

Notes: The left panel shows the average values of the replies to the Eurobarometer’s survey questions on trust in a country’s institutions and other people (sample average; see Annex 1: Data, for a list of institutions covered in the survey). The right panel plots the changes of values for this indicator between the years 2005 and 2014. For each country, these average values are computed as unweighted means of the replies to the survey questions.
An increase in inequality reduces trust and leads to less resilience, creating a vicious cycle. A high degree of inequality undermines trust. If an economic shock causes an increase in inequality, trust is reduced, in turn making the economic rebound more difficult. The negative correlation between trust and inequality is strong (Figure 2.21). Rising inequality also undermines long-term growth and would make economic convergence more difficult to achieve. Finally, rising inequality and lower trust levels are also associated with an increase in support for national populism.

Figure 2.21  Income inequality and trust/institutional variables

<table>
<thead>
<tr>
<th>Country</th>
<th>Trust in institutions</th>
<th>Trust in people</th>
</tr>
</thead>
<tbody>
<tr>
<td>AT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BG</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Figure 2.21 illustrates the correlation between the income ratio of households at the 20th percentile of the income distribution to that of households at the 80th percentile of the income distribution and various constructs capturing trust in institutions and other people.

Source: World Bank calculations

Notes

1. From an optimum currency area perspective, those institutions are key substitutes for the lack of monetary (or fiscal) capacity to respond to shocks (Carlin, 2012).
2. Conversely, an economy hit positively should be characterized by rising wages (and profits).
3. Informal rules can build on formal, codified rules, or modify them; they consist of socially sanctioned behavior or enforce standards of conduct (North 1990, p. 40). Obviously, informal rules are all that counts in the informal economy where 'contract' enforcement and dispute settlement cannot refer to formal institutions.
6. Draghi (2018) reports intra-EU exports rising from 13 percent of EU GDP in 1992 to 20 percent in 2018. “Intra-euro area trade has risen both in absolute terms and as a share of total trade with advanced economies, even as emerging market economies have entered the global market. Foreign direct investment (FDI) flows within Europe have also grown. However, whether trade indeed increased because of the euro is contested (Frankel, 2009). The most recent research finds that the impact of the currency union on stimulating trade is inconclusive (Glick and Rose, 2015). One of the reasons for the lack of evidence is that “without” EMU scenario, the counterfactual, is difficult to model and is sensitive to parameter assumptions.
8. Countries that have substantially euroized their debt positions may have more limited recourse for depreciation in any case.
This is known as the economic “trilemma” or, if extended to include open trade, the “inconsistent quartet”.

Padoa-Schioppa (1982) made a similar argument, extending it to include open trade. He argued that it was impossible for a group of countries like the EU to simultaneously aim at free trade, capital mobility, independent domestic monetary policies, and fixed exchange rates. This was coined the “inconsistent quartet”.

The European Commission made these arguments in its 1990 publication “One Market, One Money.” European Union Commission, 1990; see for a reassessment by one of the authors Gros, 2017.

Mario Draghi (ECB President since 2011) summarizes these two decades in his speech “Europe and the euro 20 years on”. https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp181215.en.html

Buiter et al., 1993 were critical of the Maastricht criteria as they did not address the substance of unstable (public sector) debt dynamics. In addition, they did not address private sector debt vulnerability, ultimately a major contributing factor to the crisis in the euro area periphery.

Inflation would be measured as the 12-month average of year-on-year rates of the Harmonized Index of Consumer Prices. EU member states with rates significantly below the comparators will not be included in the three-country benchmark.

The deficit is the annual general government deficit. GDP is measured at market prices. Deficit can be slightly above the limit if it is on a continuously declining trend or if it is temporary in nature due to exceptional circumstances. These would include an economic recession of over 2 percent of GDP, as later agreed. A recession between 0.75 and 2 percent would need to be discussed and agreed on between the ministers of finance of the member states.

Debt is the gross government debt. If the ratio is exceeded, it should be coming closer to the ceiling at a satisfactory pace.

The long-term interest rate will be measured as the average yield of 10-year government bonds in the last year. EU member states with long-term interest rates significantly above the comparators will not be included in the three-country benchmark.

While the arithmetic was evident, the economics was less convincing and strongly contested, for instance by Buiter et al. 1993. Buiter et al. guessed that the criteria were derived at as follows. The debt ratio was close to the EC’s average in 1991; long-run growth of 3 percent seemed feasible; inflation at 2 percent seemed a stretch, according to Buiter; and a 3 percent deficit would be compatible with a debt-to-GDP ratio of 60 percent in the long run. The 3 percent deficit was equal to the EC’s public investment-to-GDP ratio (1974–1991), suggesting that deficits should finance public investments only, and not recurrent expenditures — this was called the “golden rule of public finance” in EC documents. Buiter et al. argued, for instance, that, first, this assumed that inflation would be zero (higher inflation would be compatible with higher debt ratios; p. 63), second, that education expenditures would not be seen as investment, while, third, public investment would always yield a positive financial return to government.

See for instance, Djankov (2014).


Kaldor, 1978. Kaldor had already warned of this in 1971 in his critique of the Werner Report of 1970. He argued that the monetary union could actually prevent the emergence of a political union because of the economic conflicts it created.

Kenen, 1969.


De Grauwe and Yi, 2012.

EC, 2008.

Investment decoupled from local savings. This went against the phenomenon uncovered by Feldstein and Horioka (1980). They demonstrated (for OECD countries, between 1960 and 1974) a close correlation between domestic savings and local investments. They took this to indicate a low degree of integration of capital markets across countries.

In the wake of the crisis, financial market integration fell back towards its level of the early 2000s (ECB 2017, Integration Report).

This “overshooting” of the real interest rates (nominal interest rates converged more quickly than inflation) created situations in which the real interest rates in countries such as Spain, Ireland or Portugal were substantially lower than in Germany, boosting investments in these economies as a consequence.

Baldwin and Giavazzi, 2015.

Italy, Portugal and Spain, in particular.

Baldwin and Giavazzi, 2015.

One exception confirmed the rule: Greece had had very large fiscal imbalances before the crisis, but it had hidden these from the EU.
Greece had misrepresented its budget deficit and debt for over a decade (Djankov, 2014; Papaconstantinou, 2015).

Djankov, 2014.

Shambaugh, 2012.

The report of the Committee for the Study of EMU (1989) — the Delors Report — had correctly predicted that Europe’s new free capital markets might not always and consistently rein in profligate debtors (and careless creditors) by requesting substantially higher spreads for less prudent debtors with riskier projects. However, the authors had probably not anticipated that they would be reduced to near zero.

This also meant that, when push came to shove, the credibility of the no-bailout clause (Art 125 of the Treaty on the Functioning of the European Union) was rather low.

For instance, banks’ exposure to their own sovereigns was rated as having zero risk by the regulators. This could be seen as softening the market’s discipline on the sovereign.

In the Italian case, Banca d’Italia had disallowed putting investments in structured products off balance, hence, by insisting on booking on balance and thus requiring backing with equity, these instruments became unattractive. Italian banks were not hit in 2008, only later when the sovereign debt crisis erupted.

Other supervisors implemented basically the same European rules differently, of course within the leeway given by the European regulations. They were using “national derogations”.


The importance of inter-regional mobility for absorbing shocks was emphasized early on by Blanchard and Katz, 1992. Since then, however, it has declined.

Eurostat, 2018.

World Bank, 2016. This calls for the harmonization of qualification standards and certification procedures. The Bologna process on harmonizing academic curricula was a beginning.


World Bank, 2016.

Since yearly data at the NUTS-3 level are only available for more recent years, we are unable to conduct population weighted analysis at the NUTS-3 level.

Lutz et al., 2019.

Even today, the “federal” EU budget is very small (and deemed to stay so): 1 percent of GDP, compared to a US federal budget of about 20 percent. It is mainly spent on agriculture and support for lagging regions and, of course, does not have the automatic stabilizing capacity of the US budget, for instance. MacDougall (1977) had estimated that the EU would need a budget of about 5 to 7 percent of aggregate GDP of member states in order to play this role.

In July 2012, ECB president Draghi announced the ECB’s resolve to do “whatever it takes” within its mandate to safeguard the euro. This largely mitigated market fears of an unravelling of the euro. Institutional investors were reassured as the statement was seen to imply that EMU member states would have access to ECB funds when running into liquidity problems, i.e. problems with rolling-over their outstanding debt. The support, called Outright Monetary Transactions (OMT), was conditional on entering an adjustment program with the European Commission, the ECB and the IMF — the “Troika”. The OMT provides a safeguard in case severe distortions in sovereign bond markets occur. Conditions for its activation include that the respective country is subject to an appropriate ESM program with strict conditionality. As any purchases take place only in secondary markets, no direct financing of governments is extended.

This assistance is granted only if it is proven necessary to safeguard the financial stability of the euro area as a whole and of the eurozone members.

It took the place of the European Financial Stability Facility (EFSF), which was supposed to be a temporary facility that mitigates moral hazard. The EFSF was established to deal with the Greek crisis that started in May 2010. It went against the “no-bail out” philosophy of the Maastricht Treaty, which had argued that providing member states with insurance against market pressure would lead to unsustainable policies.

Berger et al., 2018.

Berger et al., 2018. The International Monetary Fund (IMF) was also brought in during the crisis, providing about a third of the funding for the Greek and Irish rescue packages of 2010, with the EFSF providing the other two thirds. Both the ESM and the IMF conducted debt sustainability analyses, with the possibility of issuing bridge loans to reach sustainability.

Further development of the ESM (currently with paid-in capital of 80 billion euro) should be one of the elements of the new architecture of the euro area. In parallel, better public debt management and banking supervision is needed to reduce the risks from sovereign bonds infecting bank balance sheets, and, ultimately, the creation of a European “safe asset”.

Buti et al., 2017.

This should reduce capture and provide for a common, uniform application of regulations.
Whereas the real exchange rate is difficult to control, it is, however, not completely impossible. Central Bank
In addition, the Bank Recovery and Resolution Directive (BRRD) creates a Single Resolution Board and Fund
Backé and Dvorsky, 2018.

This is why Blanchard (2019) even calls national collective bargaining the missing third leg of the eurozone
architecture — the other legs are the fiscal and banking sector legs.

Aiyar et al. (2019) also stress the potential benefits of collective bargaining in the eurozone, providing supporting
evidence. They also stress that effective coordination through collective bargaining is “typically rooted in a long
tradition of social dialogue and mutual trust between partners, which is difficult to build from scratch.” (p. 17).

OECD, 2017.

We measure the duration or length of the downturn as the “half-life” of the shock (in quarters). We measure
the depth is measured as the percentage decline seen from the pre-crisis income to the turning point.


To investigate household income resilience trends, we measure the “duration” of the crisis by examining the
number of years during which incomes declined, until a turning point is reached, and incomes start to rise
again. The depth is measured as the percentage decline seen from the pre-crisis income to the turning point.
We examine this separately for median incomes and for the incomes of the worst-off 20 percent in a country,
capturing resilience among average and poorer households.

Carlin and Soskice, 2009.

This is why Blanchard (2019) even calls national collective bargaining the missing third leg of the eurozone
architecture — the other legs are the fiscal and banking sector legs.

Aiyar et al. (2019) also stress the potential benefits of collective bargaining in the eurozone, providing supporting
evidence. They also stress that effective coordination through collective bargaining is “typically rooted in a long
tradition of social dialogue and mutual trust between partners, which is difficult to build from scratch.” (p. 17).

OECD, 2017.

We measure the duration or length of the downturn as the “half-life” of the shock (in quarters). We measure
differences in the half-life indicator range from 1 to 6 quarters for output and from 1.5 to more than 20
quarters for unemployment. The standard deviations of output and unemployment range from around 0.5 to 5.

Aiyar et al. (2019) also stress the potential benefits of collective bargaining in the eurozone, providing supporting
evidence. They also stress that effective coordination through collective bargaining is “typically rooted in a long
tradition of social dialogue and mutual trust between partners, which is difficult to build from scratch.” (p. 17).

OECD, 2017.

Backé and Dvorsky, 2018.

This would ensure adherence to the “no bailout” rule of the Treaty on the Functioning of the European Union:
the rule prohibits governments to pay for each other’s debt. In the us, the no-bailout rule allegedly gained cred-
ibility by letting 9 out of the 13 states fail in the late 1830s. As a result, us states, except for one, have introduced
balanced budget rules. Macro stabilization is the remit of the federal state. There are, however, automatic sta-
bilizers, mainly through lower taxes flowing from states doing not so well to the center (see, e.g., Sachs 1992,
von Hagen 1992). A system of federal deposit insurance, preventing depositor runs, was established in 1933 and
reformed in the early 1990s. It meant that state-level banking crises were immediately federalized, hence the
doom loop between states and their local banks was severed (consider, for example, the case of Texas in 1986).

In addition, the Bank Recovery and Resolution Directive (BRRD) creates a Single Resolution Board and Fund
to manage troubled banks. The BRRD obliges all EU governments to first bail in (junior) creditors before bailing
out a bank in distress with taxpayers’ money.

The report builds on earlier work that established the importance of institutions on average owp growth per
capita in the EU. Masuch et al. (2016) showed how the 15-year average per capita owp growth since the mid-1990s
this growth was related to the quality of institutions (rule of law, regulatory quality, government effective-
ness and control of corruption) and of particular importance for countries with an initial public debt is above
a threshold (e.g. 60% or 70%).

The real exchange rate can also be seen as the nominal exchange rate after accounting for the differing tra-
jectories of regional price levels. Regional price levels are (short- to medium-run) indicators of how “competing
claims” on the regional value added are managed (Carlin and Soskice 2006, Blanchard, Amighini and Gia-
avazzi 2013). Here, institutions and culture — and their regional or national differences — come in forcefully.

Whereas the real exchange rate is difficult to control, it is, however, not completely impossible. Central Bank
interventions in the foreign exchange markets, the accumulation of foreign reserves as well as capital account
policies can influence the real exchange rate, at least to a degree. In this way, China was able to successfully
prevent the appreciation of its currency during periods of very high export and owp growth (convergence with

We measure the duration or length of the downturn as the “half-life” of the shock (in quarters). We measure
the depth of the downturn as the dispersion (its standard deviation) of output/unemployment. The differences
are large. Differences in the half-life indicator range from 1 to 6 quarters for output and from 1.5 to more than 20
quarters for unemployment. The standard deviations of output and unemployment range from around 0.5 to 5.

The report that laid the groundwork for the proposed monetary union — the Delors Report — had stressed eco-

Aiyar et al. (2019) also stress the potential benefits of collective bargaining in the eurozone, providing supporting
evidence. They also stress that effective coordination through collective bargaining is “typically rooted in a long
tradition of social dialogue and mutual trust between partners, which is difficult to build from scratch.” (p. 17).

OECD, 2017.

We measure the duration or length of the downturn as the “half-life” of the shock (in quarters). We measure
differences in the half-life indicator range from 1 to 6 quarters for output and from 1.5 to more than 20
quarters for unemployment. The standard deviations of output and unemployment range from around 0.5 to 5.

The report that laid the groundwork for the proposed monetary union — the Delors Report — had stressed eco-

Aiyar et al. (2019) also stress the potential benefits of collective bargaining in the eurozone, providing supporting
evidence. They also stress that effective coordination through collective bargaining is “typically rooted in a long
tradition of social dialogue and mutual trust between partners, which is difficult to build from scratch.” (p. 17).

OECD, 2017.

We measure the duration or length of the downturn as the “half-life” of the shock (in quarters). We measure
differences in the half-life indicator range from 1 to 6 quarters for output and from 1.5 to more than 20
quarters for unemployment. The standard deviations of output and unemployment range from around 0.5 to 5.

The report that laid the groundwork for the proposed monetary union — the Delors Report — had stressed eco-

Boeri et al. (2019) compare the collective bargaining institutions of Germany and Italy, and find that the German model works better because it allows for local wage agreements that reflect local conditions.

The data used in the heatmap reflect Romania’s collective bargaining coverage in 2008, at which point there was widespread collective bargaining at the national, sectoral and establishment levels. The data in the figure reflect Collective Bargaining Coverage in 2019, using data from the European Trade Union Institute. Labor law reforms undertaken in 2011 altered these structures substantially, and reduced the fraction of the workforce covered by collective bargaining agreements (Trif, 2014). Romania’s collective bargaining indicator therefore changes from among the highest in 2008 to just below average from 2011 onwards.

Hijzen, Martins and Parlevliet (2017) report the same differences between collective bargaining in Northern Europe (helpful to weather the fallout of the crisis) and Southern Europe (seen as an obstacle). In addition to levels of trust and cooperation, they also point to the scope for flexibility at the firm or worker level within sector-level agreements, among others.

For the difference between the Netherlands and Portugal, see Hijzen, Martins and Parlevliet (2018).

Germany had institutionalized forms of cooperation: konzertierte Aktion (concerted action) and later Bündnis für Arbeit (alliance for labor) (e.g., Hassel, 2006).

Bentolila et al., 2010.

This does not imply a causal relationship between these institutional factors and responses to crises, countries with stricter employment protection regulatory frameworks differ systematically from those who do not have such on other grounds.

It should be noted that this approach focuses on whether poorer or better-off households had incomes that were more or less exposed to contractions than average households but does not allow us to explore how shifting regulatory frameworks during the crisis, and also does not speak to how employment protection legislation impacts an economy’s absorption and recovery capacity.

Dustmann et al., 2014.

Effective activation strategies can help make labor markets more resilient in case of adverse demand shocks.

EC, 2017.

Product market institutions that foster competition and provide a business-friendly environment include the ease of doing business (legal barriers for entry, administrative burdens and costs), contract enforcements, effective insolvency processes, limited sectoral regulations in retail and regulated professions (licensing and permits), anti-monopoly regulations, good governance of SOEs. Ensuring the quality of public administration is also important.

As measured by changes in the Product Market Regulation index compiled by the oecd.


Hall and Jones (1999) deployed a closely related concept they call “social infrastructure”. Social infrastructure is defined as “the institutions and government policies that determine the economic environment within which individuals accumulate skills, and firms accumulate capital and produce output.” An ideal measure of social infrastructure would quantify the wedge between the private return and the social return to economic activities. They construct an index using (i) law and order; (ii) bureaucratic quality; (iii) corruption; (iv) risk of expropriation; (v) government repudiation of contracts; and (vi) the Sachs-Warner index of openness to trade. The authors find strong associations between this index and output per worker. This result holds after controlling for educational attainment and capital per worker, and — in order to uncover causal relations — after instrumenting by the fraction of the population speaking a Western European or the English language, and the predicted trade share of an economy.

Putnam, 1993. Differences in values and beliefs, historically deeply rooted, are for example held responsible for the diverging evolution of Italy’s Northern provinces and its mezzo giorno (Guiso et al. 2004).

Charron and Lapuente (2013) explore subnational divergences in quality of government (understood as control of corruption, impartial treatment of citizens, and government effectiveness) using newly created subnational data including over 70 European regions. They argue that a major factor explaining these regional differences lies in the consolidation of clientelist networks in those regions where elites were historically (seventeenth to nineteenth centuries) less politically accountable.

Identity, the aspiration to be part of a specific group by abiding to commonly shared norms of behavior, can be a driver of economic convergence. Akerlof and Kranton (2000, 2010) developed this approach, which they call identity economics. Bénabou and Tirole (2006 and 2007) argue along similar lines.

Nannicini et al., 2013. This confirmed Banfield, 1958.

Granovetter, 1985.

Hoff and Stiglitz, 2005 and 2015.
Pelloni and Savioli (2015) attribute the weak economic rebound of Italy after the crisis to the general level of corruption. Bigoni et al. (2016) attribute the continued differences between northern and southern Italy to differences in social norms.

“Betrayal aversion” captures the same phenomenon. See Bohnet, I. et al. (2008), Bigoni, M 2018.

Alesina and Giuliano, 2015. The same perspective leads to research on the economic implications of notions of “generalized morality” and “limited morality” (Platteau, 2000, and Tabellini 2008a, 2009, 2010).

A frequently used dataset on this is Geert Hofstede’s at www.geert-hofstede.com

Alesina et al. (2013) explore the link between family ties and labor-market regulation.

Our approach follows a growing strand of literature that relates business cycle characteristics of a country to various dimensions of its institutional characteristics such as labor market institutions, financial market conditions or governance indicators (see, e.g., Essers (2012), Georgiadis, 2014, Giannone et al. 2011, Abbritti and Weber, 2019). Our approach faces three data constraints. First, our sample of countries is fairly small. Secondly, business cycle characteristics are computed for a relatively short sample period (2001-2016), which was, of course, affected by historically exceptionally volatile economic dynamics. Thirdly, the available data represent proxies for the institutions they are supposed to capture.

Concerning the important question of the direction of causality, we refer to the discussion in Guiso et al. (2012) who provide evidence that institutions are causal for economic outcomes.

Uslaner and Brown (2003), using aggregated American state-level data for the 1970s, 1980s and 1990s that show that inequality is the strongest determinant of trust. Jordahl’s literature review (2007) concludes that cross-country studies, within-country studies, and experiments all suggest that economic inequality exerts a negative influence on trust.

See for instance, O’Connor (2017).
Conclusions
This report concentrated on the institutions that improve resilience to shocks in the EU and the eurozone. They are the institutions that allow smooth responses of the real exchange rate to shocks and determine the distributional implications of this adjustment. This is of particular importance to countries in the eurozone (or those that have fixed their exchange rate), as they can no longer use independent monetary policy to absorb economic shocks, while the eurozone’s institutional architecture is still a work in progress. Within the eurozone, the bulk of the adjustment process falls on the changes in the relative prices of tradable and non-tradable goods and services: the real exchange rate.

Within the eurozone, most of the shock will need to be absorbed by “internal devaluation”, that is, an adjustment of the real exchange rate allowing for expenditure switching and reduction. This makes the economy more competitive, while reducing domestic absorption. Lower domestic prices should then attract new investment and create economic growth. During the rebound thus created, the real exchange rate would start to appreciate again. The more effective this process, the more resilient the economy. The adjustment of the real exchange rate is determined by the institutions that govern the flexibility of labor, product, services and financial markets and how the absorption of the shock and its aftermath is translated into particular patterns of inclusive economic growth\(^1\). They are not policy parameters to be controlled at the will of policymakers. Instead, they require a combination of flexible, competitive markets and, when possible, coordination between stakeholders to support equitable burden sharing and inclusion.

The effectiveness of these “real exchange rate institutions” is based on the trust citizens place in them, while they are also embedded in, and interact with, a wider set of complementary structures, all of which are invariably rooted in national and regional history. This explains why institutions are not “portable” from country to country\(^2\) and why resilience differs so much within the EU\(^3\). For instance, the level of cooperation between labor unions and employers’ associations is highly country, or sometimes even firm, specific. Yet, it is this interaction that determines the real exchange-rate adjustment with respect to wages\(^4\).

This report argues that eurozone members and candidates should pay particular attention to these institutions, going beyond meeting the formal conditionality required\(^5\). This will require dialogue between the social partners. This dialogue should start with developing a common understanding of what the challenge of euro adoption entails and end with committing to an effective and equitable solution. Such attempts at arriving at a coordinated response to economic shocks can be effective at national, regional and firm levels. If governments, firms and workers find ways to effectively absorb economic shocks and create an economic rebound that is inclusive, trust levels will increase, making the economy even more resilient to the next shock. A failure to do so creates a vicious cycle, while also undermining the effectiveness of institutional reforms during periods of economic growth.

Finally, institutions are grounded in politics, history, and culture. These “background conditions” are often difficult to change, which is why institutional reforms are rarely done “with a stroke of the pen”. But given the importance of getting the institutions that govern the real exchange rate right, economic stakeholders should engage in dialogues at all levels to promote faster and deeper reform of the formal institutions, while building the trust necessary to arrive at cooperative solutions. Experience in the EU shows that levels of trust do change over time. More resilience creates trust. Less resilience undermines it.
Notes

1 Our findings confirm the conclusions of the ECB’s Convergence Report (2018): “The strength of the institutional environment is another important factor in the analysis of the sustainability of economic integration and convergence. In several central and eastern European countries, removing the existing rigidities and impediments to the efficient use and allocation of production factors would help to enhance economic potential. These reflect, for example, weaknesses in the business environment, the relatively low quality of institutions, weak governance and corruption. By hampering potential output growth, the institutional environment may also undermine a country’s debt-servicing ability and make economic adjustments more difficult. It may also affect a country’s ability to implement necessary policy measures.” (Section 3.5)

2 Hall and Gingerich, 2009.

3 Amable, 2005; Bughin et al., 2018.

4 For an early argument along these lines: Bruno and Sachs 1985, Carlin and Soskice 1990.

5 EC, 2008. The EU considers going beyond the monitoring under the “European Semester” towards developing budgetary support for member states implementing structural reforms, with a special window for prospective euro adopters. The facility – the “reform delivery tool” – would put priority emphasis on national policy and institutional reforms that support economic convergence.
## Annex 1: Data used in the convergence and resilience analysis

### Table A.1.1 Description of data used in the Convergence and OCA analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Sample period, frequency</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Growth (β- and σ-) convergence</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>Annual gross domestic product — Purchasing power standard (PPS) per inhabitant at the national, NUTS-2 and NUTS-3 level (dataset identifier: nama_10r_gdp)</td>
<td>2004 – 2015, A Eurostat</td>
<td></td>
</tr>
<tr>
<td><strong>Business cycles analysis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP</td>
<td>Quarterly gross domestic product — Chain linked volumes (2010), million euro, seasonally and calendar adjusted data (dataset identifier: namq_10_gdp)</td>
<td>2000 – 2017, Q Eurostat</td>
<td></td>
</tr>
<tr>
<td>CPI</td>
<td>Monthly harmonized consumer price index, 2005=100 — All-items, transformed into quarterly data by computing quarterly averages (dataset identifier: prc_hicp_midx)</td>
<td>2000 – 2017, M Eurostat</td>
<td></td>
</tr>
<tr>
<td><strong>OCA index</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal exchange rate</td>
<td>Annual nominal exchange rates, domestic currency per euro, period averages, (dataset identifier: &quot;IFS&quot;, indicator: &quot;ENEAE_XDC_EUR_RATE&quot;)</td>
<td>2001 – 2016, A IMF</td>
<td></td>
</tr>
<tr>
<td>CPI</td>
<td>Annual (harmonized (where available)) consumer price index, (dataset identifier: &quot;IFS&quot;, indicator: &quot;PCPI(NA)_PC_PP_PT&quot;)</td>
<td>2001 – 2016, A IMF</td>
<td></td>
</tr>
</tbody>
</table>

### Table A.1.2 Description of data used for the institutional analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Sample period, frequency</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Macroeconomic indicators</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>Gross domestic product, real, reference chained, seasonally adjusted (indicator: NGDP_R_CH_SA_XDC)</td>
<td>2001Q1 – 2016Q4, Q</td>
<td>IFS (IMF)</td>
</tr>
<tr>
<td>Prices</td>
<td>Gross domestic product deflator, seasonally adjusted, index (indicator: NGDP_D_SA_JX)</td>
<td>2001Q1 – 2016Q4, Q</td>
<td>IFS (IMF)</td>
</tr>
<tr>
<td>Unemployment</td>
<td>Unemployment rate, percent</td>
<td>2001Q1 – 2016Q4, Q</td>
<td>IFS (IMF)</td>
</tr>
<tr>
<td>Interest rates</td>
<td>For most countries: 3-month or 90-day rates and yields (interbank rates) from the MEL (indicator: interest). For Bulgaria, Croatia, Hungary and Romania: 3-month interest rates from the IRS (Interest Rate Statistics) of the ECB are used.</td>
<td>2001Q1 – 2016Q4, Q</td>
<td>MEI (OECD) and IRS (ECB)</td>
</tr>
<tr>
<td><strong>Labor market institutions</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EPL</td>
<td>Index on strictness of employment protection — individual and collective dismissals (regular contracts) by the OECD</td>
<td>2008 – 2013, A</td>
<td>Employment Protection Database (OECD)</td>
</tr>
<tr>
<td>Variable</td>
<td>Description</td>
<td>Sample period, frequency</td>
<td>Source</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
<td>--------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>CBC</td>
<td>Collective bargaining coverage is given by the proportion of employees covered by collective bargaining</td>
<td>2008</td>
<td>OECD data supplemented with Eurofound data. For Bulgaria, Estonia, Ireland, Latvia, Hungary, Poland and Sweden data gaps for 2008 were filled using a weighted average of the nearest data points.</td>
</tr>
<tr>
<td>UD</td>
<td>Union density, proportion of employees that are members of a labor union</td>
<td>2019, A</td>
<td>European Trade Union Institute</td>
</tr>
</tbody>
</table>

**Institutional and trust indicators**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
<th>Sample period, frequency</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>EODB</td>
<td>Ease of doing business indicator by the World Bank. The name of the series used is: “Global: Ease of doing business score (DB10-14 methodology)”</td>
<td>2010 – 2014, A</td>
<td>Ease of doing business score (World Bank)</td>
</tr>
<tr>
<td>Trust inst.</td>
<td>Aggregate index (and principal component scores) constructed from replies to survey questions addressing the trust in a country’s institutions. Institutions included are the written press, radio, television, the internet, online social networks, justice/the legal system, the police, the army, political parties, regional or local public authorities and the national parliament.</td>
<td>2005 and 2014, A</td>
<td>Eurobarometer (European Commission)</td>
</tr>
</tbody>
</table>

The following countries are included in our sample: Australia, Austria, Belgium, Bulgaria, Canada, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Japan, Korea, Latvia, Lithuania, Netherlands, New Zealand, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, the United Kingdom and the USA.
Annex 2: Poor-weighted growth elasticities

We use the framework of Foster and Szekeley (2008) to examine whether economic growth raises the tides of all boats, including the poor. This approach uses Atkinson’s (1970) general means or family of “equally distributed equivalent income” functions. Each general mean is an income standard that emphasizes the income of the poor (or better-off), where progressively less weight is placed on higher (or lower) incomes. This is then used to examine whether average household growth feeds through disproportionately to “bottom sensitive” or “top sensitive” incomes.

General means are the only income standards that satisfy the properties of symmetry, replication invariance, homogeneity, normalization, continuity and subgroup consistency. More concretely, let $x = (x_1, \ldots, x_n)$ denote the income distribution where $x_i > 0$ is the income of the $i$th person, and $n$ is the population size, a positive integer. The income distribution is ranked from poorest ($1$) to best off ($n$). The general mean can be given by

$$
\mu_\alpha = \left[ \frac{x_1^\alpha + \ldots + x_n^\alpha}{n} \right]^{\frac{1}{\alpha}} \text{ for all } \alpha \neq 0 \text{ and } \mu_\alpha = [x_1 \ldots x_n]^{1/n} \text{ for } \alpha = 0.
$$

When $\alpha=1$, this reverts to the standard meanwhile when $\alpha=0$ the formula gives the geometric mean and $\alpha=-1$ is typically denoted as the harmonized mean. The weight placed on higher incomes in the distribution increases with $\alpha$, while as $\alpha$ declines greater weight is placed on lower incomes.

A direct link between general means and the Lorenz curve can be seen through the observation that $\mu_\alpha(x)$ is strictly S-concave for $\alpha < 1$ and strictly S-convex for $\alpha > 1$. This means that, if two distributions share the same mean and population size, and if one distribution is more unequal than the other, then the more equal distribution will have a higher general mean for $\alpha < 1$ and a lower general mean for $\alpha > 1$.

The properties of the general means can be observed in Figure A2.1 which compares the family of general means for $\alpha$ ranging from minus three to three for Austria, the United States, Ireland and Spain. Standard average household incomes in 2011 USD PPP terms are greater in Ireland than in the United States. However, as a greater weight is placed on better-off households, the general mean for the US rises over that of Ireland due to a greater concentration of higher income households in the US. When a greater weight is placed on poor households, Ireland maintains a higher general mean than the US — implying higher per capita incomes among lower-income households in Ireland than in the US. This reveals that income inequality is higher in the US than in Ireland.

Estimation approach: We use general means and mean incomes by decile to examine whether growth has fed through more or less proportionately to the bottom end of the income distribution. To examine this, we explore the relationships between average growth — using the standard mean — and average growth by decile and for general means with parameter values below and above 1. This allows us to establish whether means weighted towards worse-off or better-off households are more responsive to average growth. More concretely we explore the following regression:

$$
\frac{d\mu_\alpha(x)_{it,t-1}}{d\mu_1(x)_{it,t-1}} = c + \gamma(t) + \beta d\mu_1(x)_{it,t-1} + \epsilon_{i,t}
$$

where $d\mu_\alpha(x)_{it,t-1} = \log \mu_\alpha(x)_{it} - \log \mu_\alpha(x)_{it-1}$, $t$ denotes the time period for which the household survey is available, $\gamma(t)$ denotes a linear time trend and $\epsilon_{i,t}$ captures the error term.
We pool together over 200 datasets including annual household income data from the EU-SILC, spanning 27 countries (the EU-28 excluding Germany) between income years 2003 and 2016.

We follow Foster and Szekely (2008) and the broader literature by estimating the poverty growth elasticity in first differences, thus eliminating the effect of time-invariant country characteristics. We report robust standard errors and use the Huber iteration to reduce the potential effect of outlier observations. An elasticity greater than one implies that growth gains more than one-for-one with growth in the mean, an elasticity of one means that their gains are the same as those seen at the mean and an elasticity less than one implies growth that is less than growth in the mean.

**Figure A2.2 Elasticity of growth of different deciles relative to average household disposable income growth, by region**
Allowing for the relationship to vary across positive and negative periods of growth: Since periods of expansion, where growth is positive from period to period, may affect households differently from periods of contraction, we explore how parameters differ from each other by separating out these two periods:

\[ d\mu_\alpha(x)_{it,t-1} = c + \gamma(t) + \beta_1 d\mu_1(x)_{it,t-1} + \beta_2 \times \delta_{\mu_1} \times d\mu_1(x)_{it,t-1} + \varepsilon_{i,t} \]

Where \( \delta_{\mu_1} \) is a dummy variable with value one during positive periods of average growth, notably \( d\mu_1(x)_{it,t-1} > 0 \).

Allowing for the relationship to vary across policy environments: We examine whether the relationship between average growth and poor-weighted growth varies according to the policy environment:

\[ d\mu_\alpha(x)_{it,t-1} = c + \gamma(t) + \gamma_1 \delta_{\mu_1} \times d\mu_1(x)_{it,t-1} + \gamma_2 \delta_{\mu_1} \times Policy_i \times d\mu_1(x)_{it,t-1} + \gamma_3 \theta_{\mu_1} \times d\mu_1(x)_{it,t-1} + \gamma_4 \theta_{\mu_1} \times Policy_i \times d\mu_1(x)_{it,t-1} + \varepsilon_{i,t} \]

Where \( \delta_{\mu_1} \) is a dummy variable with value one during positive periods of average growth, notably \( d\mu_1(x)_{it,t-1} > 0 \) and \( \theta_{\mu_1} \) is a dummy variable equal to 1 during periods when average growth is negative, notably \( d\mu_1(x)_{it,t-1} < 0 \).
Annex 3: 
A deeper look at low-income thresholds

Poverty trends using different thresholds

**Figure A3.1** Headcount poverty rate using 23 euro per adult equivalent (2011 PPS), 2016 and projected 2020

- The EU level low-income threshold is considerably higher than the national at risk of poverty thresholds for multiple countries in Central Europe, since it is based on EU median equivalized incomes rather than national median incomes. As a result, the share of individuals under this threshold differs considerably from the share of individuals at risk of poverty using national concepts. Romania’s higher share of households under the threshold, as compared to Bulgaria and Hungary, is also reflected in lower mean and median income per adult equivalent in the harmonized EU-SILC survey as well as lower incomes reported by bottom 20 households.

**Note:** The estimates for all countries can be found in Annex 9.

**Source:** World Bank calculations using AMECO and EU-SILC data, excluding Germany.

Sensitivity analysis of low-income household shares

The main text of the Regular Economic Report used 60 percent of the EU median income, in 2011 PPS terms, to define the concept of Low Income by EU Standards. Since trends in the share and spatial profile of low-income households can be sensitive to the threshold used, we replicate the figures in the text using an alternative threshold: $5.50 2011 PPP, the international upper-middle income class poverty line. Although the levels of poverty using this alternative lower threshold are below those estimated using the low-income by EU-standards threshold, the ranking across countries, spatial distribution and its shifts over time are similar.

**Figure A3.2** Share of the population living under 5.50 USD PPP

**Note:** a. Bulgaria and Romania added to the data    b. Croatia added to the data    * Projection

**Source:** World Bank calculations using AMECO and EU-SILC data, excluding Germany.
**Figure A3.3** Number of individuals who live under 5.50 USD PPP

![Graph showing the number of individuals living under 5.50 USD PPP from 2006 to 2016.](image)

**Note:** a. Bulgaria and Romania added to the data  b. Croatia added to the data.

**Source:** World Bank calculations using AMECO and EU-SILC data, excluding Germany.

**Figure A3.4** Share of population living under 5.50 USD PPP, by grouping and country in 2006 and 2016

![Pie charts showing the share of population living under 5.50 USD PPP.](image)

**Note:** Croatia’s indicator uses the low-income share estimate from the 2009 income year, the first year of data from the EU-SILC available.

**Source:** World Bank analysis using the EU-SILC, excluding Germany, from the 2007 and 2017 survey years, which correspond to the 2006- and 2016-income years, respectively.
### Table A4.1 EU Members and Eurozone Accession

<table>
<thead>
<tr>
<th>Country</th>
<th>Joins the EU in</th>
<th>Adopts the euro in</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Belgium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. France</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Germany</td>
<td>1957</td>
<td>1999</td>
</tr>
<tr>
<td>4. Italy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Luxemburg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Netherlands</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Ireland</td>
<td>1973</td>
<td>Opt-out negotiated</td>
</tr>
<tr>
<td>8. Denmark</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. United Kingdom</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Spain</td>
<td>1986</td>
<td>1999</td>
</tr>
<tr>
<td>12. Portugal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. Austria</td>
<td>1995</td>
<td></td>
</tr>
<tr>
<td>14. Finland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Sweden</td>
<td></td>
<td>2007</td>
</tr>
<tr>
<td>16. Slovenia</td>
<td></td>
<td>2008</td>
</tr>
<tr>
<td>17. Malta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Cyprus</td>
<td></td>
<td>2008</td>
</tr>
<tr>
<td>19. Slovakia</td>
<td></td>
<td>2009</td>
</tr>
<tr>
<td>21. Latvia</td>
<td></td>
<td>2014</td>
</tr>
<tr>
<td>22. Lithuania</td>
<td></td>
<td>2015</td>
</tr>
<tr>
<td>23. Czech Republic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. Hungary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25. Poland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27. Romania</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28. Croatia</td>
<td></td>
<td>2013</td>
</tr>
</tbody>
</table>
Annex 5: 
**Results on Beta- and Sigma-convergence**

To measure the speed of a country’s or region’s convergence of per capita GDP with the EU average, we run a panel (OLS) regression of the following type:\(^1\)

\[
\Delta y_{i,t+T} = \text{const} + b y_{i,t} + \epsilon_{i,t+T}
\] (1)

We test for growth convergence by regressing the average change in per capita GDP growth rates over the period considered against its initial value. Here, \(T\) denotes the length of the sample period in years, \(y\) stands for \((\log)\) per-capita GDP and \(t\) represents the initial period. The sub-index \(i\) denotes the country (or region) considered. \(\Delta y_{i,t+T}\) captures the growth rate of GDP over the sample period. \(\epsilon_{i,t+T}\) represents the error term between \(t\) and \(t+T\).

Convergence in per capita income levels requires the estimated value of \(b\) to be negative: the distance or gap between low-income countries and high-income countries will then shrink over time.

We use the estimated slope coefficient \(b\) in equation (1) to compute a measure of the speed of convergence. The annual convergence rate \(\beta\) can be estimated by using the following equation, which is derived from equation (1):\(^2\)

\[
1 + b = -e^{-\beta T}
\] (2)

Hence, \(\beta\) is a metric of the speed of convergence: the proportion by which the existing gap is reduced in each period. This is known as \(\beta\)-convergence.

The growth literature understands “\(\sigma\)-convergence” as a measure of cross-regional dispersion.\(^3\) This cross-regional dispersion is defined as:

\[
\sigma_t^2 = \frac{1}{N} \sum_{i=1}^{N} (y_{i,t} - \bar{y}_t)^2,
\] (3)

**Table A5.1 \(\beta\)-convergence**

<table>
<thead>
<tr>
<th>National</th>
<th>NUTS-2</th>
<th>NUTS-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>(B)</td>
<td>-0.287***</td>
<td>-0.203***</td>
</tr>
<tr>
<td></td>
<td>(0.057)</td>
<td>(0.021)</td>
</tr>
<tr>
<td>(B)</td>
<td>0.034</td>
<td>0.023</td>
</tr>
<tr>
<td>Half life</td>
<td>20.51</td>
<td>30.49</td>
</tr>
<tr>
<td>Observations</td>
<td>27</td>
<td>236</td>
</tr>
<tr>
<td>(R^2)</td>
<td>0.504</td>
<td>0.290</td>
</tr>
<tr>
<td>F Statistic</td>
<td>25.422*** (df = 1; 25)</td>
<td>95365*** (df = 1; 234)</td>
</tr>
</tbody>
</table>

**Note:** Asterisks indicate significance at the 10% (*), 5% (**) or 1% (***)) level. Numbers in brackets below the coefficient show the coefficient’s standard deviation.

**Source:** World Bank estimates.
Table A5.2 Test for σ-convergence

<table>
<thead>
<tr>
<th>National</th>
<th>NUTS-2</th>
<th>NUTS-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>time trend</td>
<td>-0.0137***</td>
<td>-0.0085***</td>
</tr>
<tr>
<td>(0.012)</td>
<td>(0.0008)</td>
<td>(0.0008)</td>
</tr>
<tr>
<td>Observations</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>R²</td>
<td>0.9005</td>
<td>0.8981</td>
</tr>
<tr>
<td>F Statistic</td>
<td>126.68*** (df = 1; 14)</td>
<td>123.39*** (df = 1; 14)</td>
</tr>
</tbody>
</table>

Note: Columns 2 to 4 report the results of regressing the cross-regional dispersion of per capita GDP on a constant (not shown) and a linear time trend (time trend) employing national (first column), NUTS-2 level (second column) and NUTS-3 level (third column) GDP per capita data. Asterisks indicate significance at the 10% (*), 5% (**) or 1% (***) level. Numbers in brackets below the coefficient show the coefficient’s standard deviation.


Notes

1. This cross-sectional approach has been intensively used in the empirical growth literature, ever since the seminal work of Barro and Sala-i-Martin (1992).
3. Both expressions (β- and σ-convergence) were originally introduced by Sala-i-Martin (1990).
Annex 6: 
Optimal currency area indicators

Business cycle synchronicity

Being “in sync” strengthens resilience. If eurozone countries were to exhibit the same business cycles, a common monetary policy should be able to deal effectively with a common shock: all member states are hit and can (at least theoretically) respond in a similar fashion. However, when this is not the case, a one-size-fits-all monetary response will have economic costs. While there are no hard-and-fast rules to determine what level of variation is acceptable or not, the experience of the eurozone suggests that the existing levels of variation within the eurozone already represent considerable challenges.

At the time of the creation of the euro, Europe’s “core” was more synchronized than Southern Europe. The core consisted of Austria, Belgium, Denmark, Finland, France, Germany and the Netherlands. Denmark would not join the euro, but it fixed its exchange rate to the euro instead. There was less cyclical correlation between the core and the Southern European countries, and the UK and Ireland. Of these, the UK would not join the euro and continued using a flexible exchange rate. The others did join. They would experience serious difficulties due to large capital inflows into speculative investments and credit-fueled consumption, causing significant appreciation of the real exchange rate and the resulting loss of competitiveness that constrained more productive inward investments.

This report updated measures of business cycle synchronicity and showed similar patterns. Countries were ranked according to the strength in the correlation of their cyclical output gaps: the darker the color, the stronger the correlations (Figure A6.1). The core countries exhibit strong correlations of their business cycles. Other EU member states that show strong co-movements include the Czech Republic, Hungary, Italy and Slovenia. Bulgaria and Croatia exhibit intermediate degrees of co-movements. Lower correlations are found for Greece, Ireland, Norway, Poland, Portugal and Romania.

Among the euro candidates, the business cycles of Bulgaria, Croatia, the Czech Republic and Hungary exhibit the highest correlation with the euro area’s cycle. For Croatia the GDP co-movements are also sizeable. However, its industrial production (separately estimated) is almost uncorrelated to the euro area, underlining its weaker integration into European value chains. The co-movement for Romania is relatively moderate. To be sure, the economy of Romania is more synchronized with the euro area than several existing members, e.g. Greece and Portugal. Poland, which has a floating exchange rate regime, shows low levels of business cycle synchronicity.

However, this report finds no consistent link between business cycle synchronicity and resilience in terms of output and employment trends. There is no completely consistent association between business cycle synchronicity and resilience. Spain, which had an intermediate measure of business cycle synchronicity, stands out as the economy with the weakest resilience for both output and employment. The Czech Republic had relatively strong synchronicity but is nearly as weak on output resilience as Spain, while ranking among the EU’s most resilient economies on the duration and depth of unemployment trends. Bulgaria, Croatia, Hungary, Ireland, Lithuania and Spain, but also the UK, show long unemployment periods. More employment resilient are Austria, Belgium, the Czech Republic, Denmark, France, Finland, the Netherlands, Romania and Sweden.
Real exchange rate pressures

Within the eurozone, differences in economic structure, asymmetric shocks (shocks that do not impact all member states) and different responses to common economic shocks, all create pressures on the real exchange rate to adjust. When the nominal exchange rate is gone for good (or ‘irrevocably fixed’), differences — asymmetries — between the economies need to be absorbed by movements in the relative price of tradeable to non-tradeable goods: the real exchange rate. The Delors report had stressed the importance of such real exchange rate (wage and price) flexibility to prevent and correct economic imbalances within the common monetary union.

Real exchange rate adjustment pressures can be measured with the help of an Optimal Currency Area index. The greater the similarities, the higher the index and the more appropriate a one-size-fits all monetary policy. Conversely, the lower the index, the larger the role for real exchange rate adjustments in absorbing shocks. The updated OCA index suggests that Bulgaria, the Czech Republic and Hungary would...
face relatively little real exchange rate pressures (comparable to Austria, Belgium and the Netherlands before the euro). However, Croatia and Romania exhibit values similar to those of Italy or Portugal before 1999 (Table A6.1).

**Table A6.1 OCA Index**

<table>
<thead>
<tr>
<th>Country pair</th>
<th>Basic regression</th>
<th>Regression incl. openness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Central European non-euro EU countries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA – BG</td>
<td>0.0494</td>
<td>0.0495</td>
</tr>
<tr>
<td>EA – CZ</td>
<td>0.0295</td>
<td>0.0296</td>
</tr>
<tr>
<td>EA – HU</td>
<td>0.0352</td>
<td>0.0357</td>
</tr>
<tr>
<td>EA – HR</td>
<td>0.0654</td>
<td>0.0645</td>
</tr>
<tr>
<td>EA – PL</td>
<td>0.0604</td>
<td>0.0603</td>
</tr>
<tr>
<td>EA – RO</td>
<td>0.0696</td>
<td>0.0693</td>
</tr>
<tr>
<td><strong>Other non-euro EU countries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA – DK</td>
<td>0.0554</td>
<td>0.0552</td>
</tr>
<tr>
<td>EA – GB</td>
<td>0.0701</td>
<td>0.0702</td>
</tr>
<tr>
<td>EA – SE</td>
<td>0.0587</td>
<td>0.0584</td>
</tr>
<tr>
<td><strong>Non-EU countries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EA – AU</td>
<td>0.087</td>
<td>0.0887</td>
</tr>
<tr>
<td>EA – CA</td>
<td>0.079</td>
<td>0.0807</td>
</tr>
<tr>
<td>EA – CH</td>
<td>0.0543</td>
<td>0.0546</td>
</tr>
<tr>
<td>EA – CN</td>
<td>0.0926</td>
<td>0.0945</td>
</tr>
<tr>
<td>EA – NO</td>
<td>0.062</td>
<td>0.062</td>
</tr>
<tr>
<td>EA – NZ</td>
<td>0.081</td>
<td>0.082</td>
</tr>
<tr>
<td>EA – RU</td>
<td>0.0959</td>
<td>0.0959</td>
</tr>
<tr>
<td>EA – TR</td>
<td>0.1031</td>
<td>0.1034</td>
</tr>
<tr>
<td>EA – US</td>
<td>0.0879</td>
<td>0.0889</td>
</tr>
</tbody>
</table>

*Note:* Index values correspond to the estimates resulting from the OCA regressions. They are based on the values employed to run the regression (within the sample forecast). Variables entering the right-hand side therefore proxy key factors as suggested by the OCA theory. They capture the ‘pressure’ acting on the exchange rate valve. Low predicted values indicate that only low real exchange rate adjustments were needed. In such a case, joining monetary policy between two countries or adopting a common currency comes with low opportunity costs.

*Source:* World Bank estimates. For more information on the data used, see Annex 1

**Notes**

1. Bayoumi and Eichengreen, 1993. This showed in a lower level of real-exchange rate flexibility needed (von Hagen, Neumann 1992; Baltensperger, Jordan, 1994).

2. To assess the synchronicity in economic dynamics across countries we first extract the business cycle component from the underlying data on economic activity and then measure the strength of co-movements in these series. To identify business cycles, we follow the most widely used approach in this respect and determine them as “deviation cycles”, i.e. as deviations of economic activity from an estimated trend. To estimate the trend, we apply the Hodrick-Prescott (1997) filter. To check for robustness, we also used the Christiano-Fitzgerald (2003) filter. Results were not significantly affected by the choice of the filter. To measure the strength of co-movement we compute simple correlation coefficients.
Bayoumi and Eichengreen, 1997.

The index relates recent real exchange rate volatility between two countries to variables that cause diverging economic movements or prevent a cushioning of asymmetric shocks. This approach goes back to Bayoumi and Eichengreen (1997) who estimated the relationships between key variables and the associated exchange rate adjustment for major industrialized European and non-European country pairs, employing available data to gauge the readiness of potential member countries for the adoption of the euro, obviously, before its introduction. Bayoumi and Eichengreen (1997) used the results to construct a so-called “OCA index”. However, theory does not come up with normative OCA index values which would unequivocally allow the determination of a country’s preparedness for membership.
Annex 7: Business cycle dynamics and their relationship to selected institutional variables

Table A7.1 Persistence of output and unemployment shocks (quarters)

<table>
<thead>
<tr>
<th>Country</th>
<th>Lags included</th>
<th>Output</th>
<th></th>
<th></th>
<th>Lags included</th>
<th>Unemployment</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Sum of AR coefficients</td>
<td>Implied half-life</td>
<td></td>
<td></td>
<td>Sum of AR coefficients</td>
<td>Implied half-life</td>
<td></td>
</tr>
<tr>
<td>EMU countries (joining 1999)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AT</td>
<td>4</td>
<td>0.72</td>
<td>2.07</td>
<td>1</td>
<td>0.63</td>
<td>1.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BE</td>
<td>2</td>
<td>0.76</td>
<td>2.49</td>
<td>2</td>
<td>0.72</td>
<td>2.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DE</td>
<td>4</td>
<td>0.72</td>
<td>2.12</td>
<td>1</td>
<td>0.89</td>
<td>5.74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EE</td>
<td>4</td>
<td>0.8</td>
<td>3.04</td>
<td>4</td>
<td>0.91</td>
<td>7.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ES</td>
<td>3</td>
<td>0.88</td>
<td>5.27</td>
<td>4</td>
<td>0.97</td>
<td>21.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FI</td>
<td>4</td>
<td>0.68</td>
<td>1.65</td>
<td>4</td>
<td>0.88</td>
<td>5.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FR</td>
<td>3</td>
<td>0.79</td>
<td>2.96</td>
<td>4</td>
<td>0.87</td>
<td>3.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GR</td>
<td>4</td>
<td>0.82</td>
<td>3.57</td>
<td>4</td>
<td>0.96</td>
<td>17.39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IE</td>
<td>1</td>
<td>0.67</td>
<td>1.74</td>
<td>1</td>
<td>0.97</td>
<td>22.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT</td>
<td>2</td>
<td>0.81</td>
<td>3.27</td>
<td>3</td>
<td>0.94</td>
<td>10.86</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LT</td>
<td>4</td>
<td>0.75</td>
<td>2.43</td>
<td>4</td>
<td>0.95</td>
<td>13.45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LV</td>
<td>4</td>
<td>0.84</td>
<td>4.09</td>
<td>4</td>
<td>0.92</td>
<td>8.56</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NL</td>
<td>2</td>
<td>0.82</td>
<td>3.4</td>
<td>4</td>
<td>0.9</td>
<td>6.53</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PT</td>
<td>2</td>
<td>0.8</td>
<td>3.11</td>
<td>2</td>
<td>0.92</td>
<td>8.81</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Central European countries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BG</td>
<td>4</td>
<td>0.74</td>
<td>2.33</td>
<td>4</td>
<td>0.96</td>
<td>16.61</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CZ</td>
<td>2</td>
<td>0.87</td>
<td>4.86</td>
<td>3</td>
<td>0.89</td>
<td>5.73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR</td>
<td>1</td>
<td>0.82</td>
<td>3.58</td>
<td>4</td>
<td>0.96</td>
<td>17.85</td>
<td></td>
<td></td>
</tr>
<tr>
<td>HU</td>
<td>2</td>
<td>0.83</td>
<td>3.69</td>
<td>1</td>
<td>0.96</td>
<td>15.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PL</td>
<td>4</td>
<td>0.59</td>
<td>1.31</td>
<td>1</td>
<td>0.95</td>
<td>13.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RO</td>
<td>1</td>
<td>0.81</td>
<td>3.31</td>
<td>4</td>
<td>0.83</td>
<td>3.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other non-euro EU countries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DK</td>
<td>3</td>
<td>0.77</td>
<td>2.65</td>
<td>3</td>
<td>0.91</td>
<td>7.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GB</td>
<td>3</td>
<td>0.76</td>
<td>2.51</td>
<td>2</td>
<td>0.96</td>
<td>15.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SE</td>
<td>4</td>
<td>0.66</td>
<td>1.68</td>
<td>3</td>
<td>0.85</td>
<td>4.26</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-EU countries</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AU</td>
<td>3</td>
<td>0.53</td>
<td>1.08</td>
<td>4</td>
<td>0.93</td>
<td>9.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CA</td>
<td>2</td>
<td>0.78</td>
<td>2.83</td>
<td>4</td>
<td>0.87</td>
<td>4.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CH</td>
<td>2</td>
<td>0.81</td>
<td>3.3</td>
<td>4</td>
<td>0.89</td>
<td>5.93</td>
<td></td>
<td></td>
</tr>
<tr>
<td>JP</td>
<td>3</td>
<td>0.63</td>
<td>1.49</td>
<td>3</td>
<td>0.9</td>
<td>6.78</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KR</td>
<td>3</td>
<td>0.53</td>
<td>1.09</td>
<td>4</td>
<td>0.9</td>
<td>6.53</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table A7.1 Volatility (standard deviation) of output and unemployment

<table>
<thead>
<tr>
<th>Country</th>
<th>Output Standard Deviation</th>
<th>Unemployment Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>EMU countries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AT</td>
<td>1.29</td>
<td>0.57</td>
</tr>
<tr>
<td>BE</td>
<td>0.99</td>
<td>0.69</td>
</tr>
<tr>
<td>DE</td>
<td>1.67</td>
<td>1.74</td>
</tr>
<tr>
<td>EE</td>
<td>4.62</td>
<td>3.65</td>
</tr>
<tr>
<td>ES</td>
<td>1.52</td>
<td>4.68</td>
</tr>
<tr>
<td>FI</td>
<td>2.12</td>
<td>1.29</td>
</tr>
<tr>
<td>FR</td>
<td>0.96</td>
<td>0.66</td>
</tr>
<tr>
<td>GR</td>
<td>2.53</td>
<td>4.81</td>
</tr>
<tr>
<td>IE</td>
<td>3.81</td>
<td>3.73</td>
</tr>
<tr>
<td>IT</td>
<td>1.4</td>
<td>1.71</td>
</tr>
<tr>
<td>LT</td>
<td>4.01</td>
<td>4.91</td>
</tr>
<tr>
<td>LV</td>
<td>4.97</td>
<td>4.18</td>
</tr>
<tr>
<td>NL</td>
<td>1.31</td>
<td>0.99</td>
</tr>
<tr>
<td>PT</td>
<td>1.4</td>
<td>2.11</td>
</tr>
<tr>
<td>SI</td>
<td>2.34</td>
<td>1.44</td>
</tr>
<tr>
<td><strong>CE/Central European countries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BG</td>
<td>1.75</td>
<td>3.8</td>
</tr>
<tr>
<td>CZ</td>
<td>1.99</td>
<td>1.19</td>
</tr>
<tr>
<td>HR</td>
<td>1.99</td>
<td>3.26</td>
</tr>
<tr>
<td>HU</td>
<td>1.72</td>
<td>2.36</td>
</tr>
<tr>
<td>PL</td>
<td>1.12</td>
<td>2.61</td>
</tr>
<tr>
<td>RO</td>
<td>2.62</td>
<td>0.77</td>
</tr>
<tr>
<td><strong>Other non-euro EU countries</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DK</td>
<td>1.48</td>
<td>1.17</td>
</tr>
<tr>
<td>GB</td>
<td>1.32</td>
<td>1.99</td>
</tr>
<tr>
<td>SE</td>
<td>1.83</td>
<td>1.22</td>
</tr>
</tbody>
</table>

Note: This table reports estimated persistence parameters of the cyclical component of GDP and the unemployment rate. To obtain the cyclical component of output, the deviation of \((log)\) output from its trend is computed. The trend is computed using the HP filter. The numbers are obtained by estimating AR(p) models of the form \(y_t = \sum_{j=1}^p \gamma_{i,j} \cdot y_{t-j} + \epsilon_{t,i}\). Based on the estimated AR coefficients, half-lives, \(h\), are computed as:

\[
h = \frac{\ln(0.5)}{\ln(\sum \gamma_{i,j})}.
\]

To determine the number of lags, the AIC information criterion is used. The columns denoted “Lags included” report the number of lags included in the estimation of the AR(p) model. “Sum of AR coefficients” corresponds to the sum of the estimated coefficients on lagged values and half-life is a metric for the time elapsed until half of the distance to equilibrium is covered.

---

Annex 7: Business cycle dynamics and their relationship to selected institutional variables | 131
<table>
<thead>
<tr>
<th>Country</th>
<th>Output</th>
<th>Unemployment</th>
</tr>
</thead>
<tbody>
<tr>
<td>AU</td>
<td>0.52</td>
<td>0.83</td>
</tr>
<tr>
<td>CA</td>
<td>1.11</td>
<td>0.8</td>
</tr>
<tr>
<td>CH</td>
<td>1.21</td>
<td>0.67</td>
</tr>
<tr>
<td>JP</td>
<td>1.53</td>
<td>0.48</td>
</tr>
<tr>
<td>KR</td>
<td>1.11</td>
<td>0.68</td>
</tr>
<tr>
<td>NO</td>
<td>11.0</td>
<td>0.71</td>
</tr>
<tr>
<td>NZ</td>
<td>0.99</td>
<td>0.96</td>
</tr>
<tr>
<td>US</td>
<td>1.14</td>
<td>1.74</td>
</tr>
<tr>
<td><strong>Mean (all)</strong></td>
<td><strong>1.86</strong></td>
<td><strong>1.95</strong></td>
</tr>
</tbody>
</table>

Note: This table reports volatilities (standard deviations) parameters of the cyclical component of GDP and the unemployment rate. To obtain the cyclical component of output the deviation of (log) output from its trend is computed. The trend is computed using the HP filter.

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Half-life of output shocks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EPL (1)</td>
</tr>
<tr>
<td>Inst.</td>
<td>0.89**</td>
</tr>
<tr>
<td></td>
<td>(0.38)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.56</td>
</tr>
<tr>
<td></td>
<td>(0.88)</td>
</tr>
<tr>
<td>Obs.</td>
<td>28</td>
</tr>
<tr>
<td>R²</td>
<td>0.19</td>
</tr>
<tr>
<td>Adj. R²</td>
<td>0.01</td>
</tr>
<tr>
<td>Res.Std. Error</td>
<td>1.03</td>
</tr>
<tr>
<td></td>
<td>(df = 26)</td>
</tr>
<tr>
<td>F Stat.</td>
<td>6.00**</td>
</tr>
<tr>
<td></td>
<td>(df = 1, 26)</td>
</tr>
</tbody>
</table>

Note: This table reports results from regressing countries’ half-lives of GDP on the institutional/trust variables indicated above the equation numbers. Regressions are done using OLS. The numbers in brackets below the reported coefficients denote their standard deviations. Asterisks (*), (**), and (***), indicate statistical significance at the 10%, 5% and 1% level, respectively.
Table A7.4  Output volatility and institutional variables

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Volatility of output</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPL (1)</td>
<td>CBC (2)</td>
</tr>
<tr>
<td>Inst.</td>
<td>0.32 (0.38)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.99 (0.91)</td>
</tr>
<tr>
<td>Obs.</td>
<td>28</td>
</tr>
<tr>
<td>R²</td>
<td>0.03</td>
</tr>
<tr>
<td>Adj. R²</td>
<td>-0.01</td>
</tr>
<tr>
<td>Res.Std. Error</td>
<td>1.07 (df = 26)</td>
</tr>
<tr>
<td>F Stat.</td>
<td>0.74 (df = 1; 26)</td>
</tr>
</tbody>
</table>

Note: This table reports results from regressing countries’ standard deviations of their cyclical GDP component on the institutional/trust variables indicated above the equation numbers. Regressions are done using OLS. The numbers in brackets below the reported coefficients denote their standard deviations. Asterisks (*), (**) and (***) indicate statistical significance at the 10%, 5% and 1% level, respectively.

Table A7.5  Persistence of unemployment shocks and institutional variables

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Half-life of unemployment shocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPL (1)</td>
<td>CBC (2)</td>
</tr>
<tr>
<td>Inst.</td>
<td>-1.29 (1.86)</td>
</tr>
<tr>
<td>Constant</td>
<td>12.11** (4.49)</td>
</tr>
<tr>
<td>Obs.</td>
<td>28</td>
</tr>
<tr>
<td>R²</td>
<td>0.02</td>
</tr>
<tr>
<td>Adj. R²</td>
<td>-0.02</td>
</tr>
<tr>
<td>Res.Std. Error</td>
<td>5.30 (df = 26)</td>
</tr>
<tr>
<td>F Stat.</td>
<td>0.48 (df = 1; 26)</td>
</tr>
</tbody>
</table>

Note: This table reports results from regressing countries’ half-lives of unemployment on the institutional/trust variables indicated above the equation numbers. Regressions are done using OLS. The numbers in brackets below the reported coefficients denote their standard deviations. Asterisks (*), (**) and (***) indicate statistical significance at the 10%, 5% and 1% level, respectively.
### Table A7.6  Unemployment volatility and institutional variables

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>EPL (1)</th>
<th>CBC (2)</th>
<th>WF (3)</th>
<th>PMR (4)</th>
<th>WGI (5)</th>
<th>EODB (6)</th>
<th>Trust inst. (7)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inst.</td>
<td>0.41 (0.46)</td>
<td>-0.02** (0.01)</td>
<td>-4.90* (2.73)</td>
<td>-5.33** (2.29)</td>
<td>-1.40*** (0.44)</td>
<td>-0.06* (0.03)</td>
<td>-0.70** (0.33)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.81 (1.10)</td>
<td>3.18*** (0.58)</td>
<td>2.94*** (0.52)</td>
<td>6.20*** (1.84)</td>
<td>3.58*** (0.55)</td>
<td>6.69** (2.57)</td>
<td>5.74*** (1.64)</td>
</tr>
<tr>
<td>Obs.</td>
<td>28</td>
<td>28</td>
<td>21</td>
<td>32</td>
<td>31</td>
<td>24</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.03</td>
<td>0.14</td>
<td>0.14</td>
<td>31</td>
<td>0.26</td>
<td>0.11</td>
<td>0.17</td>
</tr>
<tr>
<td>Adj. $R^2$</td>
<td>-0.01</td>
<td>0.11</td>
<td>0.10</td>
<td>0.16</td>
<td>0.23</td>
<td>0.08</td>
<td>0.13</td>
</tr>
<tr>
<td>Res.Std. Error</td>
<td>1.30 (df = 26)</td>
<td>1.36 (df = 26)</td>
<td>1.35 (df = 19)</td>
<td>0.13 (df = 30)</td>
<td>1.24 (df = 29)</td>
<td>1.36 (df = 22)</td>
<td>1.34 (df = 22)</td>
</tr>
<tr>
<td>F Stat.</td>
<td>0.81 (df = 1; 26)</td>
<td>4.31** (df = 1; 26)</td>
<td>3.22* (df = 1; 19)</td>
<td>1.34 (df = 29)</td>
<td>10.29*** (df = 1; 30)</td>
<td>3.50* (df = 1; 29)</td>
<td>4.52** (df = 1; 22)</td>
</tr>
</tbody>
</table>

Note: This table reports results from regressing countries' standard deviations of unemployment rates on the institutional/trust variables indicated above the equation numbers. Regressions are done using OLS. The numbers in brackets below the reported coefficients denote their standard deviations. Asterisks (*), (**), and (***) indicate statistical significance at the 10%, 5% and 1% level, respectively.
## Annex 8: Grouping of countries by exchange rate regime type

### Table A8.1 Country exchange rate groupings

<table>
<thead>
<tr>
<th></th>
<th>02'</th>
<th>03'</th>
<th>04'</th>
<th>05'</th>
<th>06'</th>
<th>07'</th>
<th>08'</th>
<th>09'</th>
<th>10'</th>
<th>11'</th>
<th>12'</th>
<th>13'</th>
<th>14'</th>
<th>15'</th>
<th>16'</th>
<th>17'</th>
</tr>
</thead>
<tbody>
<tr>
<td>BE</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
</tr>
<tr>
<td>BG</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
</tr>
<tr>
<td>CZ</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
</tr>
<tr>
<td>DK</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
</tr>
<tr>
<td>DE</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
</tr>
<tr>
<td>EE</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
</tr>
<tr>
<td>IE</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
</tr>
<tr>
<td>EL</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
</tr>
<tr>
<td>ES</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
</tr>
<tr>
<td>FR</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
</tr>
<tr>
<td>HR</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
</tr>
<tr>
<td>IT</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
</tr>
<tr>
<td>CY</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
</tr>
<tr>
<td>LV</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
</tr>
<tr>
<td>LT</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
</tr>
<tr>
<td>LU</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
</tr>
<tr>
<td>HU</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
</tr>
<tr>
<td>MT</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
</tr>
<tr>
<td>NL</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
</tr>
<tr>
<td>AT</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
</tr>
<tr>
<td>PL</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
</tr>
<tr>
<td>PT</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
</tr>
<tr>
<td>RO</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
<td>Fx</td>
</tr>
<tr>
<td>SI</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
</tr>
<tr>
<td>SK</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
</tr>
<tr>
<td>FI</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
<td>EA</td>
</tr>
<tr>
<td>SE</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
</tr>
<tr>
<td>UK</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
<td>Fl</td>
</tr>
</tbody>
</table>

**Note:** EA — Euro Area, Fl — Fixed exchange rate regime (inflation targeted and floating regimes), Fx — Fixed exchange rate and managed floating regime. Division into floating/fixed exchange rate regime was done based on IMF de facto classification of exchange rate regimes and the divisions defined in that classification.

**Source:** IMF de facto classification of exchange rate regimes, World Bank
Annex 9: Additional figures and table

**Figure A9.1 Real GDP per capita growth**
Pre-crisis level: average 2007 – 08

Source: Eurostat, World Bank calculations.

**Figure A9.2 Employment growth rate**
Pre-crisis level: average 2007 – 08

Source: Eurostat, World Bank calculations.
Figure A9.3  Government investment

Note: Unweighted average.
Source: Eurostat, World Bank calculations.

Figure A9.4  Gross income shares, 2016

Note: The data are from the 2017 survey year, 2016 income year.
Figure A9.5  Earnings shifts over time for those aged 25 – 29

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Earnings aged 25</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earnings aged 29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average earnings of a 25 year old born in 1983, in 2008</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

During the crisis years, earnings dropped and the gradient with age was suppressed.

Note: Population weighted. Income years are reported.
Source: World Bank estimates using the eu-silc, excluding Germany.
Table A9.1 Heatmap with scores

Note: This table replicates Table 2.1. However, table cells additionally contain information on the original value of the variable indicated in the second column.

<table>
<thead>
<tr>
<th>Policy/Institutional variables</th>
<th>WE</th>
<th>NE</th>
<th>CEE</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aggregate indicator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Convergence</td>
<td>3.6</td>
<td>3.4</td>
<td>3.0</td>
<td>2.4</td>
</tr>
<tr>
<td>12 Output half-life</td>
<td>3.4</td>
<td>3.4</td>
<td>3.4</td>
<td>2.9</td>
</tr>
<tr>
<td>13 Output volatility</td>
<td>3.0</td>
<td>2.9</td>
<td>1.9</td>
<td>1.3</td>
</tr>
<tr>
<td>14 Unemployment half-life</td>
<td>1.7</td>
<td>1.5</td>
<td>1.3</td>
<td>1.0</td>
</tr>
<tr>
<td>15 Unemployment volatility</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>2.1 Income duration</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>2.2 Income depth</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>3.1 Business cycle synchrony</td>
<td>0.9</td>
<td>0.9</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>4.1 Income inequality</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>5.1 Pass-through</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>5.2 Transfer/tax system eff.</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>5.3 Social protection exp.</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>5.4 Social prot. exp. bott 40</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>6.1 ALMP/PLMP - % GDP</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>6.2 CBC</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>6.3 EPL</td>
<td>3.1</td>
<td>3.1</td>
<td>3.1</td>
<td>3.1</td>
</tr>
<tr>
<td>6.4 Part-time work</td>
<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>6.5 Hiring and firing costs</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>6.6 Wage flexibility</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>7.1 Ease of doing business</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>7.2 Product market regulation</td>
<td>1.8</td>
<td>1.8</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>7.3 Enforcing contracts</td>
<td>2.7</td>
<td>2.7</td>
<td>2.7</td>
<td>2.7</td>
</tr>
<tr>
<td>7.4 Insolvency procedures</td>
<td>8.4</td>
<td>8.4</td>
<td>8.4</td>
<td>8.4</td>
</tr>
<tr>
<td>8.1 Trust in institutions</td>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
</tr>
</tbody>
</table>

Outcome variables, Resilience of Inclusive growth

<table>
<thead>
<tr>
<th>Aggregation indicator</th>
<th>WE</th>
<th>NE</th>
<th>CEE</th>
<th>SE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Economy level resil</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.1 Convergence</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>1.2 Output half-life</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>1.3 Output volatility</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>1.4 Unemployment half-life</td>
<td>2.1</td>
<td>2.1</td>
<td>2.1</td>
<td>2.1</td>
</tr>
<tr>
<td>1.5 Unemployment volatility</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>2. Household income resil</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.1 Income duration</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
<td>1.0</td>
</tr>
<tr>
<td>2.2 Income depth</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>3. OCA indicator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.1 Business cycle synchrony</td>
<td>0.9</td>
<td>0.9</td>
<td>0.9</td>
<td>0.9</td>
</tr>
<tr>
<td>4. Inequality</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1 Income inequality</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>5. Low income protection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.1 Pass-through</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>5.2 Transfer/tax system eff.</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>5.3 Social protection exp.</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
<td>2.0</td>
</tr>
<tr>
<td>5.4 Social prot. exp. bott 40</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>6. Labor market indicators</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1 ALMP/PLMP - % GDP</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
<td>0.3</td>
</tr>
<tr>
<td>6.2 CBC</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
<td>5.6</td>
</tr>
<tr>
<td>6.3 EPL</td>
<td>3.1</td>
<td>3.1</td>
<td>3.1</td>
<td>3.1</td>
</tr>
<tr>
<td>6.4 Part-time work</td>
<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
<td>2.2</td>
</tr>
<tr>
<td>6.5 Hiring and firing costs</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>6.6 Wage flexibility</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>7. Private sector conditions</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.1 Ease of doing business</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
<td>2.4</td>
</tr>
<tr>
<td>7.2 Product market regulation</td>
<td>1.8</td>
<td>1.8</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>7.3 Enforcing contracts</td>
<td>2.7</td>
<td>2.7</td>
<td>2.7</td>
<td>2.7</td>
</tr>
<tr>
<td>7.4 Insolvency procedures</td>
<td>8.4</td>
<td>8.4</td>
<td>8.4</td>
<td>8.4</td>
</tr>
<tr>
<td>8. Trust</td>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
<td>5.2</td>
</tr>
</tbody>
</table>
References


