



VNiVERSiDAD D SALAMANCA

UNIVERSIDAD DE SALAMANCA
ESCUELA DE DOCTORADO
PROGRAMA DE DOCTORADO EN CIENCIAS SOCIALES

TESIS DOCTORAL

**Essays on labour economics: Wage and income disparities in
European labour markets amid the Great Recession**

Doctorando: Carlos Vacas Soriano

Directores: Dr. Rafael Muñoz de Bustillo Llorente

Dr. Enrique Fernández Macías

May 2018

Essays on labour economics: Wage and income disparities in European labour markets amid the Great Recession

Carlos Vacas Soriano

May 2018

Thesis Supervisors: Dr. Rafael Muñoz de Bustillo Llorente and
Dr. Enrique Fernández Macías

Thesis submitted to the Department of Applied Economics, University of Salamanca in partial fulfilment of the requirements for the degree of Doctor of Philosophy

Acknowledgements

This thesis owes much to people whose support and collaboration deserves recognition. First of all, I would like to thank my two thesis supervisors, Enrique Fernández Macías and Rafael Muñoz de Bustillo Llorente. Enrique gave me a crucial encouragement to start this thesis and has greatly contributed to my professional development over the last years, he has shared his knowledge and pushed me forward in a very generous and caring way, and doing research together has been a truly stimulating experience not only professionally but as well personally as friends. This thesis would not have been possible without him. Rafa has given me strong support and help when conducting this thesis, he was very supportive when I wanted to start this research project in the University of Salamanca, he has been always eager to provide me with good guidance and excellent feed-back on my research and has greatly facilitated the elaboration of this thesis. I am extremely grateful to him.

I would like to thank the European Foundation for the Improvement of Living and Working Conditions for funding and supporting the research projects on which the publications included in this thesis are largely based. More concretely, I would like to thank some Eurofound colleagues that worked with me over the past years and, apart from Enrique, I would like to mention particularly John Hurley, who was always ready to read attentively the research pieces of this thesis and offered me great advice for improvement. I would like to thank as well the Head of the Employment and Change Unit over the past years, Donald Storrie, who always tried to make room for good-quality research within the Unit and was always supportive of our research proposals on wage and income inequalities.

There are people from outside the European Foundation that have contributed to our different research projects on wage and income inequalities. I would like to mention Kristin Alsos, José María Arranz-Muñoz, Christine Aumayr, Line Eldring, Andrea Garnero, Damian Grimshaw, Stephen Kampelmann, Rafael Muñoz de Bustillo Llorente, Brian Nolan, Luis Ortiz, François Rycx, Andrea Salvatori, Mark Smith, Donald Storrie and Christian Welz for very useful input to different research projects on wage and income inequalities conducted by the Foundation. I would like to thank as well Eurostat for the data used in this thesis.

Finally, I would like to thank my mother Amparo for making sure during my whole life that my education was very important and that I would always have the understanding and material means to be able to pursue my studies for as far as I wanted. I know she is happy I completed this PhD and my grandparents and uncle would be too if they could have seen it. I

would like to thank as well my girlfriend Luana for her generous support during the completion of this PhD, she has suffered my complaints and bad moods often, and her patience, understanding, warm feelings and smile have helped me greatly.

Abstract

This thesis consists of an introduction, five self-contained research outputs on wage and income disparities across European labour markets and a final chapter discussing the main conclusions. Although each one of these pieces of research stands by itself, they are all interrelated and jointly provide a consistent picture from different angles about the recent evolution of wage and income disparities for the European Union (EU) as a whole and within European national labour markets, both before and after the Great Recession, including a policy proposal.

The first output is a paper mapping the evolution of low-paid work over the period 2005–2013 and exploring its underlying causes. The analysis uses an inflation-adjusted low-pay threshold anchored at 60 percent of median wages in 2007 to assess the impact of the Great Recession, showing that the share of low-paid employees increased for the EU as a whole and in two-thirds of European countries. This is explained by a general decline in real wage levels, particularly intense in the European periphery countries and at the bottom of the wage distribution as well as among employees with shorter tenures. Growing part-time employment also emerges as a significant driver of expanding low-paid work from the onset of the crisis. Moreover, the analysis identifies the existence of compositional effects that may have prevented a larger expansion of low-pay shares and masked the real extent of the wage correction.

The second output is a paper presenting an overview of wage inequality trends from an EU-wide perspective over the period 2005-2015 and discussing the contribution of convergence in wage levels and wage distributions between countries. The analysis shows that EU-wide wage inequality fell strongly prior to the crisis as a result of upwards convergence in wage levels, which was mainly driven by catch-up growth in Eastern European countries. EU-wide wage inequality has remained stagnant from the onset of the crisis due to the interruption of this process of convergence, which nevertheless is reactivating again in the most recent years due to a continuation of catch-up growth in Eastern Europe. Simultaneously, there was a process of convergence towards intermediate wage inequality levels, also partially interrupted by the crisis. Trends in wage inequalities across European countries are mixed from the onset of the crisis, partially due to the existence of compositional effects resulting from lower-paid employees being more likely to exit employment. Our results capture as well the strong

reduction in wage inequality levels observed in Germany in 2015 as a result of the introduction of the new German statutory minimum wage.

The third output is a paper presenting an overview of household disposable income inequality trends from an EU-wide perspective over the period 2005-2015, therefore providing a wider context from which to interpret the evolution of wage inequalities, by incorporating the impact of compositional effects and employment turbulences into the picture. As it occurred with wages, the analysis shows that EU-wide income inequalities were notably reduced prior to the crisis mainly due to catch-up growth in eastern European countries, a process of convergence that was also largely interrupted by the crisis. EU-wide income inequality levels have increased slightly from 2008, largely as a result of a halt in this process of income convergence between European countries, which nevertheless is re-emerging in most recent years. On the other hand, even if the increase in EU-wide income inequality was very modest, the Great Recession pushed income inequalities significantly upwards among many European countries largely as a result of rising unemployment levels, although this impact has been significantly cushioned by the public benefits and transfers systems in place across European countries.

The fourth output is an extensive report on which the third paper is based. It presents an overview of income inequality trends from an EU-wide perspective over the period 2005-2013. It is a much wider study on inequalities, since many different income sources are covered jointly. Apart from what is presented in the third paper, this analysis shows that the impact of the Great Recession is better reflected by trends in income trends: real income levels suffered a downwards impact across most countries and the size of European middle classes has been generally squeezed.

The fifth output is a paper discussing a policy tool that would have an effect in tackling wage (and income) disparities and low-pay work across European labour markets. It contributes to the growing debate on EU-level minimum wage coordination by considering the introduction of an hypothetical EU-wide policy that would set minimum wages at 60 percent of the median wage across European countries. The institutional impact of this policy would be larger in those countries where minimum wages are collectively agreed by social partners than in those countries where they are set by statutory regulation, but the analysis shows that this policy would affect a larger proportion of the workforce in the latter group of countries because they are typically characterised by a larger low-paid segment.

Resumen

Esta tesis consta de una introducción, cinco productos de investigación académica independientes sobre disparidades salariales y de ingresos en los mercados de trabajo europeos y un capítulo final discutiendo las principales conclusiones. Si bien cada una de estas piezas de investigación es independiente, todas ellas están interrelacionadas y proporcionan conjuntamente una imagen consistente, desde diferentes ángulos, sobre la evolución reciente de las disparidades salariales y de ingresos en la Unión Europea (UE) en su conjunto y en los mercados de trabajo nacionales Europeos, tanto antes como después de la Gran Recesión, incluyendo una propuesta política también.

El primer producto es un artículo que describe la evolución del empleo de bajos salarios durante el período 2005-2013 y explora las causas subyacentes. El análisis utiliza un umbral para identificar los bajos salarios anclado al 60% de los salarios medianos en 2007 y ajustado por la inflación para evaluar el impacto de la Gran Recesión, mostrando que la proporción de empleados con salarios bajos aumentó para la UE en su conjunto y en dos tercios de sus países. Esto se explica por una disminución general de los salarios reales, especialmente intensa en los países periféricos europeos y en la parte inferior de la distribución salarial, así como entre los empleados con menos antigüedad en sus puestos. El crecimiento del empleo a tiempo parcial también emerge como una causa significativa de la expansión del trabajo de bajos salarios desde el inicio de la crisis. Además, el análisis identifica la existencia de efectos de composición que pueden haber impedido una mayor expansión del trabajo de bajos salarios y enmascarado el alcance real de la corrección salarial.

El segundo producto es artículo que presenta una panorámica de las tendencias de las desigualdades salariales desde una perspectiva global de la UE durante el período 2005-2015 y analiza la contribución de la convergencia en los niveles salariales y en las distribuciones salariales entre los países europeos. El análisis muestra que la desigualdad salarial en el agregado de la UE se redujo fuertemente antes de la crisis como resultado de la convergencia ascendente en los niveles salariales, que fue impulsada principalmente por el mayor crecimiento salarial en los países de Europa del Este. La desigualdad salarial en el agregado de la UE se ha mantenido estancada desde el inicio de la crisis debido a la interrupción de este proceso de convergencia en los niveles salariales entre países, aunque este último parece reactivarse nuevamente en los últimos años debido a la continuación del crecimiento salarial más acelerado en ciertos países de Europa del Este. Simultáneamente, hubo un proceso de

convergencia entre los países europeos hacia niveles de desigualdad salarial intermedia, también parcialmente interrumpido por la crisis. Las tendencias de las desigualdades salariales en los países europeos desde el inicio de la crisis son variadas debido en parte a la existencia de efectos de composición en el empleo derivados de la mayor probabilidad de que los asalariados peor remunerados pierdan su trabajo. Los datos capturan una notable caída en la desigualdad salarial en Alemania en 2015 como resultado de la introducción del nuevo salario mínimo estatutario.

El tercer producto es un artículo que presenta una panorámica de las tendencias de la desigualdad de la renta disponible de los hogares desde una perspectiva global de la UE durante el período 2005-2015, proporcionando así un contexto más amplio para interpretar mejor la evolución de las desigualdades salariales que incorpora también al análisis el impacto de los efectos de composición y las turbulencias en el empleo. Al igual que ocurre con los salarios, el análisis muestra que las desigualdades de renta en el agregado de la UE se redujeron notablemente antes de la crisis, debido principalmente al mayor crecimiento de las rentas en los países de Europa del Este, y este proceso de convergencia en las rentas entre países también se interrumpió a causa de la crisis. La desigualdad de rentas en el agregado de la UE ha aumentado desde 2008, en gran parte debido a la interrupción del citado proceso de convergencia, aunque este parece estar reactivándose en los años más recientes. Por otra parte, aunque el incremento de la desigualdad de rentas para el agregado de la UE ha sido muy modesto, la Gran Recesión ha empujado las desigualdades de rentas al alza de forma significativa en muchos países europeos, principalmente debido a los mayores niveles de desempleo, aunque este impacto ha sido amortiguado por los sistemas de impuestos y prestaciones de los estados de bienestar europeos.

El cuarto producto es un informe muy extenso en el que se basa el tercer artículo mencionado anteriormente. Presenta una panorámica de las tendencias de desigualdades de rentas desde una perspectiva global de la UE durante el período 2005-2013. Es un estudio mucho más amplio sobre desigualdades, ya que muchas fuentes de ingresos son analizadas conjuntamente. Aparte de lo que se muestra en el tercer artículo, el análisis muestra que el impacto de la Gran Recesión se refleja más claramente al observar la evolución de los niveles de renta: los niveles de renta reales han sufrido un claro impacto negativo en prácticamente todos los países europeos y el tamaño de las clases medias europeas se ha contraído de una forma general.

El quinto y último producto de esta tesis es un artículo que discute una política que tendría un efecto en la lucha contra las disparidades salariales (y de rentas) y el trabajo de baja remuneración en los mercados de trabajo europeos. Contribuye al creciente debate sobre la coordinación de los salarios mínimos a nivel de la UE al considerar la introducción de una hipotética política a nivel de la UE que fijaría los salarios mínimos en un nivel del 60 por ciento del salario mediano en los países europeos. El impacto institucional de esta política sería mayor en aquellos países donde los salarios mínimos son establecidos mediante negociación colectiva por los agentes sociales que en los países donde se establecen por ley (salario mínimo estatutario), pero el análisis muestra que esta política afectaría a una mayor proporción de los asalariados en el segundo grupo de países, porque estos tienden a tener una mayor proporción de trabajos de salarios bajos.

Contents

1. Introduction.....	7
Introducción.....	19
2. The ‘Great Recession’ and low pay in Europe (Article 1).....	32
3. Recent trends in wage inequality from an EU perspective: a tale of two convergences (Article 2).....	49
4. Income inequality in the Great Recession from an EU-wide perspective (Article 3).....	76
5. Income inequalities and employment patterns in Europe before and after the Great Recession (Article 4).....	95
6. A coordinated European Union minimum wage policy? (Article 5)....	166
7. Conclusions.....	185
Conclusiones.....	193

1. Introduction

Inequalities are very much on top of the agenda in the academic and policy debate in Europe and other advanced economies (Atkinson 2015; Piketty 2014). Concerns about growing inequalities aggravated as a result of the Great Recession and its negative impact on economic activity and labour markets. Nevertheless, inequalities were already an important topic before the crisis, as evidenced by the important academic discussion on the measurement of global inequalities from a cross-national perspective (Milanovic 2005) or by the findings of empirical studies reporting growing inequalities across many developed countries over the decades prior to the crisis (OECD 2008 and 2011). Indeed, widening inequalities and declining labour shares have been identified by some as one of the factors leading to the crisis due to their effect in weakening aggregate demand (Stiglitz 2012).

1.1. Labour market reforms and rising inequalities in European countries over past decades

The potential impact of the recent crisis on inequalities needs to be put into context. In past decades, inequalities were on the rise across many developed countries as a result of wider economic, social and political changes.

Labour markets have traditionally been one of the most regulated aspects of western economies, either by law, collective bargaining, corporatist bodies or by other ties constraining the behaviour of economic actors. A broad consensus emerged after World War II supporting the role of the State in economic redistribution and social protection (the "Welfare Consensus") which went largely undisputed during the so-called Golden Age of welfare capitalism in the 1950s and 1960s.

This period was characterised by strong state intervention, high economic growth, full employment (although predominantly by male workers) and relatively low inequalities and poverty levels. Labour markets were tightly regulated. Companies got a stable and committed labour force and trade unions stable and secure employment relationships between the worker and the company. These mutual interests resulted in a strict employment regulation that emphasized full-time permanent employment, while temporary and part time employment played only a marginal role (Ramos-Díaz 2006).

But this “Welfare Consensus” started to unravel progressively from the 1970s. The oil crises (1973 and 1978) pushed prices and, in turn, wages upwards, as a result of which investment and economic activity were negatively affected and unemployment and budgetary deficits emerged. From the 1980’s, the pre-existing social contract started to be significantly eroded as a result of several changes: at the macro-economic level, the progressive abandonment of Keynesian policies resulted in weakening aggregate and labour demand; at the micro-level, globalization and the reorganization of production systems following the crisis of Fordism pressed for more flexibility in labour markets; at the policy level, labour market regulation was increasingly signalled as a potential cause of the new phenomenon of unemployment hysteresis (the simultaneous existence of high levels of unemployment and inflation).

As a result of the new situation and emerging ideological forces, discussions about social policy and economic growth became interlinked. Welfare state policies were increasingly seen as economically distortive due to their impact on the incentives to work and invest and the role of the state started was questioned as a trade-off between equality and efficiency was often assumed (Okun 1975).

Labour market regulation was increasingly re-conceptualised as labour market rigidity and the need for higher flexibility moved to the centre of the political and academic debate. Reforms aimed at deregulating labour markets have been advocated in past decades and have resulted, among others, in laxer employment protection laws leading to an expansion of atypical work (temporary, part-time and self-employment), more flexible working hours and wage structures and a trend towards decentralised wage bargaining (OECD 1994).

Empirical analyses conducted by the OECD (in 2008 and 2011) using data covering up to the emergence of the recent crisis showed that income inequalities have tended to move upwards from the 1970s and 1980s across many European countries, primarily driven by widening pay disparities in European labour markets. The proliferation of part-time and temporary employment (Burniaux, 1997), weakening trade unions and declining coverage of collective pay agreements (European Commission, 2013) or more decentralisation in wage-setting mechanisms (Visser and Checchi, 2009) are some of the changes in labour market institutions that have contributed to push income and wage inequality upwards.

Other forces with similar effects identified in the literature are technological change and globalisation. On the one hand, the new information technologies have permitted larger productivity gains among high-skilled than among their lower-skilled counterparts. This

skills-biased technical change puts an upwards pressure on the labour demand and the wages of higher-skilled workers, leading to widening wage differentials (Violante, 2008). On the other hand, advances in information and communication technologies have deepened the extent of the economic integration and facilitated phenomenon such as trade specialisation and off-shoring, which may have a negative impact on the wages of low-skilled workers in European countries (Blau and Kahn, 2009).

1.2. The emergence of the Great Recession

These trends shaping European labour markets over past decades explain why inequalities were on the rise across many countries and were already a source of concern prior to the crisis. The financial crisis of 2008-2009 and the Great Recession that ensued have greatly aggravated those concerns.

This background provides the rationale for this thesis, whose main overarching objective is to map recent trends in wage and income disparities in European labour markets amid the Great Recession. This thesis provides three main areas of added value. One, it updates the picture of wage and income disparities across European countries by taking into account the impact of the crisis and whether it contributed to or reverted previous trends. Two, it adopts an EU-wide approach to study trends in wage and income disparities that goes beyond the picture offered by the cross-country comparison. Three, it assesses the impact of a policy which may be helpful in tackling wage disparities and that would be implemented at an European scale, a EU-wide minimum wage policy.

1.2.1. Recent trends in wage and income disparities across European countries

Before the effects of the crisis could be foreseen and against a background of rather generalized economic growth and employment expansion, concerns about rising inequalities already existed (OECD 2008). The crisis turned the European economic and employment outlook very bleak and aggravated these concerns. On the one hand, rising inequalities have been even signalled as one of the causes leading to the crisis due to their effect in weakening aggregate demand (Stiglitz 2012). On the other hand, a growing interest has emerged on the potentially negative impact of the crisis on wage and income levels, which may have been especially acute among low-paid workers and less well-off individuals.

This thesis addresses these growing concerns about inequalities existing in the academic and policy debate since the crisis by mapping the recent evolution of wage and income disparities across European countries. This is done by using aggregate indicators of income and wage inequality such as Gini indexes, but as well a measure of the lower tail of the wage distribution such as the proportion of low-pay work across European markets.

As previously mentioned, income inequalities have tended to grow over past decades among many developed countries, largely as a result of widening pay differentials (OECD 2008 and 2011). From a shorter-term perspective that is especially relevant to this thesis, the existing literature provides some insights as to which should have been the expected evolution of inequalities during the recent crisis. In theory, inequalities are counter-cyclical, that is, they are expected to increase during a downturn (Storesletten et al, 2004; Bonhomme and Hospido, 2012). Nevertheless, empirical studies find that this counter-cyclicality exists for income inequality but it is rather unclear for hourly wage inequality (Maestri and Roventini, 2012).

The lack of a clear business cycle pattern in the case of wage inequality could be due to the existence of employment compositional effects resulting from lower-paid employees being more likely to exit employment during a recession (Solon et al 1994), which would squeeze wage distributions from the bottom and could off-set the potential widening wage disparities among workers. This compositional effect could also explain why the evolution of the share of low-pay work during the recession would be indeterminate theoretically: while this share should increase due to the negative impact of the crisis on wage levels, it may decrease as well if lower-paid employees are more likely to exit employment.

This thesis provides a comprehensive picture on wage and income disparities in Europe and contributes to previous academic literature in three main ways. One, it provides an updated and exhaustive, comparative analysis of wage and income inequalities across EU Member States that takes fully into account the effect of the recent crisis, extending the time coverage of previous empirical studies. It describes the evolution of the Gini indices of wage and income levels over the period 2004-2015, which permits identifying the impact of the Great Recession and how it relates to previous trends.

Two, covering trends in wages and incomes simultaneously offers a more complete picture of the impact of the crisis on inequalities in European societies. Trends in wage inequalities reflect developments among the employed workforce, while those in income inequalities are

affected as well by employment turbulences and other sources of income, which means covering both of them allows for a deeper understanding of the forces shaping them. This is especially relevant given the findings of the recent OECD reports stating that widening pay differentials were the main driver behind rising income inequalities in the period up to the emergence of the crisis (OECD 2008). These empirical studies covered a period (1980-2008) which was not characterised by generalised reductions in employment levels across countries (rather the opposite), as it has been the case in the current crisis. This is why this thesis complements those previous studies by exploring what occurred with wage and income disparities against the background of the Great Recession.

Three, this thesis captures trends at the bottom of the wage distribution by providing as well a comprehensive picture on the evolution in the share of low-pay work across European countries. Apart from mapping its trends, this thesis explores which have been the explanatory forces behind them, which permits analysing the impact of wage levels, part-time work, employment levels and compositional effects in shaping low-pay segments in European labour markets. The analysis uses an inflation-adjusted low-pay threshold anchored at 60% of the national median wage in 2007 across European countries, which provides a direct picture of the impact of the crisis by fixing the definition of low-pay as it was understood just before its emergence, following Duesenberry's relative income hypothesis (Duesenberry 1949). Moreover, this facilitates the identification of the role played by wage levels and employment compositional shifts in shaping the evolution of low-pay shares.

1.2.2. Recent trends in wage and income disparities from an EU-wide perspective

The existence of the EU project represents an additional dimension that may be taken into account when analysing European labour market trends, especially in recent years. Prior to the crisis, important advances in the European project took place, mainly due to the deepening of the economic integration process following the adoption of the Euro and the enlargement of the EU towards the east. Concerns emerged about the magnitude of the wage and income disparities between European regions even though, against a general background of economic growth and employment creation, economic activity was generally growing faster in the periphery than in the core of Europe.

The Great Recession reversed this picture because of its uneven impact. While most European countries were affected by the global financial crisis of 2008, the labour market

turbulences caused by the ensuing sovereign debt crisis have been more concentrated in peripheral economies. This has put European social cohesion under strain. Some of the most affected countries have adopted fiscal consolidation measures, structural reforms and internal devaluations aimed at recovering competitiveness in a monetary union. A strong divide emerged in European labour markets, with employment and wage levels being much more resilient in the core while suffering notable corrections in the periphery (ECB, 2015).

One of the main contributions of this thesis is the adoption of an EU-wide perspective in the analysis of wage and income inequalities, which adequately addresses the influence of the European integration process on European labour markets and the need to understand how the uneven impact of the crisis has affected Europe as a whole. Implementing an EU-wide approach requires considering all income and wage earners as part of a single European-wide distribution of incomes and wages, respectively, shaped by developments both within and between Member States.

Looking at previous theoretical literature, there are different branches providing insights about the expected trends in inequalities in past decades given the economic integration process taking place in Europe. One, according to neoclassical theories of economic growth, EU-wide inequality levels should be pushed downwards as a result of the process of convergence resulting between countries with different levels of economic development, due to catch-up in lower-income countries. Two, the so-called social convergence model indicates that cross-country differences in income inequality are becoming less pronounced over time (Deininger and Squire, 1998; Benabou, 1996; Clark, 2013), as a result of forces such as the institutional homogenization of countries (Meyer et al., 1997) or the adoption of common standards and policies (Torfason and Ingram, 2010), which would be especially relevant in the European context. Three, the economic theory of international trade predicts that countries will specialise in those activities fitting their relative resource endowments (Heckscher–Ohlin theorem), which has implications for trends in wage inequalities (Stopler-Samuelson theorem): they should increase in those countries with more high-skilled labour (due to more demand and rising wages for high-skilled workers) and vice versa.

Looking at the previous empirical literature, there are remarkably few studies adopting a truly EU-wide perspective to cover trends in inequalities and even less covering the recent impact of the crisis. Moreover, most of them focus on income rather than wages. This scarce literature broadly shows that EU-wide income inequalities declined prior to the crisis due to

the economic convergence of eastern European countries, while they remained rather stable (Darvas, 2016) or increased (Dauderstädt and Keltek, 2014) from the onset of the crisis.

This thesis contributes to fill in this gap in the literature by expanding the very limited number of empirical studies adopting a truly EU-wide approach to cover trends in wage and income inequalities. And it does so by covering the period 2004 to 2015, at a time when it is especially relevant to provide a narrative on the evolution of inequalities that takes into account trends both between and within European countries, identifying the processes of convergence and divergence that may have taken place between European countries.

1.2.3. EU-wide minimum wage as a policy proposal

Over the past decades, widening pay differentials across European countries have been reported (OECD 2008), wage levels have grown well below labour productivity (OECD 2012) and a significant share of low-pay work among the workforce seems to have become a structural reality across European labour markets. As a result of the crisis, average real wages declined across almost all European countries and were still below its pre-crisis levels in 2015 in Mediterranean countries, Ireland and the United Kingdom (OECD Earnings data).

Against this background, countries have at their disposal some policy tools for fighting low-pay and tackling wage disparities in European labour markets, such as creating good training institutions able to up-skill the workforce or establishing adequate wage floors, be it by means of collective bargaining or statutory regulation. For instance, data presented in this thesis reflect the notable drop in wage inequality levels in Germany as a result of the introduction of a new statutory minimum wage in 2015. This thesis discusses a policy proposal consisting in the introduction of EU-wide minimum wage coordination and assesses its impact across European countries.

The relevant literature shows that although the EU has no competence in deciding wage levels or wage formation mechanisms, there are notable references to minimum wage floors in recent European policy documents and debates. The European Social Charter of the Council of Europe (1961) mentioned the right of workers to a fair remuneration for a decent standard of living and the Council of Europe has suggested member states to fix minimum wage levels at a certain minimum level (normally, 50% the average or 60% of the median national wage). Moreover, European institutions have taken a more active role with respect to

decisions in wage developments and wage formation mechanisms in the context of the economic crisis, which partly explains why the debate on an European minimum wage coordination has gained force in recent years.

Minimum wages exist across all European countries, although their concrete setting mechanisms and levels diverge: they may be statutory or collectively agreed by social partners; they may be national or sector-specific; and they may be more or less generous. One of the most debated aspects of minimum wages is their impact on employment. Minimum wages ensure that nobody works for a lower wage of what may be considered minimally acceptable (Freeman 1996), but concerns about their potential negative impact on the employment levels of lower-skilled workers if set too high are common (Brown, Gilroy and Kohen 1982; Abbot 2012).

The feasibility of minimum wage coordination across European countries is much less debated in the literature (Schulten 2008 and 2012) but very relevant for the purposes of this thesis. Some of the arguments in favour refer to its embodiment of the idea of European Social Model, because minimum wage coordination could work as a counterbalance to European economic integration by creating a level playing field for fair competition and could as well strengthen aggregate demand and macroeconomic stabilisation. Arguments against the European coordination of minimum wages typically warn against the undermining of existing national industrial relation systems and traditions and question that a single policy would respond to the specific needs and features of the different European countries.

This thesis contributes to the existing literature by assessing the potential impact and feasibility of introducing an hypothetical EU-wide policy consisting of a statutory minimum wage set at 60% of the national median wage across European countries. This exercise offers three main contributions.

One, it responds to the growing academic and policy debate on a possible coordination of minimum wages across European countries by discussing the institutional difficulties and potential quantitative impact of introducing an EU-wide minimum wage policy. This is an innovative analytical approach that has not been explored before and that, moreover, permits to compare the diverse minimum wage-setting systems across European countries.

Two, as a result of using a minimum wage threshold set at 60% of the median national wages, this analysis permits comparing low-pay segments across European countries and therefore links this study to that on low-pay work against the background of the crisis

explained above. In fact, if the EU-wide minimum wage policy proposed in here was implemented, it would result in the elimination of low-pay work across European labour markets as defined in this thesis.

Three, since one of the main added values of this thesis is adopting an EU-wide perspective to map trends in wage and income inequalities, proposing the introduction of an hypothetical minimum wage policy coordinated at the EU-level reinforces further the European dimension that features so prominently in this thesis.

1.2.4. The five research outputs included in this thesis

The encompassing assumption of this thesis and its general justification is that the Great Recession has had an impact on wage and income disparities across European countries and for the EU as a whole. This thesis explores whether this has been the case and offers the three main areas of added value explained above by means of five self-contained but interrelated research outputs.

The first paper explores how low-pay segments across European countries have been affected by the Great Recession and identifies the forces behind. The second paper maps the evolution of wage and wage inequality levels from an EU-wide perspective that distinguishes developments between and within EU Member States and identifies the role of economic convergence. The third paper contextualises the trends in wage inequality levels by putting them in relation to developments in household disposable income from an EU-wide and cross-country approach, so that the full extent of the impact of the Great Recession is taken into account by looking beyond what occurred in labour markets. The fourth output (on which the third paper is based) is a large report that looks at trends in inequalities across a variety of income sources and offers a wider picture on the impact of the crisis by looking as well at the evolution of real income levels and the size of middle classes in Europe. The last paper analyses the impact and feasibility of introducing a EU-wide minimum wage coordination, a policy option that would tackle low-pay work across European countries.

A priori and based on the existing literature explained above, the initial hypotheses of this thesis would be that the Great Recession should have generally pushed cross-country income inequalities upwards, while its impact on wage inequalities and low-pay shares would be

undetermined because the expected downwards impact on wage levels may be offset by the existence of employment compositional effects.

As a result of the economic integration process taking place in Europe, a trend towards declining EU-wide wage and income inequalities should have occurred prior to the crisis, while, according to the theory of international trade, wage inequalities should have declined in lower-skilled economies (due to faster progress in wage levels among lower-skilled employees) and expanded in higher-skilled economies (due to faster progress in wage levels among higher-skilled employees).

References for the introduction

- Atkinson, A. B. (2015). *Inequality. What can be done?*. Harvard University Press, Cambridge.
- Benabou, R. (1996). Inequality and growth. In Bernanke B. S. and Rotemberg, J. J. (eds) *NBER macroeconomics annual 1996* (Cambridge).
- Blau, F. D. and Kahn, L. M. (2009). Inequality and earnings distribution. In Salverda, W., Nolan, B. and Smeeding, T. M. (eds.), *The Oxford handbook of economic inequality*, Oxford University Press, Oxford.
- Bonhomme, S. and Hospido, L. (2012). The cycle of earnings inequality: Evidence from Spanish social security data. Working Paper No. 1225, Banco de España, Madrid.
- Brown, C., Gilroy, C. and Kohen, A. (1982). The effect of the minimum wage on employment and unemployment. *Journal of Economic Literature* 20(2): 487–528.
- Burniaux, J. M. (1997), *Inégalités et emplois: Effet de redistribution lié à la structure familiale*. *Economie Internationale*, Vol. 71, No. 3.
- Clark, R. (2013). Convergence in national income distributions. *Social Forces*, 92(2), 413–436, December.
- Darvas, Z. (2016). Some are more equal than others: New estimates of global and regional inequality. Bruegel Working Paper 8, Brussels.
- Dauderstädt, M. and Keltek, C. (2014). Crisis, austerity and cohesion: Europe's stagnating inequality. Friedrich-Ebert-Stiftung, Bonn.
- Deininger, K. and Squire, L. (1998). New ways of looking at old issues: Inequality and growth. *Journal of Development Economics*, December 1998, 57(2), pp. 259–87.
- Duesenberry, J. S. (1949). *Income, saving and the theory of consumer behaviour*. Cambridge: Harvard University Press.
- European Central Bank (ECB) (2015). Comparisons and contrasts of the impact of the crisis on euro area labour markets. Occasional Paper Series, No 159, February 2015.

- European Commission (2013). *Employment and social developments in Europe 2013*, Publications Office of the European Union, Luxembourg.
- Freeman, R. B. (1996). The minimum wage as a redistributive tool. *Economic Journal* 106(436): 639–649.
- Maestri, V. and Roventini, A. (2012). *Stylized facts on business cycles and inequality*. GINI Discussion Papers 30, Amsterdam Institute for Advanced Labour Studies, Amsterdam.
- Meyer, J. W., Boli, J., Thomas, G. M. and Ramirez, F. O. (1997). World society and the nation state. *American Journal of Sociology*, 103(1): 144–181.
- Milanovic, B. (2005). *Worlds apart: Measuring international and global inequality*. Princeton University Press, Princeton, NJ.
- OECD (1994). *The OECD Jobs Study: Facts, analysis, strategies*. OECD Publishing, Paris.
- OECD (2008). *Growing unequal? Income distribution and poverty in OECD countries*. OECD Publishing, Paris.
- OECD (2011). *Divided we stand: Why inequality keeps rising*. OECD Publishing, Paris.
- OECD (2012). *OECD Employment Outlook*. Paris: OECD.
- Okun, A. (1975). *Equality and efficiency: The big trade-off*. Brookings Institution Press, Washington.
- Piketty, T. (2014). *Capital in the twenty-first century*. Belknap Press, Portland, OR.
- Ramos-Díaz, J. (2006). ¿Son reconciliables altos niveles de flexibilidad laboral y una amplia protección social?. *Fundació Rafael Campalans, Papers de la Fundació/138*.
- Rasmussen, P. N. and Delors, J. (2006). *The new social Europe*. Report to the PES Congress, Porto, December.
- Schulten, T. (2008). Towards a European minimum wage policy? Fair wages and social Europe. *European Journal of Industrial Relations* 14(4): 421–439.
- Schulten, T. (2012). European minimum wage policy: A concept for wage-led growth and fair wages in Europe. *International Journal of Labour Research* 4(1): 85–105.
- Solon, G., Barsky, R. and Parker, J. (1994). Measuring the cyclicalities of real wages: How important is composition bias?. *Quarterly Journal of Economics* 109: 1–25.
- Stiglitz, J. (2012). *The price of inequality*. Published by W. W. Norton & Company.
- Stolper, W. and Samuelson, P. A. (1941). Protection and real wages. *Review of Economic Studies*, 9: 58-73.
- Storesletten, K., Telmer, C. I. and Yaron, A. (2004). Cyclical dynamics in idiosyncratic labor market risk. *Journal of Political Economy*, Vol. 112, No. 3, pp. 695–717.
- Torfason, M.T. and Ingram, P. (2010). The rise of global democracy: A network account. *American Sociological Review*, 75(3): 355–377.

Violante, G. L. (2008). Skill-biased technical change. In Blume, L. and Durlauf, S. (eds.), *The new Palgrave dictionary of economics*, Palgrave Macmillan.

Visser, J. and Checchi, D. (2009). Inequality and the labor market: Unions. In Salverda, W., Nolan, B. and Smeeding, T. M. (eds.), *The Oxford handbook of economic inequality*, Oxford University Press, Oxford, pp. 230–256.

1. Introducción

Las desigualdades ocupan un lugar destacado de la agenda en el debate académico y político en Europa y otras economías avanzadas (Atkinson 2015; Piketty 2014). La preocupación por las crecientes desigualdades se ha agravado como resultado de la Gran Recesión y su impacto negativo en la actividad económica y los mercados de trabajo. Sin embargo, las desigualdades ya eran un tema importante antes de la crisis, como lo demuestra la importante discusión académica sobre la medición de las desigualdades globales desde una perspectiva transnacional (Milanovic 2005) o las conclusiones de estudios empíricos que informan de crecientes desigualdades en muchos países desarrollados durante las décadas anteriores a la crisis (OCDE 2008 y 2011). De hecho, el aumento de las desigualdades y la disminución de la participación de los salarios en el ingreso nacional han sido identificados por algunas voces como uno de los factores que condujeron a la crisis debido a su efecto en el debilitamiento de la demanda agregada (Stiglitz 2012).

1.1. Reformas del mercado de trabajo y desigualdades crecientes en los países europeos en las últimas décadas

El potencial impacto de la reciente crisis en las desigualdades debe ser puesto en contexto. En décadas pasadas, las desigualdades aumentaron en muchos países desarrollados como resultado de cambios económicos, sociales y políticos más amplios.

Tradicionalmente, los mercados de trabajo han sido uno de los aspectos más regulados de las economías occidentales, ya sea por ley, negociación colectiva, organismos corporativistas o por otros vínculos que limitan el comportamiento de los actores económicos. Después de la Segunda Guerra Mundial, surgió un amplio consenso que respaldaba el papel del Estado en la redistribución económica y la protección social (el "Consenso del Bienestar") y que prácticamente no se cuestionó durante la llamada Edad de Oro del capitalismo social en las décadas de 1950 y 1960.

Este período se caracterizó por una fuerte intervención estatal, un alto crecimiento económico, pleno empleo (aunque predominantemente masculino) y unas desigualdades y niveles de pobreza relativamente bajos. Los mercados de trabajo estaban estrictamente regulados. Las empresas tenían una fuerza de trabajo estable y comprometida y los sindicatos

relaciones laborales estables y seguras entre el trabajador y la empresa. Estos intereses mutuos dieron como resultado una estricta regulación laboral que enfatizó el empleo permanente a tiempo completo, mientras que el empleo temporal y a tiempo parcial desempeñó un papel marginal (Ramos-Díaz 2006).

Pero este "Consenso del Bienestar" comenzó a deshilacharse progresivamente a partir de los años setenta. Las crisis petroleras (1973 y 1978) empujaron los precios y, a su vez, los salarios a la alza, por lo que la inversión y la actividad económica se vieron afectadas negativamente y surgieron el desempleo y los déficit presupuestarios. A partir de los años ochenta, el contrato social preexistente empezó a erosionarse de manera significativa como resultado de varios cambios: a nivel macroeconómico, el abandono progresivo de las políticas keynesianas dio como resultado el debilitamiento de la demanda agregada y de trabajo; a nivel micro, la globalización y la reorganización de los sistemas de producción tras la crisis del fordismo presionaron hacia una mayor flexibilidad en los mercados de trabajo; a nivel político, la regulación del mercado de trabajo fue cada vez más señalada como una posible causa del nuevo fenómeno de la histéresis (la existencia simultánea de altos niveles de desempleo e inflación).

Como resultado de la nueva situación y las fuerzas ideológicas emergentes, los debates sobre la política social y el crecimiento económico se entremezclaron. Las políticas sociales fueron cada vez más consideradas como distorsionadoras de la actividad económica debido a su impacto en los incentivos para trabajar e invertir, y el papel del Estado empezó a ser cuestionado al asumirse una relación inversa entre igualdad y eficiencia (Okun, 1975).

La regulación del mercado de trabajo fue cada vez más conceptualizada como rigidez del mercado de trabajo y la necesidad de una mayor flexibilidad se trasladó al centro del debate político y académico. Reformas destinadas a desregular los mercados de trabajo han sido propugnadas en décadas pasadas y han dado lugar, entre otras cosas, a leyes más laxas en materia de legislación del empleo que han conducido a una expansión del trabajo más atípico (temporal, a tiempo parcial y por cuenta propia), jornadas laborales más flexibles y una tendencia hacia la descentralización de la negociación colectiva (OECD, 1994).

Los recientes análisis empíricos de la OCDE (en 2008 y 2011) utilizando datos que abarcan el periodo anterior a la aparición de la crisis mostraron que las desigualdades de rentas tendieron a aumentar a partir de los años 70 y 80 en muchos países europeos, principalmente debido a la ampliación de las divergencias salariales en los mercados de trabajo europeos. La

proliferación de empleos a tiempo parcial y temporal (Burniaux, 1997), el debilitamiento de los sindicatos y la disminución de la cobertura de los convenios salariales colectivos (Comisión Europea, 2013) o mecanismos de negociación salariales más descentralización (Visser y Checchi, 2009) son algunos de los cambios en las instituciones del mercado de trabajo que han contribuido a elevar la desigualdad de ingresos y salarios.

Otras fuerzas con efectos similares identificadas en la literatura son el cambio tecnológico y la globalización. Por un lado, las nuevas tecnologías de la información han permitido mayores ganancias de productividad entre los trabajadores altamente calificados que entre sus homólogos menos calificados. Este cambio tecnológico sesgado ejerce una presión ascendente sobre la demanda de mano de obra y los salarios de los trabajadores más cualificados, lo que conduce a un aumento de las diferencias salariales (Violante, 2008). Por otro lado, los avances en las tecnologías de la información y la comunicación han profundizado el alcance de la integración económica y han facilitado fenómenos como la especialización comercial y la deslocalización, lo que puede tener un impacto negativo en los salarios de los trabajadores poco cualificados en los países europeos (Blau y Kahn, 2009).

1.2. El surgimiento de la Gran Recesión

Estas tendencias que configuraron los mercados de trabajo europeos durante las últimas décadas explican por qué las desigualdades estaban en aumento en muchos países y ya eran una fuente de preocupación antes de la crisis. La crisis financiera de 2008-2009 y la Gran Recesión que siguió han agravado mucho más esas preocupaciones.

Este trasfondo proporciona la justificación de esta tesis, cuyo principal objetivo general es estudiar las tendencias recientes de las disparidades salariales y de rentas en los mercados de trabajo europeos durante la Gran Recesión. Esta tesis proporciona tres áreas principales de valor añadido. En primer lugar, actualiza el cuadro de las disparidades salariales y de rentas en los países europeos teniendo en cuenta el impacto de la crisis y si esta contribuyó o revirtió las tendencias anteriores. En segundo lugar, adopta un enfoque global a escala de la UE para estudiar las tendencias de las disparidades salariales y de rentas que va más allá del panorama ofrecido por las tendencias nacionales. En tercer lugar, evalúa el impacto de una política que puede ser útil para hacer frente a las disparidades salariales y que se aplicaría a escala europea, una política de salarios mínimos coordinada a nivel de la UE.

1.2.1. Tendencias recientes de las disparidades salariales y de rentas en los países europeos

Antes de que se pudieran prever los efectos de la crisis y en un contexto de crecimiento económico y de expansión del empleo bastante generalizado, ya existían preocupaciones por el aumento de las desigualdades (OECD, 2008). La crisis hizo que las perspectivas económicas y de empleo europeas se volvieran muy sombrías y agravaron esas preocupaciones. Por un lado, las crecientes desigualdades han sido señaladas como una de las causas de la crisis debido a su efecto en el debilitamiento de la demanda agregada (Stiglitz 2012). Por otra parte, ha surgido un creciente interés por el impacto potencialmente negativo de la crisis sobre los niveles salariales y de rentas, que puede haber sido especialmente fuerte entre los trabajadores con menores salarios y los individuos menos acomodados.

Esta tesis responde a estas crecientes preocupaciones existentes en el debate académico y político acerca de las desigualdades desde el inicio de la crisis mediante el estudio de la evolución reciente de las disparidades salariales y de rentas en los países europeos. Esto se hace utilizando indicadores agregados de desigualdad de rentas y salarios como los índices de Gini, pero también una medida de la parte inferior de la distribución salarial, como la proporción de trabajo de bajos salarios existente en los mercados europeos.

Como se mencionó anteriormente, las desigualdades de rentas disponibles de los hogares han tendido a crecer en los últimos decenios entre muchos países desarrollados, en gran medida como resultado de la ampliación de los diferenciales salariales (OECD 2008 y 2011). Desde una perspectiva a corto plazo que es especialmente relevante para esta tesis, la literatura proporciona algunas ideas sobre cuál debería haber sido la evolución esperada de las desigualdades durante la crisis reciente. En teoría, las desigualdades son anticíclicas, es decir, se espera que aumenten durante una recesión (Storesletten et al, 2004, Bonhomme y Hospido, 2012). Sin embargo, los estudios empíricos hallan que esta anti-ciclicidad existe para la desigualdad de rentas, pero es bastante poco clara para la desigualdad de salarios por hora (Maestri y Roventini, 2012).

La ausencia de un claro patrón durante el ciclo económico en el caso de la desigualdad salarial podría deberse a la existencia de efectos de composición del empleo causados por el hecho de que los empleados con salarios más bajos tienen una mayor probabilidad de perder su empleo durante una recesión (Solon et al 1994), lo que comprimiría las distribuciones

salariales desde abajo y podría compensar el potencial aumento de las disparidades salariales entre los trabajadores. Este efecto de composición también explicaría porque la evolución de la proporción de trabajo de bajos salarios durante la recesión es teóricamente indeterminada: si bien esta proporción debería aumentar debido al impacto negativo de la crisis sobre los niveles salariales, también podría disminuir si los empleados con salarios más bajos pierden en mayor proporción sus empleos.

Esta tesis proporciona un cuadro completo de las disparidades salariales y de rentas en Europa y contribuye a la literatura académica previa de tres maneras principales. En primer lugar, proporciona un análisis comparativo actualizado y exhaustivo de las desigualdades salariales y de ingresos entre los Estados miembros de la UE que tiene plenamente en cuenta el efecto de la reciente crisis, ampliando la cobertura temporal de estudios empíricos anteriores. Describe la evolución de los índices de Gini de salarios y niveles de ingresos durante el período 2004-2015, lo que permite identificar el impacto de la Gran Recesión y cómo se relaciona con las tendencias anteriores.

En segundo lugar, abarcar las tendencias de los salarios y las rentas simultáneamente permite ofrecer un panorama más completo del impacto de la crisis sobre las desigualdades en las sociedades europeas. Las tendencias de las desigualdades salariales reflejan los desarrollos en la población empleada, mientras que las desigualdades de las rentas también se ven afectadas por las turbulencias en el empleo y otras fuentes de ingresos, lo que significa que cubrir ambas tendencias ofrece un mejor entendimiento de las fuerzas que las configuran. Esto es especialmente relevante considerando los resultados de los recientes informes de la OCDE en los que se afirma que la ampliación de los diferenciales salariales fue el principal impulsor de las crecientes desigualdades de rentas durante el período que precede a la aparición de la crisis (OECD, 2008). Estos estudios empíricos abarcaron un período (1980-2008) que no se caracterizó por reducciones generalizadas de los niveles de empleo en los países (más bien al revés), como ha sido el caso en la crisis actual. Esta es la razón por la que esta tesis complementa estos estudios previos al explorar lo que ocurrió con las disparidades salariales y de renta en el contexto de la Gran Recesión.

En tercer lugar, esta tesis recoge las tendencias en la parte baja de la distribución salarial al ofrecer también un panorama general sobre la evolución de la proporción de trabajo de bajos salarios en los países europeos. Además de observar sus tendencias, esta tesis explora también cuáles han sido sus fuerzas explicativas, lo que permite analizar el impacto de los

niveles salariales, el trabajo a tiempo parcial, los niveles de empleo y los efectos de composición sobre la evolución del trabajo de bajos salarios en los mercados de trabajo europeos. El análisis utiliza un umbral de bajos salarios anclado en el 60% del salario medio nacional en 2007 en los países europeos y ajustado por la inflación, lo que proporciona una imagen más real del impacto de la crisis al fijar la definición de bajos salarios a la que existía justo antes del surgimiento de la crisis, siguiendo la hipótesis del ingreso relativo de Duesenberry (Duesenberry 1949). Además, esto facilita la identificación del papel desempeñado por los cambios en los salarios y en la composición del empleo en la evolución de la proporción de trabajos de bajos salarios.

1.2.2. Tendencias recientes de las disparidades salariales y de rentas desde una perspectiva global de la UE

La existencia del proyecto de la UE representa una dimensión adicional que debe tenerse en cuenta al analizar las tendencias en los mercados de trabajo europeos, especialmente en los últimos tiempos. Antes de la crisis, se produjeron importantes avances en el proyecto europeo, principalmente debido a la profundización del proceso de integración económica tras la adopción del euro y la ampliación de la UE hacia el este. La magnitud de las disparidades salariales y de rentas entre las regiones europeas suscitó inquietudes aunque, en un contexto general de crecimiento económico y de creación de empleo, la actividad económica crecía más rápidamente en la periferia que en el núcleo de Europa por lo general.

La Gran Recesión invirtió esta situación debido a su impacto desigual. Mientras que la mayoría de los países europeos se vieron afectados por la crisis financiera mundial de 2008, las turbulencias en los mercados de trabajo causadas por la crisis de la deuda soberana se han concentrado más en las economías periféricas. Esto ha amenazado la cohesión social europea. Algunos de los países más afectados han adoptado medidas de consolidación fiscal, reformas estructurales y devaluaciones internas destinadas a recuperar la competitividad en una unión monetaria. En los mercados de trabajo europeos surgió una fuerte división, con los niveles de empleo y salarios siendo mucho más resistentes en los países del núcleo europeo, mientras sufrían notables correcciones en la periferia (ECB, 2015).

Una de las principales contribuciones de esta tesis es la adopción de una perspectiva a nivel agregado de la UE en el análisis de las desigualdades salariales y de rentas, que tiene en

cuenta adecuadamente la influencia del proceso de integración europea en los mercados de trabajo europeos y la necesidad de comprender cómo el impacto desigual de la crisis ha afectado a Europa en su conjunto. La aplicación de un enfoque a escala de la UE requiere considerar a todos los perceptores de renta y asalariados como parte de una única distribución agregada europea de rentas y salarios, respectivamente, influenciada tanto por los desarrollos dentro de los Estados miembros como entre ellos.

En cuanto a la literatura teórica anterior, existen diferentes ramas que proporcionan información sobre cuáles deberían haber sido las tendencias en las desigualdades durante las últimas décadas dado el proceso de integración económica que está teniendo lugar en Europa. En primer lugar, de acuerdo con las teorías neoclásicas de crecimiento económico, los niveles de desigualdad para el agregado de la UE deberían sufrir una presión a la baja como resultado del proceso de convergencia que se produce entre países con diferentes niveles de desarrollo económico, debido a la mayor progresión en los países de rentas más bajas. En segundo lugar, el llamado *modelo de convergencia social* indica que las diferencias entre países en los niveles de desigualdad de rentas se están haciendo menos pronunciadas a lo largo del tiempo (Deininger y Squire, 1998; Benabou, 1996; Clark, 2013), como resultado de la homogeneización institucional de los países (Meyer et al., 1997) o la adopción de normas y políticas comunes (Torfason e Ingram, 2010), lo que sería especialmente relevante en el contexto europeo. En tercer lugar, la teoría económica del comercio internacional predice que los países se especializarán en aquellas actividades que se ajusten a sus dotaciones de recursos relativos (teorema de Heckscher-Ohlin), lo que tiene implicaciones para las tendencias de las desigualdades salariales (teorema de Stolper-Samuelson): deberían aumentar en los países con más mano de obra cualificada (debido a una mayor demanda y aumento de los salarios de los trabajadores altamente calificados) y viceversa.

En cuanto a la literatura empírica existente, hay muy pocos estudios que adopten una verdadera perspectiva para el agregado de la UE al describir las tendencias de las desigualdades, y aún menos que cubran el reciente impacto de la crisis. Además, la mayoría de ellos se centran en las rentas más que en los salarios. Esta escasa literatura muestra generalmente que la desigualdad de rentas en el agregado de la UE disminuyó antes de la crisis debido a la convergencia económica de los países de Europa del Este, mientras que permaneció bastante estable (Darvas, 2016) o aumentó (Dauderstädt y Kelttek, 2014) desde el inicio de la crisis.

Esta tesis contribuye a cerrar esta brecha en la literatura mediante la ampliación del muy limitado número de estudios empíricos que adoptan un enfoque verdaderamente a escala de la UE para cubrir las tendencias de las desigualdades salariales y de rentas. Y lo hace cubriendo el período de 2004 a 2015, en un momento en que es especialmente relevante proporcionar una narrativa sobre la evolución de las desigualdades que tenga en cuenta las tendencias entre los países europeos y dentro de ellos, identificando los procesos de convergencia y divergencia que pueden haber tenido lugar entre los países europeos.

1.2.3. Salario mínimo a nivel de la UE como propuesta política

En los últimos decenios se ha producido una ampliación de los diferenciales salariales en los países europeos (OECD 2008), los niveles salariales han crecido muy por debajo de la productividad (OECD 2012) y una significativa proporción de trabajo de bajos salarios parece haberse convertido en una realidad estructural en los mercados de trabajo europeos. Como resultado de la crisis, los salarios reales medios disminuyeron en casi todos los países europeos y estaban aún por debajo de sus niveles previos a la crisis en 2015 en los países mediterráneos, Irlanda y el Reino Unido (datos salariales de la OCDE).

En este contexto, los países tienen a su disposición algunas políticas para combatir el empleo de baja remuneración y las disparidades salariales en los mercados de trabajo europeos, tales como la creación de buenas instituciones de formación capaces de mejorar las habilidades de la mano de obra o el establecimiento de niveles salariales mínimos adecuados, ya sea mediante negociación colectiva o regulación estatutaria. Por ejemplo, datos presentados en esta tesis muestran el gran efecto que la introducción del nuevo salario mínimo estatutario alemán tuvo en la reducción de los niveles de desigualdad salarial en 2015. Esta tesis discute una propuesta consistente en la introducción de una política de salarios mínimos coordinada a nivel de la UE y evalúa su impacto.

La literatura muestra que, aunque la UE no tiene competencias para decidir los niveles salariales o los mecanismos de formación de salarios, existen referencias significativas a los niveles de los salarios mínimos en documentos y debates recientes en el ámbito de la política europea. La Carta Social Europea del Consejo de Europa (1961) menciona el derecho de los trabajadores a una remuneración justa para tener un nivel de vida digno, y el Consejo de Europa ha propuesto a los Estados miembros que fijen sus salarios mínimos en un cierto nivel

(normalmente, el 50% del salario medio o el 60% del salario mediano nacional). Por otra parte, las instituciones europeas han asumido un papel más activo en las decisiones sobre la evolución de los salarios y los mecanismos de formación de salarios en el contexto de la crisis económica, lo que explica en parte por qué el debate sobre la coordinación de los salarios mínimos a nivel europeo ha ganado fuerza en los últimos años.

Los salarios mínimos existen en todos los países europeos, aunque sus niveles y mecanismos de fijación divergen: pueden ser estatutarios o colectivamente acordados por los interlocutores sociales; pueden ser nacionales o sectoriales; y pueden ser más o menos generosos. Uno de los aspectos más debatidos de los salarios mínimos es su impacto en el empleo. Los salarios mínimos garantizan que nadie trabaje por un salario inferior de lo que puede considerarse mínimamente aceptable (Freeman 1996), pero existe un debate acerca de su potencial impacto negativo en los niveles de empleo de los trabajadores menos calificados si se fijan a niveles demasiado elevados (Brown, Gilroy y Kohen 1982, Abad, 2012).

La viabilidad de la coordinación de salarios mínimos entre los países europeos ha sido mucho menos discutida en la literatura (Schulten 2008 y 2012) pero muy relevante para los propósitos de esta tesis. Algunos de los argumentos a favor se refieren a su representación de la idea del modelo social europeo, pues la coordinación de los salarios mínimos podría servir de contrapeso a los efectos de la integración económica europea al crear condiciones equitativas para una competencia leal y podría también fortalecer la demanda agregada y la estabilización macroeconómica. Los argumentos contra la coordinación de los salarios mínimos a nivel europeo generalmente advierten contra el socavamiento de los sistemas y tradiciones nacionales de relaciones industriales y cuestionan que una política general responda a las necesidades y rasgos específicos de los diferentes países europeos.

Esta tesis contribuye a la literatura existente mediante la evaluación del impacto potencial y viabilidad de la introducción de una hipotética política a escala de la UE consistente en un salario mínimo estatutario fijado a un nivel del 60% del salario mediano nacional en los diferentes países europeos. Este ejercicio ofrece tres contribuciones principales.

En primer lugar, responde al creciente debate académico y político sobre una posible coordinación de los salarios mínimos entre los países europeos examinando las dificultades institucionales y el posible impacto cuantitativo de la introducción de una política de salarios mínimos en toda la UE. Se trata de un enfoque analítico innovador que no se ha explorado

antes y que, además, permite comparar los diversos sistemas de salarios mínimos en los países europeos.

En segundo lugar, como resultado de utilizar un umbral de salario mínimo fijado en el 60% de los salarios medianos nacionales, este análisis permite comparar los segmentos de trabajo de baja remuneración entre los países europeos y, por lo tanto, vincula este estudio con el que sigue la evolución del trabajo de bajos salarios en el contexto de la crisis explicado anteriormente. De hecho, si se aplicara la política de salario mínimo a nivel de la UE propuesta aquí, ello supondría la eliminación del trabajo de bajos salarios en los mercados de trabajo europeos tal y como se define en esta tesis.

En tercer lugar, dado que uno de los principales valores añadidos de esta tesis es la adopción de una perspectiva a nivel agregado de la UE para observar las tendencias de las desigualdades salariales y de rentas, proponer la introducción de una hipotética política de salarios mínimos coordinada a nivel europeo refuerza la dimensión europea que es tan prominente en esta tesis.

1.2.4. Los cinco análisis académicos incluidos en esta tesis

La suposición que envuelve toda esta tesis y su justificación general es que la Gran Recesión ha tenido un impacto en las disparidades salariales y de rentas en los países europeos y en el agregado de la UE. Esta tesis explora si este ha sido el caso y ofrece las tres principales áreas de valor agregado explicadas anteriormente mediante cuatro artículos académicos independientes pero interrelacionados.

El primer artículo explora cómo los segmentos de trabajo de baja remuneración se han visto afectados por la Gran Recesión en los países europeos e identifica las fuerzas que lo explica. El segundo artículo observa la evolución de los niveles salariales y de desigualdad salarial desde una perspectiva a escala de la UE que distingue los desarrollos en los Estados miembros de la UE y también entre ellos e identifica el papel jugado por la convergencia económica. El tercer artículo contextualiza las tendencias de los niveles de desigualdad salarial poniéndolas en relación con la evolución de las rentas disponibles de los hogares, de modo que se pueda observar el impacto de la crisis en toda su magnitud al tener también en cuenta lo que ha ocurrido más allá de los mercados de trabajo. El cuarto producto es un informe (en el que se basa el tercer artículo) que describe de forma detallada la evolución de

las desigualdades en varias fuentes de ingresos y ofrece una visión más amplia del impacto de la crisis al incorporar también el impacto sobre los niveles de las rentas reales y sobre la evolución del tamaño de las clases medias europeas. El último artículo analiza el impacto y la viabilidad de la introducción de una política de salarios mínimos coordinada a nivel de la UE, una opción política que lucharía contra el trabajo de bajos salarios en los países europeos.

A priori y sobre la base de la literatura existente explicada anteriormente, las hipótesis de trabajo de esta tesis serían que la Gran Recesión debería haber empujado al alza las desigualdades de rentas en los países europeos, mientras que su impacto sobre las desigualdades salariales y la proporción de trabajo de bajos salarios sería indeterminado, porque el esperado impacto a la baja sobre los niveles salariales podría ser compensado por la existencia de efectos de composición del empleo.

Como consecuencia del proceso de integración económica que se está produciendo en Europa, antes de la crisis debería haberse producido una tendencia hacia la disminución de las desigualdades salariales y de rentas en el agregado de la UE, mientras que, según la teoría del comercio internacional, las desigualdades salariales deberían haberse reducido en los países con mayor cantidad de trabajadores poco cualificados (debido al mayor avance salarial entre los trabajadores menos cualificados) y deberían haber aumentado en los países con menor cantidad de trabajadores poco cualificados (debido al mayor avance salarial entre los empleados más cualificados).

Bibliografía para la introducción

Atkinson, A. B. (2015). *Inequality. What can be done?*. Harvard University Press, Cambridge.

Benabou, R. (1996). *Inequality and growth*. In Bernanke B. S. and Rotemberg, J. J. (eds) *NBER macroeconomics annual 1996* (Cambridge).

Blau, F. D. and Kahn, L. M. (2009). *Inequality and earnings distribution*. In Salverda, W., Nolan, B. and Smeeding, T. M. (eds.), *The Oxford handbook of economic inequality*, Oxford University Press, Oxford.

Bonhomme, S. and Hospido, L. (2012). *The cycle of earnings inequality: Evidence from Spanish social security data*. Working Paper No. 1225, Banco de España, Madrid.

Brown, C., Gilroy, C. and Kohen, A. (1982). *The effect of the minimum wage on employment and unemployment*. *Journal of Economic Literature* 20(2): 487–528.

- Burniaux, J. M. (1997), *Inégalités et emplois: Effet de redistribution lié à la structure familiale*. *Economie Internationale*, Vol. 71, No. 3.
- Clark, R. (2013). *Convergence in national income distributions*. *Social Forces*, 92(2), 413–436, December.
- Darvas, Z. (2016). *Some are more equal than others: New estimates of global and regional inequality*. Bruegel Working Paper 8, Brussels.
- Dauderstädt, M. and Keltek, C. (2014). *Crisis, austerity and cohesion: Europe's stagnating inequality*. Friedrich-Ebert-Stiftung, Bonn.
- Deininger, K. and Squire, L. (1998). *New ways of looking at old issues: Inequality and growth*. *Journal of Development Economics*, December 1998, 57(2), pp. 259–87.
- Duesenberry, J. S. (1949). *Income, saving and the theory of consumer behaviour*. Cambridge: Harvard University Press.
- European Central Bank (ECB) (2015). *Comparisons and contrasts of the impact of the crisis on euro area labour markets*. Occasional Paper Series, No 159, February 2015.
- European Commission (2013). *Employment and social developments in Europe 2013*, Publications Office of the European Union, Luxembourg.
- Freeman, R. B. (1996). *The minimum wage as a redistributive tool*. *Economic Journal* 106(436): 639–649.
- Maestri, V. and Roventini, A. (2012). *Stylized facts on business cycles and inequality*. GINI Discussion Papers 30, Amsterdam Institute for Advanced Labour Studies, Amsterdam.
- Meyer, J. W., Boli, J., Thomas, G. M. and Ramirez, F. O. (1997). *World society and the nation state*. *American Journal of Sociology*, 103(1): 144–181.
- Milanovic, B. (2005). *Worlds apart: Measuring international and global inequality*. Princeton University Press, Princeton, NJ.
- OECD (1994). *The OECD Jobs Study: Facts, analysis, strategies*. OECD Publishing, Paris.
- OECD (2008). *Growing unequal? Income distribution and poverty in OECD countries*. OECD Publishing, Paris.
- OECD (2011). *Divided we stand: Why inequality keeps rising*. OECD Publishing, Paris.
- OECD (2012). *OECD Employment Outlook*. Paris: OECD.
- Okun, A. (1975). *Equality and efficiency: The big trade-off*. Brookings Institution Press, Washington.
- Piketty, T. (2014). *Capital in the twenty-first century*. Belknap Press, Portland, OR.
- Ramos-Díaz, J. (2006). *¿Son reconciliables altos niveles de flexibilidad laboral y una amplia protección social?*. *Fundació Rafael Campalans, Papers de la Fundació/138*.
- Rasmussen, P. N. and Delors, J. (2006). *The new social Europe*. Report to the PES Congress, Porto, December.

- Schulten, T. (2008). Towards a European minimum wage policy? Fair wages and social Europe. *European Journal of Industrial Relations* 14(4): 421–439.
- Schulten, T. (2012). European minimum wage policy: A concept for wage-led growth and fair wages in Europe. *International Journal of Labour Research* 4(1): 85–105.
- Solon, G., Barsky, R. and Parker, J. (1994). Measuring the cyclical of real wages: How important is composition bias?. *Quarterly Journal of Economics* 109: 1–25.
- Stiglitz, J. (2012). *The price of inequality*. Published by W. W. Norton & Company.
- Stolper, W. and Samuelson, P. A. (1941). Protection and real wages. *Review of Economic Studies*, 9: 58-73.
- Storesletten, K., Telmer, C. I. and Yaron, A. (2004). Cyclical dynamics in idiosyncratic labor market risk. *Journal of Political Economy*, Vol. 112, No. 3, pp. 695–717.
- Torfason, M.T. and Ingram, P. (2010). The rise of global democracy: A network account. *American Sociological Review*, 75(3): 355–377.
- Violante, G. L. (2008). Skill-biased technical change. In Blume, L. and Durlauf, S. (eds.), *The new Palgrave dictionary of economics*, Palgrave Macmillan.
- Visser, J. and Checchi, D. (2009). Inequality and the labor market: Unions. In Salverda, W., Nolan, B. and Smeeding, T. M. (eds.), *The Oxford handbook of economic inequality*, Oxford University Press, Oxford, pp. 230–256.

2. The ‘Great Recession’ and low pay in Europe

Article 1

Author: Carlos Vacas Soriano

The 'Great Recession' and low pay in Europe

European Journal of
Industrial Relations
1–16

© The Author(s) 2017

Reprints and permissions:

sagepub.co.uk/journalsPermissions.nav

DOI: 10.1177/0959680117715932

journals.sagepub.com/home/ejd



Carlos Vacas-Soriano

European Foundation for the Improvement of Living and Working Conditions (Eurofound), Ireland

Abstract

This article contributes to the literature on low-paid work by analysing the shares of low-paid employment in the period 2006–2014 and the underlying causes. I use an inflation-adjusted low-pay threshold anchored at 60 percent of median wages to assess the impact of the Great Recession, which increased the share of low-paid employees in two-thirds of European countries and in the EU as a whole. This was driven by a general decline in real wages, which was particularly intense in European periphery countries and at the bottom of the wage distribution as well as among employees with shorter tenure. However, compositional effects either prevented a larger expansion of low-pay shares by masking the real extent of the wage correction or were generally negligible in driving low-pay shares. Moreover, growing part-time employment emerges as a significant source of low-paid work from the onset of the crisis.

Keywords

Europe, Great Recession, low pay, part-time employment, wages, workforce compositional effects

Introduction

Wage shares have been declining in most advanced economies in the past decades, with the growth in wages well below labour productivity (Organisation for Economic Co-operation and Development (OECD), 2012). Concerns about low-wage work have intensified from the onset of the Great Recession, when real wages fell or remained stagnant for many workers. Average real wages declined across almost all European countries and in 2015 were still below pre-crisis levels in Mediterranean countries, Ireland and the United Kingdom.

The proportion of low-paid employees differs widely across European countries, and trends in the past decades have also diverged (Grimshaw, 2011). Low-pay shares are

Corresponding author:

Carlos Vacas-Soriano, European Foundation for the Improvement of Living and Working Conditions (Eurofound), Wyattville Road, Loughlinstown, Dublin 18 KP65, Ireland.

Email: cva@eurofound.europa.eu

influenced by wage movements and employment flows, and I show that the negative wage shock of the Great Recession has pushed low-pay shares upwards in Europe, while compositional effects are less significant and often limited the extent of this increase. Low-pay shares are higher when wages are not adjusted for part-time work; part-time employees have accounted for a growing proportion of low-paid employees since the onset of the crisis.

In the next section, I provide an overview of literature on the expected impact of the business cycle on low pay. I then provide my main definition of the low pay share and explain the methodology used in this article. After this, I map the trend in low-pay shares across European countries between 2006 and 2014 and go on to assess the role played by wage movements and workforce composition in driving such patterns. I explore the impact of part-time employment as a source of low-paid work and then conclude. For reasons of space, it is impossible to include in this article all the detailed tables. These are included in an Supplementary Appendix 1 which is available at <https://carlosvacassoriano.files.wordpress.com/2017/05/annex.pdf>, and I refer to these at various times below.

Literature review

There is a consensus in the literature that inequalities tend to grow in recessions and decline with expansion (Bonhomme and Hospido, 2012), although empirically this counter-cyclicality seems stronger for weekly or monthly earnings than for hourly wages (Maestri and Roventini, 2012). But even if the low-pay share is one measure of wage distribution and is related to wage inequality, its trend over the business cycle is not necessarily the same as that of standard inequality measures such as the Gini coefficient.

Given the absence of specific literature on the cyclicalities of low-pay shares, we can review that of its main determinants to infer the expected impact of the crisis on low-pay shares. Trends in low-pay shares can be affected by two forces: general wage movements (the low-pay share increases if wages decline below the low-pay threshold), and changes in workforce composition (it decreases if employees below the threshold are more likely to lose their jobs, even if wage levels do not change).

On one hand, the crisis could have increased low-pay shares since wage levels are supposedly pro-cyclical and move downwards in a recession. However, earlier empirical studies generally failed to identify a clear real wage pro-cyclicality (Abraham and Haltiwanger, 1995), although this may reflect the use of aggregate data in such analyses until the 1980s. Once micro-panel data were incorporated in the analysis, the pro-cyclical behaviour of real wages was often identified (Brandolini, 1995; Chirinko, 1980). This is also one reason why the real wages of job movers have been found to be more pro-cyclical than those of job stayers (Devereux, 2001; Hart, 2006).

On the other hand, compositional effects could have pushed low-pay shares downwards. Low-paid employees are the first to lose their jobs in recessions (Solon et al., 1994), which would also introduce an upward bias in aggregate wage levels; this has been considered the main reason for the lack of wage pro-cyclicalities when using aggregate instead of individual data, although other researchers question the real significance of this counter-cyclical composition bias (Farsian, 2011).

The net effect of these two opposing forces determines the trend of low-pay shares, which cannot be established a priori. This indeterminacy is reflected in the lack of

common trends in low-pay shares across countries found in some recent studies (Grimshaw, 2011; Mason and Salverda, 2010). But there is a third parameter affecting low-pay shares that further complicates the picture: the low-pay threshold chosen, which is typically defined in relation to the median or average annual wage. This threshold itself is also affected by the first two factors: aggregate wage decline pushes it down (hence reducing low-pay shares), while compositional changes can have the opposite effect.

Recent empirical research has covered the impact of the crisis on some of these elements influencing low-pay shares. Some have argued that this impact has been primarily via employment levels, with significant increases in unemployment and sluggish wage adjustments, at least during the initial years (Schmitt-Grohé and Uribe, 2013), while others claim that there has been a significant downward adjustment of real wages in Europe which was concealed by the (opposite) effect of employment compositional changes (Brandolini and Rosolia, 2015; Verdugo, 2015). Other studies have acknowledged the contribution of the growing part-time share of employment to low-pay shares (as well as to wage inequality and job polarization) in recent years (Fernández-Macías, 2012; OECD, 2015).

Nevertheless, to my knowledge there has been no comprehensive comparative study of the impact of the Great Recession on low-pay shares across European countries and the factors driving such trends. This article fills this gap by mapping recent trends in low-pay shares across European countries between 2006 and 2014, by using an inflation-adjusted low-pay threshold anchored at 60 percent of the median wage in 2008, which facilitates the identification of the role played by wage levels and compositional shifts, as explained below.

Methodology

The low-pay share calculates the proportion of employees earning wages below a certain threshold, typically defined as a percentage of the average or median wage. This article follows an innovative approach by taking the following decisions regarding the low-pay threshold used:

Running versus anchored and deflated versus non-deflated threshold. While studies of low pay typically use a *running* threshold, expressed in relation to yearly median wages, I apply a threshold *anchored* to median wages in 2008. To take into account changes in the cost of living caused by inflation, this threshold is *deflated* for the years before and after 2008. These decisions permit a better assessment of the impact of the crisis on low-pay shares by fixing the definition of low pay as it was understood before the crisis emerged and maintain its purchasing power by adjusting for inflation. Anchoring the threshold in 2008 instead of allowing it to evolve together with succeeding wage changes is in line with the relative income hypothesis (Duesenberry, 1949), which states that consumption is more stable than income in the short run because families maintain customary consumption patterns despite falling incomes. Moreover, and crucially for our purposes, an anchored threshold eliminates its own effect over time and limits the factors driving low-pay shares to wage movements and employee composition.

Threshold level. Two-thirds of the median wage is a threshold commonly used in the literature, for example, by the OECD or the Low-Wage Employment Research network (LoWER). Instead, I use 60 percent of the median wage, as in some other empirical studies (Marlier and Ponthieux, 2000; Muñoz de Bustillo and Anton, 2007); this is referred to in the European debate on fair pay (European Parliament, 2008) and corresponds to the level for a hypothetical EU minimum wage policy proposed by some academics (Schulten et al., 2005). Moreover, this is also the level used to define relative poverty in income levels (60% of the national median equivalized disposable household income). The median is used instead of the mean because of its superior statistical robustness since the latter is more sensitive to outliers in the wage distribution and the measurement of very high and low wages is less precise in surveys.

I use the European Survey on Income and Living Conditions (EU-SILC), covering those working as employees in a given year, and apply the following formula to transform the variable for annual earnings into a monthly wage measure used in the analysis (based on Brandolini et al., 2010)

$$\text{Monthly FTE gross wage} = \frac{\text{Annual cash gross earnings}}{\text{Months in FT jobs} + (\text{Months in PT jobs} * [\text{PT} / \text{FT ratio}])}$$

This monthly full-time equivalent (FTE) gross wage equals the annual cash gross earnings divided by the number of months the employee worked over the income reference period (the previous year). The number of months in part-time jobs is multiplied by a sex-specific ratio for each country of median hours of work in part-time jobs to median hours of work in full-time jobs, providing an FTE measure of wages across all employees (including part-time and temporary employees; for further minor adjustments and data caveats, see Fernández-Macías and Vacas-Soriano, 2015).¹ Importantly for our purposes, this wage measure ensures that low pay reflects only lower wages earned during an FTE month and not shorter working hours as a result of part-time working. Wage levels for non-eurozone countries are considered in national currencies, to avoid the possibility that movements in currency values affect low-pay shares.

Most data come from the EU-SILC cross-sectional waves, but the longitudinal datasets are used for the labour market transitions analysis. The reference year for the data presented in this article are that of the survey, even if wage data refer to the previous year, given that the employment structure is captured in the year of the survey and that changes in employment composition are among the elements analysed in this article.² Data are provided for all EU countries except Bulgaria, Croatia, Malta and Romania, but most analysis focuses on a few selected countries.

Trends in low-pay shares during the Great Recession

I now present data on low-pay shares and, in order to provide a context, on wages and employment dynamics. For clarity and simplification, I focus on the six largest EU member states (Germany, France, the United Kingdom, Italy, Spain and Poland), which in

Table 1. Low-pay shares in selected countries (%).

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Low-pay shares (using an anchored and deflated threshold)									
UK	20.0	19.5	18.9	20.6	23.8	23.8	24.8	26.1	27.6
ES	14.0	14.2	12.5	13.6	13.9	14.6	14.1	15.3	18.0
IT		12.7	11.7	13.8	13.6	13.3	15.6	15.7	16.7
FR	10.9	12.3	11.7	11.8	11.3	11.0	11.6	11.2	12.2
DE	24.6	24.2	25.0	24.1	24.8	24.7	24.1	24.4	24.2
PL	24.7	22.0	17.0	12.2	12.2	10.0	9.6	8.4	6.8
EU	20.0	17.6	16.3	16.0	16.5	16.5	16.9	17.2	17.9
Low-pay shares (using an anchored and non-deflated threshold)									
UK	22.4	20.9	18.9	19.2	21.3	19.3	18.2	18.0	17.5
ES	16.4	15.1	12.5	12.3	12.8	13	11.9	12.2	13.7
IT		13.3	11.7	12.7	12.6	11.9	12.9	12.0	12.3
FR	12.0	12.7	11.7	11.3	10.6	10.1	10.1	9.5	10.5
DE	25.6	24.9	25.0	23.5	23.8	23.4	22.1	21.5	20.9
PL	27.1	23.5	17.0	10.2	8.7	6.3	4.8	3.7	3.5
EU	22.3	18.7	16.3	14.8	14.8	14.3	13.7	13.2	13.3
Low-pay shares (using a running threshold)									
UK	17.7	18.2	18.9	17.6	18.9	19.2	19.0	19.1	19.6
ES	13	13.7	12.5	15.3	16.8	18	16.9	15.9	18.7
IT		12.8	11.7	13.2	13.6	14	15.3	14.9	15.9
FR	10.9	11.5	11.7	12.1	12	11.7	12.1	11.9	13.1
DE	25.0	24.7	25.0	24.1	24.3	24.4	24.0	23.5	23.3
PL	17.6	16.4	17.0	14.5	16.4	14.3	14.6	13.7	12.1
EU	15.8	16.4	16.3	16.0	16.5	16.6	16.7	16.3	16.8

Countries are ranked by the magnitude of the relative increase in low-pay shares (using an anchored and deflated threshold) between 2009 and 2014 (wages referring to 2008–2013). Wage data shift from net to gross in Italy in 2007, which is why data for this country have been omitted for that year.

aggregate account for around 80 percent of low-paid employees in the EU. Moreover, these countries represent European regions unevenly affected by the crisis and with different institutional settings.

Low-pay shares are highest in Germany and the United Kingdom (see Table 1). A contributory factor in Germany is probably the Hartz reforms which resulted in the expansion of jobs at the bottom of the wage distribution (mini-jobs or temporary agency work) as well as a weakening of collective bargaining coverage for large segments of the workforce (Bosch and Kalina, 2008), until a statutory minimum wage was introduced in 2015. In the United Kingdom, relatively low minimum wage levels (according to Eurostat data) are an important factor. The relatively high levels of low pay in Poland at the beginning of the period may also be partially due to modest statutory minimum wage levels and the extensive use of ‘civil law contracts’ (temporary contracts based on the Civil Code), while low-pay shares were initially lower in Spain and Italy, possibly because collective bargaining compensated for low skill levels (and also for a relatively

low statutory minimum wage in Spain). Nevertheless, Spain and Italy were severely affected by the crisis, while Poland has weathered it better and has reduced low-pay shares notably. At the other extreme, low-pay shares are lowest in France, where statutory minimum wage levels are set at a very high relative level.

Low-pay shares

Table 1 (and Figure 1 in Supplementary Appendix 1) provides an overview of low-pay share measures in the selected countries and shows that the upwards impact of the Great Recession is well reflected by using the threshold anchored in 2008 and deflated, which is my preferred measure here. The low-pay share expanded from the onset of the crisis in the United Kingdom, Spain, Italy and in the most recent years in France, while it remained rather stable in Germany and declined strongly in Poland, the two of the six countries which managed to weather the economic crisis better. Figure 2 in the Supplementary Appendix 1 shows that this rather counter-cyclical pattern was more widespread since the low-pay share declined across most European countries up to the crisis and then expanded in almost two-thirds after 2008, notably in the European periphery countries worst affected by the crisis (Mediterranean and Baltic countries to a lower extent), but as well in some core European countries (the Netherlands, Sweden, Finland, Luxembourg). For the EU as a whole, the low-pay share rose from 16 percent in 2009 to 18 percent in 2014 (wages referring to 2008–2013).

The impact of the crisis on low-pay shares seems less obvious if the threshold is anchored in 2008 but not adjusted for inflation. Low-pay shares fell for the EU in aggregate and across all selected countries except Spain and Italy, which suggest nominal wage levels around the low-pay threshold have not generally been reduced and have risen between 2009 and 2014. Nevertheless, the movement in wages among a growing proportion of the workforce did not keep up with inflation and resulted in reduced purchasing power, which explains the difference in low-pay shares depending on whether the threshold is deflated: the gap between both measures reflects inflation and is largest in the United Kingdom, where higher inflation pushes the anchored and deflated threshold further upwards (see Figure 1 in the Supplementary Appendix 1).

A different picture emerges when using a running low-pay threshold, which is affected by changes in median wages. Overall, the increase in low-pay shares from the crisis onwards is more moderate and does not affect so many countries; this is explained by wage moderation keeping the running low-pay threshold below the level of the anchored and deflated threshold, which occurs mainly in the United Kingdom and to a lower extent in Italy, as shown in Figure 1 in Supplementary Appendix 1 (and in some other Mediterranean and Baltic countries, as shown in Figure 2 in Supplementary Appendix 1). Conversely, a larger expansion is reported when using a running threshold in a few cases because wage increases push this threshold above the level of the anchored and deflated threshold, as in France (and also in Spain, but because of a statistical increase in the median wage in 2009 following a methodological revision of its EU-SILC income variables), as shown in Figure 1 in Supplementary Appendix 1 (or in other eastern European and Scandinavian countries as shown in Figure 2 in Supplementary Appendix 1).

This comparison between indicators confirms that the anchored and deflated threshold provides the clearest picture of the impact of the crisis on low-pay shares in Europe.

Although this article covers employees, as in most studies of low pay, Figure 1 in Supplementary Appendix 1 also shows how low-pay shares would diverge across the selected countries if the whole workforce was considered: they would be significantly higher (since labour income disparities are typically higher among self-employed than among employees), and while they show a rather similar pattern over time in the countries featured, the increase from the onset of the crisis seems to be larger in some countries such as Italy and the United Kingdom, where growing numbers of self-employed and their lower incomes have been a cause of concern (Tomlinson and Corlett, 2017). This means that the data on employees' low-pay shares presented in here should be seen as a lower bound estimate, providing a more conservative account of the expansion of low-pay shares since the crisis than if the whole workforce were covered.

Labour market dynamics

Wage and employment trends provide a necessary context because they are the two factors influencing low-pay shares when the threshold is anchored. Prior to the crisis, low-pay shares seem to have been largely driven by wage movements, against a background of low employment turbulence. From the onset of the crisis, a core–periphery divide emerges: real wages and employment levels mainly suffered a downward impact in Mediterranean and Baltic countries, while they were generally more resilient in Continental and Scandinavian countries (see Figure 2 in Supplementary Appendix 1). This uneven impact is clearly reflected in the selected countries: the absolute number of employees fell in Spain and Italy, remained stagnant in France and the United Kingdom and rose slightly more in Germany and Poland (see Figure 1 in Supplementary Appendix 1). The contribution of wages and employment composition to explain trends in low-pay shares is empirically assessed in the next section.

Explanatory factors behind the expansion of low-pay shares in Europe

When the deflated and anchored threshold is used, the reported expansion of low-pay shares in the EU as a whole and across many European countries from the onset of the crisis can only be due to changes in wages and shifts in workforce composition. I now assess their impact on the six selected countries, whose diverging patterns in low-pay shares, wages and employment permit a more robust identification of the main forces driving low-pay shares.

Two hypotheses are proposed: first, a downward impact of the crisis on wage levels pushed low-pay shares up; second, compositional effects resulting from employment shifts influenced low-pay shares, either pushing them up or down. These two hypotheses are tested empirically.

The downward impact of the crisis on wage levels

My analysis supports the thesis that downward pressure on wages pushed low-pay shares up from the onset of the crisis and shows that reductions in real wages have been notable among certain segments of the workforce and sometimes stronger than reflected by

average wage data because of compositional effects in the workforce. This is shown by data across wage quintiles and for job stayers and job movers, and data on labour market transitions (Figures 3 to 5 in Supplementary Appendix 1).

The crisis had a downward and uneven impact on the wage distribution, which drove up low-pay shares. Figure 3 in Supplementary Appendix 1 shows this is very clear in the United Kingdom, Spain and Italy across all wage quintiles and particularly among lower-paid employees, while real wages rose modestly in France during the initial years (pushing low-pay shares down) and then remained rather stagnant, except for the bottom quintile which declined notably (contributing to rising low-pay shares in most recent years). Real wages remained rather stagnant in Germany (except those at the bottom quintile that were more volatile) and low-pay shares were stable. On the other hand, real wage levels increased in Poland (although at a slower pace than before the crisis) and especially among lower-paid employees, narrowing wage disparities over the distribution and pushing low-pay shares down very notably.

The general picture that emerges is of moderate nominal wage increases which failed to keep up with inflation for growing segments of the workforce, rather than a reduction in nominal wages: declines in real wage levels affected (to varying degrees) all countries but Poland, and low-pay shares grew across all countries but Poland (and Germany) when using the deflated threshold, but not when using a non-deflated one (as is shown in Table 1). The exception to this is Spain (and Italy to a lesser extent), where low-pay shares grew even when leaving the low-pay threshold unchanged because of a general decline in real wages among employees and in some cases a decline in nominal wages.

Moreover, the wages of those employees changing jobs are more sensitive to altered labour market conditions than those of employees who retain their jobs (see Figure 4 in Supplementary Appendix 1). Real wages among job movers declined more than among stayers in all the countries where low-pay shares grew (the United Kingdom, Spain and Italy, while their wages remained more stagnant in France), while they rose somewhat more in those countries weathering the crisis better (Germany and Poland). This divergence between both groups of countries is probably because, in recessionary labour markets, a large proportion of job transitions would be involuntary (with job movers finding new jobs perhaps at lower wages after becoming unemployed), while voluntary transitions towards higher paying jobs would increase in tight and improving labour markets. The willingness to change jobs depending on labour market conditions explains why the proportion of job movers declines in the former case and grows in the latter.

Data on labour market transitions (not available in Germany) provide further evidence that a downward impact of the crisis on wages pushed low-pay shares up, based on three factors occurring in all countries except Poland (see Figure 5 in Supplementary Appendix 1). First, moderate wage increases resulted in declining transitions from low to higher pay, that is, from below to above the low-pay threshold (and this decline is due to a genuine higher persistence in low-pay status and not merely to low-paid employees exiting employment, as shown later). Second, the downward impact on wages caused growing transitions from higher to low pay, reflecting either job changes or downward shifts in wages for persons working in the same job. Third, deteriorating pay conditions, to which short-tenured employees are more sensitive, increased the proportion of low-paid employees among new entrants into employment.

In order to ensure the robustness of the results presented so far, we need to make certain that the wage data reflect genuine changes in individual wages and not compositional effects introducing a significant bias in median wage levels. On one hand, a compositional effect emerges because of changes in the employment shares of job movers. Nevertheless, the proportion of job movers among the total number of employees declines in all those countries where low-pay shares expand (see Figure 4 in Supplementary Appendix 1), introducing an upward bias in median wages and limiting the expansion of low-pay shares (since job movers generally have lower wages), which is mainly driven by wage moderation among job stayers.³ On the other hand, a relevant compositional effect could exist in the United Kingdom and France, with new entries into the workforce being increasingly dominated by low-paid employees (see Figure 5 in Supplementary Appendix 1), which would introduce a downward bias in median wage levels and push low-pay shares up. Nevertheless, while the large entry of low-paid employees in the most recent years in France is relevant, its trend is more moderate in the United Kingdom, where recent research states that the contribution of low-paid entrants to aggregate wage moderation is modest in comparison with genuine changes in individual wages (Abel et al., 2016).

Therefore, the findings in this section provide evidence that the expansion in low-pay shares from the onset of the crisis was driven by a downward impact on wages, partially masked by some compositional effects. This is in line with recent research which claims that once compositional effects are taken into account, an important downward adjustment in wage levels occurred in the countries most affected by the Great Recession, where downward rigidities seem to have become weaker in recent years (ECB, 2015).

The impact of compositional effects on low-pay shares

I now present evidence that compositional effects have been either negligible in driving European low-pay shares upwards or, more importantly, have rather limited the expansion of low pay from the onset of the crisis. These findings are inferred from a shift-share analysis and from data on employment shares across different demographic groups and on transitions in an out of employment.

A shift-share analysis can be used to assess whether low-pay shares in Europe have been affected by compositional effects consisting of changes in the employment structure (proxied by the variables of economic sector and occupational categories) from the onset of the crisis. Changes in low-pay shares are decomposed into two factors: the structural component (within) shows the evolution of low-pay shares within groups of the workforce while holding constant their employment shares, and (2) the composition effect component (between) shows the change in low-pay shares attributable to changes in the employment shares of the different groups while holding constant the incidence of low pay within each of them.

Table 2 shows that changes in the employment shares of economic sectors or occupational categories did not have a significant impact in explaining the increase in low-pay shares for the EU as a whole from the onset of the crisis; this was due to a generalized effect of overall macroeconomic conditions resulting in a downward impact on wages, as

Table 2. Shift-share analysis of the change in low-pay shares accounted for by sectoral and occupational employment structure.

	Sector		Occupation			
	2009 to 2014		2008 to 2011		2011 to 2014	
	Between	Within	Between	Within	Between	Within
DE	0.26	-0.07	-1.15	-0.30	-0.31	-0.19
ES	0.61	4.24	-0.45	2.73	0.30	2.85
FR	0.64	0.57	-0.17	-0.71	-0.25	1.24
IT	0.22	2.35	0.19	1.27	0.32	3.00
PL	-0.03	-5.39	-0.12	-6.93	-0.01	-3.28
UK	0.69	5.82	-0.95	4.48	0.06	3.55
EU	0.09	1.73	-0.07	0.52	-0.04	1.30

The sub-periods have been chosen to adapt to the changes in classifications.

Table 3. Employment and low-pay shares by education and age (%).

Employment	Educational level						Age (years)					
	2008			2014			2008			2014		
	Low	Med	High	Low	Med	High	15-35	36-55	55+	15-35	36-55	55+
DE	14.6	60.0	25.3	12.7	61.3	26.0	31.3	57.7	10.9	30.7	53.9	15.3
ES	37.4	25.2	37.4	32.0	22.6	45.4	43.7	48.3	8.0	31.2	57.5	11.2
FR	20.9	46.2	32.9	13.6	47.4	39.0	40.2	52.1	7.7	34.3	54.0	11.7
IT	36.2	46.0	17.7	28.2	48.3	23.5	32.9	58.3	8.8	25.7	60.9	13.4
PL	6.5	67.8	25.6	5.0	61.1	34.0	45.6	48.1	6.4	39.5	48.5	12.0
UK	10.5	50.8	38.7	9.6	46.4	44.0	34.7	50.3	15.0	40.0	46.8	13.2
Low pay												
DE	59.4	23.0	10.1	59.9	23.8	9.2	41.2	17.0	22.4	35.9	18.1	23.6
ES	17.5	13.4	6.4	27.4	19.9	10.8	15.1	10.0	13.2	25.8	15.1	12.5
FR	19.6	11.8	6.4	23.7	13.4	6.7	13.7	9.8	14.7	16.8	8.7	14.9
IT	16.5	10.0	6.2	22.4	16.2	11.0	17.9	9.1	7.1	25.1	13.9	13.5
PL	34.0	19.3	6.8	13.9	8.2	3.2	20.2	13.8	18.7	8.2	5.4	7.6
UK	36.3	23.3	8.2	44.1	33.6	14.1	21.2	15.5	26.4	32.3	22.3	32.7

identified in the previous section. Compositional effects are only significant in some of the selected countries, and where they do exist they rather contribute to counterbalance the trends observed in low-pay shares or they are the result of data issues.⁴

Moreover, Table 3 (upper part) shows that the employment shares of lower educated and younger employees have declined across most countries from the beginning of the crisis. This would have had a downward impact on low-pay shares (since these groups have a relatively higher incidence of low-pay work, as shown in the bottom part of the

Table 3), contributing to declining low-pay shares in Poland and limiting the surge in low-pay shares in the United Kingdom, Spain, Italy and France.

Finally, data on labour market transitions in and out of employment suggest again that compositional effects did not significantly contribute to driving low-pay shares but instead limited the extent of their expansion in Europe from the onset of the crisis, based on two insights (see Figure 6 in Supplementary Appendix 1). First, growing inflows into employment would push low-pay shares upwards because short-tenured employees typically earn lower wages.⁵ Nevertheless, this compositional effect does not seem to have played a significant role in driving low-pay shares because transition rates into employment were generally modest and stable from the onset of the crisis (except in the United Kingdom and Poland).⁶ Second, low-paid employees were relatively more affected by dismissals across all countries, with a downward impact on low-pay shares.⁷

The impact of shorter working hours on low-pay shares

I now assess whether low-pay shares and their changes from the onset of the crisis, reported in the previous section, may have been underestimated by using an FTE measure of wages. Against a background of growing part-time employment rates from the onset of the crisis (across all countries except Poland, according to Eurostat data), it is relevant to map the extent to which more employees fall into low pay because of shorter working hours. This is done by not adjusting the wage variable by part-time working so that low-pay shares measure the proportion of employees unable to reach our defined wage threshold, in this case, because of not only lower wages but also shorter working time. This is all the more important as Labour Force Survey (LFS) data confirm that a growing share of those working part-time report that they do so involuntarily.

Table 4 shows that low-pay shares would be around 30 percent higher for the EU as a whole, roughly 22 percent over the period as compared to around 17 percent when an FTE wage is used. Among the selected countries, the gap between both measures is larger where part-time employment is more common, as in the United Kingdom and Germany, and very narrow where it is less common, as in Poland. The relevance of shorter working hours as a cause of low pay is reflected by the fact that part-time employees account for almost half of the total number of low-paid employees (when not adjusting wages for part-time employment) in Spain and Italy and for more than half in the EU as a whole, including France, Germany and the United Kingdom, as shown by Figure 7 in Supplementary Appendix 1. The same occurs across some other European countries (see Figure 8 in Supplementary Appendix 1).⁸

Despite the higher levels of low-pay shares when not adjusting wages for part-time, their relative expansion from the onset of the crisis seems rather similar (compared to that reported when wages are made FTE) for the EU as whole and across most of the selected countries. Nevertheless, there are several significant reasons why growing part-time employment and its impact on low pay are a source of concern whose evolution should be closely monitored in the coming years across European labour markets.

First, low-pay shares have grown slightly more from the onset of the crisis when not adjusting wages for part-time due to the effect of shorter working hours in Italy and Spain among the selected countries, as shown by Figure 7 in Supplementary Appendix 1 (and in

Table 4. Low-pay shares in selected countries: anchored and deflated threshold (%).

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Low-pay shares (not using an FTE monthly wage)									
UK	27.8	26.8	27.7	28.6	30.3	31.8	31.6	32.6	34.0
ES	18.0	18.1	17.3	18.4	18.6	19.4	20.0	21.7	25.1
IT		16.2	15.5	18.0	17.9	19.4	21.0	21.8	22.9
FR	14.7	16.9	15.1	15.0	14.7	14.6	14.8	13.9	14.3
DE	31.9	31.2	31.1	30.3	31.5	31.4	31.2	30.7	30.6
PL	25.6	22.7	16.9	13.6	13.0	11.0	10.7	9.3	8.0
EU	24.8	22.4	21.1	20.8	21.2	21.9	22	22.1	22.9
Low-pay shares (using an FTE monthly wage)									
UK	20.0	19.5	18.9	20.6	23.8	23.8	24.8	26.1	27.6
ES	14.0	14.2	12.5	13.6	13.9	14.6	14.1	15.3	18.0
IT		12.7	11.7	13.8	13.6	13.3	15.6	15.7	16.7
FR	10.9	12.3	11.7	11.8	11.3	11.0	11.6	11.2	12.2
DE	24.6	24.2	25.0	24.1	24.8	24.7	24.1	24.4	24.2
PL	24.7	22.0	17.0	12.2	12.2	10.0	9.6	8.4	6.8
EU	20.0	17.6	16.3	16.0	16.5	16.5	16.9	17.2	17.9

The threshold used to calculate the low-pay shares when using non-FTE wages is the same anchored and deflated threshold used for FTE wages. Wage data shift from net to gross in Italy in 2007, which is why data for this country have been omitted for this year.

other countries such as Cyprus and Finland as shown in Figure 8 in Supplementary Appendix 1). Second, the fact that this does not occur in more countries is due to EU-SILC data failing to capture the reported expansion of part-time employment, as it occurs in the United Kingdom and France among the selected ones (see Figure 7 in Supplementary Appendix 1) and in some other countries (see Figure 8 in Supplementary Appendix 1).⁹ Third, part-timers are more likely to be low-paid than their full-time counterparts and are overrepresented among low-paid employees (even when their wages are made FTE), which suggests the lower wages among part-time employees are not only due to shorter working hours but also due to lower comparable pay. This explains why the significant expansion in part-time employment from the onset of the crisis has resulted in a notable increase in the proportion of low-paid employees represented by part-timers, which occurs for the EU as a whole and across most European countries, as shown in Figure 8 in Appendix 1 (it does not occur in France and the United Kingdom because EU-SILC data fail to capture the increase in part-time employment shares, as explained).

Conclusion

This article provides an updated picture on low pay in Europe over the period 2006-2014 (wages referring to 2005-2013) and shows how the Great Recession contributed to reversing previous trends by pushing low-pay shares up for the EU as a whole, from 16 percent in 2009 to 18 percent in 2014. The increase in the low-pay share occurred in a majority of member states and not only in those in the periphery most affected by the crisis.

An analysis of the six countries which account for around 80 percent of the total low-paid employees in Europe finds that the main driver behind growing low-pay shares has been a downward impact on real wages, whose true magnitude has been sometimes masked by the existence of composition effects. On the one hand, an uneven impact of the crisis on wage levels across the wage distribution has generally resulted in real wage decreases, especially at the bottom of the distribution, in the United Kingdom, Spain and Italy, and to a lesser extent in Germany (and only for the bottom wage quintile in France). Moreover, a stronger downward wage trend occurs among job movers generally, who are more sensitive to deteriorating pay conditions. On the other hand, changes in the employment structure from the onset of the crisis are found to be generally not significant in driving low-pay shares up, while other compositional effects (the reduction in the employment shares of job movers, lower educated and younger employees, and low-paid employees being generally more affected by dismissals) have limited the expansion in low-pay shares.

Nevertheless, the low-pay shares given in this article (using FTE wages) should be seen as a lower bound estimate, providing a conservative account of the expansion of low-pay shares from the crisis, for two reasons. First, part-timers account for a growing proportion of low-paid employees in Europe, which underlines the relevance of both their lower pay and shorter working hours as cause of low pay, against a background where part-time employment is growing across almost all European countries. Low-pay shares are significantly higher when wages are not adjusted for part-time work, and there is evidence suggesting that their expansion from the onset of the crisis would be larger, given the general increase in part-time employment. Our analysis shows that this has certainly been the case in Spain and Italy, and perhaps also in other countries (the United Kingdom or France), where EU-SILC data fail to capture the increases in part-time employment. Second, expanding self-employment is also a cause of concern in some countries where low-pay shares would be higher and faster growing if trends over the whole workforce were considered. These developments need to be closely monitored in future research.

A picture emerges where low pay among a significant share of dependent employment seems to have become a structural reality across European countries, one that has been aggravated by the downward and uneven impact of the crisis on wages and the challenge represented by the increasing share of part-time employment. Against this background, European countries have at their disposal several policies that may be used to limit the extent of low pay in their labour markets. Among them are well-functioning skill formation institutions capable of up-skilling the workforce through vocational education and training, higher minimum wage levels able to improve pay at the bottom of the wage distribution (as illustrated by the adoption of a German statutory minimum wage from 2015) and strengthening of collective wage bargaining regimes in order to provide or to extend wage floors to a larger proportion of the workforce, in line with increases in the cost of living, as advocated by the concept of living wages.

Acknowledgements

I would like to thank Enrique Fernández-Macías and John Hurley for their very useful input, as well as Richard Hyman and the anonymous referees of *European Journal of Industrial Relations*.

Author's Note

The views and opinions expressed in this article are those of the authors and do not necessarily reflect those of Eurofound.

Funding

The author(s) received no financial support for the research, authorship and/or publication of this article.

Notes

1. This ratio ranges from around 0.7 in Denmark and France to 0.5 in Germany and the United Kingdom. Nevertheless, this median may provide a biased estimation of the working hours of many part-time employees, especially in countries where the distribution of their hours is more polarized.
2. This 1-year lag explains why I anchor the low-pay threshold in 2008: the employment structure is not yet affected by the recessionary shifts in employment that emerged mainly in 2009, and the wage levels refer to 2007, which permits covering the full effect of the crisis by capturing employment shifts from 2009 and wage reductions from 2008.
3. Declining employment shares for job movers are explained by the partial collapse of the job ladder during a downturn, resulting in fewer separations (especially voluntary ones) and a more restricted movement towards high-paid jobs. Even if the wage levels of job movers are more affected by negative shocks, increases in overall low-pay shares are driven by job stayers since the latter represent a larger employment share which grows in those countries facing labour market turbulences.
4. The significant relative size of the between-component for economic sector in Germany is partially due to changes in the employment shares of people not reporting information. Relevant compositional effects emerge in France for economic sector because of the growing employment shares of sectors registering higher low-pay shares (such as education and health care), and in Germany for occupations between 2008 and 2011 because of growing employment shares and declining low-pay shares among service workers.
5. This effect is stronger when lower-paid employees account for a large or growing share of new entrants, as occurs in all countries except Poland (see Figure 5 in Supplementary Appendix 1), although this reflects deteriorating labour market conditions rather than being simply a compositional effect.
6. This increase could have contributed to growing low-pay shares in the United Kingdom, but recent research claims that while net job creation after the recession has been strongly skewed towards low-paid employees (Broadbent, 2015), this seems to have contributed little to a wage moderation which is mainly driven by those that remained in the workforce (Abel et al., 2016). Declining transition rates into employment in Poland could have contributed to declining low-pay shares (see Figure 6 in Supplementary Appendix 1).
7. Recent declines in the transition rates from low-paid employment into unemployment (from 2009 in the United Kingdom, 2011 in Italy, 2012 in Spain and 2014 in France) could have had a role in explaining the surges in low-pay shares in these countries. But the link between both trends is weakened by the fact that these rates also decline strongly from 2010 in Poland, against a background of strong reduction in low-pay shares (see Figure 6 in Supplementary Appendix 1).
8. Low-pay shares when not adjusting for part-time work become much higher in countries such as the Netherlands, Austria, Belgium and Ireland (where part-time work is more common and

where part-time workers account for a majority of low-paid employees) and much less so in eastern European countries (where part-time work is far less common), as shown by Figure 8 in Supplementary Appendix 1.

9. Eurostat Labour Force Survey (LFS) data report an increase in part-time employment from the onset of the crisis across all countries but Poland, but European Survey on Income and Living Conditions (EU-SILC) data fail to capture this and even reflect a decline in part-time employment shares in the United Kingdom and France among the selected countries (see Figure 7 in Supplementary Appendix 1) and also in the Czech Republic, Finland, Hungary and Portugal (see Figure 8 in Supplementary Appendix 1). It is also the case that part-time employment shares grow slightly in Poland according to EU-SILC, but not LFS data.

References

- Abel W, Burnham R and Corder M (2016) Wages, productivity and the changing composition of the UK workforce. Bank of England Quarterly Bulletin, 1.
- Abraham K and Haltiwanger J (1995) Real wages and the business cycle. *Journal of Economic Literature* 33: 1215–1264.
- Bonhomme S and Hospido L (2012) *The Cycle of Earnings Inequality: Evidence from Spanish Social Security Data* (Working Paper 1225). Madrid: Bank of Spain.
- Bosch G and Kalina T (2008) Low-wage work in Germany: An overview. In: Bosch G and Weinkopf C (eds) *Low-Wage Work in Germany*. New York: Russell Sage Foundation, pp. 19–112.
- Brandolini A (1995) In search of a stylised fact: Do real wages exhibit a consistent pattern of cyclical variability? *Journal of Economic Surveys* 9: 103–163.
- Brandolini A and Rosolia A (2015) The Euro Area wage distribution over the crisis. Available at: <http://www.iariw.org/dresden/brandolini.pdf>
- Brandolini A, Rosolia A and Torrini R (2010) The distribution of employees' labour earnings in the European Union: Data, concepts and first results. In Atkinson AB and Marlier E (eds) *Income and Living Conditions in Europe, Eurostat Statistical Books*. Luxembourg: Publications Office of the European Union, pp. 265–287.
- Broadbent B (2015) *Compositional Shifts in the Labour Market*. London: Bank of England. Available at: <http://www.bankofengland.co.uk/publications/Documents/speeches/2015/speech842.pdf>
- Chirinko RS (1980) The real wage rate over the business cycle. *Review of Economics and Statistics* 62: 459–461.
- Devereux P (2001) The cyclicity of real wages within employer-employee matches. *Industrial and Labor Relations Review* 54: 835–850.
- Duesenberry JS (1949) *Income, Saving and the Theory of Consumer Behavior*. Cambridge: Harvard University Press.
- ECB (2015) *Comparisons and Contrasts of the Impact of the Crisis on Euro Area Labour Markets* (Occasional Paper Series 159). Frankfurt: ECB.
- European Parliament (2008) Promoting social inclusion and combating poverty, including child poverty, in the EU. Resolution adopted on 9 October (2008/2034(INI)).
- Farsian C (2011) *The Fallacy of Composition Bias in the Real Wage Cyclicity Puzzle* (Economics Discussion Paper 11/16). Canterbury: University of Kent.
- Fernández-Macías E (2012) Job polarization in Europe? Changes in the employment structure and job quality, 1995–2007. *Work and Occupations* 39(2): 157–182.
- Fernández-Macías E and Vacas-Soriano C (2015) *Recent Developments in the Distribution of Wages in Europe*. Luxembourg: Publications Office of the European Union.

- Grimshaw D (2011) *What Do We Know about Low-Wage Work and Low-Wage Workers? Analysing the Definitions, Patterns, Causes and Consequences in International Perspective* (Conditions of Work and Employment Series 28). Geneva: ILO.
- Hart R (2006) Worker-job matches, job mobility and real wage cyclicality. *Economica* 73: 287–298.
- Maestri V and Roventini A (2012) *GINI DP 30: Stylized facts on business cycles and inequality*. Amsterdam Institute for Advanced Labour Studies, GINI Discussion Paper 30.
- Marlier E and Ponthieux S (2000) *Low-Wage Employees in EU Countries* (Statistics in Focus, theme 3-11/2000). Luxembourg: Eurostat.
- Mason G and Salverda W (2010) Low pay, earnings mobility, economic growth and wage distribution in the US and Western Europe. In: Gautié J and Schmitt J (eds) *Low-Wage Work in the Wealthy World*. New York: Russell Sage Foundation.
- Muñoz de Bustillo R and Anton JI (2007) Low wage work in a high employment growth economy: Spain, 1994–2004. Available at: https://mpr.ub.uni-muenchen.de/13847/1/MPRA_paper_13847.pdf
- Organisation for Economic Co-operation and Development (OECD) (2012) *OECD Employment Outlook*. Paris: OECD.
- Organisation for Economic Co-operation and Development (OECD) (2015) *In It Together: Why Less Inequality Benefits All*. Paris: OECD.
- Schmitt-Grohé S and Uribe M (2013) Downward nominal wage rigidity and the case for temporary inflation in the Eurozone. *Journal of Economic Perspectives* 27(3): 193–212.
- Schulten T, Schäfer C, Bispinck R, Rieger A, Ringger B and Baumann H (2005) Theses for a European minimum wage policy. *Transfer* 11(2): 256–259.
- Solon G, Barsky R and Parker J (1994) Measuring the cyclicality of real wages: How important is composition bias? *Quarterly Journal of Economics* 109: 1–25.
- Tomlinson D and Corlett A (2017) *A Tough Gig? The Nature of Self-employment in 21st Century Britain and Policy Implications*. London: Resolution Foundation.
- Verdugo G (2015) *Real wage cyclicality in the Eurozone before and during the Great Recession: Evidence from micro data*. [Banque de France, Direction générale des études et des relations internationales, Document de Travail N. 570], September 2015.

Author biography

Carlos Vacas-Soriano is a Research Officer in Eurofound, Dublin.

3. Recent trends in wage inequality from an EU perspective: a tale of two convergences

Article 2

Authors: Carlos Vacas Soriano, Enrique Fernández Macías and Rafael Muñoz de Bustillo Llorente

Recent trends in wage inequality from an EU perspective: a tale of two convergences

Abstract

This paper presents an analysis of two processes of convergence between European countries, in wage levels and wage distributions, and the extent to which they explain recent trends in wage inequality from an EU-wide perspective. The results show that wage convergence was the main driver behind wage inequality trends for the EU as a whole in the last decade. EU-wide wage inequality was significantly reduced prior to the crisis as a result of wage catch-up growth in Eastern Europe, a process which was interrupted during the crisis but is reactivating in the most recent period. On the other hand, the contribution of within-country wage developments to explain changes in EU-wide wage inequality levels over the last decade was much more limited as a result of a process of convergence in wage distributions between European countries towards intermediate inequality levels. However, some large European countries are pushing EU-wide wage inequality upwards in the most recent period. Policies directed at reducing wage disparities within countries offer the best prospect to tackle wage inequalities both at the national and EU-wide level, as illustrated by the introduction of the German statutory minimum wage in 2015.

Introduction

An implicit assumption exists in many European Union (EU) policy documents that European economic integration should automatically lead to some degree of convergence between countries. Nevertheless, hardly any study has looked into the processes of wage convergence operating between European countries and discussed its role in shaping the evolution of wage disparities from an EU-wide perspective. An empirical study adopting this approach is, however, particularly relevant to inform the European policy debate at the present time, when the European project, after a period of accelerating economic integration, has been put to test by a harsh economic crisis that had a very uneven impact across European regions.

European labour markets have been subject to contradictory developments in the past two decades. Between 1995 and 2007, a long period of rather generalized economic expansion and employment growth coincided with important advances in the European project (adoption of the Euro and enlargement of the EU), although concerns existed about the disparities in wage and income levels across European regions and about growing levels of inequality in most developed economies (OECD, 2008).

Those concerns were certainly aggravated by the Great Recession, which after 2008 turned the European economic and employment outlook very bleak (Atkinson, 2015; OECD, 2011). The forces unleashed by the financial crisis put the European project itself under increasing levels of strain due to a strong divide between the core and the periphery of the EU, with employment and wage levels being much more resilient in the former while suffering notable corrections in the latter (ECB, 2015).

This paper tries to fill a gap in the specialised literature by exploring the existence of processes of convergence in wage levels and wage distributions across European countries and assessing the extent to which they shaped recent trends in EU-wide wage inequality levels. This empirical analysis uses data from The European Union Statistics on Income and Living Conditions (EU-SILC) between 2005 and 2016 (with wage data referring to 2004-2015) whenever possible, which permits assessing the effect of the Great Recession and its aftermath on the abovementioned processes of convergence and on EU-wide wage inequalities.

The paper is divided in five sections. Section one discusses from a theoretical and policy perspective the potential emergence of processes of convergence in wage levels and wage distributions between European countries and their expected impact on wage inequalities from an EU-wide perspective. Section two describes how these processes of convergence have actually shaped the evolution of EU-wide wage inequality over the last decade. Section three analyses in detail the extent of the convergence in wage levels between European countries, while section four places a focus on the process of convergence in wage distributions. Finally, section five concludes with a summary of the main findings and discusses their policy implications.

Convergence and wage inequality from an EU-level perspective: policy and economic discussion

The implicit assumption that economic integration would lead to a balanced development and some type of convergence between European countries is at the heart of the European Union project from its start, as illustrated by the aim laid out at the Treaty of Rome (1957) of reducing “the differences existing between the various regions and the backwardness of the less favoured regions”. European

countries were generally expected to benefit from higher living standards as a result of their market integration and moreover EU regional policies were designed to give an extra push to the less well-off countries and regions.

However, the explicit use of the term “convergence” did not appear in the main EU policy documents until some decades after its foundation, being first found in the 1992 Maastricht Treaty. Moreover, it referred only to the convergence in certain fiscal and monetary indicators needed before the creation of the Economic and Monetary Union. And while convergence refers theoretically to a process which tends towards parity (as a result of faster growth among those starting at lower levels), parity has not been an explicit objective of the EU project.

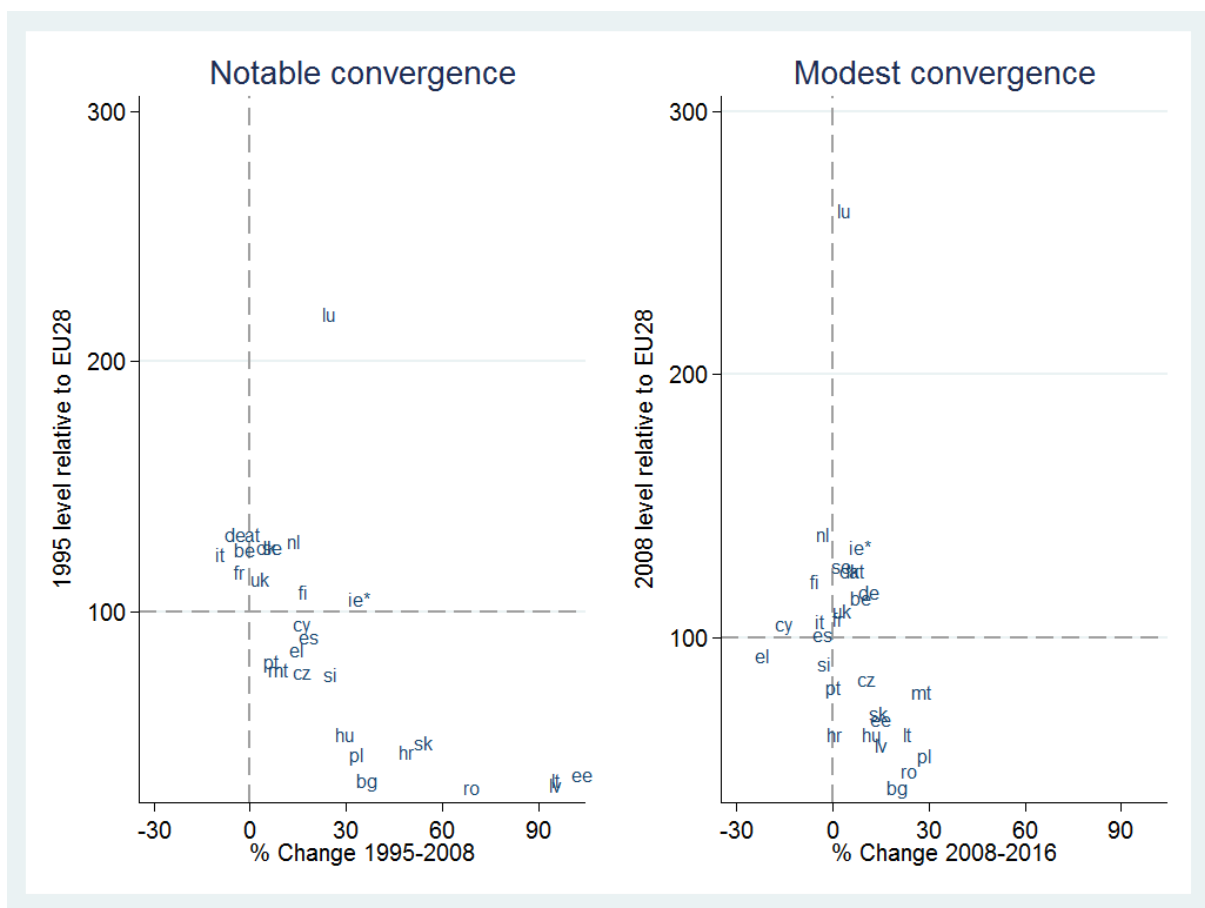
A term which has been frequently used within European institutions, and inserted in the treaties since the 1986 Single European Act, is that of “cohesion”, a broader concept typically used to refer to both the economic and social dimensions and which does not necessarily imply a trend towards parity (Storrie 2017). A strong economic, social and territorial cohesion and, particularly, a reduction of the disparities between the levels of development of its various regions, is seen as necessary for the overall harmonious development of the European Union (articles 174 to 178 of the Treaty on the Functioning of the European Union). This was the rationale behind the EU cohesion policies deployed from decades ago and aimed at securing that no regions were left behind.

Nevertheless, the economic recession and its diverging effects across countries have recently put the cohesion of the European project at risk and, as a result, the subject of socio-economic convergence has moved to the fore of the European policy debate. And, unlike what occurred with the first reference to convergence laid out in the Maastricht Treaty before the adoption of the euro, current references to convergence go beyond monetary and fiscal indicators, which the euro crisis has shown not to be enough to secure the stability of the EMU.

In line with this new approach to convergence, the Five Presidents’ report, Completing Europe’s Economic and Monetary Union (European Commission 2015), stated that “the notion of convergence is at the heart of our Economic Union” and mentioned “structural convergence” and the need for

“both more efficient labour and product markets and stronger public institutions.”. The recently adopted European Pillar of Social Rights¹ was “designed as a compass for a renewed process of upward convergence towards better working and living conditions in the European Union” (European Commission 2018), while the call for the monitoring of employment and social performance across European countries laid out in the Social Pillar was aimed at fighting the divergence forces activated by the crisis and the need to support fair and well-functioning labour markets and welfare systems.

Figure 1. GDP per capita levels across countries (in PPS and in relation to the EU, EU28=100).



Source: Eurostat. Note: The second panel uses data for Ireland up to 2014 to leave out the large jump that GDP levels registered in 2015 due to changes in accounting rules.

¹ https://ec.europa.eu/commission/priorities/deeper-and-fairer-economic-and-monetary-union/european-pillar-social-rights/european-pillar-social-rights-20-principles_en

A certain level of socioeconomic convergence between European countries seems to be increasingly perceived as a necessary condition for the stability of European societies, the common currency and the European project itself. In the case of economic activity levels, the first panel of Figure 1 shows that a notable process of convergence or catch-up growth took place between European countries between 1995 and 2008, since those countries with GDP per capita levels below the EU average registered a much larger economic expansion. Nevertheless, a smooth convergence should not be taken for granted since Member states may reap differently the benefits of economic integration and do so at their own pace and timing, while some of them may be more exposed than others to setbacks such as those unleashed by economic crises. This is captured in the second panel of Figure 1, which shows how the Great Recession caused a significant slowdown in this process of convergence between European countries in the period 2008 to 2016.

Instead of economic growth, this paper focuses on the convergence between European countries in one of the main indicators of working conditions and living standards among Europeans, wages. It tries to identify the possible existence of two processes of convergence between European countries, in wage levels and wage distributions, the extent to which they have shaped wage inequality levels for the EU as a whole over the last decade and how the Great Recession has affected such trends. Which are the main theories and findings of the specialised literature regarding each of these two processes of convergence?

One, regarding the evolution of wage levels between European countries, mainstream theories of economic growth would predict a process of wage convergence as a result of the European economic integration taking place from decades ago among countries with different levels of economic development. These theories would expect a process of catch-up in lower-income countries due to the higher profitability of capital in those countries with lower capital endowments, which would translate

into higher investment rates, higher accumulation, higher productivity growth and finally, higher GDP growth. Convergence in GDP and income levels would result in convergence in wage levels.²

The literature offers some empirical evidence of convergence among different groups of countries, known as *clubs of convergence* (Baumol and Wolf, 1988), which should apply more strongly to countries with similar economic and social institutions or geographic location, as it is the case in the EU (Sachs and Warner, 1996). Nevertheless, since empirical studies show that wages are supposed to be pro-cyclical and suffer a downwards impact during a recession (Chirinko, 1980; Shin, 1994; Brandolini, 1995), the long-run trend towards wage convergence between European countries could have been negatively affected by the Great Recession due to its harder impact on wage levels in the European periphery.

Two, the mainstream theories of economic growth mentioned above do not state whether the expected process of wage convergence between European countries would extend as well to wage distributions. Nevertheless, it could be argued that this may be the case to the extent that convergence towards a comparable level of economic development would make countries more homogeneous. In fact, there is a strand of literature, the so-called social convergence model, which argues that cross-country differences in income inequality are becoming less pronounced over time (Deininger and Squire, 1998; Benabou, 1996; Clark, 2013).³

Convergence in wage distributions between countries could be the result of different forces: the modernization and institutional homogenization of countries associated with economic development (Meyer et al., 1997); the limits imposed to the structural variations of societies by establishing a common division of labour (Levy, 1966); the sharing of technology and technical knowledge as a result of economic globalization (Sachs and Warner, 1995; Bhalla, 2002); or the adoption of common

² Wages represent a large share of total value added (around 63% according to AMECO database) and a very strong correlation exists in European countries between hourly wages (data from Structure of Earnings Survey) and GDP per capita (Eurostat data based on national accounts).

³ This convergence model is different to prior studies considering inequality levels rather static (with limited variation across countries and time; Pareto, 1971) or dynamic (with significant variation across countries and time; Kuznets, 1955).

standards and policies pushed by international organisations (Torfason and Ingram, 2010), particularly important in the European case though common policies and policy benchmarking.

From a supranational perspective, these two processes of convergence in wage levels and wage distributions between European countries would have an impact on wage inequality levels for the EU as a whole. On the one hand, the expected reduction in wage disparities between countries would push EU-wide wage inequality downwards, while the potential divergence forces unleashed by the Great Recession would push it upwards. On the other hand, it is not possible to establish a priori how the process of convergence in wage distributions would impact the evolution of EU-wide wage inequality levels, which is affected by trends in wage distributions across all European countries.

These theories and findings emerging from the literature can be summarized in a number of hypotheses that can be used as guidelines of our empirical research in the following pages: (H1) as a corollary of mainstream theories of economic growth, we would expect a convergence in wage levels between EU Member States (which would push EU-wide wage inequalities down); (H2) as corollary of the literature on the business cycle dynamics of wage levels, the wage convergence process between European countries should have been negatively affected by the economic crisis due to its larger impact on the European periphery (which would have had an upwards effect on EU-wide wage inequality); (H3) as a corollary of the social convergence model, we could expect a convergence in wage distributions between European countries (with an uncertain effect on EU-wide wage inequality).

Recent evolution of wage inequalities from an EU-wide perspective

A first attempt to identify the existence of processes of wage convergence between European countries is possible by mapping trends in wage inequalities for the EU as a whole. Approaching wage inequalities from an EU-wide perspective requires considering a single EU-wide wage distribution whose evolution would depend on that of its two main components: developments resulting from changes in average wage levels across European countries; and developments resulting

from changes in the wage distribution within countries. The evolution of the first component of EU-wide wage inequalities will already allow for an assessment of whether a process of convergence in wage levels between European countries has taken place, while the second component does not allow for such an assessment in the case of the convergence in wage distributions, for which country-level data will be needed.

Adopting a genuine EU-wide perspective to study wage inequality requires considering all European wage earners across all European countries as part of a single EU-wide wage distribution which would reflect wage disparities both between and within Member States. This approach has few precedents in the literature (see for instance Fernández-Macías and Vacas-Soriano, 2015; Brandolini and Rosolia, 2015).

This paper focuses on wage inequality among employees by using a full-time equivalent measure of gross wages that is made comparable across countries by using Purchasing Power Parities (PPP).⁴ A static picture of the resulting EU-wide wage distribution in 2015 is shown in Figure 2 below, which depicts the percentage of European employees (vertical axis) earning different levels of wages (horizontal axis, each bar representing people found at a specific PPP-adjusted €100 interval). For instance, around 3.7% of European employees earn a (full-time equivalent) wage between €1,700 and €1,800 per month.

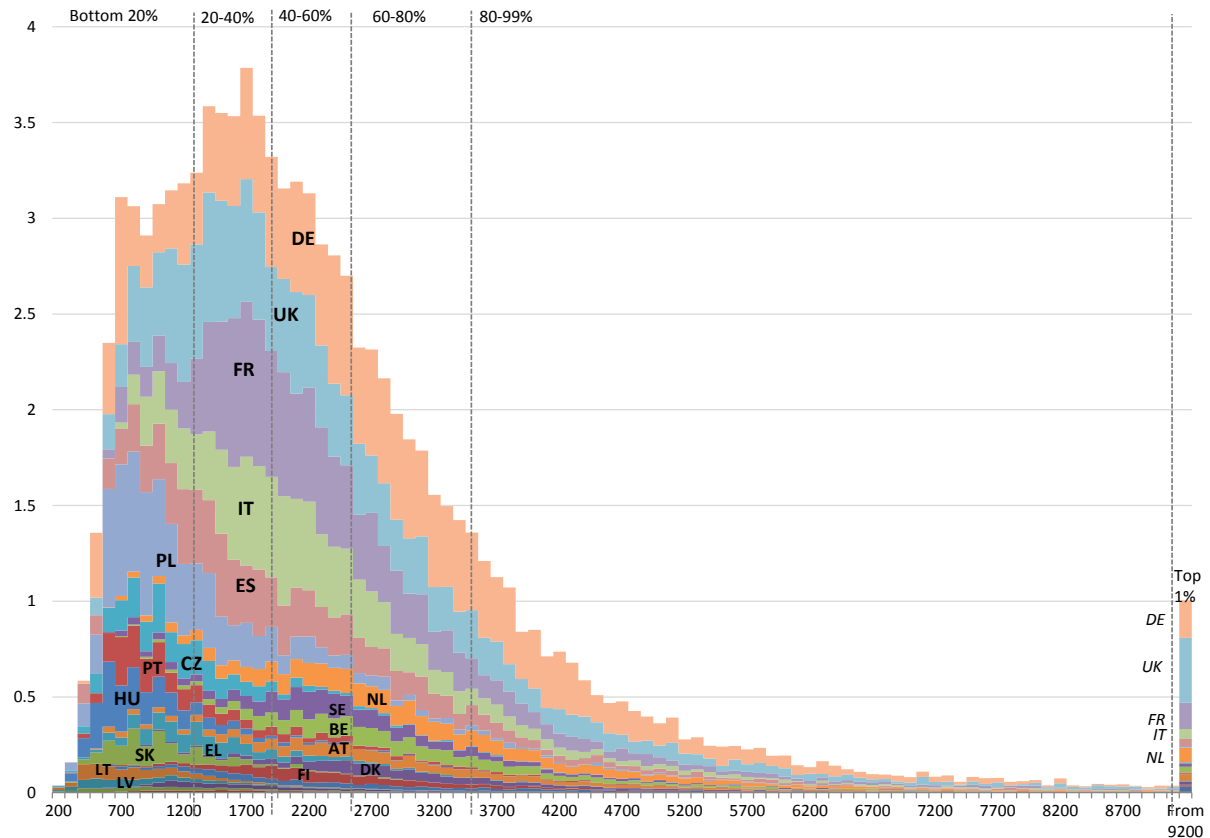
This figure illustrates two key attributes of the EU-wide distribution of wages. On the one hand, wage disparities between European countries (as evidenced by the different positioning of countries) are notable, with Eastern European countries (and Mediterranean countries to a lesser extent) dominating the bottom 20% of the EU-wide wage distribution and EU-15 countries much more present in the top EU-wide wage quintile.⁵ However, on the other hand, a significant degree of overlapping also exists between the different national wage distributions, especially if measured at purchasing parity levels (for instance, those countries dominating the top wage quintile in the EU also have a significant share

⁴ A detailed methodology is provided in the Annex.

⁵ Information on wage levels at the top 1% should be interpreted with care and probably as lower bound estimates. The very highest wage levels are most likely underestimated due to the typically poor coverage of the top of the distribution by income surveys, which explains why most recent research on inequality is using tax data instead (Piketty, 2014).

of the bottom wage quintile). In terms of purchasing power, wage disparities within European countries are larger than those between countries in the EU.

Figure 2. EU distribution of employees (%) by full-time equivalent wage levels (PPP-euro), 2015



Source: EU-SILC. Note: data for the EU aggregate excludes Bulgaria, Croatia, Malta and Romania. EU-SILC's wage data has a one-year lag, so data from the 2015 wave refers indeed to 2014.

A dynamic picture of EU-wide wage inequality is provided in Table 1 below, which presents the most standard measure of inequality (the Gini index), and more importantly, its decomposition into between-country and within-country developments by using the Theil index. In the years prior to the crisis, EU-level wage inequality declined notably, and the Theil index shows that this was entirely driven by a strong process of convergence in average wage levels between countries, while within-

country wage inequalities remained rather stable over the period despite some bumps.⁶ The Great Recession broke these trends from 2009: initially EU wage inequality remained rather stagnant mainly due to a significant slowdown in the process of between-country wage convergence, and it increased significantly in 2015 pushed by within-country developments.

Table 1. EU-wide wage inequality: Theil and Gini indexes.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Gini	0.360	0.350	0.349	0.350	0.338	0.340	0.343	0.339	0.339	0.339	0.344
Theil-total	0.233	0.220	0.217	0.228	0.201	0.205	0.217	0.209	0.208	0.207	0.227
Theil-between	0.069	0.054	0.049	0.043	0.039	0.037	0.035	0.035	0.035	0.033	0.033
Theil-within	0.164	0.166	0.168	0.186	0.162	0.168	0.182	0.174	0.173	0.174	0.194
Between component over total Theil (%)	29.4	24.4	22.6	18.7	19.3	18.0	16.0	16.6	16.8	15.9	14.4

Source: EU-SILC. Note: data for the EU aggregate excludes Bulgaria, Croatia, Malta and Romania

The Theil decomposition illustrates two important aspects of recent developments. One, wage convergence dynamics have been the main driver behind the trends in EU-wide wage inequalities over the past decade. The EU operated as a convergence engine in the area of wages until the onset of the crisis, and although this engine stalled during the Great Recession, it seems to be back at work (albeit more slowly) in the most recent period. Two, wage inequalities within European countries remained rather stable over the period but represent the lion's share of EU-wide wage inequality levels, and increasingly so due to the mentioned reduction of differentials between average wage levels across countries. The share of the EU-wide wage inequality levels represented by within-countries wage disparities went from 70% in 2005 to 85% in 2016.

⁶ The within-countries component of the Theil index reflects the average trends in wage inequality in all countries, but the weight of each country depends on the share it represents over the total EU wage mass. The bumpy yearly variations in this component are mostly due to the UK. If this country is excluded from the analysis, the within-country component remains very stable over the whole period and only registers a significant increase in 2015.

These results are obviously important for EU policy debates. Firstly, they suggest that the implicit assumption of EU policy documents that European economic integration should lead to convergence between countries has proven to be right for one of the main dimensions of working conditions and well-being among European people, that of wages. The reduction of wage disparities between countries observed prior to the crisis would vindicate the capacity of the European integration process to deliver convergence between its participating countries, even if this wage convergence process was temporarily weakened by the impact of the Great Recession.

Secondly, policies aimed at reducing wage inequalities at the national level would offer the best prospects for reducing wage inequalities for the EU as a whole in the future. In previous decades, the European policy debate has largely focused at disparities between European Member states and regions and made extensive use of regional development and cohesion policies to reduce them. This orientation seems adequate for a collection of countries with large disparities in wage and income levels (especially after some accession waves, such as those in the 80s for Mediterranean countries or the late 2000s for Eastern Member States) and it seems to have contributed to the process of convergence between European countries described above.⁷ On the other hand, the European policy debate has paid less attention to the fact that economic integration and free trade can lead as well to growing wage inequalities *within countries* as well, since more competitive sectors may gain while uncompetitive sectors may suffer. And in any case, since within-country wage inequalities currently explain an overwhelming (and growing) proportion of EU-wide wage inequalities, the best policy strategy for the future may combine EU-level policies for the automatic stabilization of economic activity (to cushion the impact on future crises on less developed European regions) and (EU-coordinated) national policies aimed at the reduction of inequalities and the improvement of the conditions of low-paid workers, such as minimum wages, benefits, tax reliefs or up-skilling measures (see Marchal and Ives 2015 for a review).

⁷ Some researchers conducting independent evaluations have found that the cohesion policies implemented by the EU via the regional development funds have promoted catch-up in less developed Member States (Rodriguez-Pose and Garcilazo 2015).

The next two sections of the paper will provide a more detailed picture of the process of convergence in wage levels between European countries identified in this section and assess whether a process of convergence between European countries has taken place as well in wage distributions.

A closer look into wage convergence between EU countries

This section describes in greater detail the reduction of average wage disparities between European countries identified in the previous section by including the particular country-level dynamics that caused it and covering a larger time span. This is possible by using national accounts data on nominal wages expressed in PPP-adjusted Euros and in relation to the EU wage average, which permits identifying genuine wage convergence between European countries, that is, wage convergence due to changes in purchasing power and not merely inflation differentials.

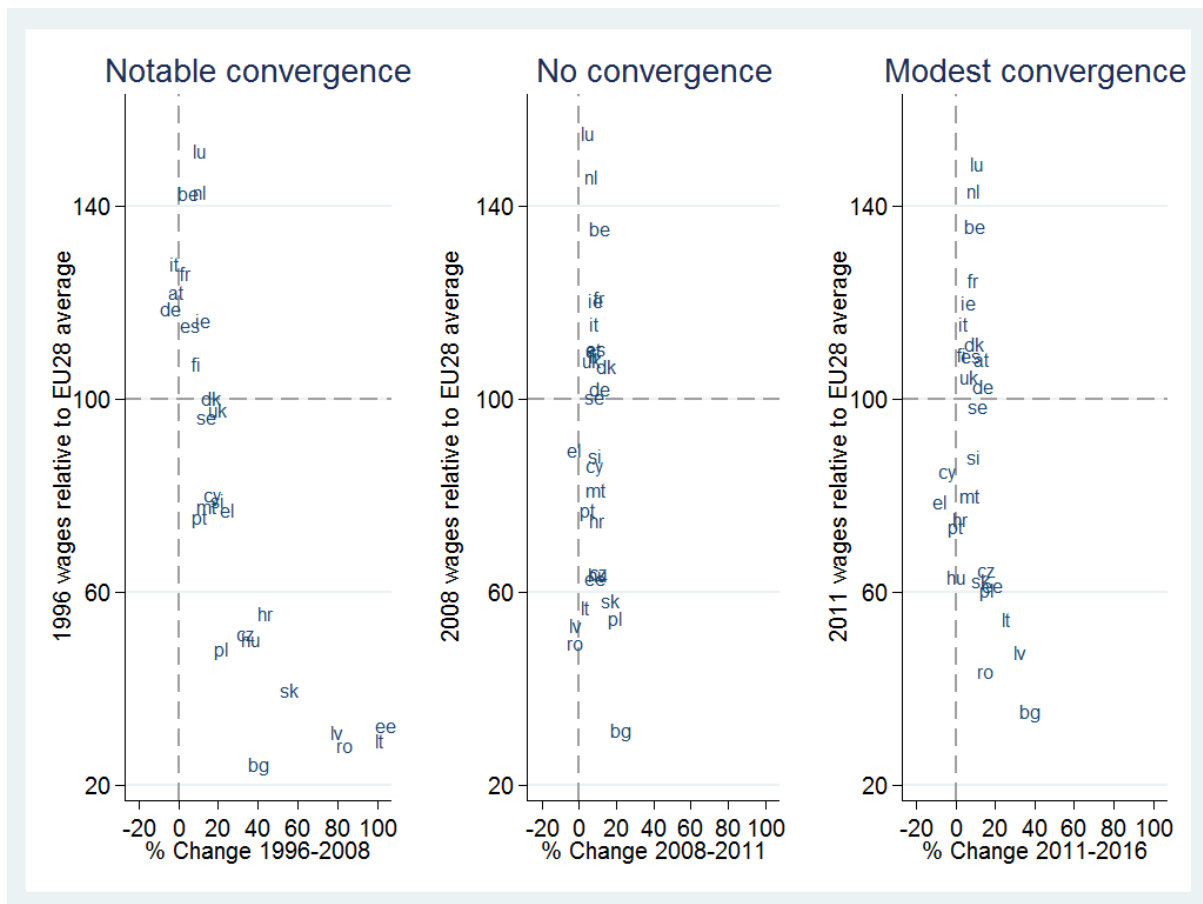
Figure 3 provides a narrative on the wage convergence process between European countries which is consistent with the one provided earlier (see Table 1).⁸ From the mid-1990s to 2008, a strong process of upwards wage convergence took place between European countries, explained by developments at both extremes of the wage levels scale. Among the higher-wage countries, wages marginally deteriorated (in the Continental countries of Germany, France, Austria and Belgium) or stagnated with very limited progress (the UK, Luxembourg, Netherlands or Scandinavian countries). Among the lower-wage countries, most Eastern European countries registered a strong growth in their relative average wage levels, although Mediterranean countries generally failed to do so.

The economic crisis reversed the sign of the core-periphery divide by having a stronger negative impact on the European periphery and causing a slowdown in the wage convergence process between European countries. Wage convergence was interrupted during the early years of the financial crisis between 2008 and 2011, when wages were generally impacted more moderately in the European

⁸ Data from AMECO includes all EU-28 countries from 1996 to 2016 and refers to compensation of employees, including wages and salaries and employer's social contributions. The total compensation of employees is divided by the total number of employees across countries to obtain the final measure of average compensation per employee, which is comparable but not identical to our wage measure based in EU-SILC.

higher-wage countries (despite some declines in the UK and to a lower extent in Austria, Netherlands and Luxembourg) and a significant downward wage correction occurred in several lower-wage countries (Baltics, Romania, Hungary, Croatia and Greece).⁹

Figure 3. Wage levels in PPP-adjusted euros across countries (EU28=100).



Source: AMECO. Note: 2008 has been used to distinguish the pre-crisis period, instead of 2009 as before, due to the one-year lag in EU-SILC data.

⁹ Some caution is needed when interpreting these results since developments in full-time equivalent wages cannot be used for a general evaluation of the impact of the crisis on the welfare of Europeans, since they only reflect the earnings of those that remained employed throughout the period, while the main impact of the crisis was on unemployment levels. Moreover, it should be noted that data on average wage levels could be biased upwards in those countries most affected by the crisis, due to lower-paid employees being more likely to lose their jobs (Vacas-Soriano and Fernández-Macías 2017). This compositional effect could mask the real extent of the correction across some countries in the European periphery strongly affected by declining employment during the recession, potentially contributing (although to a small extent) to the modest wage convergence between countries observed from the onset of the crisis.

Nevertheless, Figure 3 shows how the process of wage convergence reactivated between 2011 and 2016, although at a slower pace than prior to the crisis, due to renewed wage growth in most Eastern countries and more modest progress (Continental and Scandinavian countries) or even relative wage declines (Anglo-Saxon countries) in high-wage countries.¹⁰ Again, as it occurred prior to the crisis, Mediterranean countries do not benefit from this process as their relative wage levels remained stagnant or even declined.

The results presented in this section generally support our initial hypotheses regarding the expected trends in the process of wage convergence between European countries:

1. A process of convergence in wage levels has taken place between European countries (H1), which explains the decline in EU-wide wage inequality described in the previous section (see Table 1). This convergence is largely explained by fast catch-up in Eastern Europe, while Mediterranean countries have generally failed to achieve real wage convergence in the last couple of decades, both before and after the crisis.
2. The economic crisis had a negative impact on the wage convergence process between European countries due to its stronger impact on the European periphery (H2), which largely explains the stabilisation of EU-wide wage inequality levels from the onset of the crisis described in the previous section (see Table 1). Our results capture a halt in the process of wage convergence during the initial years of the crisis. However, we could also see a slow return to convergence in recent years (with a very similar nature: strong catch-up in the East, stagnation in the South and Centre), which seems to be accelerating in 2017-8.

The contrasting examples provided by Eastern and Mediterranean countries are relevant for the discussions on convergence in the European policy debate in recent years. Our results show that the convergence in GDP and nominal wages that took place prior to the crisis in the European periphery did not necessarily translate into real wage convergence. This was the case for Eastern Europe, but not

¹⁰ The reactivation of the wage convergence process becomes significantly stronger according to provisional AMECO data for 2017 (not shown), mainly due to the return of strong wage growth among most Eastern European countries.

for Mediterranean countries, where massive capital flows from the European core resulted in price bubbles, higher wages and inflation, but not in real convergence (ECB 2015).

Convergence and trends in wage distributions across EU countries

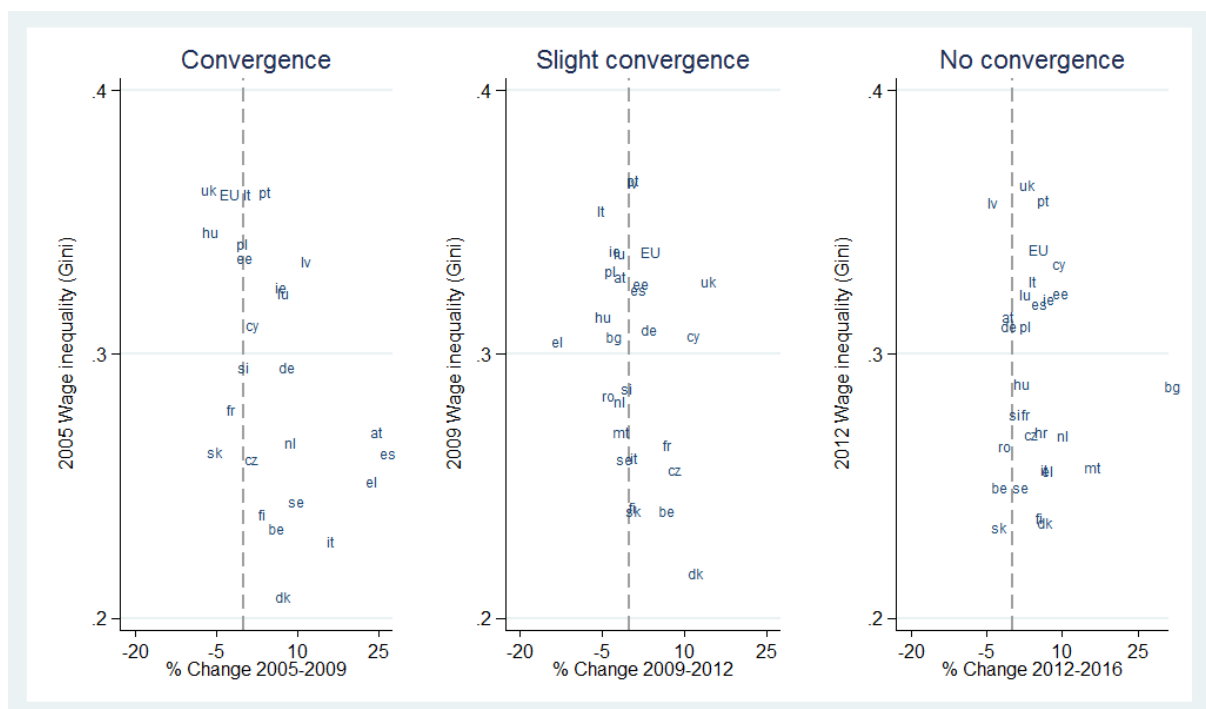
Trends in EU-wide wage inequality over the last decade have been mainly driven by the wage convergence process between European countries described in the previous section. Nevertheless, this section shows how the relative stability observed in the within-country component of EU-wide wage inequalities (see Table 1) concealed a process of convergence in wage distributions between European countries towards intermediate levels of wage inequality. Moreover, we show how the hike in EU-wide wage inequalities observed in 2015 was due to growing wage disparities within some of the largest European countries, a trend that has been counteracted by the recent introduction of a statutory minimum wage in Germany.

Figure 4 provides a detailed picture of the evolution of wage inequalities across European countries over three sub-periods covering the last decade. The results suggest two main insights. One, there was a moderate process of convergence towards intermediate wage inequality levels between European countries. This mainly occurred prior to the crisis (left panel) and it was the result of developments at both extremes of the wage inequality scale, although the changes at the bottom were more significant: wage inequalities expanded among almost all the countries that were more egalitarian at the beginning of the period (Scandinavian and several Continental and Mediterranean countries), while they moderated among many of the most unequal countries (several eastern European countries and the UK). This process of convergence in wage distributions between European countries was largely interrupted by the emergence of the crisis and has not reactivated thereafter.¹¹

¹¹ If the whole period is considered (2005-2016), wage inequality grew in all the countries that initially had lower levels of wage inequality (most Scandinavian, Continental and Mediterranean countries), while trends among those countries that were most unequal at the beginning of the period were more mixed (inequalities moving slightly upwards in Anglo-Saxon, Estonia and Portugal; and going downwards in Lithuania, Latvia and, especially, Hungary and Poland).

Two, wage inequalities have expanded in around two-thirds of European countries between 2005 and 2016. Although patterns across countries are mixed over the different sub-periods, they tend to describe a pro-cyclical behaviour over the business cycle. Prior to the crisis, there are more cases of inequality expansions than reductions among European countries and they are of a larger magnitude (left panel of the figure). On the contrary, wage inequality decreased in more than two-thirds of the countries during the initial stages of the crisis between 2009 and 2012 (centre panel). In the most recent period from 2012 to 2016, wage inequalities increase again in most countries, as a gradual recovery sets in among European countries (right panel).

Figure 4. Wage inequality levels across countries (Gini index).

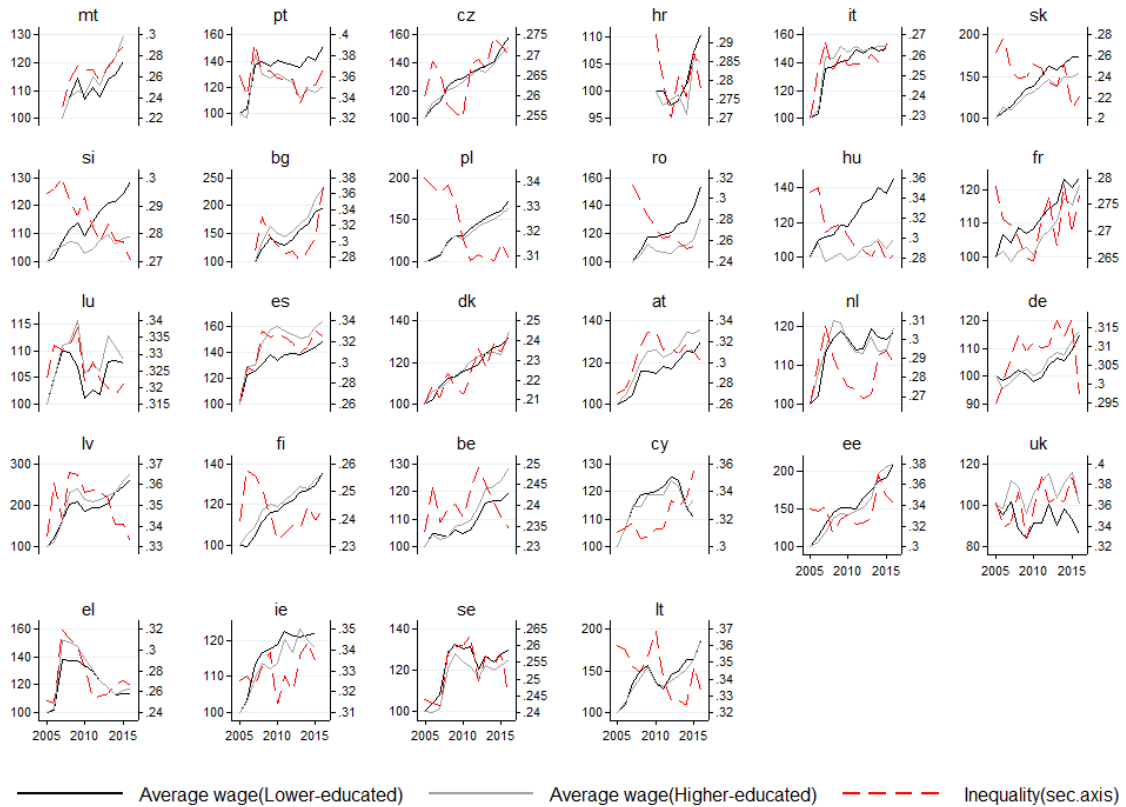


Source: EU-SILC. Given the one-year lag of wage data in EU-SILC, 2009 and 2012 have been used to divide the three sub-periods and make it comparable with Figure 3. For Bulgaria, Malta and Romania, 2005 data refers to 2007. The most updated EU-SILC data for 2016 has been incorporated in the most recent sub-period for those countries where it is available (all EU-28 countries except Cyprus, Ireland, Italy, Luxemburg and Malta, for which 2015 is used instead).

A more detailed picture on the evolution of wage inequalities across European countries is provided by Figure 5, which offers yearly data on wage inequality and moreover provides additional

information on average wage levels by employee’s level of educational attainment. This figure offers two main insights.

Figure 5. Average wage by educational attainment (PPP-adjusted euro, Index) and wage inequality levels across countries (Gini).



Source: EU-SILC. Note: countries are ranked by the average proportion of lower-educated employees (those having up to upper but not post-secondary education studies) over the whole period.

One, wages have tended to perform better among lower-educated employees in those countries characterised by higher proportions of lower-educated employees (those countries shown first in the figure, since they have been ranked by their average proportion of lower-educated employees), pushing wage inequalities downwards. This is the case of most Eastern European countries, and also in most Mediterranean countries but for different reasons (the relative improvement of lower-educated workers took place only during the crisis period, and largely as the result of a larger wage decline for

high-educated employees).¹² On the contrary, wage levels for the higher educated have tended to perform relatively better in those countries characterised by smaller proportions of lower-educated employees, pushing wage inequalities upwards (most Continental, Anglo-Saxon and Scandinavian countries).¹³

The fact that wage inequality reductions tended to occur more in lower-skilled economies due to a typically better wage performance among lower-skilled employees (and vice versa) would conform to the predictions of the Heckscher–Ohlin model and the Stolper-Samuelson theorem (1941). The Heckscher-Ohlin model of international trade states that countries will specialize in those activities fitting their relative resource endowments (countries with more low skilled labour will specialise in lower-skilled activities and vice versa). The Stolper-Samuelson theorem infers that, as a result, wage inequality levels should decrease in those countries with more low-skilled labour (due to more demand and rising wages for low-skilled workers) and viceversa. Our results would suggest that those dynamics were at play during the last decade to the EU, currently the largest integrated trade area in the world.

Two, Figure 5 permits identifying very relevant developments in wage inequalities across some specific countries. The 2015 hike in EU-wide wage inequality driven by within-country developments identified earlier (see Table 1) IS largely explained by the wage inequality increases observed among most of the largest European countries: Germany, UK, Spain, Italy and Poland. On the contrary, data for these same countries in 2016 (not available for Italy) show that wage inequalities decreased in all of them (particularly in Germany and the UK), which suggest EU-wide wage inequality would move downwards as well (although this has not been calculated in here due to wage data not being available for some countries in 2016).

¹² As explained previously (see footnote 9), this effect was reinforced by large compositional shifts due to declining employment levels for the low educated, which resulted in even larger declines in wage inequality over the period in some of these countries.

¹³ France and Luxembourg are an exception among Continental countries, since they are characterized by higher shares of low-educated employees and they do not register wage inequality increases during the period. Nevertheless, wage inequalities did not increase in several of these countries characterised by low share of lower-educated employees, be it due to similar wage growth among the two groups (Lithuania, Estonia and Finland), be it due to employment shocks having a downwards impact on wage inequalities (Latvia).

This likely reduction of EU-wide wage inequality levels in 2016 could be linked to a recent national policy initiative increasing wage floors in Germany. A major policy development took place in Germany with the introduction for the first time of a statutory minimum wage level in 2015 (set at 8.5 euros per hour) to fight the expansion of low-pay work that took place in the previous decades (see Fernández-Macías and Vacas-Soriano 2016). Our data shows that Germany registered a notable reduction in wage inequality levels in 2016 (wage data referring to 2015) that counteracted the ongoing trend towards higher levels of inequality in the previous years. Importantly, our data shows that the fall in wage inequality was mainly explained by developments at the bottom of the wage distribution, which is consistent with the expected impact of higher minimum wage floors.¹⁴ The notable reduction observed in wage inequality levels in the UK in 2016 could be as well partially explained by the rise in the statutory minimum wage introduced in 2015 (to £6.70 per hour, from £6.50 in 2014), although in the British case the role played by the policy change does not seem so relevant since developments at the bottom of the wage distribution are less important than in the German case.¹⁵

The results presented in this section support the initial hypotheses of this paper regarding the expected process of convergence in wage distributions between European countries (H3). Our results show that this process was more modest than the one in average wage levels discussed earlier and that it was due to developments at both extremes of the wage inequality scale. This convergence towards intermediate inequality levels helps explaining the rather stable level of overall within-country inequality in the EU in recent years (see Table 1).

¹⁴ Between 2015 and 2016 (data referring to 2014-2015), the ratio between the 90th and the 50th wage percentile (p90p50) remained rather unchanged in Germany (at around 1.86), while that between the 10th and the 50th wage percentile (p10p50) went from 0.374 to 0.451. That wage developments were relatively more positive at the bottom of the wage distribution is confirmed by trends in average wages among lower-educated as compared with those among higher-educated employees: average wages registered a larger expansion among lower-educated employees (5.3% compared to 3.1%).

¹⁵ In the UK case, wage developments between 2015 and 2016 (data referring to 2014-2015) were as well relatively more positive at the bottom of the wage distribution, but less so than in Germany: the decline in the p90p50 ratio (from 2.243 to 2.208) is more modest than the expansion observed in the p10p50 ratio (from 0.503 to 0.514), while average wages among lower-educated employees registered a lower reduction than among their higher-educated counterparts (-7.2% as compared to -13.4%).

Conclusions

This paper has provided a picture of two processes of convergence taking place between European countries and the way they have shaped wage inequalities from an EU-wide perspective during the period 2005-2015 (wage data referring to 2004-2014). We have identified a notable process of convergence concerning average wage levels and a more modest process of convergence affecting wage inequality levels (or wage distributions) between European countries.

On the one hand, a strong process of upwards wage convergence between European countries pushing EU-wide wage inequalities downwards took place prior to the crisis, largely explained by catch-up wage growth in Eastern Europe and wage moderation in the core of Europe. Although this process was halted during the initial years of the crisis due to its negative impact in the European periphery, it is reactivating again in most recent years due to the return of catch-up growth in Eastern European countries.

On the other hand, a modest process of convergence between European countries towards intermediate levels of wage inequality took place during the last decade, especially before the crisis. It was explained by wage inequality increases in the initially more egalitarian countries (most Scandinavian, Continental and Mediterranean countries) and wage inequality reductions among some of the initially most unequal countries (some Eastern European countries). These trends seem related to the effect of intra-EU trade on wage developments by skill levels across different countries. Wage inequalities tended to decline in countries with more relative abundance of low-skilled labour because of faster wage growth for the low-skilled (Eastern European countries), while the opposite happened in countries with more initial relative abundance of high-skilled labour (most Continental, Anglo-Saxon and Scandinavian countries).

This process of convergence in wage distributions is consistent with the relative stability observed in the within-country component of EU-wide wage inequality. Nevertheless, despite the limited role of within-country developments in driving EU-wide wage inequalities during the last decade, the very significant decline of average wage disparities between European countries has made within-country

inequality a much more significant dimension of overall EU wage inequalities (the share of EU-level wage inequality accounted for within-country differentials went from 70 to 85% in just 10 years, according to our analysis).

What are the policy implications of these findings? First, they suggest that the implicit assumption of the EU project that economic integration should lead to socio-economic convergence between countries seems to work for wages, since a stark fall of average wage disparities between countries has taken place in the past decade. However, our analysis also shows how such a convergence process was almost reversed during the initial years of the Great Recession, in a period of existential crisis for the EU project. Moreover, the assumption of convergence is questioned by the experience of Mediterranean countries during the last decade, which have failed to register a real wage converge in purchasing power with the core of Europe both before and after the emergence of the crisis.

Second, while the regional development policy followed by the European institutions in previous decades seems to have contributed to the observed process of convergence, our results show that within-country wage inequalities currently explain an overwhelming proportion of EU-wide wage inequalities and therefore require a different policy approach. A combination of EU-level automatic stabilizing policies aimed at reducing the asymmetry of future crises, with EU-coordinated national policies to reduce inequalities within each country seems like the most promising approach to continue reducing EU-level wage inequalities. In this respect, our paper has provided a very illustrative example by showing how wage inequality levels were notably reduced in Germany as a result of the introduction of a statutory minimum wage in 2015.

Annex (TO BE MADE AVAILABLE TO READERS)
Methodology

This paper uses the cross-sectional datasets of the European Survey on Income and Living Conditions (EU-SILC) and covers those individuals aged 15-65 working as employees in a given year (reporting on their labour income from the previous year). The following formula is applied to transform the EU-SILC variable on annual labour income into the wage variable used in this paper (based on Brandolini et al, 2010):

$$\text{Monthly ft eq. gross wage} = \frac{\text{annual cash gross earnings}}{\text{months in ft jobs} + (\text{months in pt jobs} * [\text{pt/ft ratio}])}$$

The basis of the analysis is this monthly full time equivalent gross wage calculated as the annual cash gross earnings divided by the number of months the respondent worked over the income reference period. In order to provide a full-time equivalent measure of wages comparable across all employees, the number of months in part-time jobs are multiplied by a country sex specific ratio of median hours of work in part time jobs to median hours of work in full time jobs. Moreover, improbably low wage levels below a threshold set at half the minimum wage in a given country and year are eliminated (for further minor adjustments and data caveats, see XXXTO BE PROVIDED IF THE PAPER IS ACCEPTED).

Since the objective is assessing wage inequality among employees and not inequality in workers' earnings, the analysis focuses on employee's full-time equivalent wages considered in gross terms (before taxation but after social security contributions), while labour income for other types of worker (such as self-employed) is excluded. Moreover, in order to estimate EU-wide levels of wage inequality, wage levels are made comparable across European countries by using Eurostat's purchasing power parities taking into account differences in price levels. The report tries to make use of all available EU-SILC data across EU-28 countries between 2005 and 2016, although the EU

aggregate can only be constructed over the period 2005-2015 and excluding Bulgaria, Croatia, Malta and Romania.

As explained above, EU-SILC's income variables refer to the previous calendar year of that covered by the survey, introducing a one-year gap between both. So for instance, the respondents of the survey in 2010 provide information about their labour income in 2009. This means that there is a one year gap between the results of SILC concerning employment and the results concerning income and wages. However, in this paper we use the standard EU-SILC reference year when analyzing wage data in order to take composition effects into account adequately, since EU-SILC's information on the labour market status on the current year is used to construct the variable on monthly wages among employees.

References

- Atkinson A. B. (2015): *Inequality. What can be done?* Harvard University Press, Cambridge.
- Baumol, William S., and Wolf, Edward, N. (1988): "Productivity Growth, Convergence, and Welfare: Reply" *American Economic Review*, Vol. 78, No. 5, December, 1155-59.
- Benabou R. (1996), *Inequality and Growth*," in Ben S. Bernanke and Julio J. Rotemberg, eds., *NBER macroeconomics annual 1996*. Cambridge.
- Bhalla, S (2002). *Imagine There's No Country: Poverty, Inequality and Growth in the Era of Globalization*, Washington, D.C.: Institute for International Economics.
- Borsi, Mihály T. and Metiu, Norbert (2013): *The evolution of economic convergence in the European Union*, Discussion Paper Deutsche Bundesbank No 28/2013, Frankfurt am Main.
- Clark Rob. (2013): "Convergence in National Income Distributions", *Social Forces* 92(2), 413–436, December.
- Deininger K. and Squire L. (1998), *New Ways of Looking at Old Issues: Inequality and Growth.*" *Journal of Development Economics*, December 1998, 57(2), pp. 259–87.
- European Central Bank (ECB) (2015) *Comparisons and contrasts of the impact of the crisis on euro area labour markets*. Occasional Paper Series No 159, February 2015.
- European Central Bank (ECB) (2015), *Real convergence in the euro area: evidence, theory and policy implications*, *ECB Economic Bulletin*, Issue 5 / 2015, pp. 30-45.
- European Commission (2018), *Monitoring the implementation of the European Pillar of Social Rights*, Communication from the Commission to the European Parliament, the Council and the European Economic and Social Committee. Strasbourg, 13.3.2018, COM(2018) 130 final.

Feenstra, Robert C. and Gordon H. Hanson, 1996, "Foreign Investment, Outsourcing and Relative Wages," in R.C. Feenstra, G.M. Grossman and D.A. Irwin, eds., *The Political Economy of Trade Policy: Papers in Honor of Jagdish Bhagwati*, MIT Press, 89-127.

Fernández-Macías, E., & Vacas-Soriano, C. (2016). A coordinated European Union minimum wage policy? *European Journal of Industrial Relations*, 22(2), 97-113.

International Labour Organization, Organisation for Economic Co-operation and Development and World Bank (2015): *G20 Labour Markets in 2015: Strengthening the Link between Growth and Employment*, Report prepared for the G20 Labour and Employment Ministers Meeting and Joint Meeting with G20 Finance Ministers, Ankara, Turkey, 3-4 September 2015.

Kuznets S. (1955), *Economic Growth and Income Inequality*, *The American Economic Review*, Vol. 45, No. 1 (Mar., 1955), pp. 1-28

Levy, M. J. (1966), *Modernization and the Structure of Societies: A Setting for International Affairs*. Princeton, NJ: Princeton University Press.

Marchal S. and Ives, M (2015): "Stemming the Tide: What Have EU Countries Done to Support Low-Wage Workers in an Era of Downward Wage Pressures?" IZA DP No. 9390

Meyer JW, Boli J, Thomas GM, Ramirez FO (1997), *World society and the nation state*. *American Journal of Sociology* 103(1): 144–181

OECD (2008), *Growing unequal? Income distribution and poverty in OECD countries*, OECD Publishing, Paris.

OECD (2011), *Divided we stand: Why inequality keeps rising*, OECD Publishing, Paris. Pareto 1971

European Commission (2015), *Completing Europe's Economic and Monetary Union*, Report by Jean-Claude Juncker in close cooperation with Donald Tusk, Jeroen Dijsselbloem, Mario Draghi and Martin Schulz (the Five Presidents' report), Brussels.

Reeve, Trevor A. (2006): "Factor Endowments and Industrial Structure", *Review of International Economics*, 14(1): 30–53

Sachs, Jeffrey, and Warner, Andrew M. (1996): *Economic Convergence and Economic Policies*, NBER Working Paper No. 5039

Stolper, Wolfgang and Paul A. Samuelson (1941): "Protection and Real Wages" *Review of Economic Studies*, 9: 58-73.

Torfason, M.T. and Ingram, P. (2010) "The Rise of Global Democracy: A Network Account," *American Sociological Review*, 75(3): 355–377.

Vacas Soriano, C. and Fernández-Macías, E. (2017), *Income inequalities and employment patterns in Europe before and after the Great Recession*. Eurofound, Dublin.

Wood, Adrian (2002): "Globalization and wage inequalities: A synthesis of three theories", *Weltwirtschaftliches Archiv* , 138: 54-82.

4. Income inequality in the Great Recession from an EU-wide perspective

Article 3

Authors: Carlos Vacas Soriano and Enrique Fernández Macías

Income inequality in the Great Recession from an EU-wide perspective

Carlos Vacas-Soriano¹

Enrique Fernández-Macías²

Abstract

This paper maps recent trends income inequalities from an EU-wide perspective, discussing the forces that have shaped their evolution and the impact of the Great Recession. Our results show that the evolution of EU-wide income inequalities over the past decade is much more driven by between-country than by within-country income disparities. Income inequalities for the EU as a whole declined significantly due to a reduction in the income differentials between European countries, driven by catch-up growth in Eastern Europe, although the Great Recession interrupted this trend. EU-wide income inequality levels have increased slightly from 2008, largely as a result of a halt in this process of income convergence between European countries, which nevertheless is re-emerging in most recent years. On the other hand, even if the increase in EU-wide income inequality was very modest, the Great Recession pushed income inequalities significantly upwards among many European countries largely as a result of rising unemployment levels, although this impact has been significantly cushioned by the public benefits and transfers systems in place across European countries.

Keywords

Inequality, income, convergence, European Union

Introduction

Inequality features as a highly discussed topic in recent years in academic and policy debates in European and developed countries. Already during the 1990s and early 2000s, even though most European countries benefitted from economic growth and employment expansion, concerns emerged about existing income disparities between European countries, especially against the background of the European Union (EU) enlargement towards the East, while empirical studies unveiled trends

¹ Corresponding author: Carlos Vacas-Soriano, European Foundation for the Improvement of Living and Working Conditions– Eurofound, Wyattville Road, Loughlinstown, Dublin 18 KP65, Ireland. Email: carlos.vacas@eurofound.europa.eu.

² Enrique Fernández-Macías, European Commission’s Joint Research Centre, Calle Inca Garcilaso 3, 41092 Sevilla, Spain. Email: enrique.fernandez-macias@ec.europa.eu.

towards growing income inequalities among many advanced economies over the past three decades (OECD, 2008).

The concerns over inequality levels were exacerbated by the Great Recession. The financial crisis emerging by the end of 2008 and the debt crisis that ensued affected European economies and labour markets negatively. The impact of the crisis was uneven across countries, economic activities and demographic groups and had the potential to cause larger income disparities, both between European countries and within European societies, which are perhaps not being corrected by a recovery that is sluggish across many European countries. Growing inequalities have been pointed as well as a potential factor in causing the crisis and at the same time delaying the recovery from it.

While trends in inequalities at the country level have been commonly covered by empirical research, very few studies have mapped income inequalities adopting a truly EU-wide perspective which takes into account not only income disparities within European countries but as well between them. This is surprising given the process of economic integration taking place between European countries since decades ago and the implicit assumption found in many EU policy documents that it should result in some degree of convergence between member states. Recent developments affecting the EU make such EU-wide analysis specially relevant: the European project, which deepened its economic integration with the adoption of the euro and underwent an enlargement towards the East, has recently been put to test by the Great Recession, whose impact was much stronger in the European periphery (European Central Bank, 2014).

Against this background, this paper has two main objectives. On the one hand, to map trends in income inequality from an EU-wide perspective, looking at the evolution of income disparities both within and between European countries, identifying the existence of income convergence and divergence trends between countries. On the other hand, to provide an updated picture on the evolution of income inequalities across European countries that incorporates the effects of the Great Recession and the main forces behind such trends. Most of our analysis focuses on household

disposable income data from the European Union Statistics on Income and Living Conditions (EU-SILC) for the period 2005–2016, with income data referring to the period 2004–2015.

The paper is divided into four sections. Section 1 will introduce the relevant literature on the evolution of EU-wide income inequality and the role played by income convergence between European countries. Section 2 presents trends in income inequalities from an EU-wide perspective over the past decade and how they were shaped by developments in income disparities between and within European countries. Section 3 provides a more detailed picture of changes in income differentials between countries, while section 4 looks at the evolution of income inequalities within countries and the main forces behind. Section 5 concludes with a summary of the findings and a discussion of some policy implications.

The evolution of income inequality from an EU-level perspective: a literature review

Some authors have developed an empirical strand of the literature mapping income inequalities from a global perspective (Milanovic 2005), but similar studies aimed at comprehensively studying inequalities in the EU from a supranational perspective are scarce, despite early calls pointing to the need of such studies.³ Adopting a truly European approach to cover income inequalities requires taking into account the evolution of income disparities both between and within European countries, which means the expected evolution of EU-wide income inequalities over the period covered in this paper will depend on that of its two referred components.

On the one hand, EU-wide income inequality is affected by the evolution of inequalities across European countries. The expected evolution of income inequality over the business cycle is especially relevant given the importance of the recession that emerged during the period covered in this paper.

³ More than two decades ago, Tony Atkinson (Atkinson, 1995; cited in Brandolini, 2007) stated: ‘If the Community continues to assess poverty purely in national terms, taking 50 per cent of national average income, then the impact of growth on poverty in the Community will depend solely on what happens within each country. However, a central question concerns the possibility of moving to a Community-wide poverty line, with the same standard applied in all countries. In that case, the effect of growth on the extent of low income is affected by the relative growth rates of different member countries.’

Income inequalities are theoretically counter-cyclical, increasing during downturns (Storesletten et al, 2004; Bonhomme and Hospido, 2012). Although results are country specific and heavily dependent on institutional factors, empirical studies tend to confirm this counter-cyclicality in the evolution of net income and unadjusted annual labour earnings, which is largely due to the mediating role played by unemployment in depriving individuals of labour income (Maestri and Roventini, 2012).

This means income inequalities across European countries (and likely for the EU-aggregate as a result) should have generally declined prior to the crisis against a background of economic expansion and employment creation and should have experienced an upwards trend from the onset of the Great Recession when the general economic and employment outlook turned bleak. The expected evolution of income inequalities as a result of the crisis would add to the trend towards widening income differentials within many European societies from the 1970s identified in recent major empirical studies (OECD 2011). These studies carried out before the outbreak of the crisis identified widening wage inequalities as the main driver behind such trends: “The widening has affected most (but not all) countries ...but the increase in inequality – though widespread and significant – has not been as spectacular as most people probably think it has been” (OECD 2008).

On the other hand, EU-wide income inequality is as well affected by the evolution of income differentials between European countries. Over the medium and long-run, mainstream theories of economic growth would predict a process of income convergence between European countries over the medium and long-term, due to catch-up growth in lower-income countries, where capital is scarcer and higher investments would take place as a result of the higher expected returns to capital investment. Nevertheless, the Great Recession emerged as a force that could have negatively affected this process of income convergence over the short-run due to its generally stronger impact among peripheral economies than among core European countries (ECB 2014).

This means EU-wide income inequalities should have been impacted downwards as a result of a process of income convergence between European countries, although this trend could have been affected by the Great Recession. The very limited number of available empirical studies tend to

confirm this picture of declining EU-wide income inequality levels due to narrowing income disparities between European countries prior to the crisis, after which EU-wide income inequality remained rather stable (Darvas, 2016) or increased (Dauderstädt and Kelttek, 2014).

This paper maps the evolution of inequalities in household disposable income from an EU-wide perspective over the past decade and, in doing so, it looks at its business-cycle evolution and how it has been impacted by the Great Recession, it identifies the role played by income convergence between European countries and it provides an updated picture of the evolution of income inequalities across European countries and the main forces behind.

Mapping income inequality trends from an EU-wide perspective over the past decade

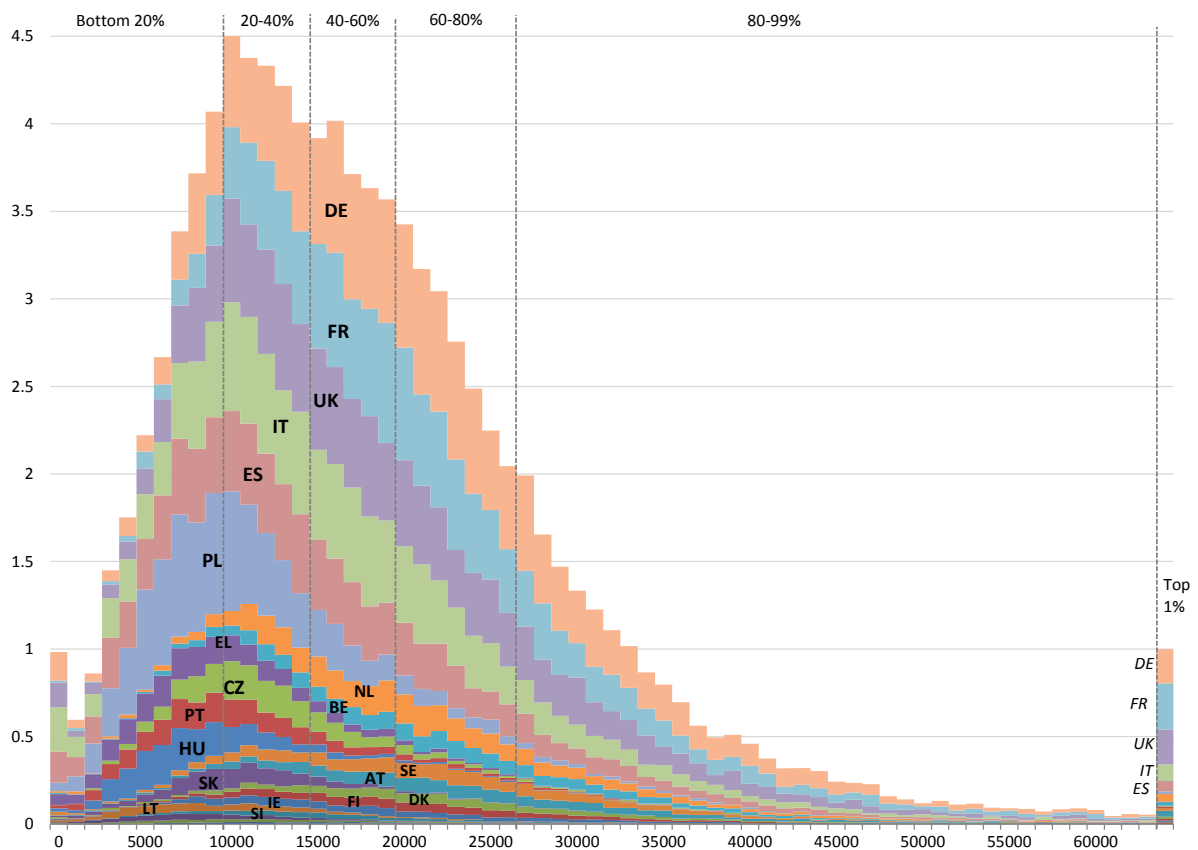
This section presents data on EU-wide inequalities by using a measure of household disposable income, which is then distributed in equal parts among all those individuals at the household by using an equivalence scale (keeping then only those aged 15-65 in the analysis) and made comparable across countries by using Purchasing Power Parities (PPP).⁴ Adopting a truly European perspective to study income inequality requires considering all income earners across European countries as part of a single EU-wide income distribution which would be affected by income disparities both between and within Member States.

A picture of this single European income distribution in 2015 (income referring to 2014, given the one-year lag of EU-SILC's income data) is provided by Figure 1 below, depicting the proportion of European individuals aged 15-65 (vertical axis) reporting different levels of equivalised household disposable income (horizontal axis, each bar representing people found at a specific PPP-adjusted €1000 interval). It shows that around 4.5% of Europeans of working age have an (equivalised) household disposable income between €10,000 and €11,000 per year, for instance.

⁴ A detailed methodology is provided in the report [Income inequalities and employment patterns in Europe before and after the Great Recession](#), on which this paper is based (Eurofound 2017). Data comes from EU-SILC, whose income data has a one-year lag and refers to the previous year to the one in which the survey is conducted. This lag must be taken into account in the figures and tables presented in the paper.

The figure reflects two important aspects of the EU income distribution. One, the different positions occupied by European countries reflects the income disparities between them, with Eastern European countries (and Mediterranean countries to a lesser extent) relatively more present at the bottom 20% of the EU-wide income distribution and EU-15 countries at the top income quintile. Two, national income distributions overlap considerably (for instance the countries dominating the top quintile also have a significant share of population in the lowest income quintile), which means that income disparities within countries are larger than those between countries for the EU aggregate.

Figure 1. EU-wide (equivalised) household disposable income distribution, in PPP-euros, 2015 (%)



Source: EU-SILC. Note: data for the EU aggregate excludes Bulgaria, Croatia, Malta and Romania.

A picture of EU-wide income inequality trends over time and, importantly, its decomposition into those changes due to between-country and within-country developments is provided in Table 1 below. Two main insights emerge from the data. One, EU-wide income inequality levels for the EU have been clearly influenced by the crisis. The Gini (and the Theil) index for household disposable income declined significantly prior to the crisis, and the Theil index shows this was almost entirely due to a reduction in the differentials in average income between countries, while the within-country inequalities component declined only very slightly. These trends were reversed by the crisis, as EU-wide income inequalities registered a modest upwards trend from 2009 (income data referring to 2008), due to a halt in the process of income convergence between European countries and to a slight increase as well in the component capturing income inequalities within countries.

Table 1 EU-wide (equivalised) household disposable income inequality: Theil and Gini indexes.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Gini	0.349	0.340	0.338	0.337	0.329	0.331	0.333	0.332	0.334	0.336	0.335
Theil	0.224	0.207	0.206	0.210	0.195	0.198	0.204	0.198	0.202	0.201	0.202
Theil-between	0.050	0.042	0.041	0.036	0.030	0.030	0.030	0.032	0.032	0.031	0.030
Theil-within	0.174	0.165	0.165	0.174	0.165	0.168	0.174	0.166	0.170	0.170	0.172

Source: EU-SILC. Note: data for the EU aggregate excludes Bulgaria, Croatia, Malta and Romania, which are not available for all years over the period covered.

Two, the contribution of income disparities between and within European countries to explain changes in EU-wide income inequality feature very differently over the last decade. On the one hand, the EU has been able to generate a considerable income convergence between its Member States and, even though it has stalled from the onset of the crisis, the reduction of income disparities between European countries has played a key role in driving EU-wide income inequalities downwards over the

last decade. On the other hand, the component capturing income inequalities within countries has remained much more stable over the period, but within-country inequalities represent the lion's share of EU-wide income inequality, and increasingly so due to the abovementioned process of income convergence, representing from around 78% of EU-wide inequalities by the beginning of the period to 85% by the end of the period.

These results are very relevant from an European policy-making perspective. Firstly, they provide support for the implicit assumption of EU policy documents that European economic integration should lead to convergence between countries and, moreover, they would vindicate the regional development policy deployed by the European institutions from decades ago, targeted at poorer regions and Member States.⁵ Nevertheless, the income convergence between European countries has been halted by the impact of a Great Recession, which has put the European project to test. More detailed data at the national level and follow-up during the following years are needed for a more adequate assessment of the status of this process of income convergence.

Secondly, given that within-country inequalities currently explain an overwhelming proportion of EU-wide income inequalities, those policies aimed at reducing income inequalities at the national level would offer the greatest prospect in the future, since they would tackle inequalities both within European countries and for the EU as a whole. European-level policies aimed at enhancing the inclusiveness of the more vulnerable societies (such as the European Social Fund or the European Globalisation Fund) and national policies addressed to helping the less well-off individuals and households within European societies (such as minimum wages, unemployment and family benefits or training and other up-skilling measures) would offer a good policy mix if reducing EU-wide income inequalities was an explicit policy objective.

A closer picture of the convergence in income disparities between European countries

⁵ Some researchers conducting independent evaluations have found that the cohesions policies implemented by the EU via the regional developments funds have promoted catch-up in less developed Member States (Rodriguez-Pose and Garcilazo 2015).

This section provides a more detailed picture of the reduction in income differentials between European countries over the past decade identified earlier by providing the country-level dynamics that characterise it. Moreover, while data for the EU aggregate included 24 European countries over the period 2005-2015, the analysis here incorporates EU-SILC data for all EU-28 countries and up to 2016 whenever available. The data presented here refers to average household disposable income levels expressed in PPP-euro across European countries, which permits capturing real income convergence processes between European countries in terms of purchasing power and not merely caused by inflation differentials.

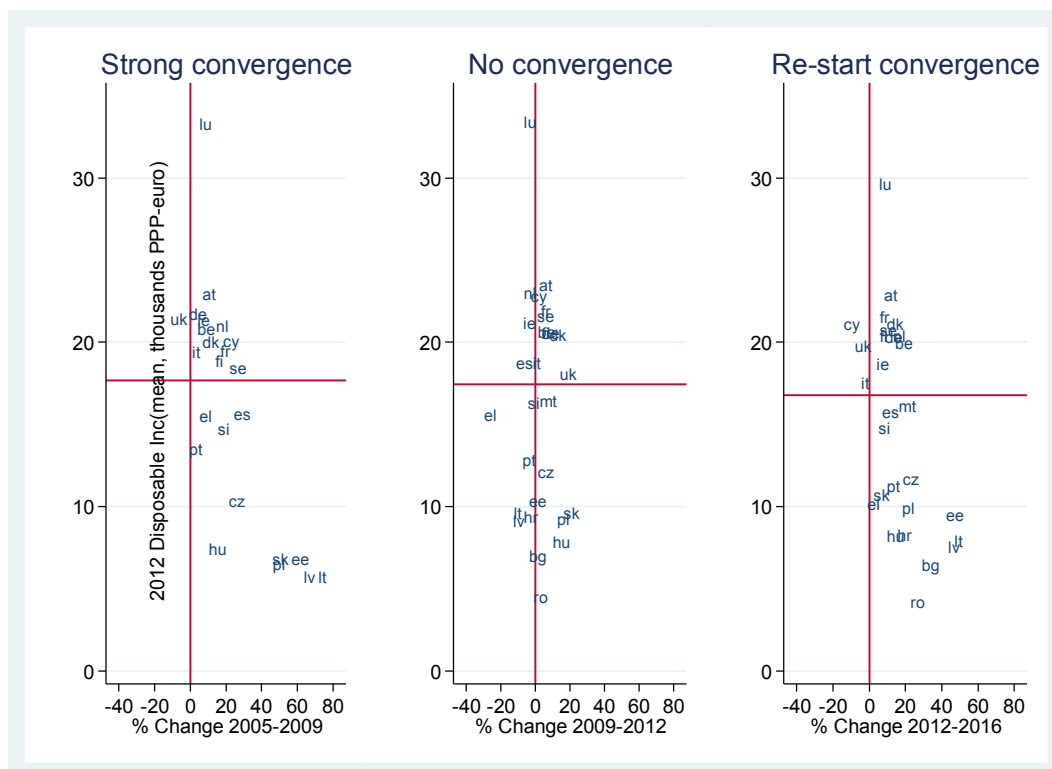
The process of income convergence between European countries suffered clear mutations over the past decade, as illustrated in Figure 2. Prior to the crisis (left panel of the figure), a notable process of income convergence took place due to developments at the top of the income scale and, mainly, among those countries at the bottom of the income scale. Among most higher-income countries, relative income levels remained stable or even declined (in Germany and notably in the UK, although in this case partially due to currency depreciation). Among lower-income countries, most Eastern European states registered a strong catch-up process (very remarkable in the Baltics, Poland and Slovakia), even though Mediterranean countries failed to do so (with the exception of Spain).

The second panel of Figure 2 clearly reflects how the emergence of the crisis halted the process of income convergence between European countries by reversing the sign of the core-periphery divide, since income levels were more negatively affected in the European periphery (mainly in several Mediterranean and Baltic countries, even though they continued to progress in Slovakia, Poland and Hungary) and they were generally more resilient in the European core (with the exceptions of Luxembourg and the Netherlands). This halt in the process of income convergence between European countries from the onset of the crisis is consistent with the picture provided earlier (see Table 1).

Nevertheless, the third panel of Figure 2 captures the recovery of this process of convergence between European countries in the most recent years (between 2012 and 2016, income data referring to 2011-2015). Again, this process is mainly due to the return of catch-up income growth among most Eastern

European countries (notably in the Baltics), which did not extend to Mediterranean countries (the downwards correction continued in Greece and Italy). Among higher-income countries, income levels remained generally contained.

Figure 2. Average (equivalised) household disposable income across countries (in PPP-euro).



Source: EU-SILC. Note: 2008 has been used to distinguish the pre-crisis period, instead of 2009 as before, due to the one-year lag in EU-SILC data. The horizontal red line refers to the average income for the EU as a whole, although it includes different countries in each sub-period due to data availability. Bulgaria, Croatia, Malta and Romania are included from the second sub-period (2009 Croatian data refers in fact to 2010). The most updated EU-SILC data for 2016 has been incorporated in the most recent sub-period for those countries where it is available (all EU-28 countries except Cyprus, Ireland, Italy, Luxemburg and Malta, for which 2015 is used instead).

Although it is weaker than prior to the crisis, the re-emergence of this process of income convergence seems to indicate that the divergence forces unleashed by the Great Recession only had a short-term impact over a longer-term trend towards income convergence between European countries. Nevertheless, the contrasting example provided by Eastern European and Mediterranean countries

warns this convergence does not have to be taken for granted. While the East of Europe generally managed to attain a real income convergence with the rest of Europe, whatever convergence Mediterranean countries accomplished was the result of higher inflation levels but not of a real income convergence in purchasing terms.

Growing income inequalities within European countries and the reasons behind

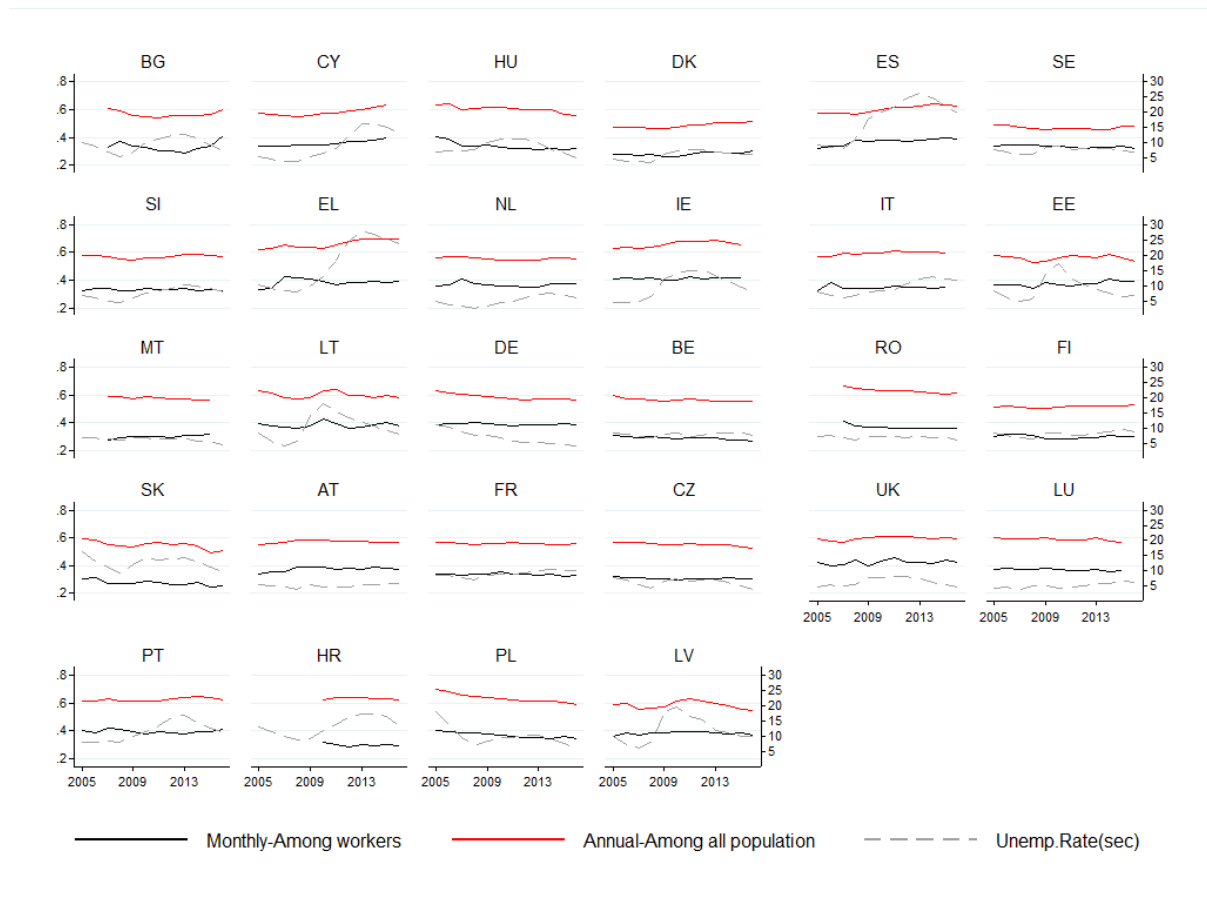
EU-wide income inequality over the last decade was mainly driven by the reduction of income differentials between countries, while the contribution of inequalities within European countries remained much more stable (see Table 1). Nevertheless, the country-level data introduced in this section shows that income inequalities expanded in a majority of European countries from the onset of the crisis mainly due to rising unemployment levels, while European welfare states have managed to cushion the extent of these growing inequalities.

The role of unemployment as the main driver behind rising income inequalities across European countries from the onset of the crisis is unveiled by Figure 3, which compares inequalities in monthly labour income among workers with those in annual labour income among the whole working age population. The difference between both measures of inequality would be explained by the fact that some individuals are out of work and do not have labour income (either for some months or during the whole year, due to unemployment or inactivity).

The figure shows the crisis pushed inequalities mainly outside employment, since labour income inequalities among the whole working age population moved upwards across most countries from 2009 (income data referring to 2008), significantly so among those countries in the European periphery most affected by growing unemployment (Mediterranean and Baltic countries generally, as well as Ireland, Slovakia or Slovenia) and much more moderately in those countries in the European core less affected by employment turbulences (Continental and Scandinavian countries). These labour market turbulences explain why inequalities within employment remained more subdued and even declined in some countries affected by significant unemployment hikes (Greece or Portugal), probably

due to a compositional effect caused by the typically lower wages of those leaving employment during a crisis (Bils 1985; Solon et al 1994).

Figure 3. Inequality in worker's monthly earnings and individual's annual labour income (Gini)



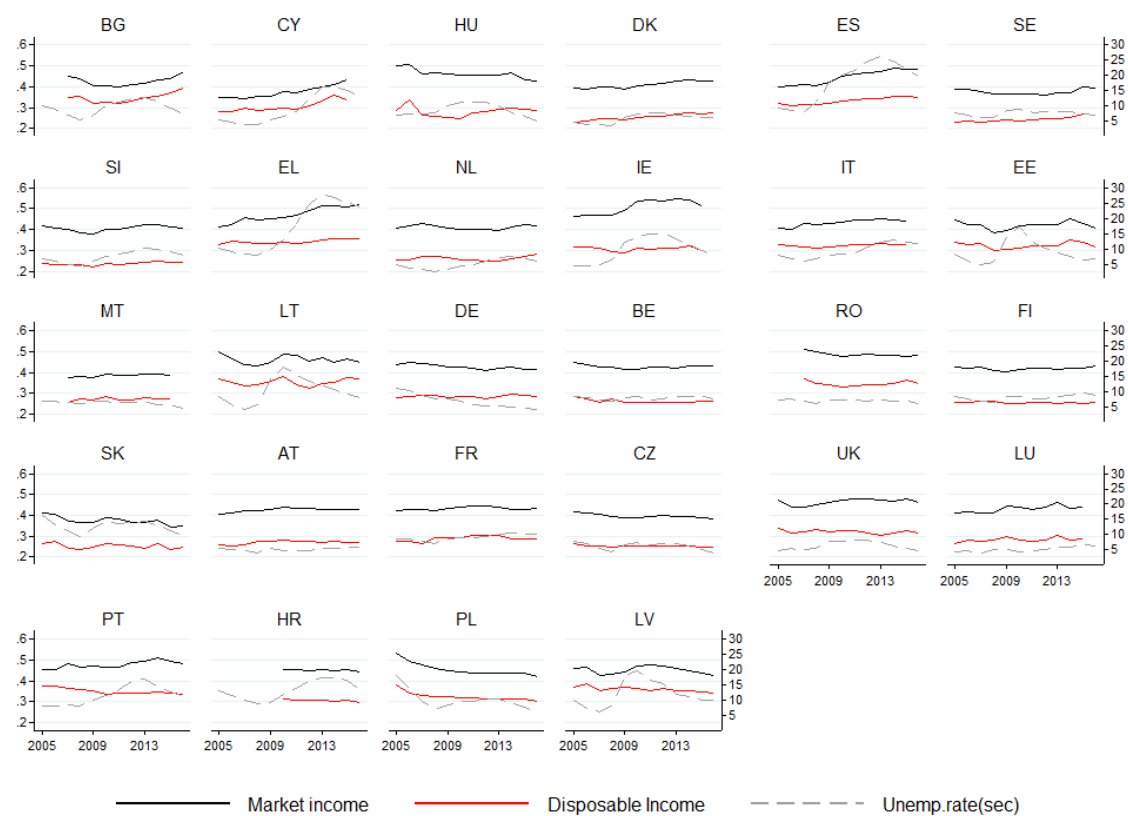
Source: EU-SILC and LFS (unemployment rate). Countries are ranked by the relative increase in household disposable income inequality between 2009 and 2016 (income referring to 2008-2015).

There are three main forces that shape income inequalities when moving from annual labour income into our final measure of household disposable income: the family pooling of income, capital income and the transfers and taxes of benefit systems (further details in the methodology provided in Eurofound 2017). Our results show that the role of this third factor has been particularly relevant during the period observed. Figure 4 compares the evolution of inequality in household market income and in household disposable income, whose different behaviour is due to the redistributive

effect of the public systems of benefits and taxes. European welfare states reduce market income inequality by almost 30% for the EU as a whole, although country differentials are notable, as reflected by the gap between both measures of inequality in each country.

Importantly, our results over the whole period clearly reflect how European welfare states largely cushioned the increase in market inequalities as a result of the crisis, as reflected by the notably larger inequality increases in household market income than in household disposable income across many countries (more relevant in Mediterranean countries generally, Latvia, Belgium, Netherlands, Finland or the UK).

Figure 4. Inequality in household market income and in household disposable income (Gini)



Source: EU-SILC and LFS (unemployment rate). Countries are ranked by the relative increase in household disposable income inequality between 2009 and 2016 (income referring to 2008-2015).

A detailed analysis of our main measure of inequality, that in household disposable (equivalised) income, reveals the pro-cyclical behaviour of income inequalities, as predicted by the literature:

- 1) Before the crisis, reductions in income inequalities are more common among European countries, significantly in some Eastern European countries.
- 2) Income inequalities are then pushed upwards from the onset of the crisis in around two thirds of European countries, although the resilience of European welfare states prevented more significant surges. Inequalities increased more notably in several countries in the European periphery where employment turbulences were harder (Cyprus, Hungary, Estonia, Slovenia, Spain or Ireland) but as well in other traditionally low-inequality countries (Denmark and Sweden or Germany). This explains the upward trend observed in the within-countries component of EU-wide income inequalities described earlier (see Table 1).
- 3) Nevertheless, as economic recovery sets foot in the continent in most recent years (between 2014 and 2016, income data referring to 2013-2015), the patterns in income inequality became more mixed and inequality reductions were registered again in more than half of European countries (more significant in some Eastern European countries but as well in Germany and Ireland).

This section has revealed an upwards trend in income inequalities among most European countries due to rising unemployment levels from the onset of the crisis, although the increase in income inequalities was rather modest in many cases largely due to the role of European welfare states. Nevertheless, it is important to keep in mind that synthetic indicators of income inequalities as the ones provided in here do not capture the whole extent of the impact of the Great Recession on European societies. A more complete picture of the evolution of inequalities and income levels over the last decade is provided in the report on which this paper is based, [Income inequalities and employment patterns in Europe before and after the Great Recession](#) (Eurofound 2017).

This broader picture shows that real disposable income levels were negatively impacted by the crisis across all European countries, especially among less well-off households in the European periphery but as well in countries in the European core. The decline or moderation of real disposable income levels reveals a more significant impact of the Great Recession on European societies than that offered by other indicators such as GDP per capita or inequality indexes, which highlights the importance of using a wide set of indicators when monitoring economic developments and well-being among European citizens.

Conclusions

This paper has provided a picture of income inequalities from an EU-wide perspective and the extent to which they have been driven by income differentials between and within European countries over the last decade. EU-wide income inequality levels were significantly reduced up to the emergence of the crisis in 2008, which has pushed them slightly upwards thereafter. Between and within-country income differentials played a different role in explaining such trends.

On the one hand, the evolution of income disparities between European countries is the main driver behind trends in EU-wide income inequalities over the past decade. The notable convergence in average income levels between European countries, mainly due to catch-up income growth in Eastern Europe and moderation in the core of Europe, almost entirely explains the decline in EU-wide income inequality prior to the crisis. The interruption of this process of convergence as a result of the stronger impact of the crisis in the European periphery largely explains the ensuing stability of EU-wide income inequality. Nevertheless, this process of income convergence is re-activating in the most recent years due again to strong income growth among Eastern European countries.

On the other hand, income inequalities within European countries did not significantly drive EU-wide income inequalities during the period, but are characterised by relevant developments as well. One, within-country income inequalities have reinforced their importance as the main source of the EU-wide income inequality level over the period, explaining 85% of it by 2015. Two, income inequalities

registered an upwards trend among most European countries and pushed EU-wide income inequality slightly upwards from the onset of the crisis.

While previous major empirical studies identified widening pay differentials as the main reason behind growing income inequalities in developed countries, our results complement those studies by showing that the growing income inequalities registered among around two-thirds of European countries from the onset of the crisis were mainly due to the role of rising unemployment and its associated loss of labour income. This explains why income inequalities started to moderate among many European countries in the most recent years following economic and employment recovery.

Moreover, our results have important policy implications. One, we have emphasized the important role played by the European benefit and tax systems in cushioning the growing market income inequalities, especially in some of the countries hardest hit by the crisis. Two, our results provide support to the implicit assumption within European institutions that European economic integration should lead to convergence between its Member States, a goal pursued as well by the regional development policies deployed by the European institutions from decades ago. Our results unveil a strong convergence in income levels over the past decade, despite the divergence trends unleashed by the Great Recession and despite the fact that Eastern European but not Mediterranean countries have benefitted generally from this income convergence process. Three, our data shows within-country income inequalities explain an overwhelming proportion of EU-wide income inequality, which suggests that policies targeted at reducing income inequalities at the national level as those offering the greatest potential to reduce income inequalities in Europe.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The authors disclosed receipt of the following financial support for the research, author-ship, and/or publication of this article: The European Foundation for the Improvement of Living and Working

Conditions (EUROFOUND), a research agency of the EU, funded the research project on which the contribution is based.

References

Atkinson, A. B. (1995), 'Poverty, statistics and progress in Europe', in Atkinson, A. B. (ed.), *Income and the welfare state – essays on Britain and Europe*, Cambridge University Press, Cambridge, pp. 64–77.

Bils, M. (1985), 'Real wages over the business cycle: Evidence from panel data', *Journal of Political Economy*, Vol. 93, pp. 666–689.

Bonhomme, S. and Hospido, L. (2012), *The cycle of earnings inequality: Evidence from Spanish social security data*, Banco de España Working Paper No. 1225, Banco de España, Madrid.

Brandolini, A. (2007), 'Measurement of income distribution in supranational entities: The case of the European Union', in Jenkins, S. P. and Micklewright, J. (eds.), *Inequality and poverty re-examined*, Oxford University Press, Oxford, pp. 62–83.

Darvas, Z. (2016), *Some are more equal than others: New estimates of global and regional inequality*, Bruegel Working Paper 8, Brussels.

Dauderstädt, M. and Keltek, C. (2014), *Crisis, austerity and cohesion: Europe's stagnating inequality*, Friedrich-Ebert-Stiftung, Bonn.

Eurofound (2017), *Income inequalities and employment patterns in Europe before and after the Great Recession*, Publications Office of the European Union, Luxembourg.

European Central Bank (ECB) (2014), 'The impact of the economic crisis on euro area labour markets', *ECB Monthly Bulletin*, October, pp. 49–68.

European Central Bank (ECB) (2015) *Comparisons and contrasts of the impact of the crisis on euro area labour markets*. Occasional Paper Series No 159, February 2015.

Maestri, V. and Roventini, A. (2012), Stylised facts on business cycles and inequality, GINI Discussion Paper 30, Amsterdam Institute for Advanced Labour Studies, Amsterdam.

Milanovic, B. (2005), *Worlds apart: Measuring international and global inequality*, Princeton University Press, Princeton, NJ.

OECD (2008), *Growing unequal? Income distribution and poverty in OECD countries*, OECD Publishing, Paris.

OECD (2011), *Divided we stand: Why inequality keeps rising*, OECD Publishing, Paris. Pareto 1971

Rodríguez-Pose, A. and E. Garcilazo (2015), Quality of Government and the Returns of Investment: Examining the Impact of Cohesion Expenditure in European Regions, *Journal of Regional Studies*, Volume 49, 2015 - Issue 8.

Solon, G., Barsky, R. and Parker, J. (1994), 'Measuring the cyclicalities of real wages: How important is composition bias?', *Quarterly Journal of Economics*, Vol. 109, pp. 1–25.

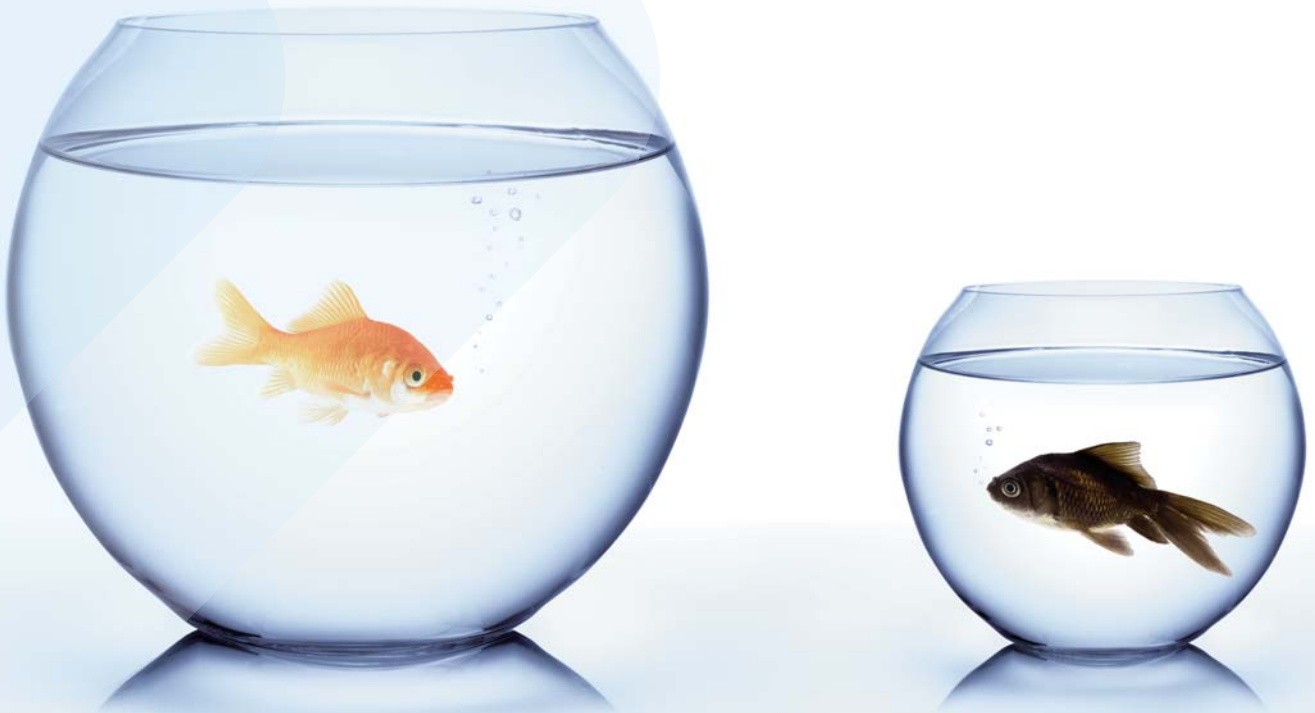
Storesletten, K., Telmer, C. I. and Yaron, A. (2004), 'Cyclical dynamics in idiosyncratic labor market risk', *Journal of Political Economy*, Vol. 112, No. 3, pp. 695–717.

5. Income inequalities and employment patterns in Europe before and after the Great Recession

Article 4

Authors: Carlos Vacas Soriano and Enrique Fernández Macías

Income inequalities and employment patterns in Europe before and after the Great Recession



Income inequalities and employment patterns in Europe before and after the Great Recession



When citing this report, please use the following wording:

Eurofound (2017), *Income inequalities and employment patterns in Europe before and after the Great Recession*, Publications Office of the European Union, Luxembourg.

Authors: Carlos Vacas-Soriano and Enrique Fernández-Macías (Eurofound)

Research managers: Enrique Fernández-Macías and Carlos Vacas-Soriano

Eurofound project: Income inequalities and employment patterns in Europe before and after the Great Recession

Acknowledgments: The authors would like to thank José María Arranz-Muñoz, Andrea Garnero, Stephen Kampelmann, Brian Nolan, Luis Ortiz, François Rycx, Andrea Salvatori, as well as Eurofound colleagues and members of the Advisory Committee for Labour Market Change for their very useful input to earlier versions of this report.

Luxembourg: Publications Office of the European Union

Print: ISBN: 978-92-897-1572-0

doi:10.2806/521424

TJ-02-17-166-EN-C

Web: ISBN: 978-92-897-1573-7

doi:10.2806/370969

TJ-02-17-166-EN-N

© European Foundation for the Improvement of Living and Working Conditions, 2017

For rights of translation or reproduction, applications should be made to the Director, European Foundation for the Improvement of Living and Working Conditions, Wyattville Road, Loughlinstown, Dublin D18 KP65, Ireland.

The European Foundation for the Improvement of Living and Working Conditions (Eurofound) is a tripartite European Union Agency, whose role is to provide knowledge in the area of social, employment and work-related policies. Eurofound was established in 1975 by Council Regulation (EEC) No. 1365/75 to contribute to the planning and design of better living and working conditions in Europe.

European Foundation for the Improvement of Living and Working Conditions

Telephone: (+353 1) 204 31 00

Email: information@eurofound.europa.eu

Web: www.eurofound.europa.eu

Europe Direct is a service to help you find answers to your questions about the European Union.

Freephone number*: 00 800 6 7 8 9 10 11

*Certain mobile telephone operators do not allow access to 00 800 numbers or these calls may be billed.

Printed in Luxembourg

Cover image: Shutterstock

Contents

	Executive summary	1
	Introduction	3
1	Literature review	5
	Income inequality by component	5
	Recent evolution of income inequalities	6
	Income inequality from an EU-wide perspective	7
2	Inequality framework and methodology used	11
	Defining the inequality framework	11
	Data source	12
	Operationalisation of variables and methodological approach	13
3	Income inequality from an EU-wide perspective	15
	Income inequalities before and after the Great Recession	17
	Inequality developments and convergence between countries	19
	Impact of the crisis on real income levels	19
	Summary	21
4	Income convergence between Member States	23
	Summary	27
5	Comparative analysis of inequality trends within Member States	29
	Inequalities and the uneven impact of the crisis	29
	Labour earnings among the working, active and whole population	34
	Role of the family in reducing income inequalities	38
	Redistributive effect of the welfare state	41
	Patterns of inequality in household disposable income	43
	Summary	47
6	Impact of the Great Recession on income levels	49
	Squeezing the European middle classes	51
	Summary	53
7	Conclusions	55
	Bibliography	57
	Annex: Additional data on income inequalities	59

Country codes

AT	Austria	FI	Finland	NL	Netherlands
BE	Belgium	FR	France	PL	Poland
BG	Bulgaria	HR	Croatia	PT	Portugal
CY	Cyprus	HU	Hungary	RO	Romania
CZ	Czech Republic	IE	Ireland	SE	Sweden
DE	Germany	IT	Italy	SI	Slovenia
DK	Denmark	LU	Luxembourg	SK	Slovakia
EE	Estonia	LT	Lithuania	UK	United Kingdom
EL	Greece	LV	Latvia		
ES	Spain	MT	Malta		

Country categories used in report

Anglo-Saxon countries	Ireland, UK
Baltic states	Estonia, Latvia, Lithuania
Central and eastern European (CEE) countries	Czech Republic, Hungary, Poland, Slovakia, Slovenia
Continental countries	Austria, Belgium, France, Germany, Luxembourg, Netherlands
Mediterranean countries	Cyprus, Greece, Italy, Spain, Portugal
Scandinavian countries	Denmark, Finland, Sweden
EU15 (the Member States in the Union prior to the enlargement of 2004)	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, UK

Note: The analysis in the report is based on EU-SILC data which is available for the years covered in this report for just 24 EU countries (all EU Member States except for Bulgaria, Croatia, Malta and Romania).

Executive summary

Introduction

Across the globe, there is increasing concern about income inequality. Empirical evidence suggests that over the last three decades, income inequality has grown in many developed economies (the extent and time frame of this trend varying considerably). The Great Recession starting in 2008–2009 intensified this concern due to the impact of the ongoing economic crisis on inequality levels, and the general perception that the increase in inequality may have been one of the factors triggering and protracting the crisis.

Although there is a large body of research on trends in income inequality in EU Member States, surprisingly few studies adopt an EU-wide perspective. In this context, this report has two main goals: to provide a comparative analysis of inequality trends in Member States over the course of the Great Recession (updating the picture given by previous international studies); and to discuss relevant trends and developments in inequality for the overall EU distribution of income – including the implications of economic convergence and divergence before and after the crisis. Most of the analysis in this report is drawn from the European Union Statistics on Income and Living Conditions (EU-SILC) for the period 2005–2014, with income data relating to the period 2004–2013.

Policy context

Evidence regarding the evolution of inequality in the EU as a whole is surprisingly limited, despite the growing interest in the phenomenon and the increasing level of European economic integration. In many EU policy documents, there is an implicit assumption that economic integration should lead to some degree of convergence in terms of income and wages and hence result in a reduction in EU-wide inequality (at least between countries). But the uneven effects of the Great Recession across EU Member States show that convergence is not an automatic outcome of economic integration: there is a need to monitor inequality trends at the EU level as well. Good EU-level statistics on income inequality trends could facilitate a better understanding of the wider implications of the European integration project and improve the coordination of existing policies to fight inequality. These include EU regional policy, focused on inequalities between countries, and European and national social policies targeted at inequalities within countries.

Key findings

EU-wide income inequalities: Before 2008, EU-level income inequalities across different sources of income had declined significantly as a result of a process of income convergence between countries (with inequalities within countries remaining rather stable). After 2008, EU-level income inequality grew for two reasons: firstly, the process of income convergence stalled, with income levels being more negatively affected in some peripheral countries than in the core EU Member States generally; and secondly, there was an expansion of income inequalities within countries in most sources of income.

Convergence in household disposable income: A detailed analysis of household disposable income shows that the process of income convergence prior to 2008 was driven mainly by a catch-up process in eastern European countries and a stagnation or decline in relative income levels in several high-income countries, such as Continental countries (Austria, Belgium, France, Germany, Luxembourg and the Netherlands) and the UK. The interruption of the process of convergence after 2008 is associated with a significant decline in relative income levels in some countries in the European periphery in the initial years (mainly the Baltic states, some Mediterranean Member States, and Ireland), while core European countries were more resilient. After 2011, paths began to diverge within the peripheral group, with the Baltic states and other eastern European countries recovering rapidly, while income levels experienced downward adjustments in Mediterranean Member States.

Inequality in household disposable income across countries: Inequalities in household disposable income grew in two-thirds of Member States over the whole period, continuing the general upward trend in inequalities identified by a number of different international studies. Nevertheless, this is mainly due to increasing inequalities after 2008, largely driven by growing unemployment in many countries during the recession. The finding that unemployment has been the main driver of growing inequalities during the Great Recession complements previous studies signalling widening wage differentials as the main reason behind growing inequalities in the decades prior to the crisis.

Counter-cyclicality of household disposable income inequalities: This central role of unemployment and its effect on labour income largely explains why inequalities in household disposable income have behaved counter-cyclically in recent years. Prior to the crisis, inequalities declined in more than half the

Member States – mainly in the European periphery, which was experiencing an economic catch-up process. From the onset of the crisis, inequalities in household disposable income grew across two-thirds of the countries, mainly in some peripheral countries more severely hit by the crisis, but also in some core Member States (Germany) and some traditionally egalitarian countries (Denmark and Sweden).

Alleviating the effect: Two key mechanisms are shown to reduce levels of inequality. First, the role of welfare state redistribution in reducing inequality became even more important during this period, especially in countries hardest hit by the crisis in the European periphery, where welfare states largely cushioned growing market income inequalities. Second, the family pooling of resources reduced the inequality in labour income observed among individuals, although its effect weakened as the crisis progressed. This is due to the increase in the number of households with no labour income and, to a lesser extent, because of a long-term decline in the size of households.

Evolution of real income levels: An even more obvious impact of the Great Recession is revealed by information on real income levels; these were either pushed downwards, or their growth rate reduced. This correction was generally greater in the European periphery (in Mediterranean and some eastern European countries in a protracted way, and in Anglo-Saxon and Baltic countries during the initial stage of the financial crisis) and especially at the bottom of the income distribution, but it occurred as well, although more modestly, in Continental and Scandinavian countries. The deterioration in income levels from the onset of the crisis among some segments of the income distribution has squeezed the size of the middle class in a majority of countries. This is significant in some peripheral countries in eastern Europe and the Mediterranean, and in countries like Denmark, Germany and Sweden, where the middle class was starting to shrink even before the crisis.

Need for wider set of indicators: The impact of the crisis revealed by real income levels is not always reflected by relative inequality indices or by other indicators such as GDP per capita. This suggests that a wider set of indicators to assess well-being and economic prosperity in European societies needs to be considered in order to properly assess the fall in living standards associated with the Great Recession.

Introduction

Concerns over growing inequality across developed economies are notably present in academic research and policy debates in recent years. Even before the Great Recession, concerns emerged about income disparities between European regions and rising levels of inequality across developed economies over the past three decades (OECD, 2008). The financial crisis that emerged by the end of 2008 and the debt crisis that ensued have aggravated these concerns (OECD, 2011). Growing inequalities and declining labour shares have been highlighted as some of the reasons behind a weakening of aggregate demand in many developed countries, which may have contributed to the Great Recession. The crisis has also had an uneven impact across countries, economic sectors and demographic groups, potentially amplifying underlying inequality trends both inside and outside labour markets. Even after the resumption of economic growth, sluggish real wages across many Member States call into question the strength of the recovery of income levels among significant segments of the workforce, let alone the population at large.

EU Member States have been undergoing a process of economic integration spanning several decades, a process that was accelerated by the creation of the euro and that has been recently tested by the emergence of global financial turmoil and the ensuing sovereign debt crisis. The Great Recession has had an uneven impact across the EU. Labour market performance across Member States has diverged considerably, with employment and real wages rising in core economies and falling in peripheral economies. While most countries were affected by the global financial crisis, the employment turbulence related to the sovereign debt crisis has been much more concentrated in peripheral economies (European Central Bank, 2014). Some of the most stressed countries have adopted fiscal consolidation measures, structural reforms and internal devaluations aimed at recovering competitiveness in a monetary union, which may have weakened downward rigidities in wage levels (European Central Bank, 2015).

The diverging impacts of the crisis and the strategies put in place to fight it have certainly resulted in different wage, income and unemployment trends across countries. Against this background, it is relevant to map trends in income inequalities and income levels and to do so from an EU-wide perspective, looking at

developments both between and within EU Member States. In principle, a certain degree of convergence in income levels should be expected between Member States due to a process of economic integration in which lower income countries would progressively catch up with higher-income countries. But the recent crisis and the bleak European economic outlook may have created forces of divergence arising from the uneven impact of economic and labour market turbulence within Europe.

Oddly, studies adopting an EU-wide perspective to map trends in inequality are scarce. To the best knowledge of the authors, no exhaustive, cross-country comparative analysis on income inequality has been conducted on developments across EU Member States over the recent crisis period. This report will seek to fill these two main gaps. The report builds on previous Eurofound work (Eurofound, 2015), taking an EU-wide perspective by analysing inequality developments both between and within Member States; this time, however, the scope extends beyond wages to include overall income, which is probably subject to more substantial variations in a period characterised by notable employment turbulence. In addition, this report aims to update recent empirical analysis covering inequality developments among many Member States from recent decades up to the end of the 2000s (OECD, 2008, 2011) by providing a much-needed comprehensive picture of trends in income inequalities across different sources of income and most Member States during the years of the Great Recession, covering the period 2005–2014 (income data referring to 2004–2013).

The report is divided into seven chapters. Chapter 1 will introduce the relevant literature on income inequality. Chapter 2 presents the methodological framework followed in this report to approach the study of inequalities in Europe over the past decade. Chapter 3 maps inequalities from an EU-wide perspective and shows how developments between and within countries affect the EU-wide income distribution over time. Chapter 4 provides a picture of income differentials between countries, while Chapter 5 discusses income inequalities within countries. Chapter 6 complements the analysis by looking at the trends in income levels that are behind income inequality patterns. Chapter 7 concludes with a summary of the findings and a discussion of some policy implications.

1 Literature review

Although a relevant strand of the literature has produced empirical studies on global inequality levels (Milanovic, 2005), a comprehensive analysis of inequality in supranational entities such as the EU has rarely been attempted. Most existing studies on income inequalities focus on developments within countries, typically using the measure of household disposable income, although the impact of its different components has been often discussed as well. There are also studies on country differentials in average wage or income levels, but these studies rarely cover these differentials together with inequality developments within the country, nor do they attempt to evaluate inequality at the supranational level. This chapter summarises the main relevant findings from the literature. It will discuss what is known about recent trends in income inequality and its different components and it will briefly review the few previous studies that take an EU-wide perspective on this issue.

Income inequality by component

The measure of income typically covered in empirical studies on income inequality is household disposable income, which is the aggregation of several income components that result from labour market outcomes, capital, household composition and the progressivity of the tax and transfer systems (Bonesmo Fredriksen, 2012).

According to a recent OECD study (OECD, 2011), a general widening of wage inequalities between 1980 and 2008 occurred across most OECD countries, a trend that seemed to intensify in the late 1990s and 2000s. It was due to developments at both extremes of the distribution, but mainly at the top, since top earners registered a rapid progress of wage levels. Importantly, this report finds that wage inequalities were the main reason behind growing income inequalities in OECD countries over the period 1980 to 2008: 'Increases in household income inequality have been largely driven by changes in the distribution of wages and salaries, which account for 75% of household incomes among working-age adults' (OECD, 2011).

Some of the main reasons identified in the literature to explain the growing inequalities in wages are skills-biased technical change, by which new technologies increase the relative productivity of high-skilled workers, their demand and wages (Violante, 2008);

trade specialisation and off-shoring, which may have a dampening effect on the wages of low-skilled workers in Member States (Blau and Kahn, 2009); and developments in labour market institutions, such as the weakening of trade unions and declining coverage of collective pay agreements (European Commission, 2013) or the trend towards decentralisation in wage-setting mechanisms in several countries (Visser and Checchi, 2009).

The dispersion of working hours has been highlighted as an important reason behind growing disparities when measures of unadjusted labour earnings are used, which would result in temporary and part-time workers occupying the bottom of the wage distribution (Burniaux, 1997), the former due to unemployment spells pushing annual labour incomes downwards and the latter due to shorter working hours generally. A recent report from the European Parliament underlines the key role played by working hours in growing inequalities in labour earnings across two-thirds of EU countries between 2006 and 2011 against a background of expanding part-time employment since the onset of the crisis (European Parliament, 2014).

The inclusion of income from self-employment results in higher inequality levels, since labour income is more unevenly distributed among self-employed workers than among employees (OECD, 2011). This is also the case with the inclusion of capital income, which is more unevenly distributed than labour income. Nevertheless, the role of capital in explaining growing inequality is somewhat unclear empirically. Many studies assign a secondary role to capital income compared with labour income when driving inequality trends, perhaps due to the fact that survey data have difficulties measuring capital and the income flows derived from it.¹ Nevertheless, recent work by Piketty and other researchers based on data from tax records shows that capital income has greatly contributed to rising inequality in recent decades and it will continue to do so given declining labour shares across most developed countries (Piketty, 2014). Capital is very important in the debate on the importance of the top of the income distribution as a driver of growing inequalities. This seems especially relevant in the US and has led some researchers to criticise inequality studies using decile ratios and failing to report on the very large income growth experienced by the top 1% (Rosnick and Baker, 2012; Atkinson et al, 2011).

¹ The European Central Bank's Household Finance and Consumption Survey is a good example of a survey that gathers micro-level data on capital more adequately, but only one wave of data exists so far and it provides structural information on euro area households' assets and liabilities and not merely on capital income flows.

The pooling of different types of income at the household level affects inequality levels notably. The inclusion of dependants and households where nobody works widens the income distribution, but the pooling of income between family members at the household level has been shown empirically to have a strong role in reducing inequalities. Furthermore, the distribution of household labour income among people has been more stable than the distribution of personal labour income among workers (OECD, 2008). Nevertheless, changes in the family structure over the last decades, mainly the decline in the average household size due to more people living alone or more single-parent families, are reducing the redistributive impact of the household (Nolan et al, 2014).²

The final components of total household disposable income are public transfers and taxes. Recent research shows that the tax and benefit system reduces market income inequalities by around 25% to 33% on average across OECD countries, playing a more significant role at the bottom than at the top half of the income distribution, and with taxes and transfers in cash being more effective than in-kind benefits such as education, health, and housing. Nevertheless, as happened with the role of families, the welfare system has generally become less redistributive from the mid-1990s and has therefore contributed to growing inequality levels in household disposable income (for instance, as a result of reductions in income taxes or tightening the criteria to access unemployment and other benefits; see Nolan et al, 2014; OECD, 2008, 2011).

Recent evolution of income inequalities

Growing inequalities in household disposable income from the 1970s have taken place across many developed countries according to several recent empirical studies. For instance, a recent OECD study identifies growing income inequalities in 17 of the 22 countries covered between the mid-1980s and the late 2000s (OECD, 2011). An earlier study concluded that ‘there has been an increase in income inequality that has gone on since at least the mid-1980s and probably since the mid-1970s. The widening has affected most (but not all) countries ... But the increase in inequality – though widespread and significant – has not been as spectacular as most people probably think it has been’ (OECD, 2008).

Some researchers have identified a convergence towards higher levels of inequality across countries, but the timing and magnitude of such increases varies

(Jenkins and Micklewright, 2007). Inequalities grew first in Anglo-Saxon countries at the end of the 1970s and the beginning of the early 1980s. They generalised by the end of the 1980s and 1990s, reaching eastern European and Mediterranean countries and even affecting traditionally low-inequality countries such as the Scandinavian countries during the 2000s (OECD, 2011; Ballarino et al, 2012). The most general increases in income inequality seem to have taken place in the 1980s and 1990s, while country patterns seem to have become more diverse in the 2000s. A recent study identifies some convergence in inequality levels between 1997 and 2009 across EU15 countries, but mixed patterns across EU27 countries (European Commission, 2011).

The evolution of income inequality over the business cycle is of particular interest against the background of the recent crisis. Theoretically, income inequality should be counter-cyclical, increasing during downturns (Storesletten et al, 2004; Bonhomme and Hospido, 2012). On the other hand, wage levels are supposed to be pro-cyclical, since the movement of workers towards jobs of better overall or match-specific quality would be more difficult during recessions and vice versa (Jovanovic, 1979; Farber, 1999).

Although it is country specific and heavily dependent on institutional factors, empirical studies tend to identify counter-cyclical in the evolution of net income and unadjusted annual labour earnings, which is largely due to the mediating role played by unemployment in depriving individuals of labour income (Maestri and Roventini, 2012). This may explain why the counter-cyclical in much weaker or absent for inequalities in hourly wages, which only refers to people who remain in employment (which can be affected by unemployment only indirectly or compositionally, with uncertain results).

The divergence observed between the business cycle behaviour of income and wage levels can also be explained by the role of unemployment. A pro-cyclical pattern emerges for income levels due to loss of labour earnings for people exiting the workforce, while empirical studies have typically failed to identify a clear real wage pro-cyclical in, with results depending on the choice of the time period, price deflator or cyclical indicator (Abraham and Haltiwanger, 1995). This has been more recently blamed on the use of aggregate data up to the 1980s, since a pro-cyclical behaviour of real wages was often identified once micro-panel data started to be used. Compositional effects would explain the lack of wage pro-cyclical in when using aggregate instead of individual data: an upward (and counter-

² Some studies focus on income inequalities within households (Chiappori and Meghir, 2014). In this paper, such a possible source of inequality will not be taken into account since household income will be equally distributed among all members in the empirical analysis.

cyclical) bias in aggregate wage levels may be caused by declining employment shares of low-skilled, low-wage workers during recessions and vice versa (Bils, 1985; Solon et al, 1994).

What does the recent empirical literature say on the impact of the Great Recession on inequality levels? A few studies have mapped inequality trends across Member States from the onset of the crisis, but results are somewhat contradictory. Some claim that the picture is mixed across countries and that income inequality did not increase generally and significantly during the initial years of the crisis (European Commission, 2011; Jenkins et al, 2011; Foster-McGregor et al, 2014; European Parliament, 2015), while others identify growing income inequality levels across most OECD countries between 2007 and 2010, as households at the bottom decile of the income distribution benefited less from rising incomes or were more affected by income declines than those at the top income decile (OECD, 2013).

Income inequality from an EU-wide perspective

While most existing studies provide a picture of inequality developments within Member States, there are good reasons to approach inequality from an EU-wide perspective (considering the EU income distribution as a whole and looking at the contribution

of between- and within-country developments). In the words of Tony Atkinson (from more than two decades ago; Atkinson, 1995, cited in Brandolini, 2007:

'If the Community continues to assess poverty purely in national terms, taking 50 per cent of national average income, then the impact of growth on poverty in the Community will depend solely on what happens within each country. However, a central question concerns the possibility of moving to a Community-wide poverty line, with the same standard applied in all countries. In that case, the effect of growth on the extent of low income is affected by the relative growth rates of different member countries.'

Information on inequality developments for the EU as a whole remains very limited despite Atkinson's early call. One possible reason for this may be the lack of adequate statistical sources providing the necessary data until very recently. But it is also likely that an EU perspective was considered simply irrelevant or uninformative, since European labour markets remain essentially national, regulated by laws or industrial relations emanating at the country level and with limited intra-EU labour mobility. As an example of this, Eurostat's information on the EU aggregate is constructed from inequality levels across Member States and does not really provide an estimate of EU-wide inequality. However, there are some empirical studies with an EU-level approach to estimate income (and wage) inequality, summarised in Table 1.

Table 1: Summary of empirical studies estimating inequality for the EU

Reference	Coverage	Data source	Target variable	Main findings	Numerical results
Eurofound (2015)	EU24 countries, 2005–2012	EU-SILC and SES	Full-time equivalent wages	A process of convergence in pay levels between countries drives declining inequalities before the crisis, after which within-country developments drive up EU-wide inequalities.	Gini: 0.346 in 2012
Dauderstädt and Keltek (2014)	EU27	EU-SILC	Average per capita income	Income inequality declines before the crisis due to the process of convergence between countries, but it grows after the crisis.	P80/P20 (2012): 6.5 (PPS): 9.5 (exchange rates)
Bonesmo Fredriksen (2012)	22 EU countries, 2008	OECD income distribution and poverty database	Disposable income, assigned to individuals using OECD scale	Within-countries inequality accounts for 85% of total EU inequality. Inequality in the EU has increased over time, both due to enlargements and to growing inequalities in countries for which data can be compared over time.	Gini: 0.323 P90/P10: 4.86 P75/P25: 2.13
Dauderstädt and Keltek (2011)	EU27 and EU25, 2005–2008	EU-SILC	Household disposable income, assigned to individuals using OECD scale	Inequality in the EU decreased during 2005 to 2008. Inequality is lower when measured in PPS than when using exchange rates. When measured in euros, inequality in the EU27 is higher than in other large economies such as India, the US, China or Russia; with PPS, it is still higher than in India.	P80/P20 (PPS): 6.21 (2005) and 5.67 (2008) for EU25; 7.23 (2007) and 6.79 (2008) for EU27

Reference	Coverage	Data source	Target variable	Main findings	Numerical results
Brandolini (2007)	21 EU countries (EU15 + 6 new Member States), 2000	ECHP for the EU-15 and LIS for the rest	Household disposable income	Inequality is higher when income is measured in euros instead of PPS measures and when inequality is measured for the EU as a whole instead of the population-weighted average of national values. Inequality is lower in the EU than in the US. The enlargement increased inequalities within the EU: inequality is higher in the EU25 than in the EU15 or euro area.	Gini (PPP): EU25 0.33; EU15 0.29; euro area 0.29; US 0.37 P80/P20 (PPP): EU25 2.8; EU15 2.3; euro area 2.3; US 2.9
Boix (2004)	Several EU aggregates, early 2000s	World Bank Household Survey Database	Individual disposable income or expenditure, obtained at household level	Inequality in the EU27 is higher than in the US (0.394). In all other EU specifications, it is lower. Inequality increased in the EU following each of the successive enlargements, especially when the eastern European countries joined.	Gini: 0.342 (EU15), 0.38 (EU25), 0.399 (EU27)
Papathodorou and Pavlopoulos (2003)	13 EU countries, 1999	CHER	Net household income, assigned to individuals using modified OECD scale	Between-countries inequality accounts for a small part of overall EU inequality (8%), while 92% is due to within-countries inequality.	Theil: 0.176 (between-countries component: 0.015, 7.8%)
Beblo and Knaus (2000)	Euro area (11 countries), 1995	ECHP and LIS for Finland	Household disposable income, assigned to individuals using modified OECD scale	Between-countries inequality accounts for 8% of overall EU inequality. Government intervention reduces inequality and intensifies differences between countries.	Theil: 0.185
Atkinson (1996)	12 EU countries, Norway and Switzerland, 1985–1990	LIS	Household disposable income, assigned to individuals using modified OECD scale	The Europe-wide distribution is less unequal than that of the US.	Bottom decile gets 2.9% of the income (1.9% in the US); bottom 50% gets 29.5% of the income (26.2% in the US); bottom 90% gets 77.2% of the income (76.3% in the US)

Note: Databases presented as acronyms are European Community Household Panel (ECHP), Luxembourg Income Survey (LIS) and Consortium of Household Panels for European Socio-economic Research (CHER). PPP = purchasing power parities. PPS = purchasing power standards.

Some of the findings from these empirical studies are particularly relevant for the purposes of the current report. First, EU-level income inequality seems comparable to that of the US or other large economies. To avoid overestimating EU-wide inequality levels, income levels must be adjusted for price differences between countries by using purchasing power parities (PPP) instead of exchange rates. Second, although around 90% of the EU-wide income inequality is explained by within-country inequalities, income level disparities between Member States are relevant and their evolution played an important role in the run-up to the crisis.

Some of the empirical studies mentioned in Table 1 report narrowing income disparities between Member States; this is in line with classical theories of economic

growth, which would predict a process of convergence in gross domestic product (GDP) per capita and income levels due to higher investments in lower income countries (a catch-up effect), where capital is more scarce and therefore returns to capital investment are more profitable and productive. This process of convergence would be stronger among countries that share a similar economic and institutional setting, such as is the case in the EU (Sachs and Warner, 1996). Nevertheless, the economic theory of international trade expects changes in income levels across countries depending on their international specialisation (Stolper and Samuelson, 1941), which would be difficult to predict. In addition, events such as the Great Recession may interrupt the income convergence pattern trend due to an uneven impact across Member States.

There are surprisingly few empirical studies covering EU-wide inequality trends over the recent crisis. A very recent study shows EU-wide income inequality levels declining in the period 1995–2008, largely due to economic convergence of central and eastern European (CEE) countries, and remaining rather stable in the period 2009–2015 (Darvas, 2016). The same pattern of declining levels of EU-wide income inequality from 2005 (as a result of a process of convergence between Member States set in place by the enlargement towards the east) was identified in an earlier study, although in this case growing inequality levels from 2009 were reported as a result of the crisis (Dauderstädt and Keltek, 2014). The same pattern was reflected in a recent study from Eurofound (2015), which described a reduction in EU-wide wage inequality before the crisis driven by a between-country convergence; this convergence process came to a halt at the onset of the crisis, while within-country inequalities tended to increase.³

This report builds on Eurofound’s recent work on wage inequality (Eurofound, 2015) but widens the focus to include all sources of income in order to map income inequality patterns in recent years against the background of the Great Recession and the forces that have shaped them. In doing so, it provides an updated picture on income inequality and the reasons behind its evolution across Member States that can be compared to that provided up to the emergence of the crisis by the two abovementioned studies from the OECD (OECD, 2008, 2011).

³ An even more recent study identifies a negative impact of the crisis on EU wages, larger than the one typically identified when national account figures are used, which results from the highly uneven impact of the crisis in the core and the periphery (Brandolini and Rosolia, 2015).

2 Inequality framework and methodology used

This report represents an attempt to counter the lack of studies on EU-wide inequality and on the impact of the recent crisis on income inequality levels by providing an updated picture of trends from a European perspective. It not only maps inequality trends in household disposable income, but also in the different sources of income. In addition, it analyses the role played by changes in unemployment, the family pooling of resources or the redistribution carried out by the welfare state in income inequality patterns.

Defining the inequality framework

The framework used to study inequality covers different income measures, starting from monthly full-time equivalent labour earnings and adding extra sources of income gradually until the final measure of household disposable income is constructed (see Figure 1). This framework is similar but not identical to the one used by recent comparable OECD reports (OECD, 2008, 2011).⁴

The following income measures were used in this report as well as the main factors to be taken into account for each of them.

Monthly labour income among the workforce

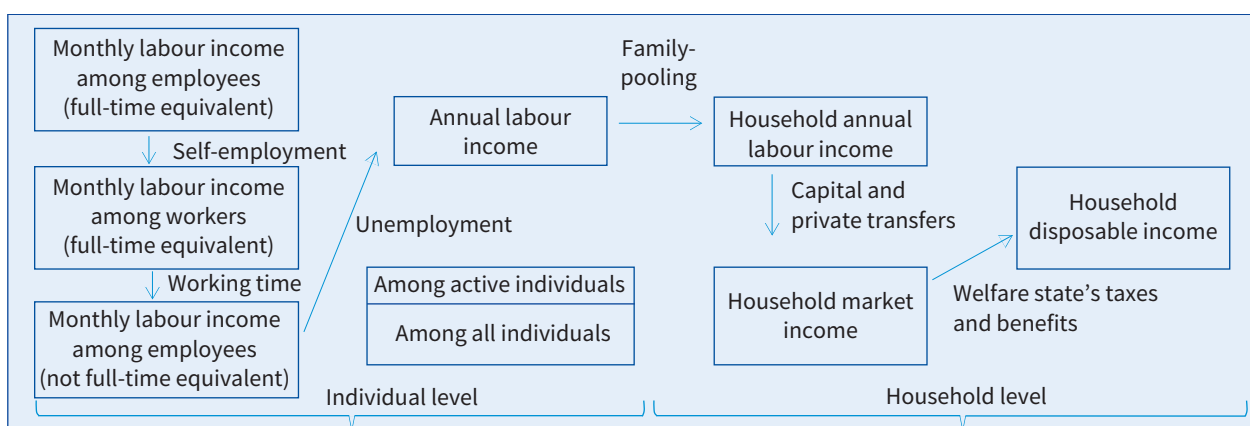
This initial measure considers cash income originated from work. As defined by the International Labour Organization (ILO), earnings are the employee's remuneration for time worked or work done, together with remuneration for time not worked, such as annual vacations and other paid leave or holidays.⁵ This report uses the term labour income because it covers labour income from salaried employment as well as from self-employment and because it is the term used in the European Survey on Income and Living Conditions (EU-SILC), the data source of this study (explained below).

Three different versions of this measure are used.

Monthly full-time equivalent labour income among employees: This considers only wages among employees adjusted for part time so that inequalities can only be the result of differentials in hourly pay and not working hours.

Monthly full-time equivalent labour income among workers: This still adjusts for part time, but adds self-employed and their labour income to the picture.

Figure 1: The components of income



4 The OECD covers wage levels differently, focusing on full-time workers and using different measures across countries (hourly, weekly, monthly earnings), so that estimated inequality levels are more useful for studying trends over time than to be compared between countries. The description of wage inequality mainly relies on a ratio comparing the earnings of the top and bottom decile (OECD, 2008). As is the case in this study, income from self-employment is considered together with wages before moving to the household level in the most recent OECD report (OECD, 2011), but it was introduced when moving from household earnings to household market income (together with capital) in the first report (OECD, 2008).

5 The full ILO definition reads: 'Earnings (wages and salaries) is the concept of earnings as applied in wages statistics, relates to remuneration in cash and in kind paid employees for time worked or work done together with remuneration for time not worked, such as annual vacation and other paid leave or holidays. Earnings exclude employers' contributions in respect of their employees paid to social security and pension schemes and also the benefits received by employees under these schemes. Earnings also exclude severance and termination pay.'

Monthly labour income among workers: This refers to the monthly labour earnings of workers, without adjusting for hours worked.

Annual labour income among individuals

This is an unadjusted measure of labour income earned over the whole year, including both income from employment and from self-employment. The difference from the previous measure is that labour income is considered over the 12 months of the year, including months not worked (and therefore with zero labour income), even for those permanently not employed over the year (which will get therefore a final value of zero in this measure).

This indicator will be considered for two different populations.

Annual labour income among active individuals: This adds those currently unemployed to the picture and therefore it includes individuals with no labour income. Inequality levels will increase notably depending on unemployment rates.

Annual labour income among all working-age individuals: This adds those currently inactive to the picture and further increases the possibility of including individuals with no labour income. Inequality levels will increase even further and this will be highly influenced by the inactivity rates.

Annual labour income among households

This measure adds together the annual labour income earned by all the members in the household and then redistributes it among them according to an equivalence scale (more on this later). This will significantly reduce the observed levels of inequality in the previous step.

Market income among households

This measure adds the income from capital and also private transfers between households. Inequalities are expected to be higher since capital is generally more unevenly distributed than labour income (the effect of private transfers is less clear).

Household disposable income

This measure takes into account the effects of the welfare state through the tax and benefit system. Since the welfare state redistributes income across individuals and families in a generally progressive way, inequalities should be notably lower than in the previous measure.

Data source

The limited availability of microdata until recently may explain the scarcity of inequality studies carried out at an EU-wide level. The EU-SILC is the only large-scale European survey that presently permits a comparative analysis on income inequality across Member States to be conducted. EU-SILC is a database on income, poverty, social exclusion and living conditions in the EU, coordinated by Eurostat, with data drawn from different sources at the national level. This report uses EU-SILC data to analyse trends in income distribution over the period 2005–2014 (income referring to 2004–2013), which is available for 24 EU countries (all EU Member States except Bulgaria, Croatia, Malta and Romania).

The EU-SILC is a survey conducted yearly of all private households and their current members residing in the territory of the countries at the time of data collection. Nevertheless, the EU-SILC presents several limitations to an ambitious analysis of inequalities across Member States like the one conducted here. On the one hand, it does not allow for a medium- and long-term analysis of inequality since the data used in this report only cover the period 2005 to 2014. On the other hand, it requires several important caveats for the purposes of this analysis. As a result of these methodological problems posed by EU-SILC, the findings presented in this report must be interpreted with care. These are some of the caveats.

Gap between survey and income variables: There is a one-year gap affecting the income variables: the survey collects information about the respondents at the time of the data collection (whether they are working, for how many hours, the job characteristics and so on), but the income variables refer to the previous year and therefore may not be related to the current job.

Income rather than wages: EU-SILC measures labour income rather than wages. Labour income in the EU-SILC refers to overall income from work in the previous calendar year, measured in gross terms (some countries also provide net data). It does not necessarily refer to particular jobs, since it measures any labour-related income: an individual's labour income may in fact have originated from more than one job if the respondent had different jobs in the previous year, either successively (if they changed jobs) or simultaneously (if they had multiple jobs).

Imputation of responses: An additional problem with the EU-SILC is that a significant proportion of the responses are imputed (due to item non-response or the information being collected indirectly) and the variable flagging imputed values is not consistently coded, making it difficult to evaluate its implications (Brandolini et al, 2010).

Variable quality between Member States: Some of the income variables may be characterised by lower quality in certain Member States during specific periods of time (such as new Member States in the initial years of the period).

Operationalisation of variables and methodological approach

Several methodological decisions had to be taken in order to construct the variables capturing each of the abovementioned components of income.

1. Monthly labour income

The original EU-SILC variable used in this report refers to annual labour income, gross employee cash or near cash income (that does not include social security contributions) for employees and cash benefits or losses from self-employment. The following formula is applied to obtain the monthly full-time equivalent labour income (based on Brandolini et al, 2010):

$$\text{Monthly ft eq. labour income} = \frac{\text{annual cash earnings}}{\text{months in ft jobs} + (\text{months in pt jobs} * (\frac{\text{pt}}{\text{ft}} \text{ ratio}))}$$

The monthly full-time equivalent labour earnings equals the EU-SILC variable of annual cash earnings (in the previous year) divided by respondents' number of months in full-time jobs over the same year, plus the number of months in part-time jobs multiplied by a country–sex specific ratio of median hours of work in part-time jobs to median hours of work in full-time jobs.⁶ This results in a full-time equivalent measure of monthly labour income across all employees, including part-time and temporary ones.⁷

The monthly full-time equivalent labour income among employees only considers labour income from dependent employment, while monthly full-time equivalent labour income among workers includes labour income from self-employment as well, for which a specific ratio of median hours of work in part-time jobs to median hours of work in full-time jobs is calculated. The unadjusted measure of monthly labour income among workers applies the same formula but without adjusting for the months worked in part-time employment. When an individual reports labour income

both from employment and self-employment, only the larger amount will be considered.

2. Annual labour income among individuals

This variable measures annual labour income without adjusting for the months worked throughout the year and allows for the possibility of some people having no income for part or even the whole year. Two measures are provided for different populations: (a) among active people, which refers to all individuals who were active (either worked or were unemployed) for at least one month during the previous calendar year, even if they did not receive labour income over part or all of the year; and (b) among inactive people, which includes all the working-age population, even if they did not receive any labour income for being unemployed or inactive, during part or all of the year. For individuals reporting both employee and self-employment labour income (only one of which was considered in the previous step), both sources of income are added in this step.

3. Annual labour income among households

This variable is constructed by adding the annual labour incomes of all the working-age members of the household and then dividing it by the equivalent number of household members (which is the number of household members adjusted by the OECD equivalence scale; this takes into account all the members, not only those of working age). Then, an identical share of the pooled income is assigned to each of the household members of working age.

4. Market income among households

This variable adds capital income and private transfers to the household: income from rents; income from interest, dividends and similar; private transfers received by young people under 16 years of age living in the household; private inter-household cash transfers received; minus private inter-household cash transfers paid. EU-SILC data present important limitations for the study of capital income, as it is quite likely that it significantly underestimates the capital income earned by households and individuals. Private transfers between households play an important role and their nature is different from that of capital from investments. These private transfers between households may be seen as an extension of the role of families in pooling resources.

6 For each country and year, a ratio is calculated dividing the median hours of work of part-time employees by those of full-time employees. A separate ratio is calculated across men and women.

7 A potential bias is prevented by adjusting the values of workers who hold more than one job by multiplying the labour income for a ratio of the hours worked in the first job to the total hours of work in all jobs so that the labour income of those having more than one job is reduced (proportionally to the number of hours worked outside the first job). This is applied to the two measures on full-time equivalent monthly earnings (since the objective is comparing inequalities in wages, even if the self-employed are included in the latter measure) but not to the unadjusted measure (since the objective is comparing inequalities in labour income). Moreover, an additional adjustment is made to the measure on monthly full-time equivalent wages among employees, for which all the abnormally low values found below a threshold of half the minimum wage of the country concerned in a particular year are eliminated (for further details, see Eurofound, 2015).

5. Disposable income among households

This variable reflects the subtraction of income by taxes and the addition of benefits carried out by the welfare system. The following taxes and benefits are included in EU-SILC: taxes on income and social contributions; taxes on wealth; unemployment benefits; old-age benefits; survivor's benefits; sickness benefits; disability benefits; education-related allowances; family/children-related allowances; housing allowances; and benefits related to social exclusion not elsewhere classified.

Other important issues to be taken into account regarding the methodology used in this study are the following.

Unit of analysis: The analysis will be performed among individuals between 15 and 65 years of age. This is straightforward for variables 1 and 2, which are calculated at the individual level. Variables 3 to 5 are also calculated at the individual level by taking the income at the household level and splitting it according to the OECD equivalence scale among the members of the household. Although the inequality analysis only focuses on people of working age, the rest of the population will affect the results indirectly when household-pooled income is studied (since part of the total household income will be assigned to the younger and older members of the household, even if they are not included in the sample). For the household market and disposable income, the incomes of people not of working age will be included as well.

Income levels: For the inequality analysis conducted at the EU level in Chapter 3, income levels across countries are expressed in euro adjusted by Eurostat's purchasing power standard (PPS), which makes them comparable across countries by taking into account differences in the costs of living. For the inequality analysis at the country level in Chapter 5, Gini indices are not affected by whether or not PPS are used. The information on income levels across countries presented in Chapter 6 will use data on national currencies so that changes in the value of the currencies in those countries outside the euro area do not affect the picture. Moreover, information on income levels is always presented in real terms by adjusting for inflation.

Treatment of negative values: Although uncommon, negative values may exist across all the income variables defined in this report except that of the monthly wage among employees. But most of the cases are concentrated in three components of income: income from self-employment; private transfers paid to other households; and taxes paid. In case there are no other sources of income (probably due to under-reporting in most cases) to compensate for these negative values, they will translate into negative values in the final measures of income inequality used here. There are three ways to treat these cases: leave them untreated, convert them into zeros or drop them from the analysis. Table A1 in the annex shows that the level of inequality (for household disposable income, although it would also apply to the different measures of income) is highest when negative values are included, declining slightly if converted to zero and a bit further if dropped from the analysis. Differences are generally negligible (slightly more significant in some countries, such as Germany, Denmark, Spain or the Netherlands) and this report will follow the intermediate approach by converting negative values into zeros and keeping all the observations. The findings and interpretations in this report are not generally affected by this decision.

Graphical representation of income data: As explained earlier, all the EU-SILC's income variables refer to the previous calendar year covered by the survey, introducing a one-year gap between the income measures used in this report and the year of the survey. This one-year gap is reflected when income data are compared to other variables from different data sources, such as employment variables or GDP. While this would offer a justification to change the reference year for the income data and show it accordingly in the graphs presented in this report, it has been decided to keep the reference year to that of the survey. The main reason is because the EU-SILC's information on the labour market status on the current year is used to construct the variable on monthly wages among employees so that the compositional effects affecting the workforce are taken into account adequately. Therefore, to maintain consistency with this measure (and with any other non-income variables from the EU-SILC used in the analysis), the current year of the survey is the one shown when representing the data, even if they refer to income obtained during the previous year. This report will use EU-SILC data for the period 2005–2014 while referring to income data for the period 2004–2013.

3 Income inequality from an EU-wide perspective

One of the main contributions of this report is to provide an analysis of recent income inequality trends from an EU-wide perspective, considering income levels across countries as part of a single EU income distribution and differentiating developments within and between Member States. There are few analyses of income inequalities from an EU-wide perspective in the literature and even fewer that map trends from the onset of the crisis. Nevertheless, despite the fact that European labour markets and their regulating institutions remain essentially national, providing a European-wide narrative on the evolution of income inequalities in the EU and across countries and income disparities between countries is highly relevant. This is especially the case against the background set by recent years, which was initially characterised by a process of deepening European integration from the creation of the euro and the enlargement of EU membership towards the east and, more recently, by financial and sovereign debt crises that are placing the EU under considerable strain.

Figure 2 provides an introductory picture of the distribution of household disposable income for the EU as a whole, broken down by Member States, in 2014 (income referring to 2013). It shows the percentage of European people found across the different annual income categories shown in the horizontal axis, which refers to euros adjusted by PPS to take into account differences in price levels across countries. Each bar represents intervals of €1,000 of household disposable income among working-age individuals. In other words, around 4.5% of Europeans of working age have a household disposable income between €10,000 and €11,000 per year. Figure 2 shows that from this perspective, the EU-wide income distribution is similar to that of a country, with a large concentration of people around mid to low income levels (between €9,000 and €14,000) and a skew to the right, with a long tail of some very high incomes.

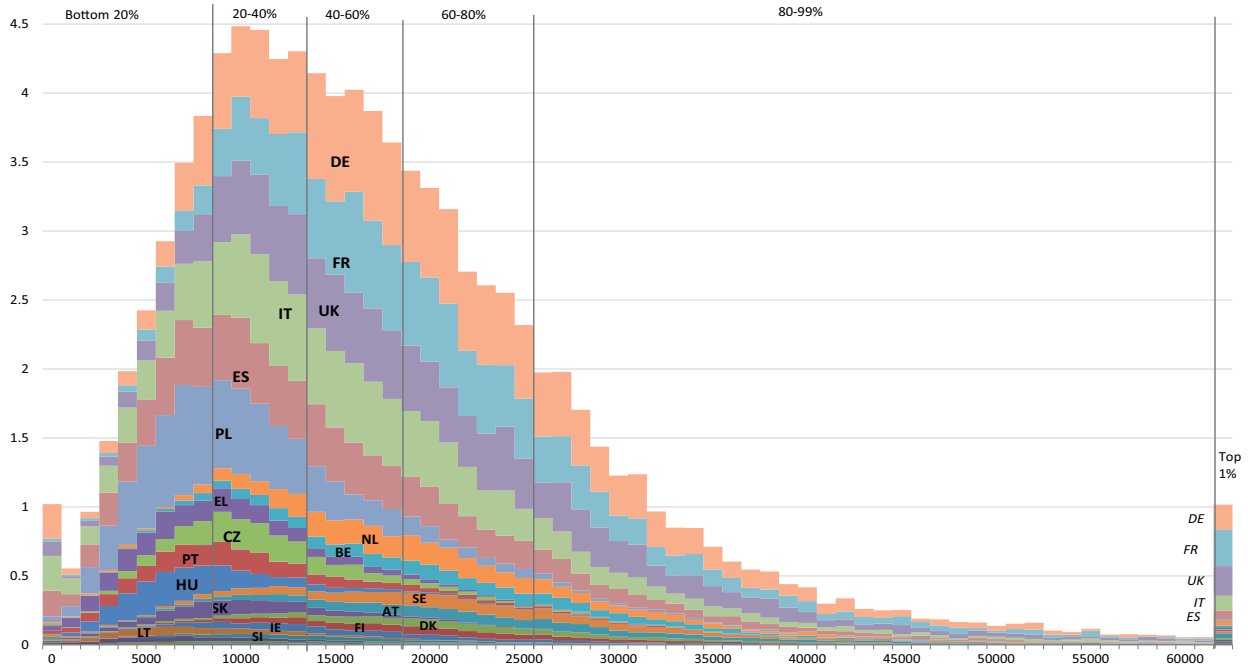
The differences in household disposable income levels between Member States are clearly reflected by the positioning of countries in the graph. Eastern European countries (and Mediterranean countries to a lesser extent) are much more present in the bottom quintile, corresponding to income levels below €9,000, while EU15 countries account for almost all the people found in the top quintile, corresponding to income levels above €25,000.⁸ The people in the top 1% of the EU income distribution earn more than €62,000. Most of them are from France, the UK, Germany and Italy, although information for top incomes drawn from the EU-SILC needs to be interpreted with care.⁹ But even if the countries occupy clearly different positions, there is a significant degree of overlap in the national distributions of income shown in Figure 2. For instance, the countries that dominate the top quintile also have a significant share of population in the lowest income quintile. This important overlap simply reflects that the dispersion of income within countries is much larger than the dispersion between their average incomes and it highlights the usefulness of an approach that integrates both aspects, as presented in Figure 2.

The notable redistribution carried out by the European welfare states and its role in compressing the income distribution is revealed when comparing the previous picture with the household market income distribution (in other words, eliminating the redistributing effect of taxes and transfers; see Figure 3). This distribution is much more scattered and polarised, with a big spike in values around zero because of the existence of many individuals and households with very little or no market income (and which depend entirely on the welfare system). According to the authors' estimate, more than 10% of Europeans have market incomes below €1,000 PPP per year. These are most likely households where all or most adult members are unemployed or inactive, a phenomenon that affects all countries, as shown in Figure 2. At the other extreme, the share of individuals with market incomes above €62,000 PPP is multiplied by 3.

⁸ For a listing of the EU15 Member States, please refer to the table at the start of the report.

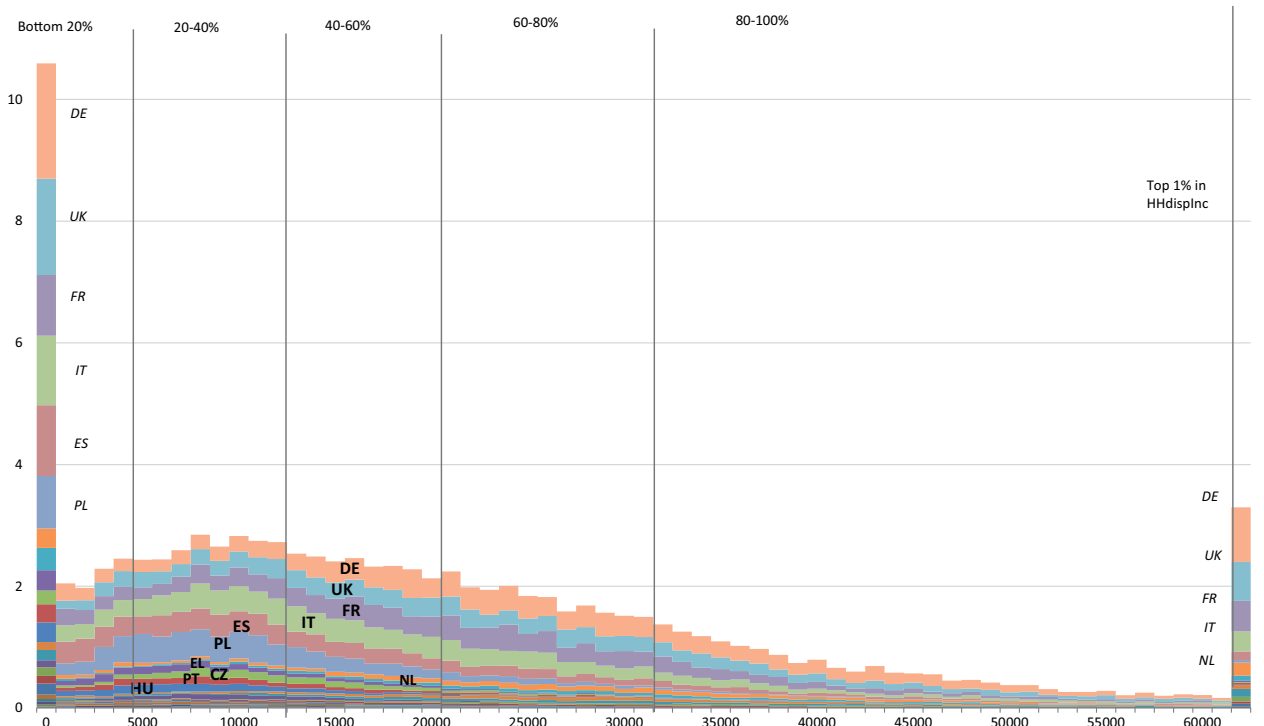
⁹ The EU-SILC probably underestimates the upper income levels due to a poor coverage of the population at the very top of the distribution.

Figure 2: EU-wide distribution by ranges of household disposable income in PPP euros, 2014 (%)



Source: EU-SILC.

Figure 3: EU-wide distribution by ranges of household market income in PPP euros, 2014 (%)



Source: EU-SILC.

The following section will analyse EU-wide inequality patterns over time by using relative indicators of inequality across different income sources. Gini indices will describe the evolution of EU-wide inequalities, while Theil indices will be used to analyse the extent to

which trends are driven by developments between or within Member States. Finally, a map of income-level developments will complete the picture of the impact of the Great Recession on the distribution of income at the EU level.

Income inequalities before and after the Great Recession

EU-wide inequalities – as measured by the Gini index – vary strongly across the different income variables, broadly in line with what would be expected (see Table 2). Inequality levels are more subdued for full-time equivalent wages and they progressively grow when labour income from self-employment is added, when labour earnings are not adjusted for part-time work and especially when they are computed as annual labour earnings among the active and the total population due to the inclusion of people with no labour earnings. Inequality levels are lowered by the family pooling of income and by the action of the welfare state.¹⁰

Interestingly, the levels of inequality are rather similar for the initial measure of full-time equivalent wages among employees and for the final measure of household disposable income. EU-wide inequality in final household disposable income as measured by the Gini index is 0.336 in 2014 (income referring to 2013), which is significantly lower than in the US, where it is estimated at 0.390 in the same year according to the

OECD (based on the OECD Income Distribution Database for the working age population, considered as 18–65 years).

Figure 4 shows inequality levels for those income variables, reflecting some interesting divergences over time. When the whole period 2005–2014 is considered (referring to income over the period 2004–2013), inequality levels have been reduced across all sources of income, but this is due to developments at the beginning of the period that have been reverted by the emergence of the crisis.

Two main insights emerge regarding the impact of the Great Recession on inequality levels. First, the crisis seemed to push inequalities upwards but outside the labour market via rising unemployment, not through widening pay differentials among the workforce.¹¹ Inequalities bounce upwards from 2009 (income referring to 2008) for all income measures, including the active and the whole working age population, but they remain stagnant or even continue to decline slightly for the three measures of monthly earnings among the workforce. However, the magnitude of the increases after 2009 is much less important than that of the decreases registered before the crisis. The biggest expansion of inequalities took place between 2009 and 2010, with more moderate developments since then.¹²

Table 2: Gini indicator for several income variables, for EU overall

Reference	2005	2006	2008	2008	2009	2010	2011	2012	2013	2014
Monthly wages, FTE (employees)	0.376	0.367	0.360	0.356	0.346	0.352	0.352	0.346	0.346	0.344
Monthly labour income, FTE (workers)	0.413	0.406	0.398	0.396	0.384	0.390	0.388	0.381	0.382	0.381
Monthly labour income (workers)	0.419	0.413	0.408	0.406	0.395	0.400	0.400	0.394	0.394	0.394
Annual labour income (active)	0.492	0.482	0.474	0.467	0.464	0.473	0.477	0.477	0.480	0.481
Annual labour income (all)	0.632	0.619	0.613	0.603	0.601	0.607	0.608	0.605	0.607	0.605
Household market income	0.493	0.480	0.474	0.463	0.459	0.469	0.471	0.470	0.474	0.472
Household disposable income	0.355	0.344	0.343	0.337	0.330	0.333	0.333	0.333	0.334	0.336

Note: FTE = full-time equivalent.

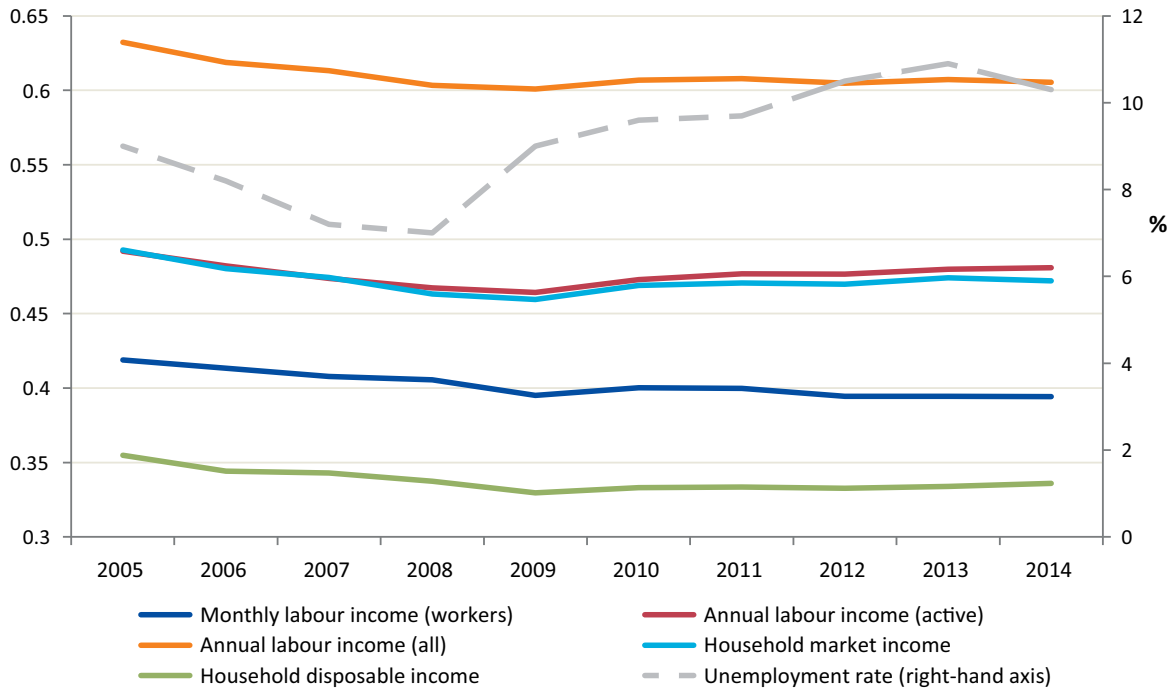
Source: EU-SILC.

10 The effect of the family pooling of labour earnings and that of capital has been considered together under the variable of household market income. The reason is that the inclusion of capital and private transfer has a rather negligible effect and moreover, contrary to what is expected, they slightly reduce income inequalities. Chapter 5 will discuss this issue in detail, which in part reflects the poor measurement of capital income in the EU-SILC but also the fact that capital income and private transfers are often received by people with no labour income.

11 The three variables on labour earnings among the workforce show the same pattern over time, which is why only the unadjusted monthly earnings variable is shown here.

12 It is important to remember that there is a one-year lag in the EU-SILC's income data, so that EU-SILC data for 2010 refer in fact to income from 2009. This explains why the notable employment corrections taking place in 2009 across most Member States mainly affect EU-SILC income data in 2010. Nevertheless, it has been decided to maintain the year of the EU-SILC data as the reference year (instead of the previous one to which its income data refer) because the employment structure and the potential impact of compositional effects refer to that year (see the methodology in Chapter 2).

Figure 4: EU-wide inequalities for different income indicators (Gini indices)

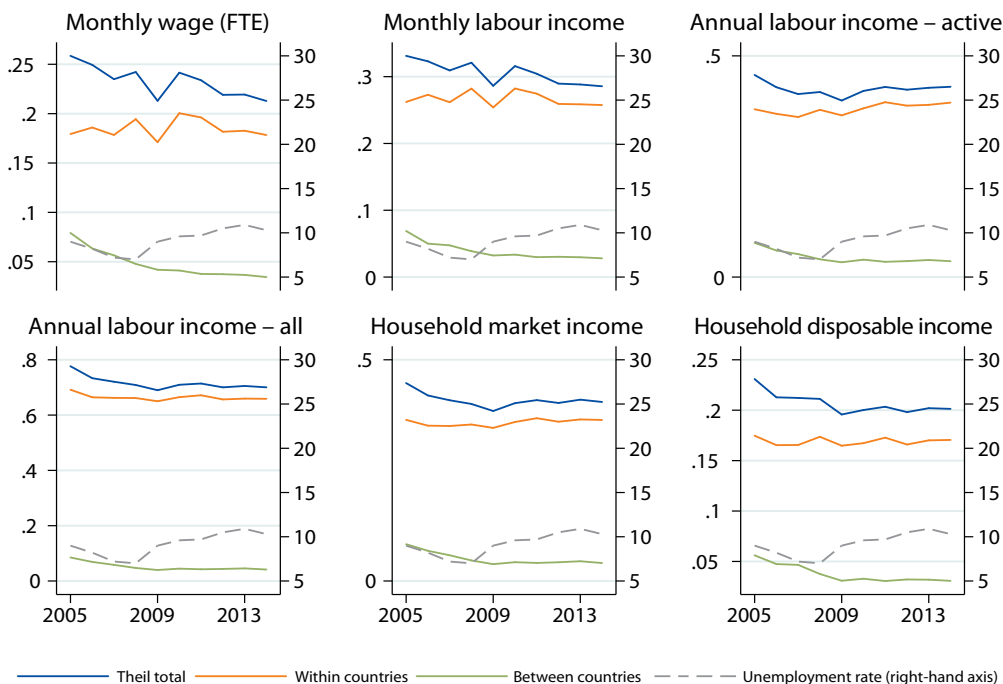


Source: EU-SILC and LFS (unemployment rate).

Second, the roles of the family and the state in cushioning income inequalities seem to influence the results in an opposite direction. On the one hand, some erosion in the inequality-reduction role of the family pooling of income could have occurred from the onset

of the crisis, as suggested by the fact that the increase in inequalities is larger for household market income than for annual labour earnings among the whole population. On the other hand, the role of the welfare state in reducing market income inequalities seems to

Figure 5: Theil indicators for several income variables (EU, 2005–2014)



Note: FTE = full-time equivalent

Source: EU-SILC and LFS (unemployment rate).

have been reinforced from the onset of the crisis (probably because of the activation of automatic stabilisers such as unemployment insurance), since it cushioned the surge in market income inequality. While inequalities in household market income grew by almost 3% between 2009 and 2014 (income referring to 2008 and 2013 respectively), inequalities household disposable income rose by less than 2%. Nevertheless, household disposable income inequalities increased in the last year for which data are available, while household market income inequalities declined, which may suggest a deterioration in the redistributive capacity of the welfare state in some countries experiencing continuing economic hardship.

Inequality developments and convergence between countries

An alternative measure of inequality is provided by the Theil index, whose decomposable nature is of great interest for this report because it can be used to describe how EU-wide inequality has been shaped by inequality developments within countries (the within component) and trends in income levels between countries (the between component).¹³

Data for the Theil index across all income variables show that although EU-wide inequality is mainly accounted for by within-country inequality, the between component has played a significant role in the recent evolution because of an important process of convergence between Member States (see Figure 5).¹⁴ The decline in EU-wide inequality before the crisis is almost entirely explained by income convergence between countries, even if within-country developments generally pushed inequalities downward as well. From 2009 (income referring to 2008), the interruption of this process of income convergence between countries is also key to understanding why within-country developments push EU-wide inequality levels up.¹⁵

Although this picture applies rather generally to all income variables, some nuances are worth noting. First, rising unemployment probably played a key role in pushing market income inequalities up and also in reversing the process of income convergence between countries. This is reflected by the fact that the process

of convergence continues (although at a slower pace) for monthly earnings among the workforce, but a divergence between countries emerges from the onset of the crisis in income levels among the population. Second, European welfare states partially offset the effects of rising unemployment in income inequalities as well as in income convergence. This explains why in the case of household disposable income, as opposed to household market income, the increase in within-country inequalities is relatively modest and the income convergence between countries gets interrupted but not reverted.

Impact of the crisis on real income levels

A comprehensive picture of the effects of the Great Recession also needs to consider the evolution of income levels, which may have suffered a downward correction that is not necessarily captured by the relative indicators of inequality presented so far. Real income levels for the EU as a whole are calculated by adjusting values by inflation and by PPS across countries.¹⁶

Figure 6 classifies the European working age population by deciles of household disposable income distribution and then shows how their income levels (by source) have evolved (income data referring to one year before to that indicated in the figure). Before the crisis, real income grew most strongly at the lower deciles, suggesting a strong reduction of overall EU inequality, particularly in the bottom half of the distribution. This occurs for all sources of income and is consistent with the previously discussed results for the Gini and Theil indices. This process, of course, has a strong between-country component. Although a significant overlap in the positioning of countries occurs in the EU-wide distribution (as was discussed in Figure 2, which shows the distribution of national populations that underlie Figure 6), lower income countries are much more present at the bottom deciles of the EU-wide distribution (these are mainly eastern European countries); the process of income catch-up in these countries explains to a large extent the observed expansion of income for the lower deciles in the EU as a whole.

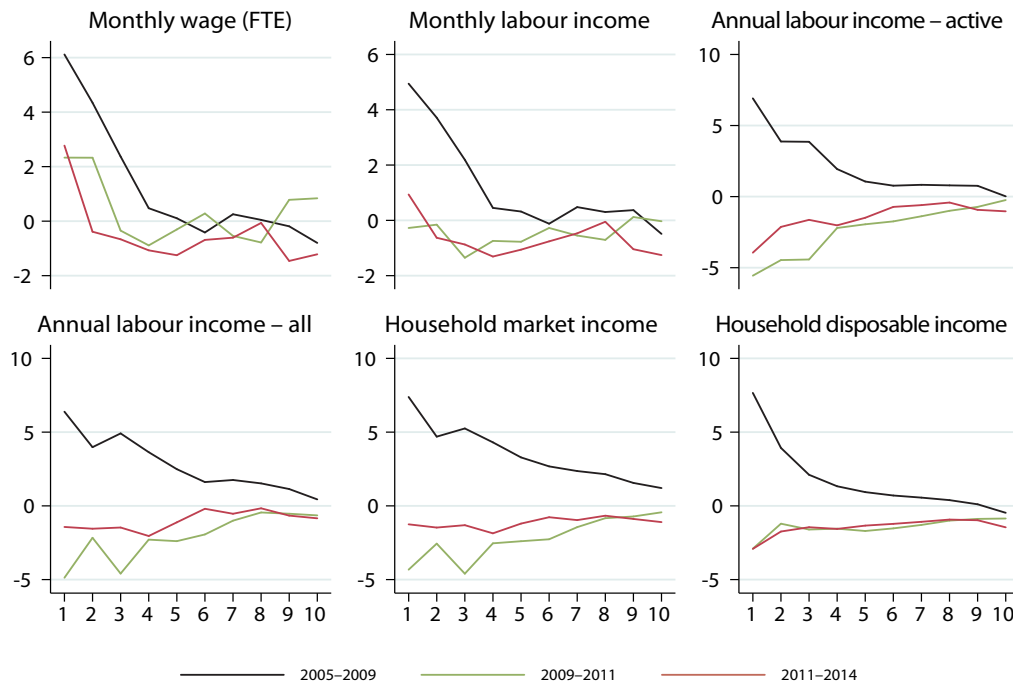
13 The Theil index is characterised by lower numerical values of inequality and more sensitivity to changes over time than the Gini index.

14 The added value of the truly EU-wide approach adopted in this report is that it takes into account between-country developments in income levels, while Eurostat's data on inequality levels for the EU-aggregate are only the result of inequality trends within countries.

15 Changes in the within-country component for the EU-wide Theil index hide significant cross-country paths in inequalities, as will be shown in Chapter 5.

16 Since inflation differentials across countries are already taken into account by PPS, all income levels across countries have been adjusted by the general inflation rate of the EU28 to obtain the incomes in real terms for the EU as a whole.

Figure 6: Average yearly growth in income levels by household disposable income deciles (%)



Note: Data refer to average yearly growth rates during each of the three subperiods (income data referring to one year earlier than the one indicated); FTE = full-time equivalent.

Source: EU-SILC.

The Great Recession had a notable impact on income levels, more obvious than was the case with income inequalities. There was a significant decline of real income across most of the distribution and across all sources of income. The decline tended to be stronger and more generalised in the first two years of the crisis but continued until 2014. The contrast with previous results (using relative inequality indices) is important: the impact of the crisis was generally stronger in terms of income levels (with a generalised decrease in real terms, which is more significant for those with low levels of income) than in terms of relative income inequality (with a moderate increase after 2009, as previously shown).

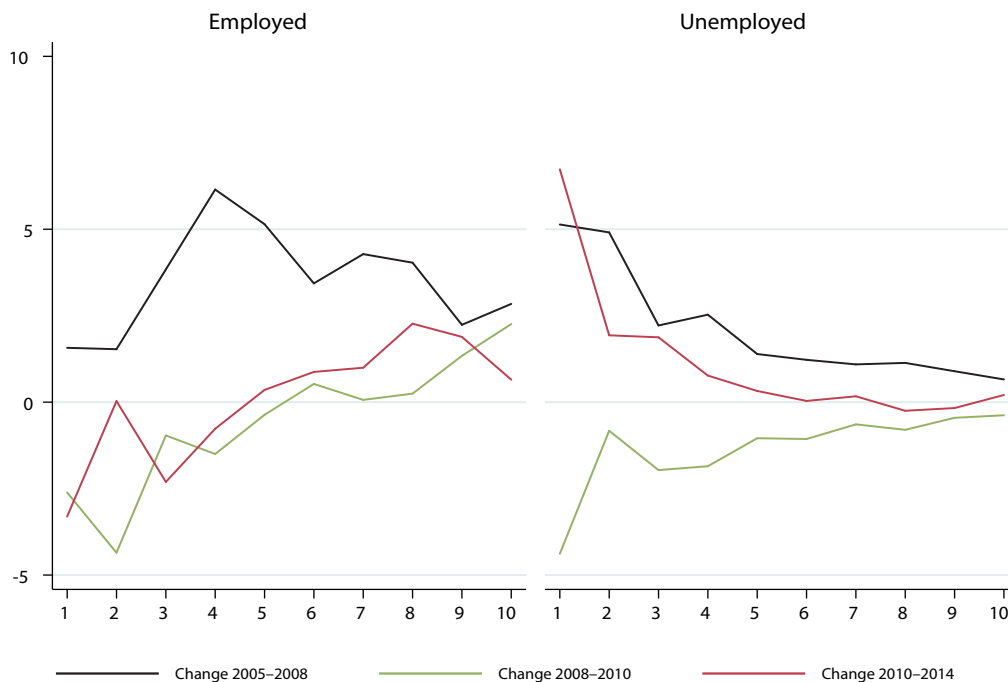
Two further details regarding the impact of the crisis on income levels are in line with what was said earlier for income inequalities. First, declining employment emerges again as a key force behind changes, since income measures extending beyond workers suffer a correction that is both larger and more unequal (being much more significant for low income levels). Second, the role of the welfare state in cushioning market forces

is again evident in the comparison between the evolution of market and household disposable income: the downwards correction in household disposable income levels is moderated significantly by the effect of taxes and transfers as well as the unevenness of the effect across deciles (the line is significantly flatter).

The key role played by employment turbulence in driving movements in income levels is further suggested by Figure 7, which shows changes (in percentage points) in the share of employed and unemployed people over the different income deciles.¹⁷ It shows that the convergence in income levels that took place in the early years of the period is linked to a process of employment creation that benefited those at the bottom of the income distribution relatively more, while the process of divergence in income levels from the onset of the crisis is associated with rapidly growing unemployment levels affecting those at the bottom much more. The lower income population is affected by higher unemployment rates, which has clearly intensified since the onset of the crisis, especially during the initial years of the financial crisis.

¹⁷ Contrary to what occurs with income, EU-SILC's data on employment refer to the actual year indicated in the figure. This is the reason why the three subperiods have been adjusted accordingly so that they are comparable with those used in Figure 6.

Figure 7: Change in the share of employed and unemployed people by household disposable income deciles, 24 EU Member States (percentage points)



Source: EU-SILC.

Summary

This chapter has discussed the impact of the Great Recession on EU-wide income inequalities and income levels, and with respect to the process of income convergence taking place between Member States. Before the crisis, EU-wide income inequalities declined, mostly as a result of a process of convergence in income levels between Member States. This convergence was due to more solid progress at the bottom of the EU income distribution, where lower income countries are more present.

The crisis pushed EU-wide inequalities upwards but outside labour markets due to declining employment levels, while labour earnings inequalities among the workforce continued to narrow very moderately. After 2009 (income referring to 2008), EU-wide income inequalities increased as a result of an expansion of inequalities within countries and to a halt in the process

of income convergence between countries. This seems linked to large drops in employment at the bottom of the income distribution after 2008, a development that affected many countries but to different extents, and therefore contributed to a between-country divergence.

European welfare states partially cushioned the effect of growing market income inequalities, since household disposable income inequalities increased more moderately than market incomes. Nevertheless, developments in the most recent period suggest a certain deterioration in the capacity of welfare states to counterbalance growing market inequalities. This seems to also be the case for families, whose role in reducing income inequalities by pooling resources at the household level seems to have eroded since the onset of the crisis. Nevertheless, these EU-wide developments may be the result of different trends across Member States, which will be explored in the next chapters.

4 Income convergence between Member States

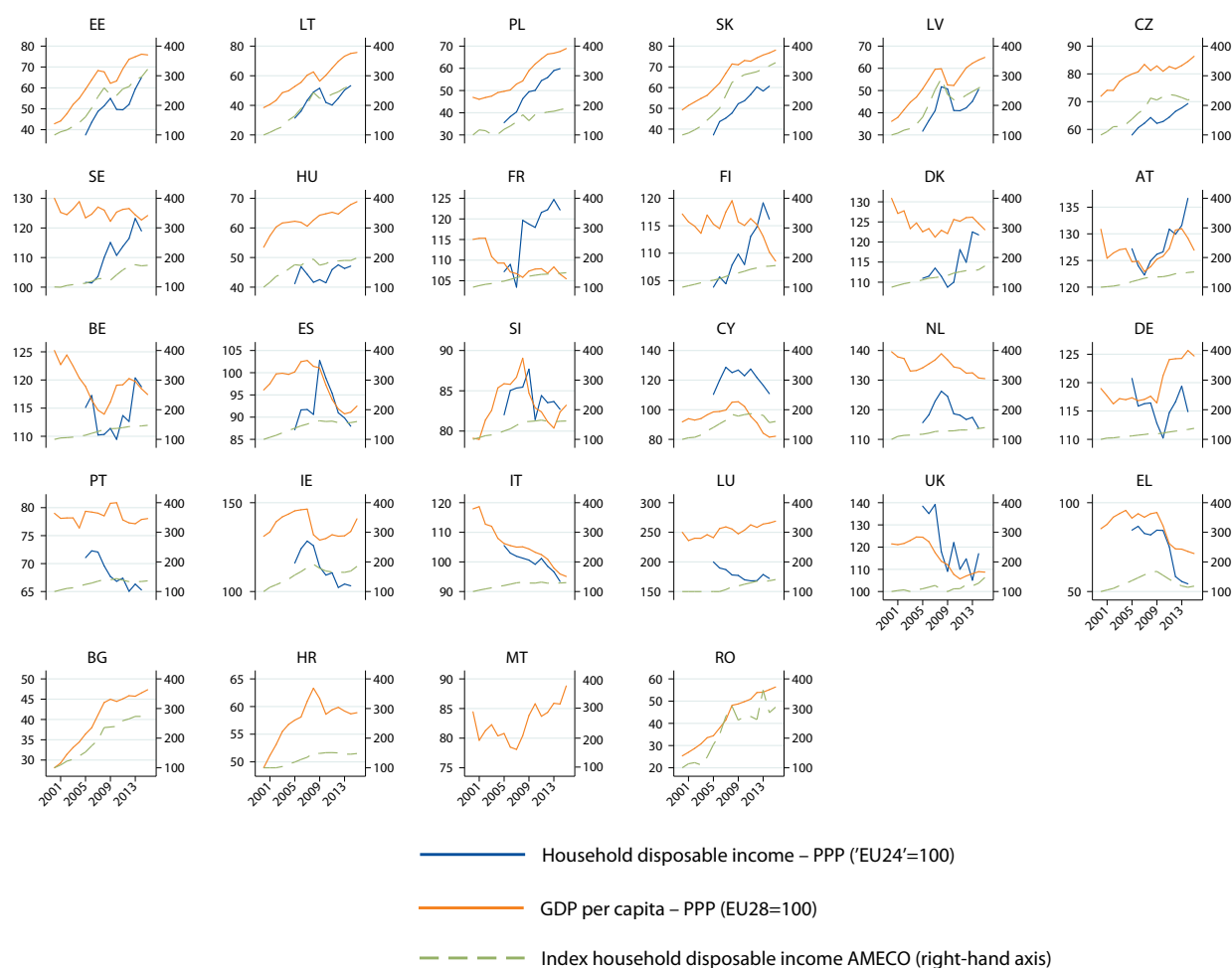
The previous chapter highlighted the key role played by between-country developments in explaining recent trends in EU-wide inequalities. Before the crisis, the reductions in EU-wide inequalities across the different sources of income were driven by a marked decline of the income differentials between countries. Nevertheless, this process of convergence has been halted since the onset of the crisis across all sources of income (although to a lower extent for earnings among the workforce, as shown in Figure 5).

This chapter provides a more detailed analysis of the process of income convergence between Member States using country-level data on average household disposable income from the EU-SILC (see Figure 8). This

is complemented with data from the annual macroeconomic database of the European Commission (AMECO), with two main objectives: first, to link developments of income levels and between-country inequalities with GDP, which is the most frequently used indicator of economic progress; and second, adding complementary data from AMECO on the gross disposable income of households, to test the robustness of the EU-SILC figures and evaluate longer time trends in household disposable income levels.

Even if the EU-SILC's average household disposable income and AMECO's GDP per capita refer to different concepts, a comparison between both variables shows similar developments, indicating that the process of

Figure 8: Average household disposable income, real GDP per capita and gross disposable income of households



Note: Countries are ranked by the magnitude of the growth rate of the average household disposable income over the whole period. There is a one year-gap in EU-SILC income data, which refers to the previous year.

Source: EU-SILC for average household disposable income and AMECO for GDP per capita and gross disposable income of households in euros.

convergence between Member States discussed in the previous chapter is mainly driven by economic growth. A strong upwards income convergence process takes place over the period, mainly driven by the catch-up of eastern European countries, although stagnating income levels in Continental and Scandinavian countries also contributed (in the UK income levels even declined, a development partially explained by currency depreciation).¹⁸ This process of convergence was notable before the Great Recession, but it has been interrupted by it due to average household disposable income and GDP levels declining more significantly in peripheral countries than in the core of Europe.

Despite this similarity in the overall picture provided by the authors' measure of household disposable income and AMECO's GDP per capita, there are some differences. The convergence in average household disposable income levels is stronger during the initial years of the period and is less abruptly interrupted from the onset of the crisis than in the case of relative levels

of GDP per capita. The strength of the process of catch-up in eastern European countries is more significant in average household disposable income than in relative levels of GDP per capita. At the same time, the deterioration of relative levels in some high-income Member States (Germany, Luxembourg and the Netherlands or Ireland) is stronger when using average household disposable income levels.

This points to the importance of monitoring well-being in European societies by using both aggregate economic indicators such as GDP, and a wider range of indicators that provide a more direct estimate of people's prosperity, such as household disposable income. Box 1 discusses the different picture obtained by using household disposable income and GDP per capita when assessing the impact of the crisis. The latter widely used measure of economic development gives a much more positive picture, which may conceal part of the drop in income levels in the periphery and stagnation in the core of Europe in recent years.

Box 1: Household disposable income and GDP per capita throughout the crisis: A comparison

Rising inequality levels and stagnating incomes among large segments of society are receiving increased attention by academics and policymakers across developed economies. Against this background, growing concerns are emerging with respect to the use of GDP per capita as the main measure used to monitor living standards and economic developments generally (Stiglitz et al, 2009). Empirical studies covering data for more than three decades have shown that the average yearly growth rate of GDP per capita has been significantly larger than that of the median equivalised household disposable income (Nolan et al, 2016).

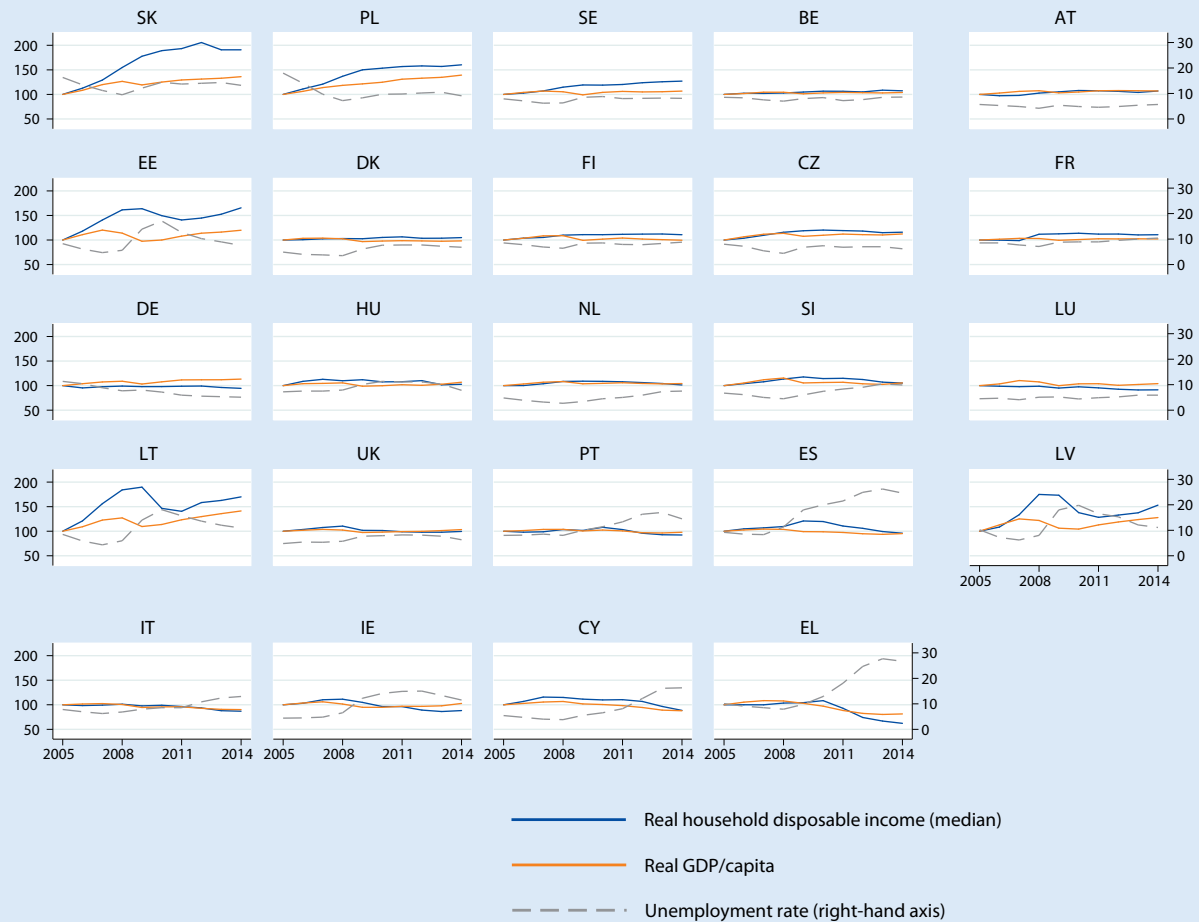
Figure 9 shows a comparison between the impact of the crisis as measured by GDP per capita and by our indicator of household disposable income (using the median instead of the average in each country).¹⁹ In this case, both measures are expressed in national currencies (instead of in PPP-adjusted euro and in reference to the EU) because the main objective here is not monitoring convergence trends, but assessing the impact of the crisis in each country.

The data reveal a downwards correction in the median household disposable income from the onset of the crisis. It declines in two-thirds of the countries between 2008 and 2014, mainly in the European periphery, Mediterranean countries and Ireland. Nevertheless, household disposable income levels also fell in the UK and some Continental countries (the Netherlands, Luxembourg, Germany and France), while they remain rather stagnant in the other core Member States from the Continental and Scandinavian regions (except Sweden).

¹⁸ For details of the country groupings used in this report, please see the table at the start of this report.

¹⁹ The mean was used in Figure 8 in order to map the process of convergence in income levels between countries explaining the results of the Theil analysis covered in the previous chapter. In order to provide a comparison with trends in GDP, Figure 9 uses the median income instead, which is more stable than the average income since the latter is more sensitive to outliers in the distribution of income (which can be problematic given the issues of precision that may arise when measuring income in surveys).

Figure 9: Median household disposable income and GDP per capita (indices)



Note: Both variables are expressed in national currencies and have been adjusted by inflation levels (constant in 2010). Countries are ranked by the growth rate of the median household disposable income between 2008 and 2014. There is a one year-gap in EU-SILC income data, which refers to the previous year.

Source: EU-SILC for median household disposable income, AMECO for GDP and LFS for unemployment rate.

The main insight from the comparison presented here is that the downwards correction in household disposable income levels caused by the crisis is not evident in some countries if GDP per capita is used instead. This is certainly the case in some important core Member States, such as Germany. It is also the case in several of the countries most severely hit by the crisis, such as Ireland, Spain and Greece, as well as the Baltic states, even if the median household disposable income ends up growing relatively more between 2011 and 2014 in the latter group of countries.

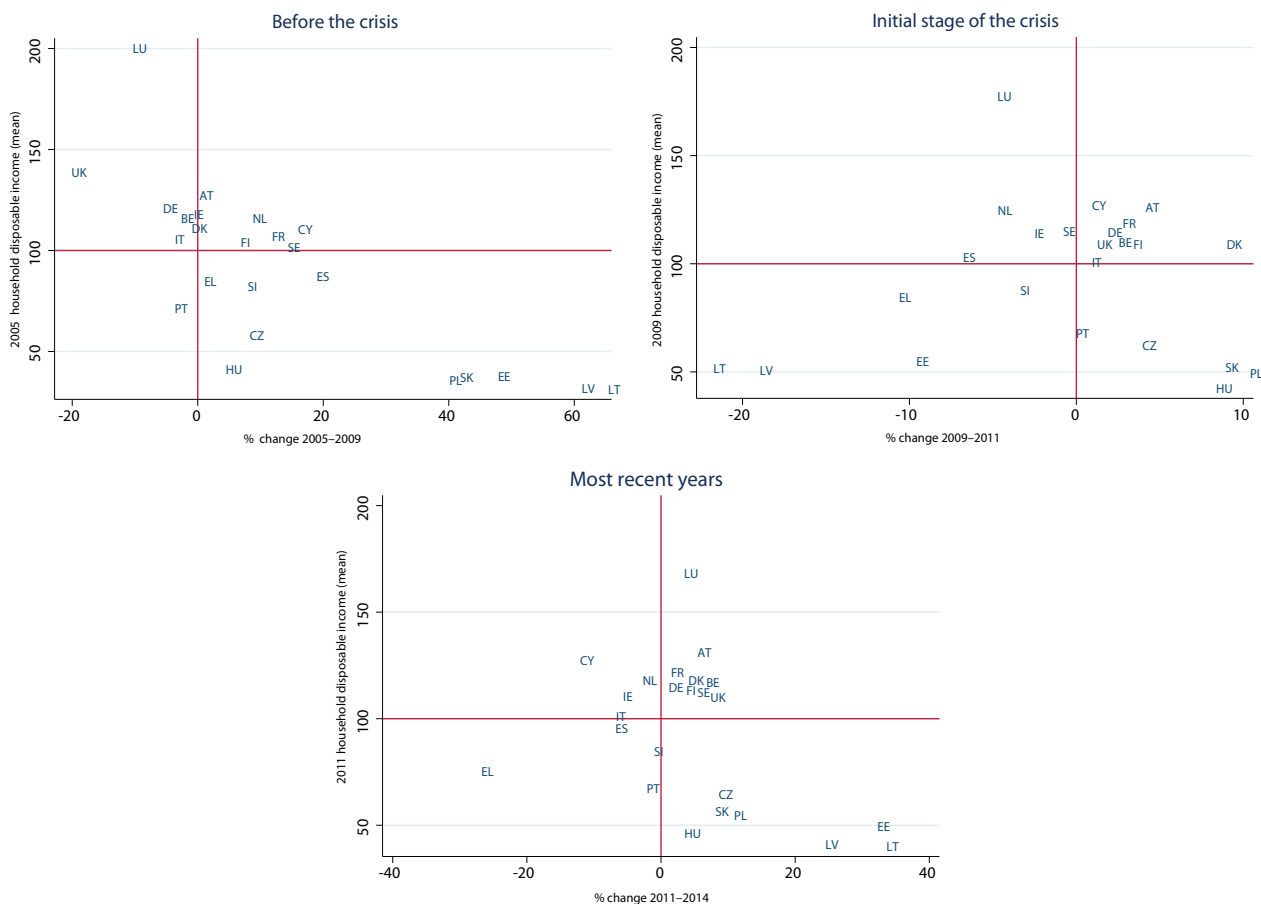
Therefore, GDP per capita may fail to capture a deterioration of living standards in some European societies that seems better reflected by the decline in median household disposable incomes. Nevertheless, this is not always the case, since the opposite development occurs in some CEE countries (and in the Baltic states, if the whole period is considered) as well as France and Sweden, where the household disposable income grew relatively more than GDP per capita.

The discrepancies between both indicators may be due to a combination of factors. Nolan et al (2016) identified some of them:

- price adjustments (since GDP is adjusted by the GDP deflator and household income by the consumer price index);
- the national income concept (since GDP refers to domestic output and household income to income inflows to resident households);

- data sources (since GDP arising from national accounts and household income typically come from surveys);
- household size (given that GDP is divided by the total population and household income is divided by – equivalised – household size);
- levels of inequality (since growth in median household disposable income will be more modest than in GDP per capita or average household income if incomes grow relatively faster at the top of the income distribution).

Figure 10: Development in average household disposable income (in PPP, 24 EU Member States (EU24) = 100)



Source: EU-SILC.

Figure 8 also provides figures on the gross disposable income of households from national accounts (AMECO), which has not been used to assess convergence between Member States because it cannot be directly compared to the EU-SILC’s average household disposable income.²⁰ Nevertheless, this variable is useful because it provides two main insights that reinforce the main narrative that has been provided by

EU-SILC data. First, it shows that the described trends across countries were ongoing from at least the early 2000s: a significant growth in household gross disposable income occurred in eastern Europe, while growth was more modest in the EU15 generally. Second, AMECO’s data on both household gross disposable income and GDP per capita suggest that the described picture would be further confirmed by the inclusion of

²⁰ AMECO’s variable refers to both households and non-profit institutions serving households. It does not provide an average per household, but rather an aggregate magnitude at the country level resulting from adding disposable income among all households. Moreover, the variable is not fit to adequately evaluate convergence because it is expressed in levels of euros (instead of in PPP-adjusted euros) and moreover not expressed in relation to the EU level (as is the case with the variable from EU-SILC).

those Member States not available in the EU-SILC: notable progress generally occurred in Bulgaria, Croatia and Romania, while GDP per capita data reflect a more moderate (only from 2007) convergence in the Mediterranean country of Malta.

A detailed analysis of EU-SILC data on average household disposable income reveals a more nuanced picture of the trends in income levels across countries behind the process of convergence described earlier. Figure 10 reflects the income catch-up process before the crisis (between 2005 and 2009, income levels referring to 2005–2008), with household disposable income levels growing much more where they were initially lowest, mainly in eastern European countries. This process could have been stronger if income levels had progressed among the lower income Mediterranean countries, but this mainly occurred in Spain.²¹ Above the EU average, incomes declined notably in the two countries where they were initially highest (Luxembourg and the UK) and they declined slightly, remained stable or progressed rather modestly across many Continental and Scandinavian countries.

A decomposition of the EU-level Theil index carried out in the previous chapter showed that the crisis interrupted this process of convergence. This is clearly reflected in the trends between 2009 and 2011 depicted in Figure 10 (income referring to 2008–2010) due to income levels being much more resilient in the European core (except in Luxembourg and the Netherlands) and declining significantly in many countries in the European periphery, mainly in some Mediterranean and Baltic countries, although household income continued to progress in some other CEE countries. Nevertheless, in a much milder and less generalised form, the process of catch-up seems to have started recovering somewhat between 2011 and 2014 (income referring to 2010–2013), with some expansion of income levels in some of the eastern European Member states (notably in the Baltic states), while they continue to remain rather stagnant in most core Member States. However, income levels continued declining in Mediterranean countries until the most recent period (very significantly in Greece).

Summary

This chapter has discussed the interrupted process of convergence in levels of household disposable income that has taken place in Member States between 2005 and 2014 (although national accounts data show it started from at least the early 2000s). This initial convergence prior to the crisis (between 2005 and 2009, income referring to 2004–2008) was due mainly to a process of relative income catch-up in CEE countries as well as income deterioration or stagnation in several high-income countries in the European core, such as the UK, Germany and other Continental countries. The Mediterranean region failed generally to converge even in the initial years.

The process of convergence was intense before the crisis and drove a significant decline in EU-wide inequalities, but was interrupted by the crisis due to a strong negative development in the European periphery in many eastern European countries (especially the Baltic states) and many Mediterranean countries, while relative income levels were much more resilient in the European core. Nevertheless, average household disposable income levels are slowly starting to grow again and catching up in the most recent years in many eastern European countries (especially the Baltic states). Mediterranean countries continue to suffer a downwards correction.

Some of these developments are not always evident when using other indicators of economic prosperity, such as GDP per capita, which provide a more benign picture of the impact of the crisis among some European societies than household disposable income levels (in Germany, for instance) and as well in some of those countries most severely hit by the crisis (such as Spain, Greece, Ireland or the Baltic states), although the opposite occurs in other cases. This underlines the importance of using a wider set of indicators than GDP when monitoring developments of economic progress and well-being in Europe.

21 Moreover, the notable expansion of income levels in Spain is largely due to considerable progress in the year 2009 due to data revision in that year. The progress was much more modest between 2005 and 2008.

5 Comparative analysis of inequality trends within Member States

This chapter complements the picture on developments between countries provided in the previous chapter by analysing inequality developments within EU Member States between 2005 and 2014 (income data referring to 2004–2013). It maps cross-country trends in income inequalities for different sources of income and analyses how they have been shaped amid the Great Recession by forces such as employment turbulence or changes in the capacity of families and welfare states to cushion income shocks.

This chapter provides an update to the picture previously provided by similar comparative studies, particularly some recent OECD studies (OECD, 2008, 2011), by mapping developments both before and after the economic crisis. The results of this analysis show that inequalities in household disposable income have increased during this period in two-thirds of the countries, confirming the upwards trend in income inequality levels affecting many Member States that was identified in the abovementioned OECD publications. Nevertheless, while those earlier studies pointed to wage inequalities as the key driver behind growing income inequalities, these findings show that in the crisis it was declining employment levels and not widening pay differentials among workers that drove inequality developments, even though the actions of welfare states have cushioned growing inequalities in market income. This pattern is especially evident in the European periphery, where both unemployment and income inequalities grew most rapidly. The results from this report and those from the OECD studies mentioned can be seen as complementary, since the latter look at long-term trends over several decades while the current report covers a short-time span crucially influenced by the Great Recession and the effects of rising unemployment levels.

The first section of this chapter provides an introductory picture of economic and labour market developments across Member States in recent years and introduces a regional map of inequality across Member States. The

rest of the chapter analyses the evolution of inequalities over time for each of the different sources of income, following the framework laid out in the methodological section.

Inequalities and the uneven impact of the crisis

The results for EU-wide inequalities presented in Chapter 3 showed that within-country inequalities tended to decline in the initial years of the period until they were pushed upwards from the onset of the crisis. The country-level inequality developments to be presented in this chapter generally confirm this picture by showing that income inequalities behaved counter-cyclically, declining before the crisis in many countries and then moving generally upwards from the onset of the crisis.

This counter-cyclicity of income inequalities needs to be put in the context of general developments in economic growth and employment. On the one hand, the downward trend in income inequalities before the crisis would be consistent with a period of economic growth and job creation. Nevertheless, it is important to stress that the evolution of income inequalities prior to the crisis covered in this report is not representative of the longer-term trends that seem to be affecting Member States in the last two or three decades and that point to growing income inequality in many cases, though to different extents and with important exceptions (see Box 2).

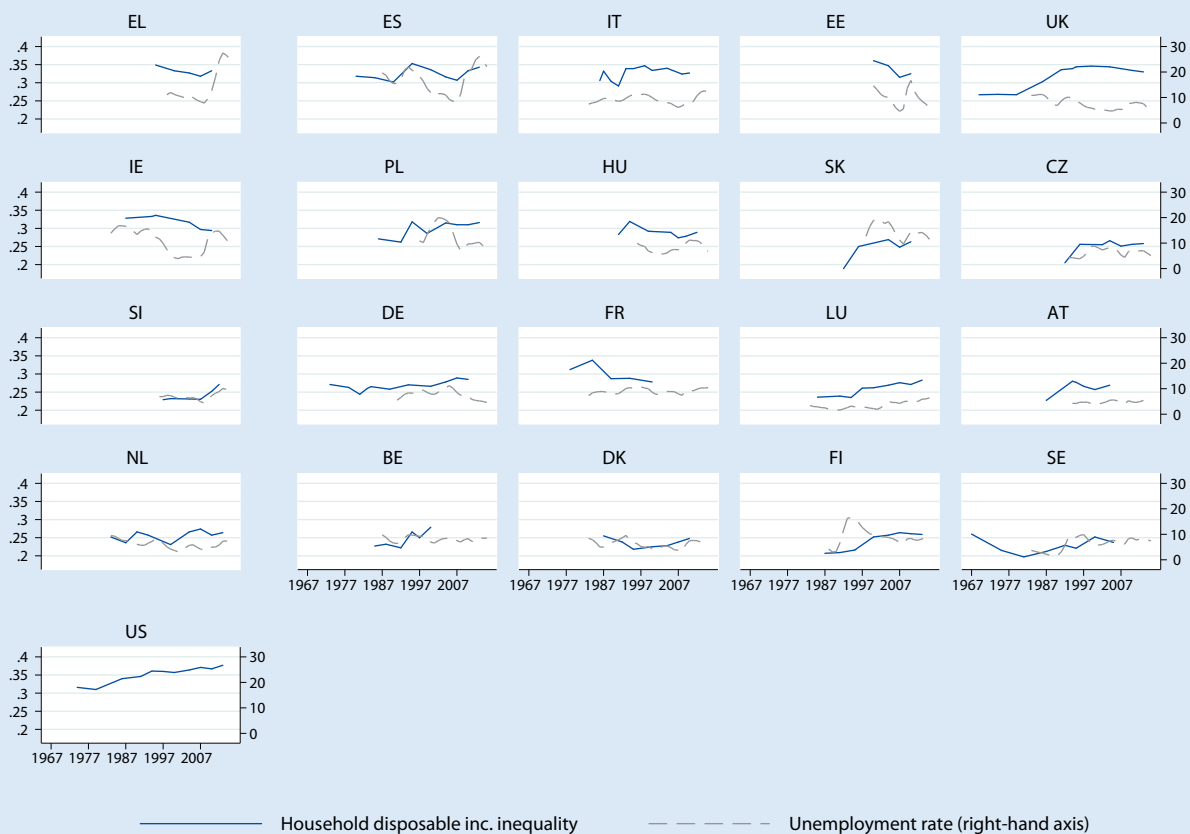
On the other hand, growing income inequalities across many Member States since the onset of the crisis would be consistent with a time of economic distress and employment corrections depriving many people of labour income, especially in those countries most severely hit by the crisis. Box 3 provides a summary of this economic and employment context.

Box 2: Growing inequalities in the long term?

The analysis in Chapter 3 of EU-wide household disposable income inequality showed that within-country inequalities were somewhat pushed upwards since the onset of the crisis, reversing a previous declining trend (although modest as well) in the period 2005–2009. These earlier trends were surely influenced by the intense economic growth characterising most of the decade of the 2000s before the emergence of the Great Recession; they may therefore paint a misleading picture of what had been the most common patterns in income inequalities across Member States in previous decades.

A look into longer-term patterns is possible, using data from the Luxembourg Income Study (LIS), which maps household disposable income inequality across many Member States using a longer time span, in some cases going back the 1960s and 1970s (see Figure 11).²² Two main insights emerge from the data that are relevant for the purposes of this report.

Figure 11: Household disposable income inequality (Gini index)



Source: Luxembourg Income Study database and LFS (unemployment rate).

LIS data do confirm a trend towards higher levels of income inequalities across many Member States in recent past decades. Scandinavian countries register rising inequalities from the 1980s (in Sweden) and 1990s (Denmark and Finland), reverting the declines in income inequality taking place up to the early 1980s in Sweden and the mid-1990s in Denmark. All Continental countries except France registered growing income inequalities over time, even though the time periods covered vary and opposite trends may coexist in different subperiods (particularly in the Netherlands). Eastern European countries (except Hungary and Estonia) reflect growing income inequalities from the 1990s. The UK registers a persistent trend towards higher income inequality levels from the early 1980s, matched only by that in the US.

²² LIS data on household disposable income inequalities are not directly comparable to the data presented in other parts of this report, not only due to the fact that they originate from different datasets and cover different concepts (for instance, LIS data refer to monetary and non-monetary income). There are also some methodological variations: LIS estimates cover the whole population and the income is made equivalent by dividing at the household level by the square root of the number of household members.

However, this trend towards higher inequality levels is not as strong as often assumed and it is certainly not universal. Significant reductions in inequalities are registered as well from the second half of the 1980s in France and from the end of the 1990s in Ireland. Declines in income inequalities occur from the end of the 1990s and early 2000s in Hungary and Estonia respectively, perhaps reversing the previous increases associated with their transition to a market economy (something that can be observed in the Hungarian case using LIS data). Finally, Mediterranean countries are characterised by rather mixed trends: a pattern of decline seems to emerge in the 1980s, which was reversed in the 1990s but re-emerged in the second half of the 1990s and the 2000s, before the crisis pushed inequalities up again.

It is important to note that with some exceptions, such as the UK, cyclical variations in income inequalities across countries broadly follow changes in the unemployment rate, reflecting a counter-cyclical pattern of income inequalities over the business cycle.²³

Box 3: European labour markets amid the Great Recession – the core–periphery divide

Economic and labour market trends during the period between 2005 and 2014 were strongly shaped by the impact of the Great Recession. Before 2009, GDP and employment levels expanded across all Member States, while the unemployment rate was reduced almost everywhere. From 2009, GDP per capita levels were pushed downwards and are still below pre-crisis levels in more than half of the EU28. This unleashed notable turbulence in labour markets, with general corrections in employment levels (which are still below pre-crisis levels in more than half the countries) and unemployment rates moving upwards in almost all countries (see Figure 12).

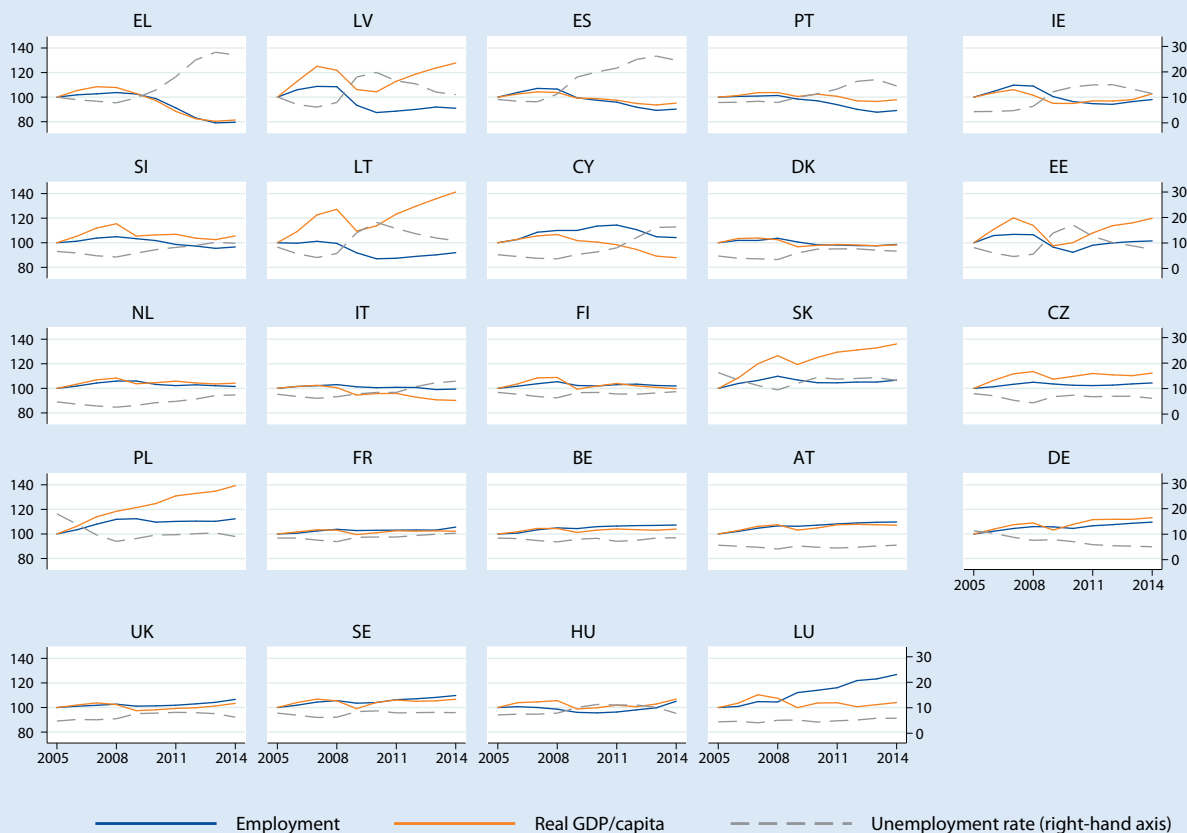
Nevertheless, there are significant differences across Member States, with a core–periphery divide both before and after the crisis. Before the crisis, eastern European Member States experienced a rapid catch-up process with fast economic growth, while growth was moderate in EU15 countries generally and even more so in some Mediterranean countries (Italy, Portugal and Spain) once the effect of inflation differentials are discounted. At the same time, employment levels rose generally more in eastern European countries (although also in Spain and Ireland), more moderately in Continental and Scandinavian countries and even more so in some Mediterranean countries (Portugal, Italy, Greece), the UK and France. Unemployment rates were notably reduced in all eastern European countries (except Hungary), while they increased in Anglo-Saxon countries and Portugal.²⁴

The Great Recession shifted the sign of the core–periphery divide. Economic activity was negatively affected across all countries but especially in the European periphery, represented in this case by eastern European and Mediterranean countries. Some countries in the eastern European group recovered rapidly and managed to continue their catch-up process, while the economies of Mediterranean countries remained under considerable strain. As a result of these trends, employment levels declined significantly in Mediterranean countries (and Ireland and Denmark) and in some eastern European countries (mainly the Baltic states), but not in those that were less affected or recovered more quickly (Poland, Hungary, the Czech Republic and Slovakia). On the other hand, the European core countries (represented in this case by Continental and Scandinavian countries and the UK) have been much more resilient in the crisis. GDP per capita levels did not register large corrections between 2008 and 2014 and employment continued to expand after 2009 in some Continental countries and the UK.

²³ Moreover, it seems there is a certain trend towards convergence in inequality levels between countries, since income inequalities increased in some of those countries where they were initially lowest and vice versa. This will be explored later for the countries covered in this report.

²⁴ For a definition of country groupings, please see the table at the start of the report, or on p. xxx in Chapter 5.

Figure 12: Employment levels, GDP per capita (indexes) and unemployment rates (%) over time



Note: Countries are ranked by the magnitude of the employment correction between 2008 and 2014.

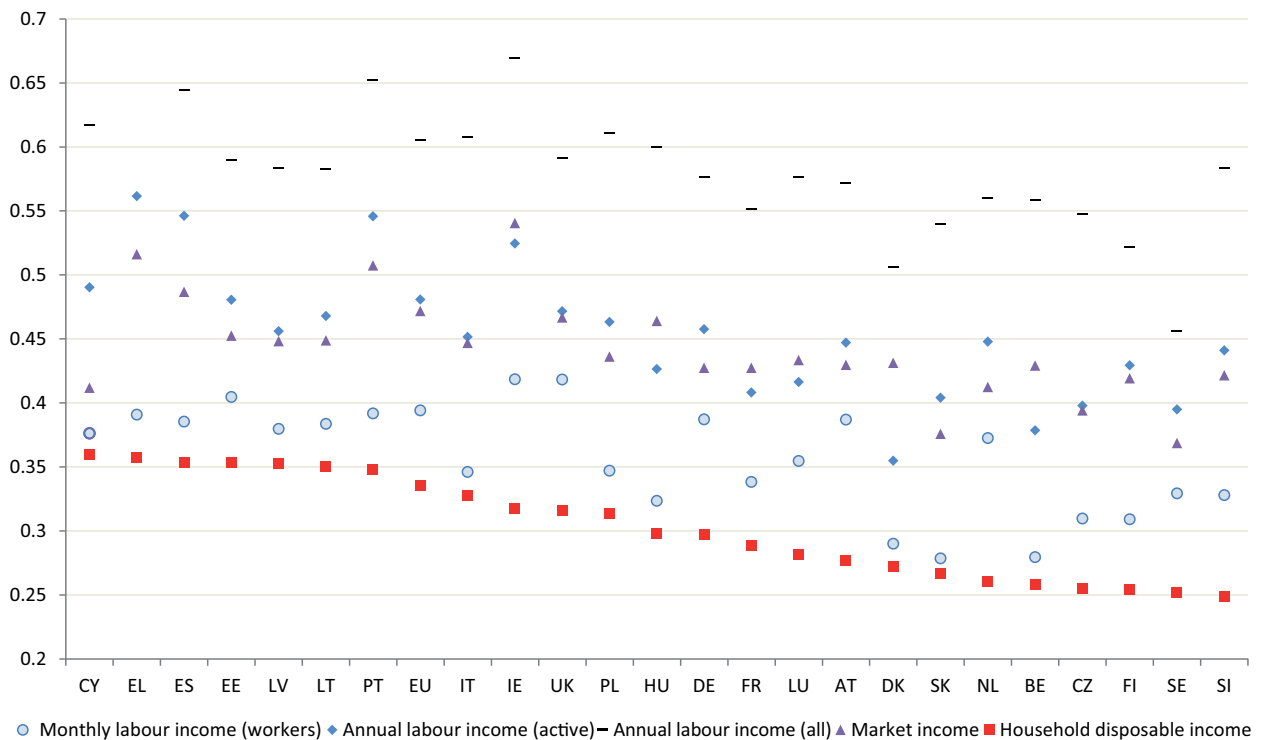
Source: Labour Force Survey (LFS) and AMECO for GDP data.

Before moving to a discussion of the evolution of inequalities across different sources of income, it is useful to provide an overall map of European income inequalities that will help to structure and interpret the results presented in the following pages. Figure 13 introduces a panoramic view of inequalities across Member States for income variables in 2014 (income data referring to 2013).

Inequality levels vary widely across countries, but the different sources of income are similarly related everywhere: inequality is lower for monthly earnings among workers and widens notably when unemployed and especially inactive people are added, to be reduced again when income is pooled at the household level and especially when it is redistributed by the state.²⁵

²⁵ Table A2 in the annex shows data on inequality levels for all sources of income in 2014. It should be noted that inequality levels in the first measure of the framework, full-time equivalent wages, and in the last one, household disposable income, are remarkably similar.

Figure 13: Gini indices for different income categories, 2014



Note: Countries are ranked by the magnitude of the household disposable income inequality.

Source: EU-SILC.

The positioning of countries in Figure 13 reflects the fact that distribution of income inequality is the result of economic and labour market dynamics, family structures, labour market institutions and other public policies that are typically associated with different groups of countries. Although it is beyond the objectives of this report to systematically discuss the political economy of income inequalities in Europe, a regional–institutional classification of countries can be useful to describe European patterns of income inequality, as indicated in the table (note that country clusters are roughly listed in decreasing extent of inequality).

Mediterranean countries	Cyprus, Greece, Italy, Portugal and Spain
Baltic states	Estonia, Latvia and Lithuania
Anglo-Saxon countries	Ireland and the UK
Central and eastern European (CEE) countries	Czech Republic, Hungary, Poland, Slovakia and Slovenia
Continental countries	Austria, Belgium, France, Germany, Luxembourg and Netherlands
Scandinavian countries	Denmark, Finland and Sweden

Mediterranean countries are generally characterised by high levels of inequality in household disposable income. Inequalities in labour earnings are also

relatively high, particularly if the analysis includes the unemployed and the inactive population. The role of family pooling in reducing inequalities is generally around or above the European average, but the welfare state plays a comparatively modest role in redistributing income.

The Baltic states also have high levels of inequality in household disposable income. They are found at the upper positions of wage inequality, but contrary to what occurs in Mediterranean countries, they are comparatively less unequal when the effect of unemployment and inactivity is taken into account. The family pooling of resources has an average effect in reducing inequality and state redistribution is particularly weak.

Anglo-Saxon countries have intermediate to high levels of income inequality. They have the highest levels of inequality for the wages of employees, but their relative position in Europe becomes less salient once unemployment and inactivity are considered as well (although in Ireland a high inactivity rate pushes up its position in terms of market income inequalities for the working age population). The effect of family pooling of resources is weak, while that of the welfare state is about average in the UK and quite strong in Ireland, which results in the latter moving down positions in the final inequality ranking.

Central and eastern European (CEE) countries are split between intermediate (Poland and Hungary) and low levels of household disposable income inequality (Slovenia, the Czech Republic and Slovakia). They have relatively low inequality levels among the workforce, but they generally move up the inequality ranking once unemployed and inactive people are included in the analysis. The family pooling of resources generally plays a strong role in reducing inequalities, while the state has a relatively important role in Slovenia, Hungary and the Czech Republic.

Continental countries are a diverse group characterised by intermediate to relatively low inequalities. They generally occupy an intermediate position in terms of wage inequality and then they generally move down in the inequality ranking when the sample is extended to unemployed people. The role of the family pooling of resources in reducing inequalities is around average when compared to the rest of the Member States, while that of the welfare state redistribution is relatively important generally.

Scandinavian countries have low levels of household disposable income inequality. They register low inequality levels among the workforce and they are the most egalitarian countries once the sample extends to all the working age population. The moderation of inequalities by the family pooling of resources is the weakest across all clusters, but their welfare states are among the most redistributive in Europe.

Labour earnings among the working, active and whole population

Figure 14 introduces data on inequality levels for unadjusted personal labour earnings considered among three different populations: workers, the active population and the whole working age population. Inequalities in monthly earnings among workers are

logically more subdued, although they still vary notably across countries, being relatively high in Anglo-Saxon and some Mediterranean and Baltic countries and lowest in Scandinavian countries, some CEE countries (except Poland) and Belgium, with cross-country variations resulting from wage differentials and the effect of self-employment and part-time work (see Box 4 for details). As expected, labour income inequalities widen notably once the analysis includes active and inactive people who do not earn labour income, with cross-country differentials mainly depending on the number of unemployed and inactive people.

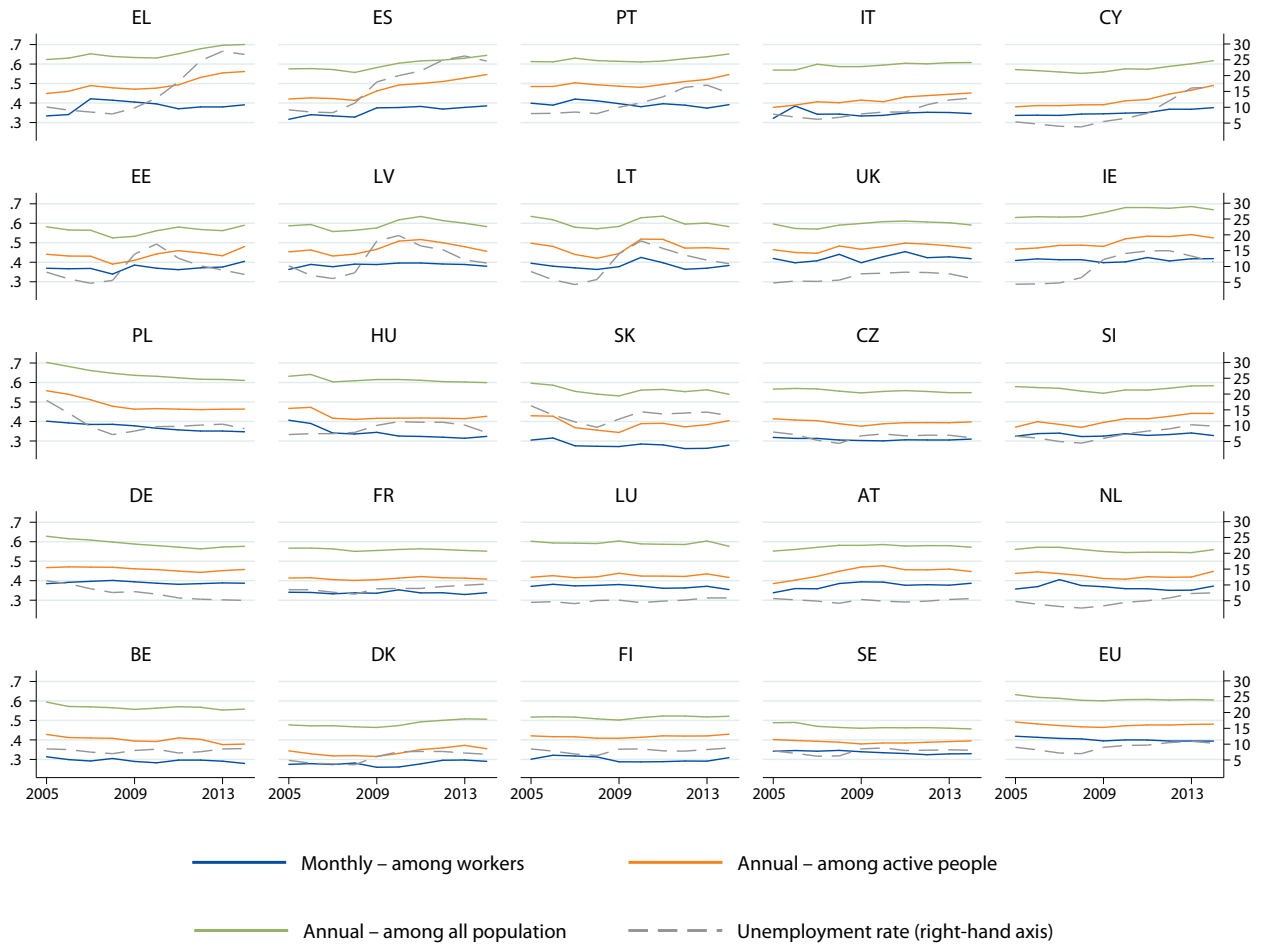
The most revealing picture emerges when comparing the trends across these different indicators, which shows that growing income inequality from the onset of the crisis is mainly due to rising unemployment levels and not widening pay differentials among workers. Income inequalities among the active population and the whole working age population increase across most countries from 2009 (income data referring to 2008).²⁶ Conversely, the evolution of earnings inequality among workers is moderate and more mixed.²⁷ In fact, Figure 14 shows how in the countries where unemployment grew more, the crisis often had a contradictory impact on the earnings of workers and the labour income of the working age population: while it made the latter significantly more unequal (by expanding the share of people earning no labour income), it often reduced the inequality of the former (probably a compositional effect, since those leaving employment in a crisis tend to have lower wages).

Figure 14 also reflects the strong divide that emerges between the European core and the periphery from the crisis. Unemployment hikes and the associated surges in income inequalities are much more significant in the Mediterranean and Baltic countries (and Ireland, Slovakia and Slovenia) than in Continental and Scandinavian countries (with perhaps the exception of Austria and Denmark, which register growing inequalities among workers and the active population).

²⁶ The effect of the crisis is stronger on labour income among the active population because unemployment grew significantly and thus so did the share of unemployed workers with no labour income. For the full working age population, this impact is partly diluted by the large and more stable share of inactive population.

²⁷ The notable surge in Spain in 2009 may at least partially be a methodological artefact because it only emerged in a recent revision of EU-SILC data in that country.

Figure 14: Gini indices for labour income across different population groups



Source: EU-SILC and LFS (unemployment rate).

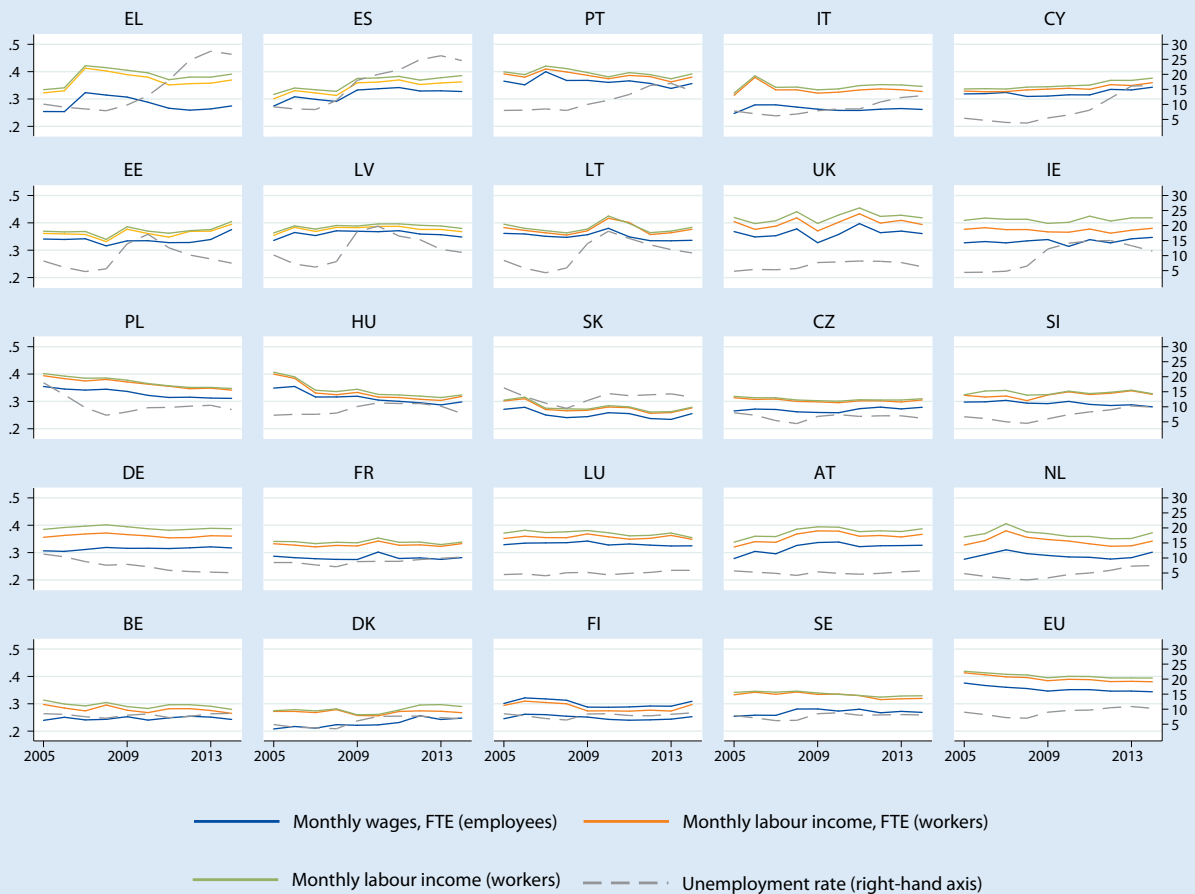
Even if the crisis hit countries to very different degrees, unemployment turbulence generally is the key channel through which income inequalities were pushed upwards and outside labour markets; this centrality of unemployment explains the business cycle behaviour of income inequalities. While wage inequality fails to show

a clear cyclical pattern, inequalities among the active population and the whole population move counter-cyclically across most countries, growing from the onset of the crisis (falling only where unemployment did not significantly grow – in Poland, the UK and the Continental countries of Germany, Belgium and Luxembourg).

Box 4: Different sources of labour earnings inequalities among workers

Inequalities in unadjusted monthly earnings are the result of differentials in wages but also part-time and self-employment rates, as illustrated by the three measures of labour earnings presented in Figure 15. Differentials in full-time equivalent wages among employees are significant and vary from the highest in Portugal, the Baltic states and Anglo-Saxon countries to the lowest in Belgium, Slovakia and the Scandinavian countries (see Eurofound, 2015 for more details), but they are lower than inequalities in labour earnings among workers.

Figure 15: Gini indices for different measures of monthly labour income



Source: EU-SILC and LFS (unemployment rate).

Inequalities grow notably once income from self-employment is considered, since it is more unevenly distributed than wages among employees. This occurs in all countries, but especially in countries with more self-employment, such as Greece and Italy. Inequalities expand further when monthly earnings are not adjusted by part-time work, although less strongly except in some countries where part-time employment is particularly high, such as the Netherlands, Germany and the UK.

Despite differences in levels, labour earnings inequalities generally show the same evolution across the three indicators. As opposed to the counter-cyclical pattern in annual labour earnings due to the effect of unemployment, none of the three indicators of labour earnings among the workforce reflect a clear business cyclicity, with country patterns being very mixed from the onset of the crisis (before the crisis, inequalities in earnings among the workforce expanded in around two-thirds of the countries between 2005 and 2008).

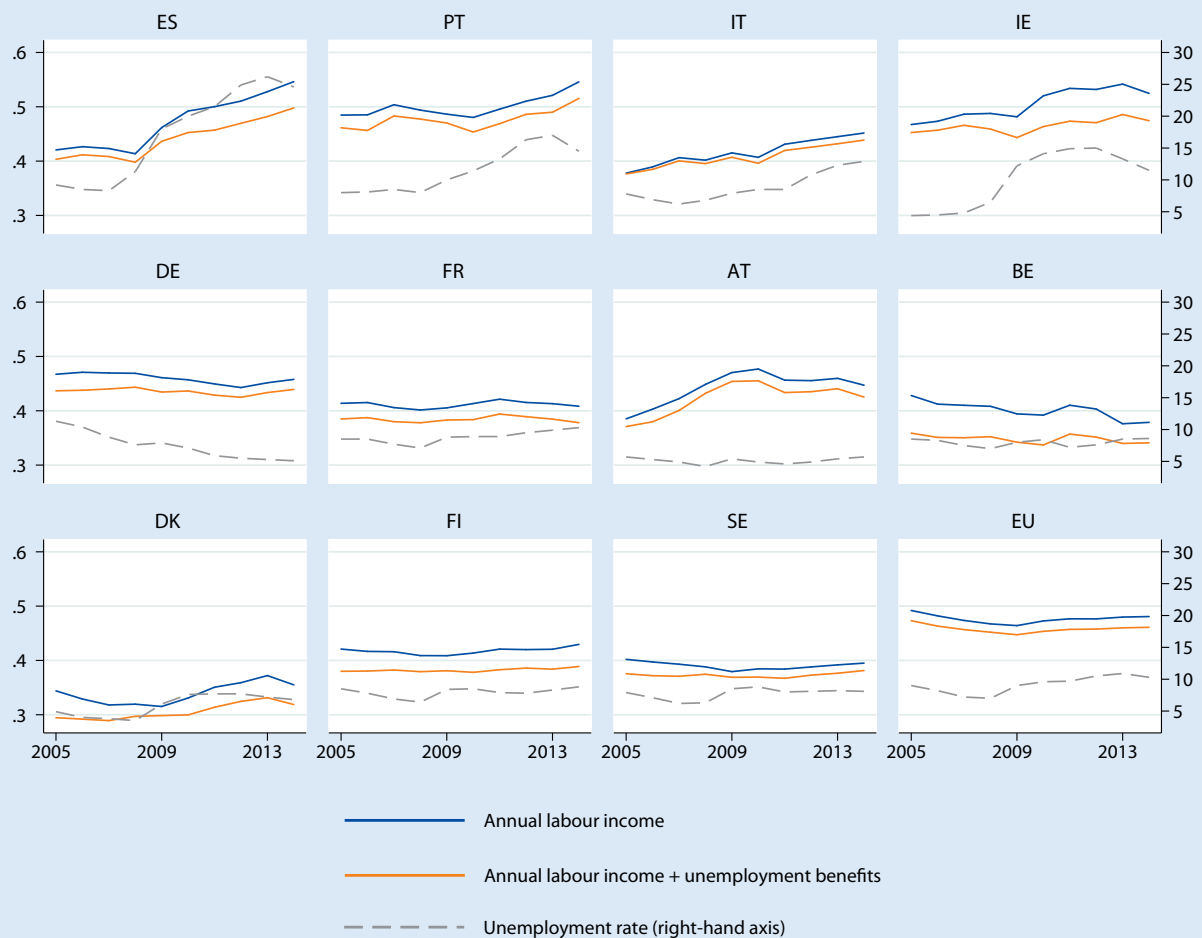
It could be argued that the effect of the crisis on labour earnings inequalities among the active population has been overestimated in this analysis because an income of zero does not correctly represent the situation of many unemployed people, who may receive unemployment benefits to compensate them for their

lost labour income. It has been argued that unemployment benefits should be taken into account for providing a lower bound estimate of labour income inequality levels (OECD, 2011). This is done in Box 5, showing that levels of inequality among the active population do decline but only slightly when considering the effect of the unemployment benefits.

Box 5: Assessing the impact of unemployment benefits on labour income inequalities

People who lose their job often receive compensatory income from the state, so not taking this into account may produce unrealistically high estimates of inequality in labour earnings among the active population. The extent to which inequality can be reduced by unemployment benefits will in principle depend on the unemployment rate and the coverage and generosity of unemployment benefits. However, the quality of the data available to estimate this effect may have a significant influence in practice.

Figure 16: Gini indices for annual labour income among active people

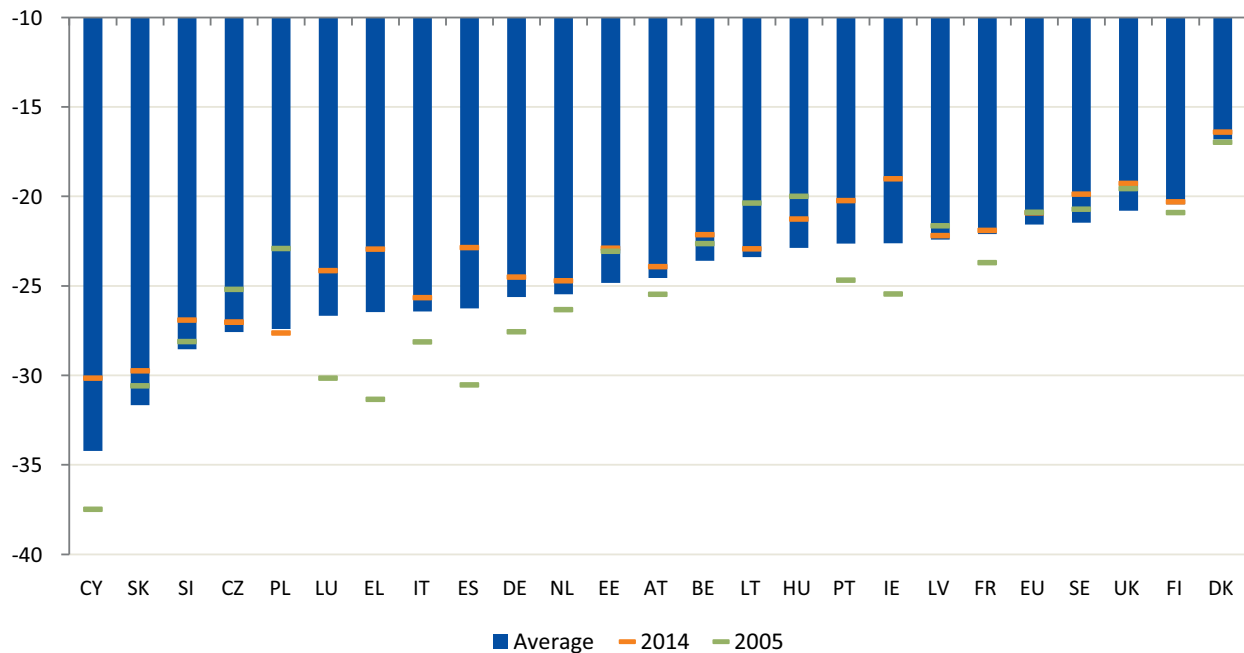


Source: EU-SILC and LFS (unemployment rate).

Figure 16 presents data for those countries where unemployment benefits are more relevant in reducing labour earnings inequalities (according to EU-SILC data). The addition of unemployment benefits to the income of the active population results in a significant drop in the estimated levels of inequality in many Scandinavian and Continental countries, probably reflecting the relative strength of this scheme in these countries. As expected, labour income inequality level estimates would be lower as well in those countries more affected by the crisis and registering growing employment levels, such as in the Mediterranean countries and Ireland.

A detailed analysis of the role of welfare state taxes and transfers in cushioning market inequalities in the crisis will be conducted later in this chapter.

Figure 17: Reduction in inequality when moving from annual labour earnings among individuals to family-pooled annual labour earnings (%)



Note: Countries have been ranked by the average reduction of inequality over the period 2005–2014

Source: EU-SILC.

Role of the family in reducing income inequalities

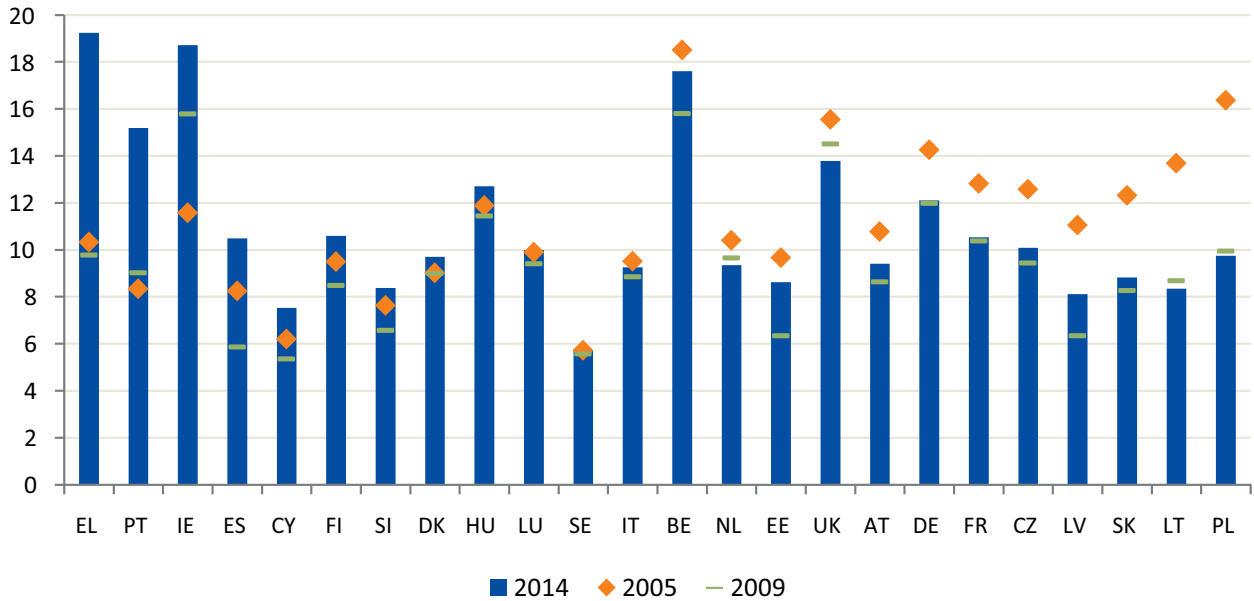
The inequalities in annual labour earnings among working age individuals presented in the previous section are to some extent an artificial indicator since most individuals pool their income at the household level. This section analyses the extent to which the family pooling of resources manages to reduce income inequalities due to economies of scale and to some members of the household compensating for the lack of labour income of others. It shows that a certain deterioration in this capacity seemed to occur across many countries, which may be related to increases in the number of households with no labour income as the crisis went on, as well as to a decrease in the size of households. Since the main objective of this section is to map the effect of the family pooling of resources, it will focus only on annual labour income. An analysis of capital income is provided separately in Box 6.

Figure 17 shows that for the EU as a whole, the pooling of personal annual labour earnings at the household level reduces inequality in that indicator by around 22% (on average during the period 2005–2014, income referring to 2004–2013). Cross-country variations are notable, with this effect being relatively larger in most CEE and Mediterranean countries and more modest in Scandinavian countries and as well in Anglo-Saxon and Baltic countries.

The yearly evolution of inequalities in household-pooled annual labour earnings is not shown here because it closely follows the evolution of inequalities in personal labour earnings among the working age population presented earlier. This would suggest that no relevant changes in the role played by families in cushioning income inequalities have occurred, which would be consistent with the fact that the demographic developments that would have an effect on such a role are not likely to change significantly in the short time span covered here. Nevertheless, Figure 17 shows that the redistributive effect of the household (measured by the reduction in the Gini of earnings when they are pooled and distributed among members of households) is slightly smaller at the end of the period than at the beginning across most countries, especially in Mediterranean countries and Ireland. Conversely, this effect strengthens in a few eastern European countries (mainly Poland, and Hungary, Lithuania and Latvia).

Two reasons seem to be behind these developments. The most relevant is probably the proportion of people living in households with no labour income, which generally fell before the crisis and then increased thereafter (see Figure 18). This increase was notable as the crisis progressed in Mediterranean countries and Ireland, which would explain the diminished average capacity of households to redistribute personal labour incomes in these countries.

Figure 18: Proportion of people living in households with no labour income (%)

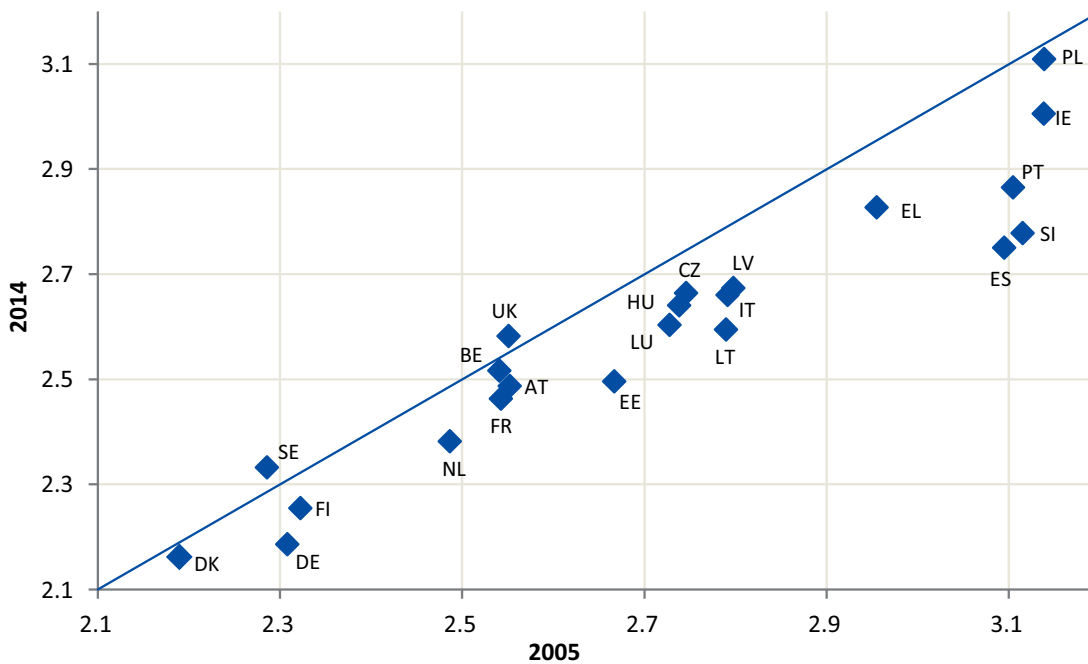


Note: Countries are ranked by the relative increase in this proportion between 2005 and 2014.
Source: EU-SILC.

Secondly, the evolution of the capacity of families to cushion income inequalities may also be influenced by changes in the average size of households across countries, since the latter captures demographic changes such as the increase in the number of

households with a single member or with a single parent, which would reduce the economies of scale at the household level (see Figure 19). Even in the short period covered, it can be seen that the average household size is declining across most Member States.

Figure 19: Average household size across countries

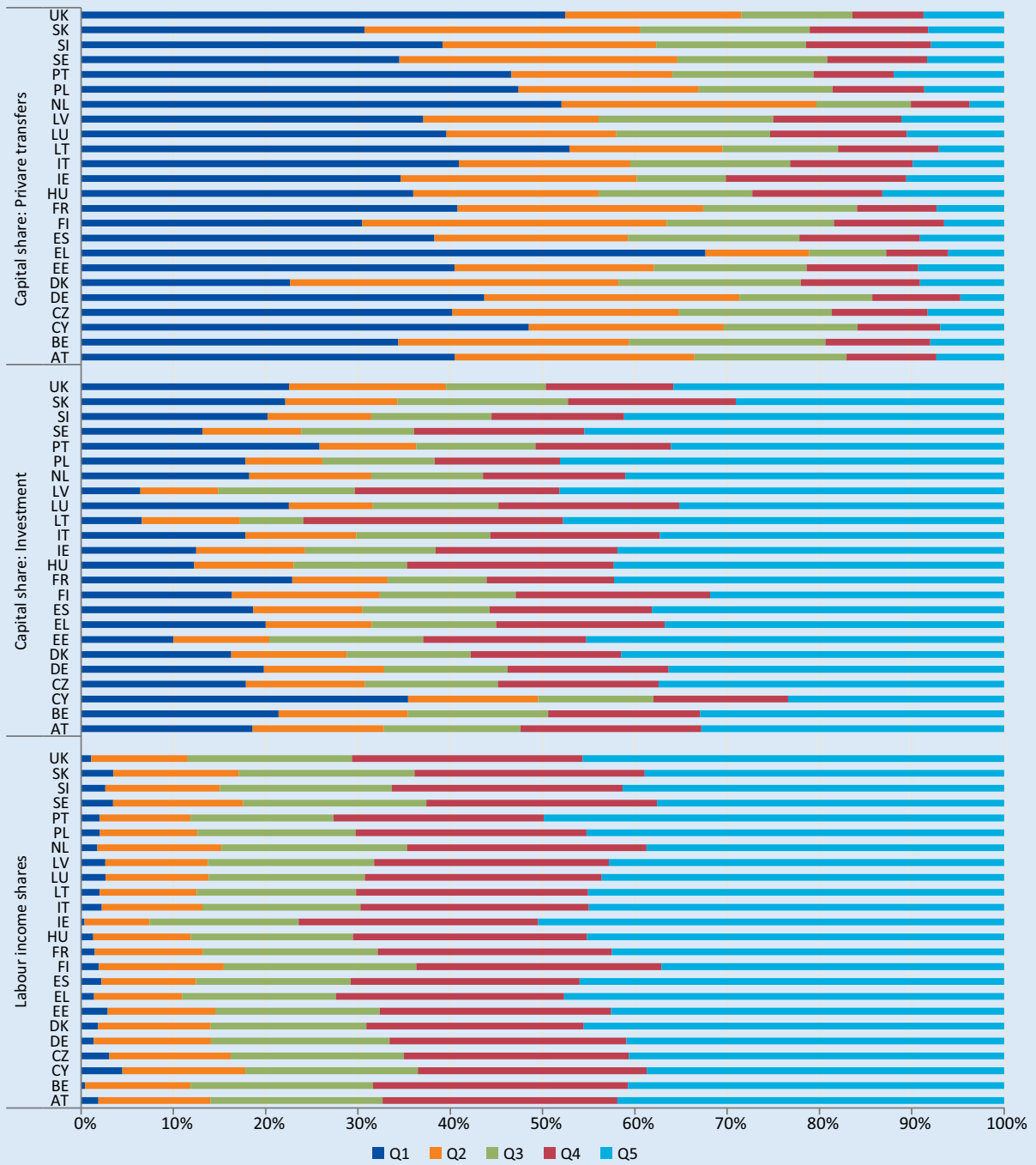


Source: EU-SILC.

Box 6: Distribution of capital flows and their effect on income inequalities

The analysis in this section has considered only the effect of the family pooling of annual labour income. Nevertheless, this report typically focuses on the measure of household market income, which considers the pooling of labour and capital income at the household level jointly. The reason for not studying capital flows separately is that in practical terms it has almost no effect on results, probably because of the very limited quality of the information provided by the EU-SILC in this respect.

Figure 20: Distribution of capital and labour income over the quintiles of family-pooled annual labour earnings (average for the period 2007–2014)



The capital and private transfer variables of the EU-SILC refer to income flows originating from investments (income from rents, interest, dividends and similar) and private transfers (income received by young people below 16 years of age living in the household and the difference between the inter-household cash transfers received and those paid). Figure 20 shows how these two sources of income are distributed across income quintiles and provides some clues to help explain the limited role played by capital in this analysis based on EU-SILC data.

First, the EU-SILC's ability to capture capital flows adequately seems questionable, which probably results in an underestimation among European households. Second, the figure shows that according to the EU-SILC, capital income is in fact more spread than labour income among the working age population, which explains why the inclusion of capital in the analysis of this report often results in (negligible) reductions in income inequality, contrary to what would be expected according to the literature. Almost half of the total labour income mass is owned by the top quintile across most countries, while the bottom quintile accounts for very little of it, due to the impact of unemployment. Conversely, capital income as measured by the EU-SILC is found across all quintiles, even if unevenly.

The figure also reveals the very different nature of capital income and private transfers. Capital income is more unevenly distributed and its largest part goes to the top quintile, while private transfers are much more evident at the bottom than at the top income quintiles, reflecting solidarity mechanisms between households, probably involving family members. In other words, private transfers may be seen as part of the family pooling of resources. In any case, the effect of capital income and private transfers on the results is negligible, so it can be simply ignored. With the EU-SILC, it is probably impossible to evaluate adequately the effect of this source of income on inequality.

Redistributive effect of the welfare state

While the previous section looked at the redistributive role of families, this one will look at the extent to which the welfare state is able to correct inequalities in market income through taxes and benefits that redistribute income across individuals and households. It shows that the capacity of the welfare state to cushion income inequalities is greater than that of families across most Member States and that public schemes have significantly offset growing market income inequalities in the European periphery during the crisis, although this capacity may be eroding in some countries in the most recent years.

Table 3 shows that European welfare states reduce market income inequality by almost 30% for the EU as a whole. Again, there are notable country differentials, with welfare states playing an even bigger role in Scandinavian and some CEE, Continental countries and Ireland, while their effect is relatively weaker in Baltic and Mediterranean countries, where in fact it is comparable to the effect of the family pooling of resources.²⁸

Importantly, the capacity to correct market income inequalities varies strongly across the different welfare policies.

- Taxes on income and social contributions are generally the most redistributive welfare policy and have a relatively larger effect in reducing income inequalities in Anglo-Saxon, Continental and Scandinavian countries (although largest in Slovenia), while the impact is by and large less relevant in several eastern European countries.²⁹
- Pensions are almost as redistributive as income taxes and are the most important of the social benefits in reducing income inequalities across all countries, especially in the CEE countries, the Baltic states, the Mediterranean countries and France.
- Unemployment benefits are most relevant in Continental and Scandinavian countries and in some of the countries hit hardest by the crisis, such as Ireland, Spain and Portugal.
- Disability benefits are significant across most countries, often having a more redistributive impact than unemployment benefits.
- Family benefits have a stronger impact in reducing inequalities in Continental, Anglo-Saxon, CEE countries but less so in Mediterranean countries generally.
- The rest of the welfare state schemes have a more modest impact generally, although housing policy is relatively more important in several Scandinavian, Anglo-Saxon, Continental countries, survivor's benefits in Mediterranean countries and sickness and education benefits in Scandinavian countries.

²⁸ In Cyprus, the family plays a larger role than the welfare state in reducing market income inequalities.

²⁹ Conversely, taxes on wealth have a negligible effect (EU-SILC data would suggest that they often add to inequality, although to an extremely low extent), which is one reason why their individual impact is not shown here.

Table 3: Relative reduction in inequality when moving from household market income to household disposable income (%)

	All	Taxes	Benefits								
	Welfare	Income tax	Pensions	Unemployment	Disability	Family	Housing	Survivor's	Sickness	Education	Other
SI	-41.7	-18.7	-14.3	-1.5	-5.9	-3.2	-0.1	-1.7	-0.8	-1.1	-1.9
HU	-41.2	-13.4	-17.2	-2.5	-6.6	-5.9	-0.4	-0.8	-0.2	-0.2	-0.6
IE	-41.0	-17.1	-4.2	-9.4	-6.7	-8.7	-1.6	-0.7	0.0	-0.7	-0.2
BE	-38.7	-14.5	-8.9	-9.2	-4.3	-3.4	0.0	-1.2	-1.3	-0.3	-1.1
FI	-38.4	-13.8	-7.2	-7.1	-7.2	-2.9	-2.4	-0.5	-0.9	-1.3	-1.4
DK	-37.4	-11.5	-3.0	-10.6	-9.1	-1.4	-1.0	-0.3	-2.0	-3.9	0.0
AT	-36.6	-14.3	-12.8	-3.8	-4.1	-4.1	-0.4	-1.0	-0.6	-0.4	-0.6
NL	-36.4	-14.7	-9.4	-2.4	-5.4	-1.4	-1.2	-0.6	-0.7	-1.6	-4.8
CZ	-36.2	-11.5	-15.7	-0.8	-6.6	-3.0	-0.5	-1.2	-0.9	-0.1	-0.8
LU	-34.4	-11.3	-11.2	-3.3	-3.8	-4.8	-0.3	-1.9	-0.3	-0.3	-2.1
SE	-34.1	-12.7	-5.3	-3.4	-6.4	-3.4	-1.1	-0.3	-2.3	-3.7	-1.2
DE	-32.7	-11.5	-9.8	-4.4	-2.8	-3.3	-1.6	-1.3	-0.4	-0.6	-1.2
FR	-32.6	-7.5	-14.8	-4.3	-1.6	-3.0	-2.8	-0.3	-0.4	-0.3	-1.5
SK	-32.5	-6.2	-16.9	-0.8	-5.2	-2.9	0.0	-2.1	-0.4	-0.2	-1.7
UK	-31.1	-14.7	-7.1	-0.9	-2.4	-4.0	-3.4	-0.3	-1.2	-0.6	-2.3
EU	-28.6	-10.1	-9.8	-3.2	-2.9	-2.2	-1.3	-0.9	-0.6	-0.5	-1.2
PL	-28.6	-4.3	-16.4	-1.3	-5.1	-2.0	-0.3	-1.4	-0.1	-0.2	-0.4
EL	-28.2	-9.7	-15.3	-1.3	-1.9	-0.7	-0.1	-1.9	-0.1	0.0	-0.5
PT	-27.6	-11.5	-9.0	-3.5	-2.6	-1.2	-0.1	-1.7	-0.6	-0.3	-0.8
IT	-26.7	-10.2	-12.8	-2.0	-2.4	-1.1	-0.1	-1.2	0.0	-0.1	-0.1
ES	-25.9	-8.3	-8.0	-5.8	-3.5	-0.3	-0.1	-2.0	-0.7	-0.3	-0.5
LT	-23.7	-5.7	-8.7	-1.0	-5.7	-1.9	-0.1	-0.9	-0.4	-0.2	-2.0
EE	-23.1	-6.3	-9.6	-1.0	-4.9	-2.6	-0.2	-0.3	-0.3	-0.2	-0.1
LV	-20.9	-6.4	-9.3	-1.1	-2.7	-1.9	-0.3	-0.6	-0.6	-0.2	-0.5
CY	-17.8	-5.6	-4.3	0.4	-3.7	-3.3	-0.2	-1.3	-0.3	-1.0	-0.4

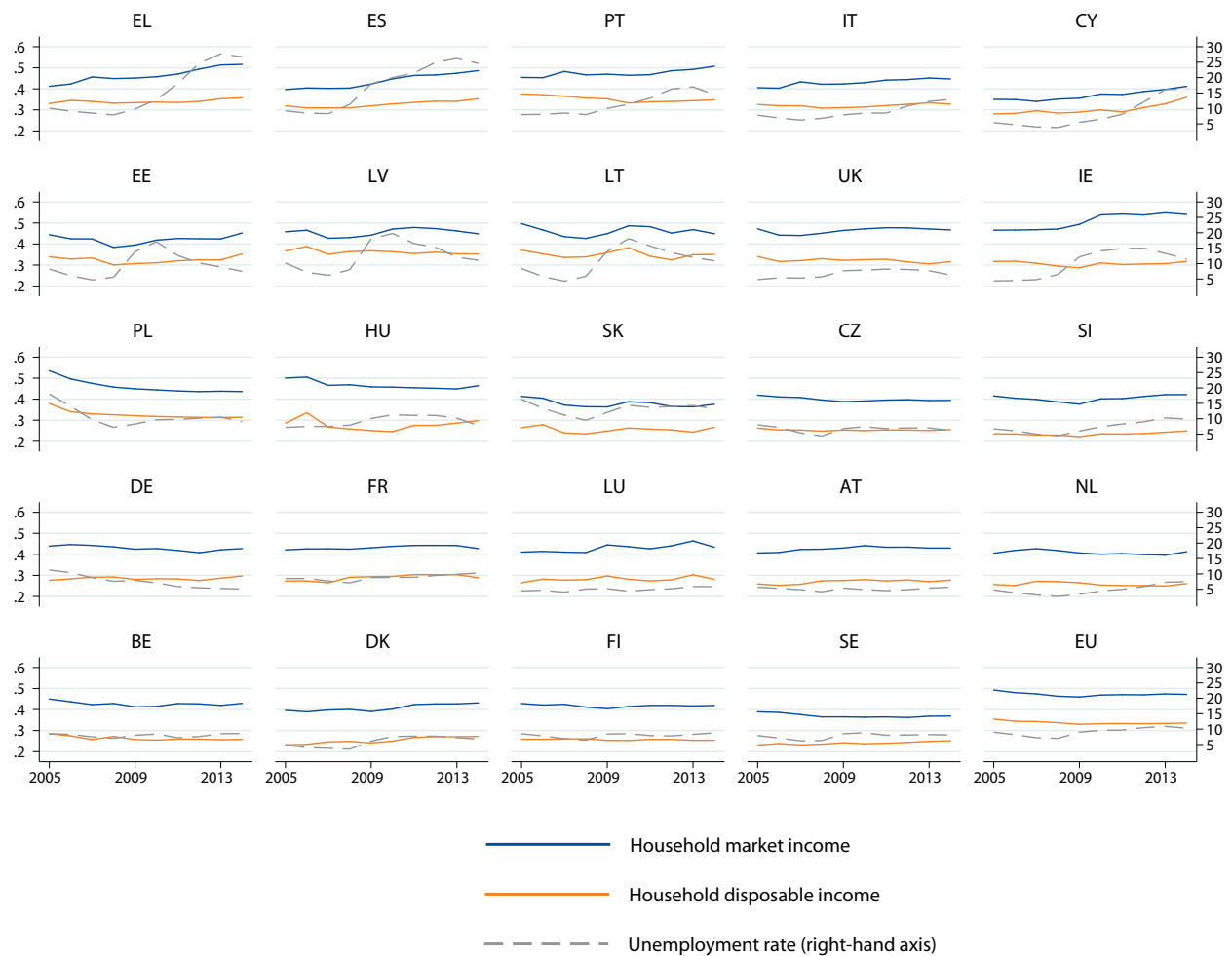
Note: The figures show the average reduction over the period 2007–2014 (income referring to 2006–2013), in total and by individual welfare state policies. Countries have been ranked by the magnitude of the total reduction. However, the sum of the individual effects of each policy does not equal the total effect of the welfare state: on the one hand, because the total effect takes into account the interplay across all welfare policies and on the other hand because the individual effect of taxes and benefits are calculated differently. The effect of benefits is calculated by comparing inequalities in market income with inequalities in the market income incorporating each specific public transfer, while the effect of taxes does not use as a reference the market income but the total household income (including income coming from public transfers). Data need to be interpreted with caution since some of these items have a significant number of missing values.

The Great Recession, the ensuing sovereign debt crisis and the resulting pressures on public finances are putting welfare states across Europe under considerable strain. Their resilience can be assessed by looking at the evolution of their effect in reducing market inequalities across countries. Figure 21 provides a mixed picture across countries, but in general it shows that European welfare states continue to perform an essential role in reducing market inequalities.

The strength of the state's redistributive role remains rather stable in around half of the countries, reflected

by a parallel evolution in market and household disposable income inequalities. In the other half, some changes in this role may have occurred during the period. The redistributive effect of the state expanded in the crisis in many of the countries registering notable surges in unemployment, thus significantly cushioning the big expansion of market income inequalities over the period. A widening gap between market and household disposable income inequalities has emerged over several years, mainly in the European periphery: in many Mediterranean (except for Cyprus) and Anglo-Saxon countries and the Baltic states to a lower

Figure 21: Gini indices for household market income and household disposable income



Source: EU-SILC and LFS (unemployment rate).

extent.³⁰ Nevertheless, the redistributive impact of the welfare state seems to have weakened in Germany, Sweden, France, Poland or Hungary, though this may simply reflect less need of state redistribution in the context of a much milder effect of the economic crisis.

Patterns of inequality in household disposable income

Household disposable income is the final measure of the income actually available to the working age population. It is the measure most commonly used by inequality studies and it merits a final, more detailed look. Table 4 shows developments in household disposable income inequalities across Member States between 2005 and 2014 (income referring to 2004–2013).

Income inequalities have expanded in two-thirds of the countries over the period: most notably in some Mediterranean countries (Cyprus, Spain and Greece, but only moderately in Italy) and some Scandinavian countries (Denmark and Sweden). Inequalities have expanded moderately in Continental countries (with the exception of Belgium), some eastern European countries (Slovenia, Hungary, Estonia, Slovakia) and Ireland. Conversely, inequalities narrowed in one-third of the countries, significantly in Belgium, Portugal, the UK and especially Poland, but also in some other countries in the eastern part of Europe (Lithuania, Latvia, the Czech Republic) and Finland.³¹ These trends across countries have resulted in a process of convergence in the levels of income inequality across Member States, discussed in detail in Box 7.

³⁰ A strengthening of the inequality-reducing impact of the welfare state seems to occur as well in other countries, where inequalities in household disposable income remained quite stagnant (Belgium, Finland, Czech Republic) or declined (Netherlands, Luxembourg, Lithuania) between 2009 and 2014 against the general background of a moderate growth in market income inequalities.

³¹ The increase in inequalities across most countries between 2005 and 2014 does not contradict the reduction registered in EU-wide inequality levels over the same period, since the former mainly resulted from developments in income levels between countries rather than inequality developments within countries (see Chapter 3).

Table 4: Household disposable income inequality across countries (Gini indices and percentages)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Change 2005–2014 (%)	Change 2005–2009 (%)	Change 2009–2014(%)
CY	0.281	0.283	0.296	0.285	0.289	0.300	0.290	0.311	0.329	0.360	28.2	3.1	24.3
HU	0.286	0.336	0.267	0.258	0.251	0.246	0.275	0.275	0.286	0.298	4.2	-12.2	18.6
EE	0.339	0.329	0.334	0.301	0.307	0.311	0.321	0.325	0.324	0.353	4.1	-9.4	14.9
DK	0.232	0.235	0.246	0.249	0.242	0.250	0.267	0.271	0.270	0.272	17.2	4.0	12.7
SI	0.235	0.234	0.230	0.229	0.222	0.235	0.234	0.237	0.234	0.249	5.7	-5.7	12.1
ES	0.320	0.309	0.310	0.310	0.319	0.329	0.335	0.342	0.341	0.353	10.5	-0.1	10.6
IE	0.317	0.318	0.308	0.295	0.287	0.311	0.303	0.305	0.307	0.318	0.2	-9.4	10.6
SK	0.264	0.279	0.240	0.235	0.248	0.263	0.258	0.254	0.243	0.267	1.1	-5.9	7.4
EL	0.330	0.346	0.340	0.332	0.334	0.337	0.335	0.340	0.353	0.357	8.2	1.2	6.9
DE	0.277	0.284	0.291	0.293	0.281	0.284	0.283	0.276	0.287	0.297	7.4	1.5	5.9
IT	0.326	0.320	0.320	0.308	0.311	0.314	0.321	0.326	0.334	0.328	0.5	-4.6	5.3
SE	0.231	0.238	0.232	0.235	0.242	0.238	0.240	0.244	0.249	0.252	8.8	4.9	3.8
EU	0.355	0.344	0.343	0.337	0.330	0.333	0.333	0.333	0.334	0.336	-5.4	-7.1	1.9
CZ	0.262	0.254	0.253	0.248	0.253	0.251	0.254	0.253	0.251	0.255	-2.7	-3.4	0.7
AT	0.259	0.253	0.258	0.274	0.276	0.280	0.274	0.278	0.270	0.277	6.9	6.4	0.5
BE	0.285	0.275	0.257	0.272	0.257	0.255	0.259	0.259	0.256	0.258	-9.5	-9.8	0.4
FI	0.259	0.258	0.261	0.261	0.254	0.253	0.258	0.258	0.254	0.254	-1.8	-2.0	0.2
PT	0.376	0.372	0.366	0.356	0.352	0.333	0.339	0.340	0.344	0.348	-7.4	-6.2	-1.3
NL	0.257	0.252	0.272	0.270	0.265	0.254	0.252	0.252	0.250	0.261	1.6	3.3	-1.6
FR	0.273	0.274	0.265	0.291	0.294	0.295	0.304	0.303	0.304	0.289	5.7	7.5	-1.7
UK	0.341	0.317	0.321	0.331	0.322	0.326	0.328	0.315	0.306	0.316	-7.1	-5.4	-1.8
PL	0.379	0.340	0.330	0.326	0.322	0.318	0.316	0.314	0.313	0.314	-17.2	-15.2	-2.4
LT	0.371	0.353	0.336	0.339	0.359	0.383	0.342	0.325	0.349	0.350	-5.7	-3.3	-2.5
LV	0.367	0.388	0.352	0.364	0.368	0.363	0.355	0.362	0.354	0.353	-3.9	0.2	-4.1
LU	0.265	0.282	0.277	0.280	0.297	0.281	0.274	0.279	0.303	0.281	6.1	12.0	-5.2

Note: Countries are ranked by the magnitude of the income inequality increase between 2009 and 2014.

Source: EU-SILC.

As has been argued in previous pages, the upward trend in income inequalities across most Member States over the period is the result of the Great Recession and the resulting employment turbulence (countries have been ranked in Table 4 by the magnitude of the income inequality increase they registered between 2009 and 2014). This is reflected in a counter-cyclical development that exacerbated the core–periphery divide in Europe.

Country patterns were mixed between 2005 and 2009 (income referring to 2004–2008): While patterns are mixed, there are more cases of reductions in income inequalities and their relative magnitude is larger. Most of the reductions are concentrated in the European periphery – eastern European countries and most Mediterranean countries (except Cyprus and Greece,

where inequalities expanded only marginally), together with the Anglo-Saxon countries and Belgium.

Conversely, inequalities expanded in the European core, particularly in the Continental countries (with the exception of Belgium) and the Scandinavian countries (except for Finland). EU-wide income inequality declined notably over this subperiod, but largely due to a process of convergence in income levels between Member States (see Figure 5).

Income inequalities expanded in two-thirds of the countries between 2009 and 2014 (income referring to 2009–2013): Most likely, this was as a result of growing unemployment. This is why the surges in inequality occurred among most countries in the European periphery, where most of the employment losses took place: Mediterranean countries (except for Portugal)

and several eastern European countries (not in Latvia, Lithuania and Poland). Rising unemployment also seems to drive increases in inequality in Ireland and in the Scandinavian countries (except for Finland). Conversely, inequalities remained rather contained in most of the European core, in Continental countries and in Finland, either increasing or even falling moderately. Inequalities also fell in some other countries where the impact of the crisis on unemployment levels was less marked (Luxembourg, Poland and the UK) or improved after the initial years of the crisis (Latvia and Lithuania). EU-wide income inequality increased modestly from 2009 due to these generally growing inequalities within-countries and the interruption of the process of income convergence between countries (see Figure 5).

The analysis highlights the important role played by European welfare states in cushioning growing market inequalities, an effect that has been particularly important in the European periphery (the

Mediterranean and Anglo-Saxon countries and the Baltics to a lower extent), where the crisis hit most strongly. This explains why, although important, the core-periphery divergence emerging in Europe from the onset of the crisis is less marked for household disposable income than for market income and why the increases in inequality, although affecting most Member States and significant in many cases, are probably not as large as generally thought. The relative increase in income inequalities did not exceed 10% between 2009 and 2014 across many countries. Exceptions to this were three countries in the eastern part of Europe (Hungary, Estonia, Slovenia), two Mediterranean countries (Cyprus and Spain), and Ireland, where inequalities expanded more.³² The action of the welfare states significantly alleviated the impact of rising unemployment rates in pushing income inequalities upwards (see Box 8 on next page for further details).

Box 7: Convergence towards intermediate levels of inequality?

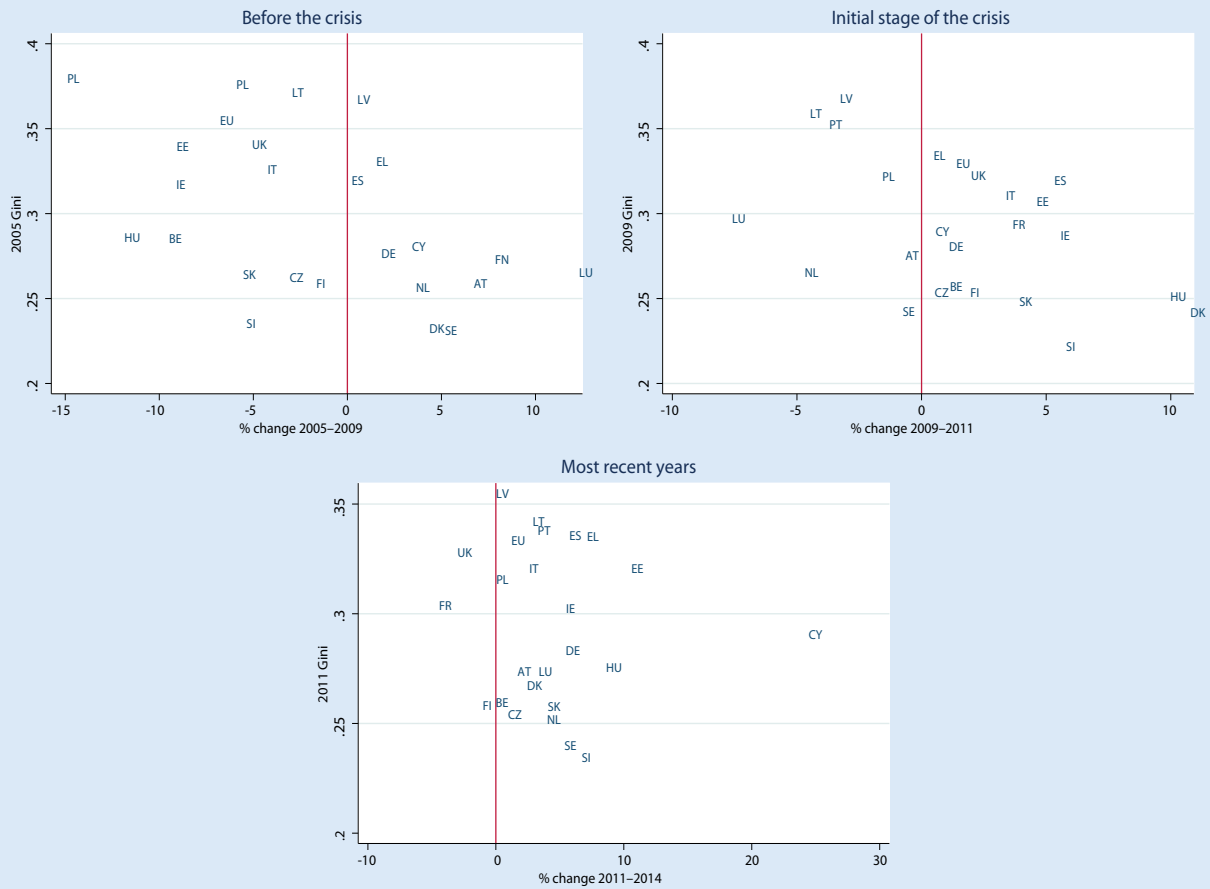
Table 4 above shows that inequalities in household disposable income expanded between 2005 and 2014 among some of the countries where they were initially lowest (the Scandinavian and Continental countries), while in the same period they decreased in some of the countries that were most unequal (the eastern European countries of Poland, Latvia, Lithuania, as well as Portugal and the UK). Although the magnitude of the rise in inequality among initially egalitarian countries were generally larger, the declines in inequality among the initially most unequal are also quite significant, which suggests a process of convergence towards intermediate income inequality levels between European countries. Signs of a process of convergence in inequality levels have already been identified in the literature (among OECD countries, OECD 2011).

Figure 22 shows that this process of convergence has varied over time. A modest convergence in inequality levels took place prior to the crisis (between 2005 and 2009, income referring to 2004–2008). Income inequalities declined among a majority of the most unequal countries, typically in the periphery (the Baltic countries as well as Poland, Portugal and the UK), while they expanded among many of the most egalitarian countries in the European core (the Scandinavian and Continental countries). This modest convergence in income inequality levels continued in the initial years of the financial crisis, since inequalities continued to increase in many of the most egalitarian countries (Denmark and Finland as well as the eastern European countries of Slovakia, Hungary, the Czech Republic and Slovenia), while they continued to decline among some of the most unequal countries (Latvia, Lithuania, Poland and Portugal).

But this process ceased from 2011 (income referring to 2010) since the rather generalised increase in income inequalities is spread among Member States, regardless of their levels of income inequality.

32 Household disposable income inequality increased by more than 10% as well in Denmark, but market inequality also increased substantially.

Figure 22: Household disposable income inequalities across countries



Source: EU-SILC.

Box 8: Impact of unemployment on income inequality levels

This report has shown that the crisis has generally pushed income inequalities up via declining labour incomes associated with growing unemployment levels, since income inequalities among workers did not increase generally.

The role of unemployment changes in driving income inequalities over time is assessed here by means of a regression analysis that compares the strength of this association across the different sources of income covered in this report. Unemployment rates are regressed on income inequality levels across countries and over time (between 2005 and 2014, income referring to 2004–2013) using four different regression analyses: pooled ordinary least squares (OLS), random effects, fixed effects and fixed effects with robust estimates (Table 5).

Focusing on the results using fixed effects with robust estimates, two main insights emerge. First, growing unemployment pushed inequalities significantly upwards among the working age population but not among workers, which is reflected by the significant coefficients for the variables of annual labour earnings and market income, while those of the variables covering monthly earnings among workers are not statistically significant. Second, the effect of unemployment in driving inequalities in household disposable income is weaker than in the other income variables and becomes statistically insignificant for the fixed-effect model with robust estimates, which reflects the role of the welfare state in cushioning growing market income inequalities, as has been extensively underlined in this chapter.

Table 5: Results of the regression analysis

Variable	Pooled OLS		Random effects		Fixed effects		Fixed effects – robust estimates	
	Coefficient	P>t	Coefficient	P>t	Coefficient	P>t	Coefficient	P>t
Monthly wage (full-time equivalent)	0.001173	0.049	0.000268	0.343	0.000246	0.389	0.000246	0.722
Monthly earnings (full-time equivalent)	0.001346	0.015	0.000657	0.039	0.000630	0.052	0.000630	0.349
Monthly earnings	0.001342	0.025	0.000994	0.002	0.000983	0.002	0.000983	0.124
Annual labour earnings (active)	0.005876	0.0	0.005294	0.0	0.005267	0.0	0.005267	0.0
Annual labour earnings (all)	0.004980	0.0	0.003420	0.0	0.003385	0.0	0.003385	0.0
Market income	0.003708	0.0	0.003897	0.0	0.003905	0.0	0.003905	0.0
Household disposable income	0.004018	0.0	0.001148	0.0	0.001054	0.0	0.001054	0.055

Note: Coefficients in green reflect statistical significance at the 1% level, in blue at the 5% level and in red not statistically significant at the 5% level.

Source: EU-SILC.

Summary

This chapter has provided an updated European map of income inequalities across different regions: the Mediterranean, Baltic, Anglo-Saxon, CEE, Continental and Scandinavian countries. The results document growing income inequalities in two-thirds of Member States over the period 2005–2014 (income referring to 2004–2013), in line with previous empirical studies from the OECD reporting an upwards trend in inequalities in household disposable income. Nevertheless, the findings in this report substantially complement those from previous studies: unemployment and its effect on declining labour income emerges as the main driver pushing inequalities upwards and outside the workforce as a result of the crisis, instead of widening labour income differentials among the workforce (which did not seem to play a significant role from the onset of the crisis but were identified in the mentioned OECD studies as the main factor driving inequalities up in the decades before the crisis). The centrality of the role of unemployment explains why inequalities behave generally counter-cyclically across most countries, falling before the crisis and increasing thereafter, especially in those countries in the European periphery that were more heavily hit by the crisis and where employment losses have been larger (the Mediterranean, the Baltic states and some CEE countries and Ireland).

There are two non-market mechanisms that reduce income inequalities. First, the role of the family pooling of income reduces personal labour income inequalities by more than 20% for the EU as a whole and is especially strong in CEE and Mediterranean countries. Nevertheless, a relative deterioration in this role of the family seems to have taken place during the period, probably due to an increase in the number of households with no labour income to distribute from the onset of the crisis and perhaps also marginally to a small reduction in the average household size across most Member States.

Second, European welfare states play a more significant redistributive role than families and reduce household market inequalities by almost 30% for the EU as a whole and by much more in Scandinavian and some CEE and Continental countries (and Ireland), with income taxes and pension benefits being by far the most relevant schemes, followed by income taxes, unemployment, disability and family benefits. The role of the state remained more or less unchanged during the period in half of the countries, although it seems to have weakened in some cases (Germany, Sweden, France, Poland and Hungary), perhaps because the welfare states of these countries had not been put to a serious test since their economies generally weathered the crisis better. The most significant development took place in some of the countries in the European periphery hardest hit by the crisis, where the redistributive effect of the state on market income inequalities became more important over the period.

6 Impact of the Great Recession on income levels

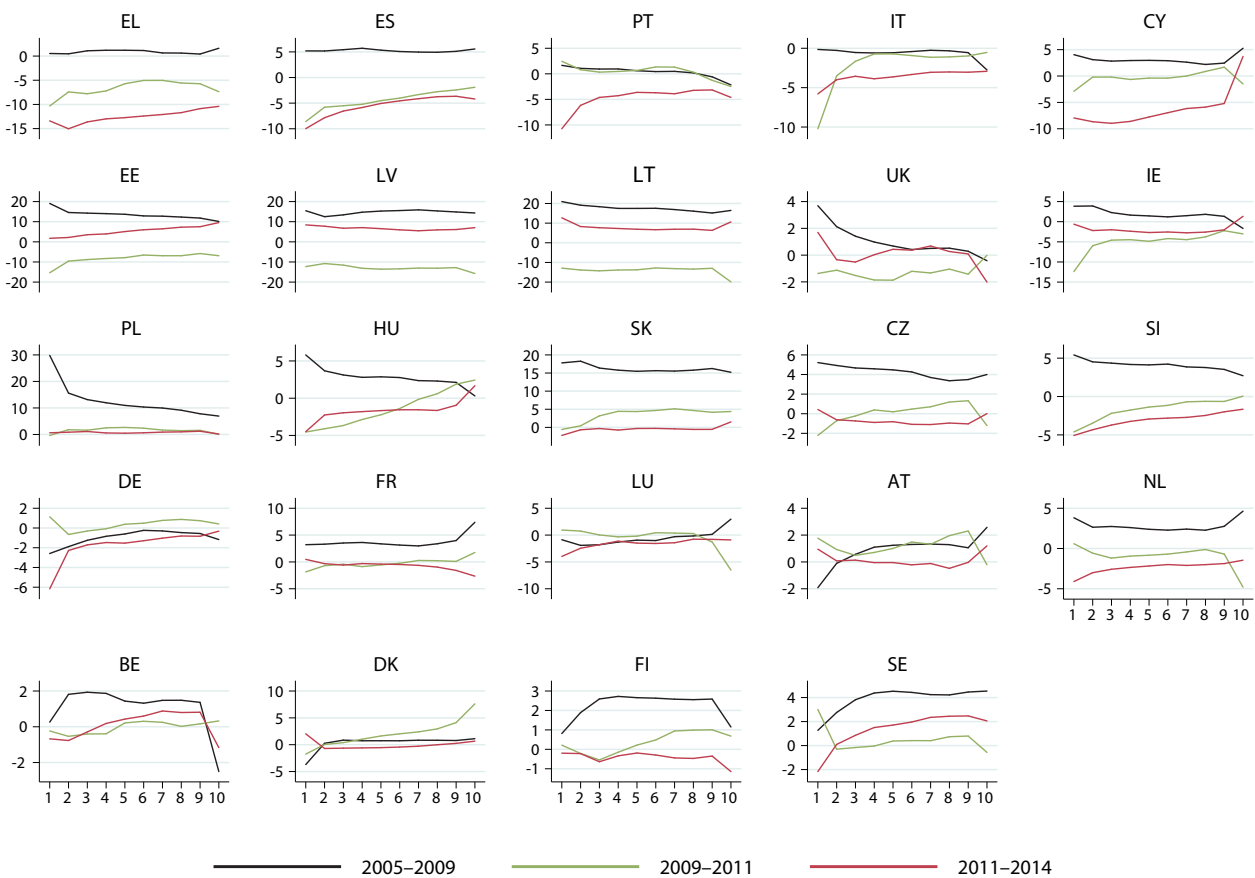
The information provided by relative measures of inequality in previous sections is complemented here by mapping developments in income levels across the distribution. All the figures of change in income levels in this section are expressed in national currencies and adjusted by inflation in order to reflect more directly the impact of the crisis across European societies.³³

Mapping income levels at different parts of the distribution provides a more direct picture of inequality trends and reveals effects on the whole distribution that can be concealed when the analysis is focused on relative inequality measures, as in the previous pages.

Figure 23 plots how real income changed over the period by income deciles (that is, each point in the horizontal axis represents 10% of the working age population, sorted from left to right from lower to higher household disposable income). Before the crisis

(between 2005 and 2009, income referring to 2004–2008), income levels progressed particularly fast in the eastern European periphery (and to a lesser extent in Anglo-Saxon countries). This progress often benefited those at the bottom of the distribution more, explaining the reductions in income inequality in these countries. Conversely, real income levels remained much more stable in many Mediterranean, Continental and Scandinavian countries. In most Continental and Scandinavian countries, real income remained stagnant or negative at the bottom of the distribution (especially in Germany and Austria), which explains the increases in income inequality in these countries. In the case of most Mediterranean countries, real income remained rather stagnant but trends over the income distribution vary across countries (with inequalities declining in Portugal and Italy).³⁴

Figure 23: Average yearly growth of household real disposable income, by income deciles (%)

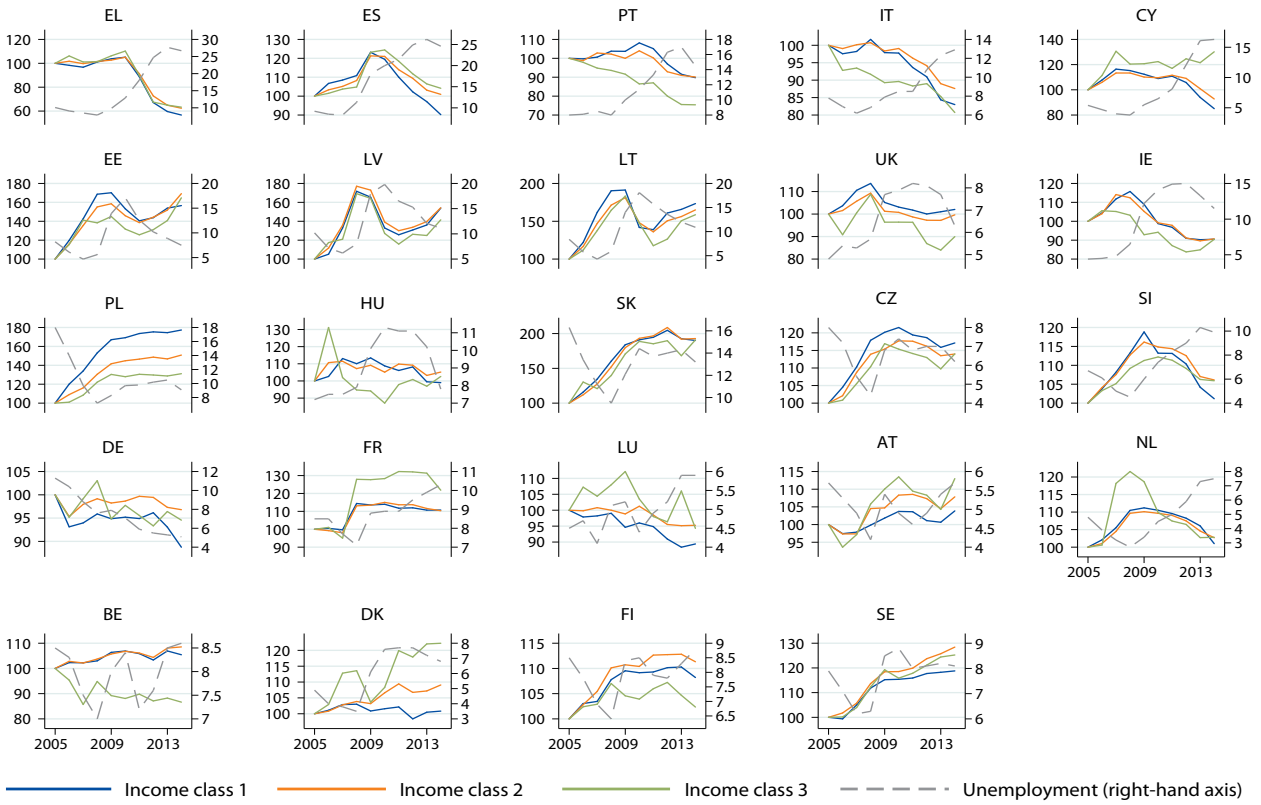


Note: Data refers to average yearly growth rates during each of the three sub-periods (income data referring to one year earlier than the one indicated)
Source: EU-SILC.

³³ Income levels are expressed in euros for members of the euro zone (including those countries that joined during the period covered here: Cyprus, Estonia, Latvia, Slovenia and Slovakia) and in national currencies for the others. All income levels are then adjusted for national inflation to obtain real income levels across countries.

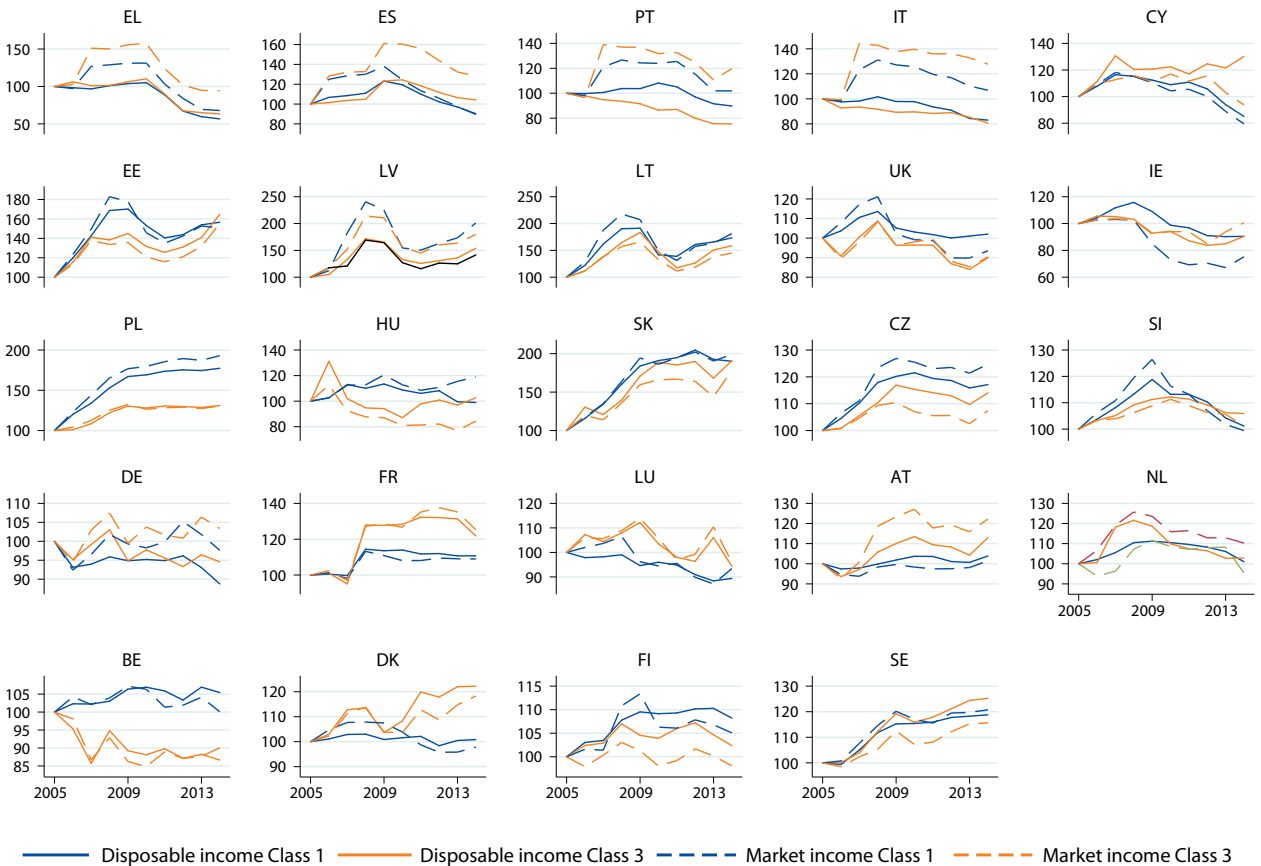
³⁴ The larger growth in real income levels in Spain is largely due to a considerable expansion in 2009, which in turn is largely due to a data revision in EU-SILC's income variables in the 2009 wave.

Figure 24: Real household disposable income levels across three income classes (indices)



Source: EU-SILC and LFS (unemployment rate).

Figure 25: Real household disposable and market income levels across two income classes (indices)



Source: EU-SILC.

Figure 23 shows that the crisis had a significant negative effect on real income levels across Member States, a finding that contrasts markedly with the relatively mild developments in inequality indices across many countries discussed in previous pages. The impact is generally stronger in the European periphery (in Mediterranean and CEE countries protractedly and in the Baltic states and Anglo-Saxon countries during the initial stage of the financial crisis) and typically stronger at the bottom of the distribution, which explains the hikes in income inequality across many of these countries from the onset of the crisis. The magnitude of the real income decline was generally more modest in Continental and Scandinavian countries, although in most cases it remained skewed towards the lower income deciles, thus contributing to growing inequalities.

A more synthetic picture of trends over the income distribution is provided by using the three income classes proposed by Piketty (2014), distinguishing between the 50% of the population with the lowest level of household disposable income, the next 40% and the top 10% of the population with the highest incomes (see Figure 24). The data broadly confirm the previous picture. Before the crisis, income levels expanded notably in eastern European countries across all income groups and typically more among the lowest income group. In the rest of Europe, income levels grew more moderately, with the following specificities: first, there was relatively more progress at the bottom half of the distribution in Anglo-Saxon countries (and in Spain and Finland to a lesser extent); and second, there was stagnation in real income levels in the rest of countries except for those at the very top, which progressed more in Continental countries (and Denmark) and were corrected downwards in Italy and Portugal or Belgium.

Again, the large negative impact of the crisis is clear, especially in the European periphery: a significant and protracted correction in real income levels occurs in most Mediterranean countries, but also to a lesser extent in Anglo-Saxon and some CEE countries (except Poland and Slovakia), while real income levels in Baltic countries were strongly affected initially but then bounced back. Nevertheless, while those at the top of the distribution tended to suffer larger corrections in Anglo-Saxon and eastern European countries, this was not generally the case in Mediterranean countries. The action of European welfare states considerably moderated the decline of real income levels resulting from the crisis, as reflected in Figure 25. A more intense correction took place in market income levels, as illustrated by countries more affected by the crisis, such as the Mediterranean countries.

Squeezing the European middle classes

An alternative way to assess the impact of the Great Recession on income levels in Europe is to define classes on the basis of common predefined income levels. By studying the changing share of the working age population that falls into each of those classes, the impact of the crisis on the social structure can be evaluated. This approach is particularly appealing because it allows us to assess the extent to which the crisis had a particularly strong impact on the middle class in Europe, a subject that has received considerable attention in the public debate. This section evaluates whether the Great Recession has shrunk the size of the European middle classes.

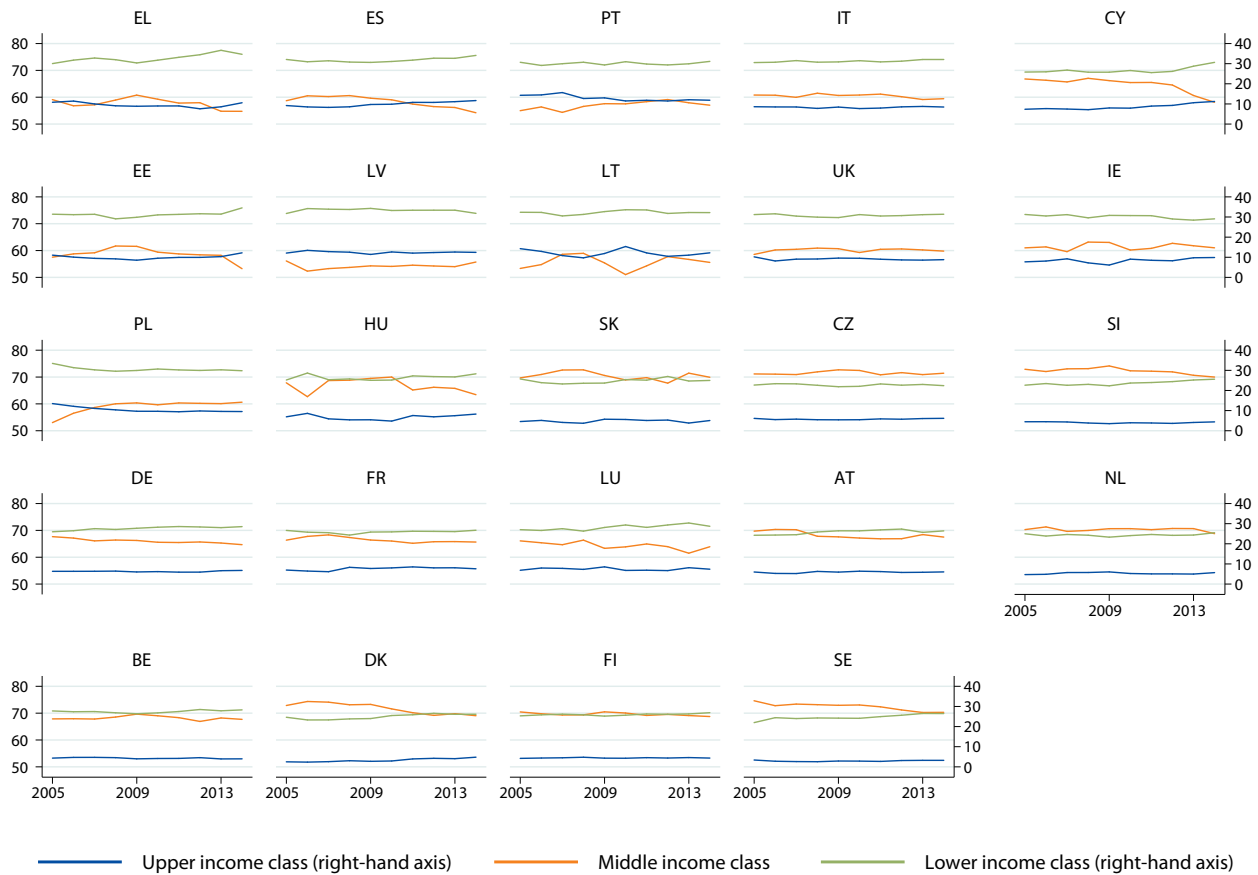
This study defines the middle class as people whose household disposable income is between 75% and 200% of the median disposable income in each country (respectively, three-quarters and twice the median disposable income). Those below 75% would belong to the lower income classes, while those above 200% of the national median income would be the upper income classes. Previous studies use similar but not always identical intervals. For instance, a recent study from the ILO defines the middle class using the range 60% to 200% of the median instead (Vaughan-Whitehead et al, 2016), but it was sought to avoid setting the lower bound of the middle class at the level of 60% (generally used as the poverty line), preferring to allow a 15% buffer between the poverty line and the lower endpoint of the middle class (Horrihan and Haugen, 1988; Ravallion, 2010; a similar approach is used, among others, by Atkinson and Brandolini, 2011).³⁵

Figure 26 presents data on the size of the three income classes over time. The size of the European middle classes ranges from around 70% to above 50% of the population across countries in 2014. It is larger in Scandinavian countries, some CEE countries (the Czech Republic, Slovenia and Slovakia) and to a lesser extent in Continental countries, while it is smaller in Mediterranean and Baltic countries.

The gaps between countries in the size of the middle class translate into significant cross-country differences as well as in the relative sizes of the lower income class and especially the upper income class. The lower income class represents around 30% of the population or more in Mediterranean, Baltic and Anglo-Saxon countries, while it represents around 25% or less in the Scandinavian countries, some CEE countries (the Czech Republic, Slovakia and Slovenia) and some Continental countries (the Netherlands and Austria). Relative cross-

35 Nevertheless, using different intervals (for instance, setting the lower bound of the middle class to 60% rather than 75% or the upper bound to 150%) does not have significant implications for the presented results in terms of trends and general interpretation.

Figure 26: Evolution in the proportion of population belonging to different income classes (%)



Source: EU-SILC.

country differences are larger in the case of the upper income class: the size of this class is only 5% or less in the Scandinavian countries, Belgium, Slovenia and Slovakia; it is between 5% and 10% in the rest of the Continental and CEE countries and in the Anglo-Saxon countries; and it reaches levels above 10% in the Mediterranean countries (apart from Italy) and the Baltic states.

But the main interest lies in the evolution of the share of population that falls into this income-based definition of the middle class. Prior to the crisis (between 2005 and 2009, income referring to 2004–2008), the middle class was expanding in around two-thirds of Member States (especially in the countries on the European periphery) and declining in some Continental and Scandinavian countries (in Germany and Sweden, linked to a significant expansion of the lower income class).

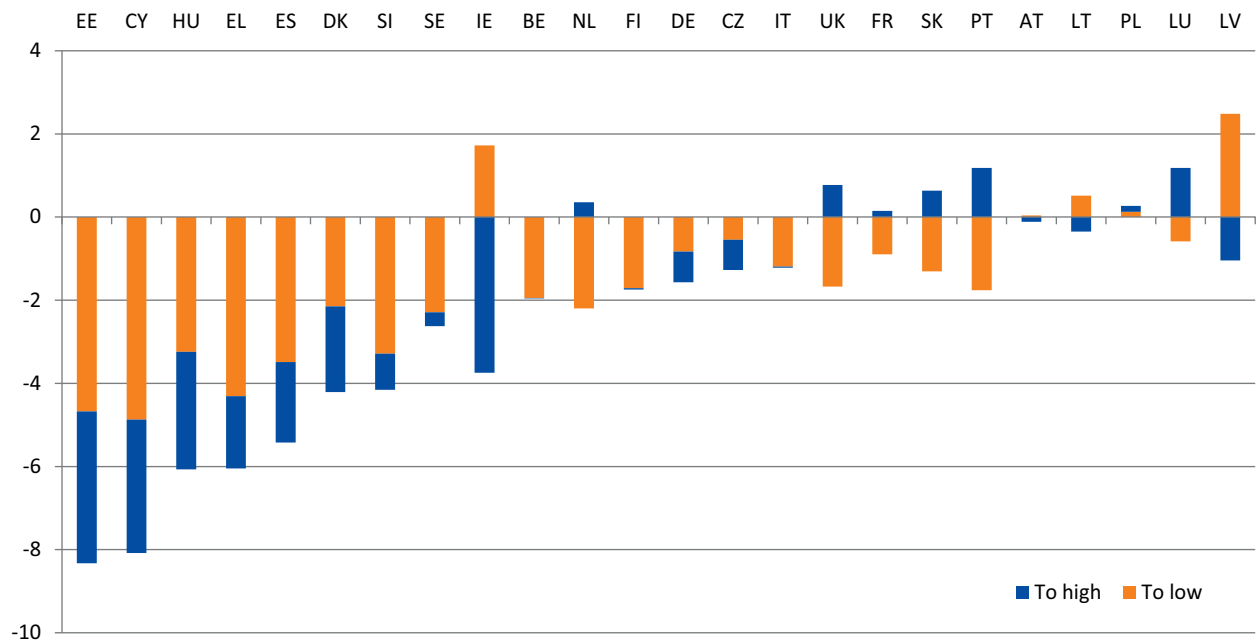
But this development was clearly reversed in the crisis. The Great Recession has resulted in the reduction in the size of the middle class between 2009 and 2014 (income referring to 2008–2013) in all Member States apart from Latvia, Luxembourg, Poland and Lithuania. This has been especially relevant in some of the peripheral Member States hardest hit by the crisis – several

Mediterranean countries (Cyprus, Greece and Spain especially) and some countries in the eastern part of the EU (Estonia, Hungary and Slovenia). Nevertheless, significant reductions in the middle class have also been registered in some countries where its size was relatively large initially, such as the Scandinavian countries.

In contrast, the reduction in the size of the middle class has typically been more modest in Anglo-Saxon and Continental countries, which have been more protected from the effects of the crisis. Nevertheless, it is relevant to note that middle classes shrank both before the crisis (in 2005–2009) and after (2009–2014) in some of the Continental countries (Austria and Germany) as well as in Sweden.

A more nuanced picture of this squeezing of the middle class is provided by looking at the trends affecting the lower and the upper income classes as well. As shown in Figure 27, the reduction in the size of the middle classes has resulted mainly in a larger expansion of the lower income class than that of the upper income class, even though the latter has increased significantly as well in some countries (and more than the lower income class in Ireland and Czech Republic).

Figure 27: Change in size of middle-income class, 2008–2014, and decomposition of change by income class of destination (percentage points)



Note: Countries are ranked by the absolute magnitude (in percentage points) of the decline of the middle class from 2009 to 2014 (income referring to 2008–2013).

Source: EU-SILC.

Summary

This chapter has discussed the strong negative impact of the crisis on income levels across all countries, which is much more substantial than the moderate trends in income inequality discussed in previous sections. Income progressed relatively more in eastern European countries before the crisis and especially at the bottom of the distribution, while real income levels remained much more stable in most Mediterranean, Continental and Scandinavian countries (and typically with income levels at the bottom of the distribution doing worse in most Continental and Scandinavian countries). The crisis had a negative impact on real income levels everywhere (either pushing them downwards or reducing their growth rate) – most notably in the European periphery (in the Mediterranean countries and some CEE countries in a protracted way, and in

Baltic and Anglo-Saxon countries during the initial stage of the financial crisis) and especially at the bottom of the distribution, while the income correction was generally modest among Continental and Scandinavian countries.

The Great Recession squeezed European middle classes. In the final years of the previous economic expansion, this analysis suggests that the middle income class was in fact expanding in around two-thirds of the countries. But this process was completely reversed from 2009 (income referring to 2008), with significant declines in the size of the middle class in some countries in the European periphery and in the Scandinavian countries. Middle classes declined throughout the whole period from 2005 to 2014 in some core Member States (Austria, Germany and Sweden).

7 | Conclusions

This report addresses growing concerns regarding income inequality, in academic and policy debates, by providing a detailed account of developments in Europe over the period 2005–2014 (income referring to 2004–2013), with two main aims: to provide an EU perspective and to update the picture provided by previous similar international comparisons covering the effects of the Great Recession.

An EU-wide perspective on the analysis of income inequalities seems particularly important in the context of the period after the crisis. Before 2008, the EU made some big leaps forward in terms of economic integration (in particular, the adoption of the euro and the enlargement to the east) that seemed to produce good economic outcomes, with fast economic growth and catch-up in many countries on the periphery. But the financial crisis that emerged at the end of 2008 disrupted that process due to a much stronger impact on the European periphery, which calls into question the benefits of the process, and which risks undermining the legitimacy of the process of European integration itself. The analysis in the previous chapters shows that these dynamics are clearly reflected in income inequality trends. Before the crisis, a process was visible of income convergence between countries, one that pushed overall EU inequalities significantly down between 2005 and 2009 (income referring to 2004–2008). After the crisis, real income convergence between countries has essentially stalled due to the larger impact of the crisis on the European periphery (very protracted in the Mediterranean countries). Thus, overall EU income inequality interrupted its notable reduction prior to the crisis and has grown modestly between 2009 and 2014 (income referring to 2008–2013) as a result of the expansion of inequality within most countries and the disappearance of the process of economic convergence identified in the previous period.

The process of income convergence before the crisis was mainly driven by a catch-up process in eastern European countries and the stagnation of several Continental countries and the UK. The end of convergence after the emergence of the crisis is associated with a significant decline in relative income levels in the European periphery in the initial years (in several eastern European and Mediterranean Member States), while core Member States were generally more resilient. Most recently, paths begin to diverge even within the group at the periphery, with some eastern European countries and Ireland recovering very quickly, whereas Mediterranean Member States continued to suffer painful corrections in their relative income levels.

This report has also offered an updated picture of income inequality trends within Member States in the aftermath of the recession. Inequalities in household disposable income grew in two-thirds of Member States between 2005 and 2014 (income referring to 2004–2013), which can be understood as a continuation of previous trends as identified by different international studies (OECD, 2008; 2011). However, the findings of this report substantially complement those from these previous studies; they identify unemployment and its effect on declining labour income as the main factor behind growing inequalities in household disposable income in the short time span from the onset of the crisis, rather than widening wage differentials (which seem to have been the driving force over the longer time span of several decades covered in those previous studies). Whether these developments will be reversed when the recession is finally over is an empirical question that should be addressed when this analysis is updated in the future.

The importance of employment turbulence explains why inequalities in household disposable income behave counter-cyclically. There are many cases of reductions in inequality before the crisis, mainly in the European periphery (eastern European and Mediterranean countries), while inequalities grew across two-thirds of Member States from the onset of the crisis, especially in the hardest hit peripheral countries but also in some core European and traditionally egalitarian countries, such as Denmark and Sweden.

If unemployment emerges as the main channel by which the Great Recession has pushed income inequalities upwards, there are two non-market mechanisms that have also played an important role. First, the impact of the family pooling of income in reducing inequalities has been weakened during the period across most countries, probably due to an increase in the number of households with no labour income in many countries as the crisis went on and to a lesser extent because of a reduction in the size of the average household across most Member States. Second, European welfare states have prevented a greater increase in inequalities by cushioning growing market income inequalities, especially in some of the countries that were hardest hit by the crisis in the European periphery (the Mediterranean and Anglo-Saxon countries and the Baltics to a lower extent). The strong pressures and growing strain on public finances as the crisis continued (especially after 2011, and especially in the periphery) further underline the significance of European welfare states in cushioning the effect of economic turbulence on the distribution of income and the life chances of Europeans.

The Great Recession had a negative impact on real income levels across Europe, either pushing them downwards or reducing their pre-crisis growth rates. This negative impact was notable in the European periphery (in the Mediterranean and CEE countries in a protracted way and in Baltic and Anglo-Saxon countries during the initial stage of the financial crisis) and especially at the bottom of the income distributions. But, even if more moderately, income levels were also affected in Continental and Scandinavian countries, a fact that is not always reflected in relative indices on income inequalities or by other indicators. The analysis of this report suggests that the full magnitude of the fall in living standards associated with the Great Recession

is not captured by data on GDP per capita, not only in some of those countries most affected by the crisis, but also in some core Member States, such as Germany, which points to the importance of using a wider set of indicators to assess well-being and economic prosperity in European societies.

The size of the middle income classes has been squeezed from the onset of the crisis across most countries – most significantly in some peripheral countries (Mediterranean and eastern European countries) but also in the core of Europe, where the middle classes were contracting even before the crisis in Austria, Germany and Sweden.

Bibliography

All Eurofound publications are available at www.eurofound.europa.eu

- Abraham, K. and Haltiwanger, J. (1995), 'Real wages and the business cycle', *Journal of Economic Literature*, Vol. 33, pp. 1, 215–1,264.
- Atkinson, A. B. (1995), 'Poverty, statistics and progress in Europe', in Atkinson, A. B. (ed.), *Income and the welfare state – essays on Britain and Europe*, Cambridge University Press, Cambridge, pp. 64–77.
- Atkinson, A. B. (1996), 'Income distribution in Europe and the United States', *Oxford Review of Economic Policy*, Vol. 12, No. 1, pp. 15–28.
- Atkinson, A. B. and Brandolini, A. (2011), *On the identification of the 'middle class'*, ECINEQ Working Paper 2011-217, Society for the Study of Economic Inequality, Verona.
- Atkinson, A. B., Piketty, T. and Saez, E. (2011), 'Top incomes in the long run of history', *Journal of Economic Literature*, Vol. 49, No. 1, pp. 3–71.
- Ballarino, G., Bogliacino, F., Braga, M., Bratti, M., Checchi, D., Filippin, A. et al (2012), *Drivers of growing inequalities*, Gini Intermediate work package 3 report, AIAS, Amsterdam.
- Beblo, M. and Knaus, T. (2000), *Measuring income inequality in Euroland*, Luxembourg Income Study Working Paper No. 232, Luxembourg.
- Bils, M. (1985), 'Real wages over the business cycle: Evidence from panel data', *Journal of Political Economy*, Vol. 93, pp. 666–689.
- Blau, F. D. and Kahn, L. M. (2009), 'Inequality and earnings distribution', in Salverda, W., Nolan, B. and Smeeding, T. M. (eds.), *The Oxford handbook of economic inequality*, Oxford University Press, Oxford.
- Boix, C. (2004), 'The institutional accommodation of an enlarged Europe', Friedrich-Ebert-Stiftung, *Europäische Politik*, Vol. 6, pp. 1–9.
- Bonesmo Fredriksen, K. (2012), *Income inequality in the European Union*, OECD Economics Department Working Paper No. 952, OECD Publishing, Paris.
- Bonhomme, S. and Hospido, L. (2012), *The cycle of earnings inequality: Evidence from Spanish social security data*, Banco de España Working Paper No. 1225, Banco de España, Madrid.
- Brandolini, A. (2007), 'Measurement of income distribution in supranational entities: The case of the European Union', in Jenkins, S. P. and Micklewright, J. (eds.), *Inequality and poverty re-examined*, Oxford University Press, Oxford, pp. 62–83.
- Brandolini, A. and Rosolia, A. (2015), *The euro area wage distribution over the crisis*, Bank of Italy, DG Economics, Statistics and Research, August 2015.
- Brandolini, A., Rosolia, A. and Torrini, R. (2010), 'The distribution of employees' labour earnings in the European Union: Data, concepts and first results', in Atkinson, A. B. and Marlier, E. (eds.), *Income and living conditions in Europe*, Eurostat Statistical Books, Publications Office of the European Union, Luxembourg.
- Burniaux, J. M. (1997), 'Inégalités et emplois: Effet de redistribution lié à la structure familiale', *Economie Internationale*, Vol. 71, No. 3.
- Chiappori, P. A. and Meghir, C. (2014), *Intrahousehold inequality*, National Bureau of Economic Research, NBER Working Paper Series, June 2014.
- Darvas, Z. (2016), *Some are more equal than others: New estimates of global and regional inequality*, Bruegel Working Paper 8, Brussels.
- Dauderstädt, M. and Keltek, C. (2011), 'Immeasurable inequality in the European Union', *Intereconomics*, Vol. 47, No. 1.
- Dauderstädt, M. and Keltek, C. (2014), *Crisis, austerity and cohesion: Europe's stagnating inequality*, Friedrich-Ebert-Stiftung, Bonn.
- Eurofound (2015), *Recent developments in the distribution of wages in Europe*, Publications Office of the European Union, Luxembourg.
- European Central Bank (2014), 'The impact of the economic crisis on euro area labour markets', *ECB Monthly Bulletin*, October, pp. 49–68.
- European Central Bank (2015), *Comparisons and contrasts of the impact of the crisis on euro area labour markets*, Occasional Paper Series No. 159, February 2015.
- European Commission (2011), *Employment and social developments in Europe 2011*, Publications Office of the European Union, Luxembourg.
- European Commission (2013), *Employment and social developments in Europe 2013*, Publications Office of the European Union, Luxembourg.
- European Parliament (2014), *Income inequality: Wage dispersion in the European Union*, Directorate General for Internal Policies, Policy Department A: Economic and Scientific Policy.

- European Parliament (2015), *Wage and income inequality in the European Union*, Directorate General for Internal Policies, Policy Department A: Economic and Scientific Policy, IP/A/EMPL/2013-05, January 2015.
- Farber, H. (1999), 'Mobility and stability', in Ashenfelter, O. and Card, D. (eds.), *Handbook of labor economics*, Volume 3B, North-Holland, New York, pp. 2,441–2,483.
- Foster-McGregor, N., Leitner, S., Leitner, S. Poschl, J. and Stehrer, R. (2014), *Study on various aspects of earnings distribution using micro-data from the European Union Structure of Earnings Survey*, Vienna Institute for International Economic Studies.
- Horrigan, M. W. and Haugen, S. E. (1988), 'The declining middle-class thesis: A sensitivity analysis', *Monthly Labor Review*, Vol. 111, No. 5, pp. 3–13.
- Jenkins, S. P. and Micklewright, J. (2007), *New directions in the analysis of inequality and poverty*, IZA Discussion Papers No. 2814, Institute for the Study of Labor (IZA), Bonn.
- Jenkins, S. P., Burkhauser, R. V., Feng, S. and Larrimore, J. (2011), 'Measuring inequality using censored data: A multiple imputation approach', *Journal of the Royal Statistical Society*, Vol. 174, No. 1, pp. 63–81.
- Jovanovic, B. (1979), 'Job matching and the theory of turnover', *Journal of Political Economy*, Vol. 87, No. 5, Part 1 (October 1979), pp. 972–990.
- Maestri, V. and Roventini, A. (2012), *Stylised facts on business cycles and inequality*, GINI Discussion Paper 30, Amsterdam Institute for Advanced Labour Studies, Amsterdam.
- Milanovic, B. (2005), *Worlds apart: Measuring international and global inequality*, Princeton University Press, Princeton, NJ.
- Nolan, B., Roser, M. and Thewissen, S. (2016), *GDP per capita versus median household income: What gives rise to divergence over time?*, Oxford INET Working Paper Series, No. 2016-03.
- Nolan, B., Salverda, W., Checchi, D., Marx, I., McKnight, A., Tóth, I. G. et al (eds.) (2014), *Changing inequalities and societal impacts in rich countries: Thirty countries' experiences*, Oxford University Press, Oxford.
- OECD (2008), *Growing unequal? Income distribution and poverty in OECD countries*, OECD Publishing, Paris.
- OECD (2011), *Divided we stand: Why inequality keeps rising*, OECD Publishing, Paris.
- OECD (2013), *Crisis squeezes income and puts pressure on inequality and income: New results from the OECD Income Distribution Database*, OECD Publishing, Paris.
- Papatheodorou, C. and Pavlopoulos, D. (2003), *Accounting for inequality in the EU: Income disparities between and within Member States and overall income inequality*, CHER Working Paper 9, CEPS/INSTEAD, Differdange, Luxembourg.
- Piketty, T. (2014), *Capital in the twenty-first century*, Belknap Press, Portland, OR.
- Ravallion, M. (2010), 'The developing world's bulging (but vulnerable) middle class', *World Development*, Vol. 38, No. 4, pp. 445–454.
- Rosnick, D. and Baker, S. (2012), *Missing the story: The OECD's analysis of inequality*, Center for Economic and Policy Research, Washington, DC.
- Sachs, J. and Warner, A. M. (1996), *Economic convergence and economic policies*, NBER Working Paper No. 5039.
- Solon, G., Barsky, R. and Parker, J. (1994), 'Measuring the cyclical nature of real wages: How important is composition bias?', *Quarterly Journal of Economics*, Vol. 109, pp. 1–25.
- Stiglitz, J., Sen, A. and Fitoussi, J. P. (2009), *Report of the Commission on the Measurement of Economic Performance and Social Progress*, Technical Report, CMEPSP.
- Stolper, W. and Samuelson, P. A. (1941), 'Protection and real wages', *Review of Economic Studies*, Vol. 9, pp. 58–73.
- Storesletten, K., Telmer, C. I. and Yaron, A. (2004), 'Cyclical dynamics in idiosyncratic labor market risk', *Journal of Political Economy*, Vol. 112, No. 3, pp. 695–717.
- Vaughan-Whitehead, D., Vazquez-Alvarez, R. and Maitre, N. (2016), 'Is the world of work behind middle class reshuffling?', ILO conference, *Trends in the World of Work: What Effects on Inequalities and Middle-Income Groups*, 29 February–1 March, Brussels.
- Violante, G. L. (2008), 'Skill-biased technical change', in Blume, L. and Durlauf, S. (eds.), *The new Palgrave dictionary of economics*, Palgrave Macmillan.
- Visser, J. and Checchi, D. (2009), 'Inequality and the labor market: Unions', in Salverda, W., Nolan, B. and Smeeding, T. M. (eds.), *The Oxford handbook of economic inequality*, Oxford University Press, Oxford, pp. 230–256.

Annex

Additional data on income inequalities

Table A1: Household disposable income inequality: A comparison when treating negative values (Gini indices)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Negative values included in the analysis										
EU	0.356	0.346	0.345	0.339	0.331	0.335	0.336	0.334	0.335	0.338
AT	0.260	0.253	0.258	0.274	0.276	0.280	0.274	0.278	0.271	0.277
BE	0.286	0.278	0.258	0.274	0.262	0.255	0.260	0.261	0.257	0.259
CY	0.281	0.283	0.296	0.285	0.289	0.300	0.291	0.311	0.329	0.360
CZ	0.262	0.254	0.253	0.248	0.253	0.251	0.254	0.253	0.251	0.255
DE	0.277	0.289	0.297	0.295	0.281	0.287	0.286	0.276	0.288	0.304
DK	0.238	0.239	0.255	0.251	0.269	0.263	0.280	0.283	0.273	0.275
EE	0.342	0.330	0.334	0.301	0.307	0.311	0.321	0.325	0.325	0.355
EL	0.332	0.348	0.341	0.337	0.338	0.338	0.338	0.347	0.356	0.358
ES	0.320	0.310	0.310	0.314	0.322	0.331	0.340	0.344	0.344	0.355
FI	0.259	0.258	0.261	0.261	0.254	0.253	0.258	0.258	0.254	0.255
FR	0.274	0.274	0.266	0.293	0.294	0.296	0.304	0.303	0.304	0.289
HU	0.286	0.338	0.267	0.259	0.251	0.246	0.275	0.275	0.286	0.298
IE	0.318	0.319	0.308	0.296	0.287	0.311	0.303	0.305	0.307	0.318
IT	0.327	0.321	0.321	0.309	0.312	0.315	0.322	0.328	0.335	0.328
LT	0.371	0.353	0.336	0.339	0.359	0.383	0.343	0.325	0.349	0.350
LU	0.266	0.285	0.277	0.280	0.297	0.282	0.276	0.281	0.304	0.284
LV	0.369	0.390	0.352	0.364	0.368	0.364	0.355	0.362	0.354	0.353
NL	0.264	0.256	0.276	0.274	0.269	0.256	0.259	0.254	0.252	0.263
PL	0.382	0.341	0.331	0.327	0.322	0.318	0.316	0.314	0.313	0.314
PT	0.376	0.372	0.366	0.357	0.353	0.333	0.339	0.341	0.344	0.348
SE	0.234	0.239	0.233	0.236	0.245	0.239	0.242	0.246	0.249	0.253
SI	0.236	0.235	0.231	0.230	0.222	0.236	0.235	0.237	0.243	0.249
SK	0.266	0.279	0.240	0.236	0.249	0.263	0.258	0.254	0.243	0.267
UK	0.341	0.318	0.321	0.331	0.322	0.327	0.330	0.317	0.306	0.320
Negative values converted to zero										
EU	0.355	0.344	0.343	0.337	0.330	0.333	0.333	0.333	0.334	0.336
AT	0.259	0.253	0.258	0.274	0.276	0.280	0.274	0.278	0.270	0.277
BE	0.285	0.275	0.257	0.272	0.257	0.255	0.259	0.259	0.256	0.258
CY	0.281	0.283	0.296	0.285	0.289	0.300	0.290	0.311	0.329	0.360
CZ	0.262	0.254	0.253	0.248	0.253	0.251	0.254	0.253	0.251	0.255
DE	0.277	0.284	0.291	0.293	0.281	0.284	0.283	0.276	0.287	0.297
DK	0.232	0.235	0.246	0.249	0.242	0.250	0.267	0.271	0.270	0.272
EE	0.339	0.329	0.334	0.301	0.307	0.311	0.321	0.325	0.324	0.353
EL	0.330	0.346	0.340	0.332	0.334	0.337	0.335	0.340	0.353	0.357
ES	0.320	0.309	0.310	0.310	0.319	0.329	0.335	0.342	0.341	0.353
FI	0.259	0.258	0.261	0.261	0.254	0.253	0.258	0.258	0.254	0.254

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Negative values converted to zero										
FR	0.273	0.274	0.265	0.291	0.294	0.295	0.304	0.303	0.304	0.289
HU	0.286	0.336	0.267	0.258	0.251	0.246	0.275	0.275	0.286	0.298
IE	0.317	0.318	0.308	0.295	0.287	0.311	0.303	0.305	0.307	0.318
IT	0.326	0.320	0.320	0.308	0.311	0.314	0.321	0.326	0.334	0.328
LT	0.371	0.353	0.336	0.339	0.359	0.383	0.342	0.325	0.349	0.350
LU	0.365	0.282	0.277	0.280	0.297	0.281	0.274	0.279	0.303	0.281
LV	0.367	0.388	0.352	0.364	0.368	0.363	0.355	0.362	0.354	0.353
NL	0.257	0.252	0.272	0.270	0.265	0.254	0.252	0.252	0.250	0.261
PL	0.379	0.340	0.330	0.326	0.322	0.318	0.316	0.314	0.313	0.314
PT	0.376	0.372	0.366	0.356	0.352	0.333	0.339	0.340	0.344	0.348
SE	0.231	0.238	0.232	0.235	0.242	0.238	0.240	0.244	0.249	0.252
SI	0.235	0.234	0.230	0.229	0.222	0.235	0.234	0.237	0.243	0.249
SK	0.264	0.279	0.240	0.235	0.248	0.263	0.258	0.254	0.243	0.267
UK	0.341	0.317	0.321	0.331	0.322	0.326	0.328	0.315	0.306	0.316
Negative values dropped from the analysis										
EU	0.353	0.343	0.341	0.335	0.328	0.331	0.331	0.331	0.332	0.333
AT	0.259	0.252	0.258	0.274	0.275	0.280	0.274	0.278	0.270	0.277
BE	0.285	0.274	0.256	0.271	0.254	0.254	0.258	0.257	0.256	0.258
CY	0.281	0.283	0.296	0.285	0.289	0.300	0.290	0.311	0.329	0.360
CZ	0.262	0.254	0.253	0.248	0.253	0.251	0.254	0.253	0.251	0.255
DE	0.275	0.281	0.286	0.289	0.279	0.283	0.281	0.274	0.284	0.289
DK	0.229	0.231	0.241	0.243	0.230	0.243	0.260	0.260	0.266	0.267
EE		0.328	0.333	0.300	0.306	0.309	0.319	0.323	0.322	0.351
EL	0.328	0.343	0.338	0.327	0.330	0.334	0.331	0.332	0.347	0.356
ES	0.319	0.309	0.308	0.306	0.315	0.325	0.332	0.337	0.338	0.349
FI	0.259	0.258	0.260	0.260	0.253	0.253	0.257	0.257	0.253	0.254
FR	0.273	0.273	0.264	0.291	0.293	0.294	0.303	0.302	0.303	0.289
HU	0.285	0.333	0.267	0.258	0.251	0.246	0.275	0.275	0.286	0.298
IE	0.316	0.318	0.308	0.295	0.287	0.308	0.302	0.305	0.306	0.317
IT	0.324	0.318	0.317	0.306	0.309	0.311	0.319	0.326	0.331	0.326
LT	0.371	0.353	0.336	0.339	0.359	0.381	0.340	0.323	0.349	0.350
LU	0.264	0.280	0.277	0.279	0.297	0.280	0.272	0.277	0.300	0.278
LV	0.364	0.386	0.350	0.363	0.366	0.361	0.352	0.358	0.351	0.350
NL	0.252	0.248	0.267	0.266	0.262	0.250	0.248	0.249	0.247	0.258
PL	0.373	0.340	0.330	0.325	0.322	0.318	0.316	0.313	0.312	0.314
PT	0.376	0.372	0.365	0.256	0.352	0.333	0.338	0.340	0.344	0.348
SE	0.230	0.235	0.231	0.234	0.240	0.235	0.238	0.242	0.247	0.250
SI	0.235	0.234	0.230	0.229	0.222	0.235	0.234	0.237	0.242	0.249
SK	0.263	0.278	0.239	0.235	0.248	0.263	0.258	0.253	0.243	0.265
UK	0.337	0.314	0.318	0.328	0.319	0.321	0.322	0.310	0.303	0.313

Table A2: Inequality levels in different sources of income in 2014 (Gini indices)

	Monthly wages, FTE (employees)	Monthly labour income, FTE (workers)	Monthly labour income (workers)	Annual labour income (active)	Annual labour income (all)	Family-pooled annual labour income	Household market income	Household disposable income
EU	0.34	0.38	0.39	0.48	0.61	0.48	0.47	0.34
AT	0.33	0.37	0.39	0.45	0.57	0.43	0.43	0.28
BE	0.24	0.26	0.28	0.38	0.56	0.43	0.43	0.26
CY	0.34	0.36	0.38	0.49	0.62	0.43	0.41	0.36
CZ	0.28	0.31	0.31	0.40	0.55	0.40	0.39	0.26
DE	0.32	0.36	0.39	0.46	0.58	0.44	0.43	0.30
DK	0.25	0.27	0.29	0.36	0.51	0.42	0.43	0.27
EE	0.38	0.39	0.40	0.48	0.59	0.45	0.45	0.35
EL	0.27	0.37	0.39	0.56	0.70	0.54	0.52	0.36
ES	0.33	0.36	0.39	0.55	0.64	0.50	0.49	0.35
FI	0.25	0.30	0.31	0.43	0.52	0.42	0.42	0.25
FR	0.28	0.33	0.34	0.41	0.55	0.43	0.43	0.29
HU	0.30	0.32	0.32	0.43	0.60	0.47	0.46	0.30
IE	0.35	0.38	0.42	0.52	0.67	0.54	0.54	0.32
IT	0.26	0.33	0.35	0.45	0.61	0.45	0.45	0.33
LT	0.34	0.38	0.38	0.47	0.58	0.45	0.45	0.35
LU	0.32	0.35	0.35	0.42	0.58	0.44	0.43	0.28
LV	0.35	0.37	0.38	0.46	0.58	0.45	0.45	0.35
NL	0.30	0.34	0.37	0.45	0.56	0.42	0.41	0.26
PL	0.31	0.34	0.35	0.46	0.61	0.44	0.44	0.31
PT	0.36	0.38	0.39	0.55	0.65	0.52	0.51	0.35
SE	0.27	0.32	0.33	0.40	0.46	0.37	0.37	0.25
SI	0.28	0.33	0.33	0.44	0.58	0.43	0.42	0.25
SK	0.26	0.28	0.28	0.40	0.54	0.38	0.38	0.27
UK	0.36	0.39	0.42	0.47	0.59	0.48	0.47	0.32

Note: FTE = full-time equivalent

Source: EU-SILC.

This report addresses growing concerns about income inequalities in academic and policy debates by offering a comprehensive study of income inequalities during the years of the Great Recession starting in 2008–2009 (income data relating to 2004–2013). It has the twofold objective of adopting an EU-wide perspective and providing an updated picture of inequalities across different sources of income and in most Member States. The results show that EU-wide income inequality declined notably prior to 2008, driven by a strong process of income convergence between European countries – but the Great Recession broke this trend and pushed inequalities upwards both for the EU as a whole and across most countries. While previous studies have pointed to widening wage differentials as the main driver behind the long-term trend towards growing household disposable income inequalities across many European countries, this report identifies unemployment and its associated decline in labour income as the main reason behind the inequality surges occurring in recent years. Real income levels have declined and the middle classes have been squeezed from the onset of the crisis across most European countries. The role played by the family pooling of income in reducing inequalities and the impact of European welfare policies in cushioning the effect of economic turbulences on the distribution of income are also explored.

The European Foundation for the Improvement of Living and Working Conditions (Eurofound) is a tripartite European Union Agency, whose role is to provide knowledge in the area of social, employment and work-related policies. Eurofound was established in 1975 by Council Regulation (EEC) No. 1365/75, to contribute to the planning and design of better living and working conditions in Europe.

6. A coordinated European Union minimum wage policy?

Article 5

Authors: Enrique Fernández Macías and Carlos Vacas Soriano

A coordinated European Union minimum wage policy?

European Journal of
Industrial Relations
2016, Vol. 22(2) 97–113
© The Author(s) 2015
Reprints and permissions:
sagepub.co.uk/journalsPermissions.nav
DOI: 10.1177/0959680115610725
ejd.sagepub.com



Enrique Fernández-Macías

European Foundation for the Improvement of Living and Working Conditions – Eurofound, Ireland

Carlos Vacas-Soriano

European Foundation for the Improvement of Living and Working Conditions – Eurofound, Ireland

Abstract

This article contributes to the growing debate on minimum wage coordination at European Union (EU) level. We consider the introduction of a hypothetical EU-wide minimum set at 60 percent of the median wage in each European country; we compare the diverse minimum wage-setting systems across Europe and discuss how they could be affected by such policy. The institutional impact of this European common threshold would be larger in those countries where minimum wages are currently collectively agreed by social partners than in those countries where they are set by statutory regulation. But according to our statistical analysis, such EU-wide minimum wage would affect a larger proportion of the workforce in those countries with statutory minimum wages, since they tend to have a larger low-paid segment of employment.

Keywords

European Union, European wage coordination, low pay, minimum wages

Introduction

Minimum wage systems vary considerably across the European Union (EU). In some countries, they are statutory while in others they are collectively agreed by social partners; some are cross-sectoral while others are sector-specific; some are relatively generous while others are comparatively low. But despite such diversity, in all member states they play a very important role in the regulation of employment. In this respect, minimum wages can be considered an integral part of the European Social Model, but also as an embodiment of its contradictions: on the one hand, their mere existence across

Corresponding author:

Enrique Fernández-Macías, European Foundation for the Improvement of Living and Working Conditions – Eurofound, Wyattville Road, Loughlinstown, Dublin 18 KP65, Ireland.
Email: efe@eurofound.europa.eu

Europe reflects a common understanding of the need to combine economic growth with social fairness; on the other hand, the wide diversity in minimum wage systems and levels reflects the difficulties in generalizing beyond a common broad understanding.

This diversity explains why, perhaps surprisingly, though minimum wages are a key element of labour regulation in all member states they are excluded from the competences of European institutions in the existing treaties. But there have always been voices arguing for some form of coordination of minimum wage policies around Europe, an argument that has gained more traction with the recent economic crisis. We contribute to this debate by discussing the difficulties and potential implications of such a coordination of European minimum wage policies.

In this article, we first discuss the theoretical and policy considerations around a coordinated EU minimum wage policy (EUMW from now on), reviewing the institutional difficulties that such a proposal would have to confront. We then use statistical data to evaluate the proportion of workers that would be affected by a hypothetical coordination of minimum wage policy in the different countries, using a baseline scenario of a floor of 60 percent of the median national wages. We end with some remarks about the feasibility of a coordinated European minimum wage policy.

Policy considerations

Wage-setting systems in Europe and the debate on an EUMW

Trade unions have long tried to introduce (and raise) wage floors, but established these extensively only in the second half of the 20th century. Where unions were strong, minimum wages were often established through collective bargaining, usually sector-specific. Where they were weaker, governments often prescribed statutory minima or extended by law collectively agreed wage floors, in most cases with a single national threshold and no exclusions. Of course, the historical origins of minimum wage systems in Eastern Europe were different, but although they were established much later and in very different circumstances, the fact that they all opted for a statutory system is probably related to the weakness of their industrial relations systems. These different origins are reflected in the complex pattern of minimum wage setting in Europe, shown in Table 1.

However, this institutional diversity has been considerably reduced in recent years, as most EU member states now have statutory national minima. Such convergence could facilitate considerably the design and implementation of a hypothetical common minimum wage policy across the EU. In principle, the EU has no competence with respect to wage levels or wage formation mechanisms: article 153 of the Lisbon Treaty, dealing with work and employment, states that ‘the provisions of this article shall not apply to pay’. Nevertheless, the 1961 European Social Charter of the Council of Europe established the right of workers to a fair remuneration for a decent standard of living, and the Council of Europe has asked member states to ensure that minimum wage levels reach at least a certain percentage of the average or median national wages (normally, 50% or 60%).

Against the background of the economic crisis, European institutions (most importantly, the Commission and the Central Bank) have increasingly intervened in wage

Table 1. Different systems of minimum wage setting in Europe.

	Statutory regulation	Collective agreements
Single national minimum wage	<i>Continental countries:</i> FR, LU, NL, DE after 2015 <i>Anglophone countries:</i> UK, IE <i>Southern countries:</i> MT, ES, PT <i>Eastern countries:</i> HR, CZ, HU, LV, LT, RO, SI	<i>Bipartite agreements:</i> BE, ^a EE, GR <i>Tripartite agreements:</i> BG, PL, SK
Sectoral and/or occupational minima	CY	<i>Nordic countries:</i> DK, FI, SE <i>Continental countries:</i> AT, IT, DE before 2015

Source: Adapted from Schulten (2012).

^aBoth national and industry-level (collectively bargained) minima.

formation mechanisms. The Memoranda of Understanding applied to countries receiving EU bailouts often included reductions in minimum wage levels and public pay and decentralization of collective bargaining systems (Busch et al., 2013). Recent agreements such as the Euro Plus Pact and the Six Pack provide for the enforcement of wage austerity and bargaining decentralization. This is surely one reason why the debate on establishing more explicit mechanisms of wage coordination, in particular with respect to minimum wage levels, is currently re-emerging in European policy circles (Eldring and Alsos, 2012; Schulten, 2012).

However, key actors still resist such coordination. Nordic member states, and more generally countries where minimum wages are set up by collective bargaining, have traditionally opposed the idea, considering that it may undermine their existing national mechanisms. Germany belonged to this group until growing dissatisfaction with the results of the existing mechanisms led to the recent adoption of a statutory model. European social partners have also often opposed the idea of an EUMW, defending the need to respect national specificities in wage-setting mechanisms as well as national and social partner sovereignty. However, the European Trade Union Confederation (ETUC, 2012), after stressing that negotiations between social partners at the relevant level are the best means to good wages and working conditions, has called for a substantial increase in the statutory minima in countries where trade unions consider this necessary, stressing that ‘in any event, all wage floors should respect Council of Europe standards on fair wages’.

Why coordinate minimum wages?

The implications of minimum wages are intensely debated in labour economics and employment policy. On the one hand, they ensure that nobody works for a salary below what is considered minimally acceptable or decent, which is particularly important for the most disadvantaged groups in the labour market (Freeman, 1996); they are often also defended as a source of demand stimulation and stabilization (Herr and Kazandziska, 2011). On the other hand, critics often argue that they damage the employment opportunities

of lower-skilled workers and the international competitiveness of low-skilled sectors (Abbott, 2012; Brown et al., 1982).

Yet, since wage minima are well established as part of European social protection systems, the issue is not their existence or even their level, but rather the potential benefits and drawbacks of their coordination at European level (Eurofound, 2014; Schulten, 2008, 2012). Perhaps the most important argument in favour is that minimum wage coordination could be an important complement to economic integration, creating a level playing field for competition; in a wider sense, it could advance European economic integration and the idea of European Social Model. On the negative side, the main arguments are that coordination at EU level would undermine the existing national institutions and traditions, and that a single policy would simply not fit the needs and specificities of each national economy. A further argument against a coordinated EU minimum wage is that it might damage the competitive position of EU countries, especially for goods and services requiring low-skilled labour.

It is important to note that the force of some criticisms depends on how such coordination is implemented. For instance, the governments and social partners of countries (notably the Nordic ones) where minimum wages are traditionally set by collective bargaining have often opposed EU minimum wage coordination as entailing the generalization of a statutory system, and perhaps also prescribing lower wage levels than they currently enjoy (Eldring and Alsos, 2012). But as explained below, minimum wage coordination can be implemented in a variety of ways, some of which in principle respect national wage-setting systems.

What type of coordination?

There are many possible ways to coordinate European minimum wage policies. We can differentiate three potential axes of coordination. The first issue is the *mode of regulation*. Several proponents of an EUMW have argued that coordination could be achieved using the mechanisms of ‘soft law’ familiar from the ‘open method of coordination’ (OMC) (Schulten, 2008). Some have argued, though, that the OMC has delivered few results in terms of actual policy coordination and harmonization (Borrás and Radaelli, 2010). But ‘hard’ forms of EU coordination of minimum wages seem extremely unlikely except perhaps in the long run, since pay is currently explicitly excluded from the Treaties; indeed, it is unclear whether they would even allow the type of soft coordination associated with OMC. Probably, other options for voluntary coordination would have to be explored, such as autonomous agreements concluded by the EU social partners.

The second axis is the *extent of coordination*. If minimum wage levels were defined by each country according to its own institutional and industrial relations traditions, those where minima are set by collective agreement could maintain such systems, only adopting the compromise that the minimum is at least as high as the common target. But a minimum wage system purely established by collective bargaining (as in Sweden or Denmark) leaves unprotected those workers not covered by collective agreements. If the common target level is defined as a minimum for all workers, it may require the extension of collective agreements or the establishment of some kind of second-level statutory

floor. This would imply an important change in existing industrial relations practices, with a higher degree of state intervention.

Taking this a step further, EU coordination could aim at harmonizing not only levels, but also systems, requiring that below the collectively agreed minima (which are generally higher) there would be a statutory threshold corresponding to the EU target. In countries which currently have statutory minima, only the level would change, not the system; where they are collectively agreed, the system itself would have to change, and therefore, the institutional impact would be more significant. It is important to note that even in the latter case, the statutory minimum wage would not (necessarily) replace the collectively bargained level, but supplement it by setting an absolute minimum covering the whole workforce.

The third question is the *target levels* for wage minima. Most frequently mentioned is a proportion of median or average wages, normally 50 or 60 percent. Other proposals anchor the target to Gross National Product (GNP) per capita (or per worker) rather than to wages (Rasmussen and Delors, 2006). The choice of the target level is obviously not trivial. Anchoring the minimum to the median wage makes it insensitive to developments at the upper end of the wage distribution; a massive growth in higher incomes raises the average but not the median. Using the average as the anchor would solve this problem. Using as the reference GNP per capita or per worker, on the other hand, has the advantage of linking the minimum wage to the growth of overall productivity, although in the context of economic crisis and rising unemployment this could lead to increases in minimum wage levels which are difficult to defend. Furthermore, if we assume that productivity growth is lower at the bottom of the wage distribution, this might be detrimental for low-wage employment. A final option would be to have no fixed target level, but some type of EU-level body (similar to the UK Low Pay Commission) that would adjust the target on a yearly basis, depending on their own evaluation of the economic and social situation.

The difficulties of minimum wage coordination across European countries

The main difficulty for minimum wage coordination is the wide diversity of existing systems, particularly between countries where minima are set by government regulation (the statutory model) and those where they are set by collective bargaining. We can summarize this diversity across a number of elements of differentiation.

The first is the *degree of social partner involvement*, which varies considerably between countries. The highest level is in countries where minimum wages are set exclusively by sectoral collective bargaining (Nordic countries, Germany before 2015, Austria and Italy), with government intervention in some cases either to extend the coverage of collective agreements (Finland and Germany before 2015) or to establish a statutory minimum in particular cases (Austria and Italy). There is less involvement in countries with minima set by peak-level collective agreements, bipartite (Belgium, Estonia and Greece) or tripartite (Bulgaria, Poland and Slovakia). This category is really a hybrid: as in the statutory model, there is a single minimum wage level, and government intervention is crucial for transforming what has been agreed into binding regulation (and often, the government can have the final word in if the social partners cannot reach an

agreement), as in the collectively bargained model, the agreement of the social partners determines the threshold. Belgium is a particularly hybrid case because it has both economy-wide and industry-level (collectively bargained) minimum wages. Countries with statutory minima have the lowest level of involvement, though in most cases social partners are consulted (often, they are formally part of some type of advisory body which recommends adjustments to the minimum wage on a regular basis, such as the UK Low Pay Commission).

Second, there is a distinction between *universal* and *segmented wage floors*. Although in most cases this is linked to the previous differentiation, it is conceptually distinct. In countries with collectively agreed minimum wages, they tend to be sector- or even company-specific, whereas most of those with statutory systems tend to have a single universal wage floor (though some have regional differentiation), whether the result of pure government action or following collective agreements at national level. Cyprus is a somewhat hybrid case, because it has an occupation-specific statutory minimum wage underpinning the collectively agreed levels (Soumeli, 2011). As far as we know, none of the proposals of EU minimum wage coordination mentions the possibility of differentiating by sector or occupation, and therefore, we can assume that there would be a universal threshold within each country.

The third distinction is the *scope* of coverage. Even in the countries with statutory national minima, there are often provisions allowing sub-minima for specific groups, or even exclusions. But again, the most important difference in the scope of minimum wages links to the divide between the statutory and sectoral collectively bargained models. In the latter, only workers covered by collective agreements are affected by the minima, although most of these countries have very high levels of coverage (above 80%), in some cases (such as Germany until 2015) it is much lower, which leaves many workers unprotected. Some countries with the sectoral bargaining model solve this problem (at least partly) by different means, such as extending the collective agreement if half of the industry is covered or making it an obligation to be member of an employer organization (Martins, 2014). In statutory systems, on the other hand, coverage tends to be comprehensive but often allows sub-minima for specific categories, typically young workers and/or apprentices. There are other types of differentiation in particular cases, such as for disability in France or Portugal, for unskilled workers in Luxembourg or for managers and unmarried workers in Greece (Eldring and Alsos, 2012).

A fourth difference concerns *enforcement*: if this differs significantly across countries, the institutional difficulties of EU-wide coordination increase considerably. Although some relatively well-known facts (the differences in the size of the informal sector or the existence of bogus self-employment) do point to differences in enforcement across Europe, there is no reliable source of comparable data, so it is difficult to evaluate in this context.

In summary, we can divide countries into three categories. First, there are those where EU-wide coordination would involve a *high degree of institutional impact*: Denmark, Sweden, Finland, Austria and Italy. These countries have collectively agreed minimum wages, and there are superimposed difficulties across most of the axes previously mentioned: the proposed policy could disrupt national industrial relations traditions or require a high degree of coordination from all economic actors, would probably eliminate

existing sector and company differentials with respect to minimum wage levels and would expand coverage to make it universal.

Second, some countries would experience an *intermediate degree of institutional impact*: Belgium, Estonia, Poland, Bulgaria, Slovakia, Greece and Cyprus. Most also have collectively agreed minimum wages, although at economy-wide level and with universal coverage. Cyprus is a peculiar case, with an underlying occupation-specific statutory minimum wage for some cases and collectively agreed minimum wages.

A third group would experience a *low degree of institutional impact*: France, Spain, Portugal, Netherlands, Lithuania, Latvia, Romania, the United Kingdom, Ireland, Hungary, Czech Republic, Luxembourg, Slovenia and Malta. In these countries, minimum wages are set by government regulation and have more or less universal coverage, and therefore, EU coordination would be considerably simpler than in the previous cases. After the establishment of a statutory national minimum wage, Germany belongs to this group too.

Evaluating the quantitative impact of a common EU minimum wage threshold

Methodology

In the rest of the article, our key objective is to quantify the number of employees currently below a threshold established by a hypothetical common EUMW. For this exercise, we use the two main EU-wide surveys on income and wages, the 2010 European Survey on Income and Living Conditions (EU-SILC) and the 2010 European Union Structure of Earnings Survey (SES). Our main variable is the monthly full-time equivalent (FTE) gross wage. We here document the main methodological decisions that we had to make in order to carry out our analysis, and the limitations imposed by the data.

Normally, the threshold established by minimum wages refers to gross earnings before taxes or other statutory deductions, and including not only the base salary but also premia and bonuses (unless these relate to non-standard work hours or overtime), and excluding payments in kind (OECD, 2002). It is usually defined in terms of an hourly rate, or monthly earnings adjusted for hours worked (so that equivalents for different working hours can be computed). These are the attributes that should characterize our target measure on which a common EU threshold could be defined. But our analysis is constrained by the characteristics of the data available, and the actual measures of wages we use are not identical to this definition.

The key element of all our analysis in this article is the identification of the wage level that corresponds to 60 percent of the median in each country, and of the workers that fall below such threshold. In this respect, we simply use the most commonly used threshold in the literature, which roughly corresponds as well with one of the most widely used definitions of low-paid workers. For instance, the OECD defines low pay as two-thirds of the median. So we can say that establishing such a threshold would mean the statutory elimination of what is commonly defined as low-paid work in Europe. The use of the median rather than the mean is normally justified by the excessive sensitivity of the latter to outliers in the distribution of income. For a discussion of some alternative thresholds

(one based on 50% of average wages, the other on sector-specific minimum wage levels), see Eurofound (2014: 112–116).

The EU-SILC is a cross-sectional and longitudinal database on income, poverty, social exclusion and living conditions in the EU. It is a very rich source of information, but the main problem for our purposes is that it is not aimed at measuring wages as such, but income coming from employment at the individual and household levels. We cannot therefore construct a measure of wages that fully matches the definition above, but only an approximation that requires making some non-trivial assumptions. The EU-SILC variable on labour income of employees refers to gross overall income from work in the previous calendar year. Since we use the latest available cross-sectional wave from 2010, the income variable actually refers to 2009. To calculate the monthly FTE gross wage, we apply the following formula (based on Brandolini et al., 2010)

$$\text{monthly FTE wage} = \frac{\text{annual gross earnings}}{\text{months in FT work} + (\text{months in PT work} * [\text{PT/FT ratio}])}$$

That is, our main variable equals the EU-SILC measure of annual cash gross labour earnings (last year) divided by the number of months in full-time jobs of the respondent over the same year plus the number of months in part-time jobs multiplied by a country sex-specific ratio of median hours of work in part-time jobs to median hours of work in full-time jobs. This adjustment for part-time work can produce some minor bias in countries with a wide spread in the hours of part-time work (such as the United Kingdom), but it is unlikely to change the overall picture. We also introduce a further adjustment for those workers that hold more than one job (for more details, see Eurofound, 2014: 101–104).

The SES collects representative and harmonized data on wages. Although the method for collecting the information differs considerably across countries (between specific surveys and administrative registers), in all cases it is collected at company level and based on payroll data (rather than on workers' responses as in EU-SILC). The main advantage of SES is that it is explicitly aimed at measuring wages with a high degree of detail, and our target variable can be constructed in a much more direct and precise way. But on the other hand, it has the important problem of providing only a limited coverage of our target population (EU employees), since data are not available for Germany, the United Kingdom, Austria, Malta, Bulgaria, Greece, Denmark and Belgium. Furthermore, for some countries the SES does not include enterprises with fewer than 10 employees, nor many important sectors of the economy (such as agriculture and public administration). The exclusion of small enterprises is especially problematic (affecting 7 of the 19 countries for which we have data), because we know that low-paid workers are overrepresented in such companies.

The measure of wages that serves as basis for our analysis is in this case very precise and corresponds more or less exactly with our target variable, according to the following formula

$$\text{hourly wage} = \frac{\text{monthly wage} + \text{monthly equivalent bonus} - (\text{overtime} + \text{shiftwork pay})}{\text{monthly working hours} - \text{overtime hours}}$$

Although it complicates the picture, the use of two sources is necessary in order to make an adequate evaluation of the potential quantitative impact of minimum wage coordination.

The hypothetical common minimum wage versus existing minimum wage levels

It is important to contextualize the hypothetical EUMW with the existing arrangements in each member state, as we do in Table 2. This contains two panels, one with data from EU-SILC (for 2009) and one from SES (for 2010). The first column of both panels shows the existing monthly minimum wage. In the case of countries with statutory minimum wages, this information was obtained from Eurostat, while in the countries with collectively agreed minimum wages, the figures shown are an approximation that we use for comparative purposes. In strict terms, there is no national minimum in those countries, but rather different minima in different sectors and/or occupations which do not necessarily apply to the whole working population. In the majority of literature on this issue, the effective levels of minimum wages in those countries are thus simply unknown, even if they do exist. A recent study (Garnero et al., 2013) gathers data from sectoral minimum wages for those countries and estimates an *average effective minimum wage level* for the workers covered by collective bargaining, which in most cases is higher than in countries with statutory systems, even if they do not apply to the full labour force. According to their estimates, the coverage is 76 percent in Austria, 56 percent in Germany, 52 percent in Denmark, 79 percent in Finland and 82 percent in Italy; they provide no estimation for Sweden. The values shown for these countries are not strictly comparable with the rest, so they have to be taken with special care. In particular, the estimate of the gap between existing minima and the hypothetical EUMW level are likely to understate the impact of a common threshold, especially if the share of uncovered workers is large.

The third column of both panels shows the value (for 2009 and 2010 respectively) of the hypothetical common EUMW threshold of 60 percent of the median. Comparing this with the existing minima (column 4) illustrates the impact such coordination would have in practice. Figure 1 shows this comparison graphically, with the hypothetical EUMW on the horizontal axis and the existing level on the vertical axis, and a diagonal where both values are the same. The distance below the diagonal reflects the increase that would be required by a hypothetical EUMW. To remind the reader of the difference between countries with and without statutory minimum wages, the latter are indicated by an asterisk. These figures clearly show that the introduction of a common target of 60 percent of the median would entail an increase in the existing levels for many European countries, quite significant in a few cases (the Netherlands, Luxembourg, Spain, the United Kingdom and Ireland, and most Eastern member states). There are some exceptions, though: the clearest is Italy, where the average collectively agreed minimum wage level estimated is so high that a common EU threshold of 60 percent of the median would be considerably lower. We must remember, though, that such a minimum wage is just an average and that it does not cover the whole

Table 2. Basic data from EU-SILC (2009 wages in Euros) and SES (2010 wages in Euros).

	EU-SILC data				EU-SES data			
	Monthly NMW ^a	Monthly median	EUMW ^b	Gap (%)	Monthly NMW ^a	Monthly median	EUMW ^b	Gap (%)
AT	1388	2414	1448	4.3	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
BE	1388	2771	1663	19.8	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
BG	123	281	169	37.5	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
CY	822	1588	953	15.9	822	1775	1065	29.5
CZ	298	747	448	50.5	302	860	516	70.8
DE	1379	2500	1500	8.8	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
DK	2341	3742	2245	-4.1	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
EE	278	632	379	36.5	278	735	441	58.6
ES	728	1626	976	34.0	739	1870	1122	51.8
FI	1584	2665	1599	0.9	1584	2848	1709	7.9
FR	1321	2037	1222	-7.5	1344	2520	1512	12.5
GR	818	1515	909	11.2	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
HU	268	458	275	2.5	272	625	375	37.9
IE	1462	2858	1715	17.3	1462	3120	1872	28.1
IT	1788	1952	1171	-34.5	1788	2263	1358	-24.1
LT	232	442	265	14.4	232	468	281	21.2
LU	1642	3678	2207	34.4	1683	3283	1970	17.1
LV	254	544	326	28.3	254	512	307	21.0
MT	635	1316	789	24.3	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>
NL	1381	3199	1919	39.0	1408	2921	1753	24.5
PL	307	538	323	5.0	321	758	455	41.8
PT	525	912	547	4.3	554	1030	618	11.5
RO	149	272	163	9.6	142	359	215	51.9
SI	589	1302	781	32.6	597	1446	868	45.2
SK	296	600	360	21.8	308	705	423	37.6
UK	995	2098	1259	26.5	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>	<i>n.a.</i>

EU-SILC: European Survey on Income and Living Conditions; SES: European Union Structure of Earnings Survey; NMW: national minimum wage; EUMW: European Union minimum wage policy.

^aEurostat data (€) for the relevant year for countries with a single national wage floor and an estimate for countries with non-statutory minimum wage (Austria, Cyprus, Germany, Denmark, Finland and Italy), based on Garnero et al. (2013). The estimate for Germany is for 2007 (adjusted for inflation) and for Cyprus, the average of 2008 and 2009.

^bHypothetical EUMW based on 60 percent of median.

Italian labour force; so the coordination of minimum wage policy would also lead to a significant increase of wages at the bottom, as we will see later. The other two countries that are above the diagonal (France and Denmark) are so close that we can only say that the establishment of a common EU threshold of 60 percent of the median would have very little or no impact, as would be also the case in other countries such as Finland, Austria, Portugal, Hungary, Poland, Romania and Greece.

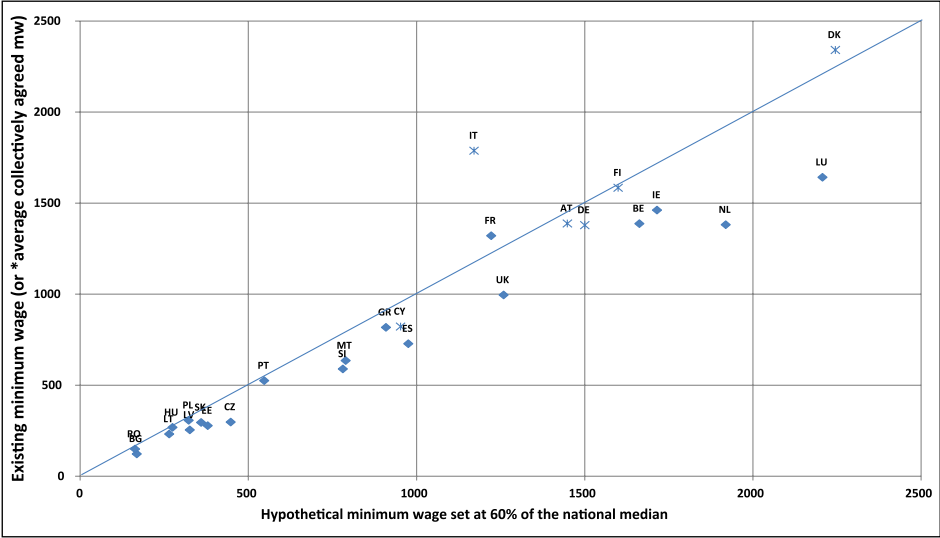


Figure 1. Existing minimum wage (in Euros) versus hypothetical EUMW (in Euros), 2009. EUMW: European Union minimum wage policy.

How many workers would be affected?

Figure 2 below shows the proportion of workers below 60 percent of the median wage in each country according to the two sources, including different SES specifications. As mentioned above, the SES is a better measure of wages and has a larger sample size, but it does not cover the whole economy, and we could not get access to data for all countries. In Figure 2, the countries have been sorted according to the base figure of SES (excluding establishments with less than 10 employees and public administration), identified by a black square marker; the countries for which we do not have SES data are shown separately at the right-hand side of the chart, sorted by the proportion of workers below the EUMW threshold according to EU-SILC. The EU-SILC figure is indicated by a diamond in the chart. The next two markers correspond to different specifications of the SES dataset, which are available only for some countries. The star shows the proportion of workers below the EUMW threshold according to the SES for establishments of all sizes (for the countries that provide such data); the line marker identifies the proportion of workers below the EUMW according to SES including public administration (again, where such data are available). Finally, the circle symbol is used only for the countries for which we did not have access to SES data, but for which Eurostat itself has published a figure which is similar to ours: the percentage of workers below two-thirds of the median in each country (for establishments with more than 10 employees, excluding public administration). We include such data to be able to evaluate roughly the consistency between our two sources for those countries as well.

In general terms, the consistency between the different specifications of the SES data is higher than between SES and EU-SILC. What this suggests is that the differences

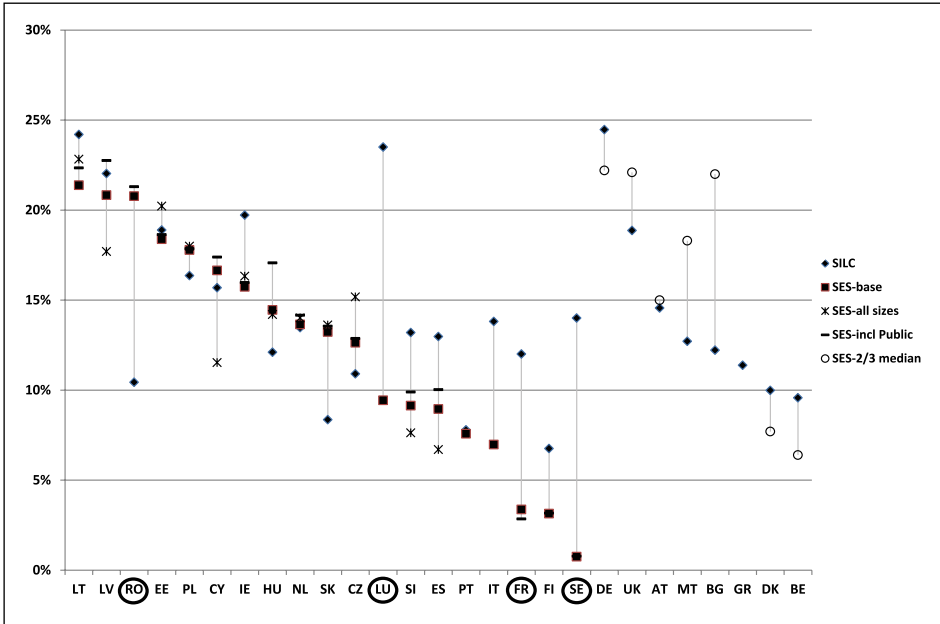


Figure 2. Proportion of workers below the hypothetical EUMW threshold, different sources and specifications.
EUMW: European Union minimum wage policy.

between both sources are not so much the result of their differences in coverage (EU-SILC covering the whole economy and SES generally not), but the result of differences in the measurement and specification of wages. That said, the inconsistency between SES and EU-SILC seems to be concentrated in a few countries (Romania, Luxembourg, France and Sweden), suggesting some problems with at least one of the sources; for a detailed discussion, see Eurofound (2014). In the majority of countries, the inconsistency is small and seems reasonably within the boundaries of what we would expect according to the different specification of variables. This will be useful for the classification of countries in terms of the scale of the impact of a hypothetical EUMW, because in most cases the choice of source would make little difference.

The distribution of wages below the threshold

Although the proportion of employees currently under the EUMW threshold is a useful measure of its potential impact, this does not take into account the *intensity* of the effect on each individual case. The distance between the current wage and the hypothetical minimum wage, and consequently the actual impact for different affected workers, can vary considerably.

We have constructed estimates of the cumulative distribution of relative wages below the median in each country (full details available from the authors). We group countries

according to the three main categories of minimum wage systems previously identified. The countries with statutory national minima tend to have a discontinuous distribution of wages below the median, with few workers below the minimum wage threshold and an abrupt increase just above; countries with collectively agreed sector-specific minimum wages, on the other hand, show a much smoother and continuous distribution of wages below the median, and the estimated average agreed minimum wage is not associated with any discontinuity in the cumulative distribution of wages (though there may be discontinuities at sector level). Nevertheless, according to our analysis, there are exceptions to this general pattern in both groups of countries: Finland and Sweden show a relatively abrupt distribution of wages (with the curve turning upwards at around 50% and 55% of the median, respectively): in the case of Finland, coinciding with the effective average agreed minimum wage estimated by Garnero et al. (2013); on the other hand, Greece, Belgium, the United Kingdom and Ireland show a rather smooth distribution, with workers more or less equally distributed below and above the minimum wage line (quite similar, in fact, to the countries without statutory minimum wages). To some extent, this may be the result of data problems, since for three of those four countries (the exception is Ireland) we only have data from EU-SILC. In fact, the countries for which we have SES data tend to show more clearly the effect of existing minimum wages than the countries for which we only have EU-SILC.

The most important point, though, is that in some countries where the share of workers below the EUMW threshold is relatively large, most of these workers are close to it. This is the case of Lithuania, Latvia, Luxembourg, Spain and Slovenia. This may be an effect of existing minimum wages (in Lithuania, Latvia and Luxembourg, where nobody is below the existing minimum wage line) or other factors (in Spain or Slovenia, the existing minimum wage is considerably below the threshold). The wage gap is larger in Germany (before the introduction of the statutory minimum wage), Estonia, the United Kingdom and Ireland, Cyprus, Austria and Romania.

An evaluation of the potential overall impact of an EUMW across countries

We can summarize the potential impact of an EUMW in each country by combining the institutional and quantitative impacts that were explained in previous sections, as shown in Table 3.

The most salient country is Germany. Strikingly, it appears in the two extremes of our assessment: as the country where the institutional and quantitative impact of an EU coordination of minimum wages would have been highest (before 2015) and as one of the countries where it would be lowest (after 2015). The reason is, of course, the large-scale institutional transformation currently occurring with the national minimum wage legislation. The level of €8.50 per hour being introduced is very similar (when adjusted for inflation) to the level corresponding to 60 percent of the median in our hypothetical exercise, and therefore it immediately eliminates the proportion of workers below such level. This is a very significant development: our own analysis shows that Germany had the largest share of low-paid workers (relative to German pay levels) in Europe, and

Table 3. An assessment of the potential impact of a hypothetical common EUMW threshold across the EU.

		Institutional impact			
		High	Medium	Low	
Quantitative impact	High	<i>DE (pre-2015)</i>	EE, PL, CY	LT, LV, RO, UK, IE	<i>More than 15% below the EUMW threshold</i>
	Medium	AT, IT, DK	BG, GR	HU, NL, CZ, LU, SI, ES, MT	<i>Between 10 and 15% below threshold</i>
	Low	FI, SE	BE, SK	PT, FR, DE (post-2015)	<i>Under 10% below threshold</i>
		<i>Collectively agreed sectoral/occupational minimum wage</i>	<i>Collectively agreed national minimum wages</i>	<i>Statutory national minimum wages</i>	

EUMW: European Union minimum wage policy; EU: European Union.

therefore a very significant proportion of employees would have been directly affected. The change obviously reduces the institutional difficulty of EU minimum wage coordination in Germany.

In the other countries with collectively agreed sector-specific minima, the quantitative impact of a threshold at 60 percent of the median would be considerably smaller because of the lower incidence of low pay. This is particularly the case in the Nordic countries, where the share of workers below this threshold is well below EU average. This is one of the reasons why, in practice, Nordic countries are likely to be the most reluctant to the introduction of such a common EU threshold. Unlike in Germany before 2015 (where this system did not prevent the expansion of a large low-paid segment), the sector-specific-bargaining model seems to be producing good economic and social outcomes in these countries, and it is widely supported by social partners and governments.

In an intermediate group, we have put the countries where minimum wage levels are currently set by social partners but at a cross-sectoral level: the establishment of a common threshold of 60 percent of the median would simply change the level, not the structure and coverage, of minimum wages. However, it could imply a significant change in the type of involvement of social partners in setting the threshold, which involves at least a medium level of institutional impact. In Estonia, Poland and Cyprus, between 15 and 20 percent of workers would be affected by such change, which is quite significant; in Bulgaria and Greece, the quantitative impact would be medium; and in Belgium and Slovakia, it would be low because of the limited current incidence of low pay.

Finally, we group all countries where minimum wages are statutory and national. In Lithuania, Latvia, Romania, the United Kingdom and Ireland, because of their relatively low statutory minima, there is a significant share of the labour force under the hypothetical threshold, and therefore the quantitative impact would be largest. Slightly less but still important would be the impact in Hungary, the Netherlands, Czech Republic, Luxembourg, Slovenia, Spain and Malta. Both types of impact would be low in Portugal,

France and Germany (following the introduction of its statutory minimum): these would be the countries where a common EU threshold of 60 percent would be easier, because such arrangement would imply little change with respect to current wage levels.

Two final comments on Table 3. First, it is interesting to note that the institutional and quantitative impacts seem to go in opposite directions: most of the countries where the quantitative impact would be high (many workers would be affected) would experience low institutional impact, and vice versa. This is because (perhaps paradoxically) countries with statutory national minima generally have a larger low-pay segment of employment and therefore would be more affected by a common higher threshold, whereas the opposite is true of countries with collectively agreed sectoral minima. There are, of course, important exceptions: Germany before 2015 had collectively agreed minimum wages and a very large low-pay segment, whereas the opposite is the case in France. A second point to note is that European regions are associated with specific positions in Table 3: in particular, Nordic countries are associated with low quantitative and high institutional impact; the United Kingdom and Ireland, as well as the Baltics, with a high quantitative and low institutional impact; and most other Eastern and Southern member states with medium quantitative and/or institutional impact. The only group of countries with no clear position in Table 3 comprises the Continental European countries, which are scattered throughout all categories. Of course, this association is to be expected, since these European regions are associated with similar institutional structures, and such structures affect both the minimum wage systems and the incidence of low pay, but such association is important for the debate about the possibility of establishing a common minimum wage policy in Europe, because it highlights that it would imply some degree of institutional convergence.

Conclusion

The Treaty on the Functioning of the European Union explicitly excludes pay from the competences of the European institutions, but for some decades statements and recommendations on wages and wage-related policies have been issued by institutions such as the European Commission, the European Council and the European Central Bank. The economic crisis has resulted in renewed attention to wage levels and wage-setting mechanisms, and the idea of policy coordination of minimum wage levels across European countries has re-emerged in both policy and academic fora. In order to contribute to the debate, we have mapped minimum wage systems and wage distributions across European countries, and discussed the possibility of their coordination against the background of a hypothetical scenario of an EU-wide minimum wage set at 60 percent of the median national wage in each Member State.

All EU countries have minimum wages in place, although there are wide differences in levels and setting mechanisms, which partially explain the varying extent of low-paid employment across countries. The most important dividing line is between countries with statutory minima where a single national threshold applies (whether the result of pure government intervention or following collective agreement at national level), and those where several minima agreed at sectoral level coexist and apply to specific groups within the workforce. Given this heterogeneity of systems, the impact of minimum wage coordination at the EU level would vary considerably across countries, as well

depending on the type of coordination chosen, which could go from some form of voluntary soft coordination by governments and/or social partners, to deeper forms of coordination that would require changes in the Treaties.

In any case, whatever the form of coordination, the institutional impact would be lower in countries with statutory minimum wage systems and in countries where minimum wages are collectively agreed but where a single wage floor exists at national level, while it would be specially challenging in those countries where minimum wages are collectively agreed at sectoral level and therefore the national industrial relations systems could be significantly affected.

We have calculated the quantitative impact of a hypothetical EUMW represented by a common threshold set at 60 percent of the national median in each country, measured by the proportion of workers and the wages below that level, using EU-SILC and SES data. Measured against such a threshold, the low-pay segment would be largest in the Baltic countries, Germany (before 2015), Ireland, Poland, Romania and the United Kingdom, and smallest in Belgium, France, the Nordic countries, Portugal and Slovakia.

Putting together our evaluation of both types of impact of a hypothetical coordinated minimum wage policy in Europe, we conclude that the institutional impact would in general be largest in those countries where the quantitative impact would be lowest, and vice versa. The reason is that those countries with wages negotiated by social partners at sectoral level generally possess higher levels of minimum wages than countries with national wage floors, and therefore have lower shares of low-paid employees in the workforce. This is mainly the case in Scandinavian countries and Austria, and Italy to a lesser extent. The main exception was Germany before 2015, where collectively agreed sectoral minimum wages did not prevent the existence of a very large proportion of low-paid workers. Partly because of dissatisfaction with this situation, Germany has now introduced a statutory minimum wage set at a relatively high level (€8.50 per hour). As a result, it is now one of the countries where a hypothetical European coordination of minimum wage policy would have a smaller impact. This might facilitate the development of an EUMW in the future, to the extent that there is political will to do so.

Acknowledgements

We would like to thank Kristin Alsos, Christine Aumayr, Line Eldring, Andrea Garnero, Damian Grimshaw, Stephen Kampelmann, Rafael Muñoz de Bustillo Llorente, Mark Smith, Donald Storrie and Christian Welz for their very useful input, as well as Richard Hyman and the anonymous referees of *European Journal of Industrial Relations*. We would also like to thank the Eurostat team dealing with the European Union Structure of Earnings Survey (SES) for their support, and to Andrea Garnero, Stephan Kampelmann and François Rycx for providing us with their estimations of minimum wage levels.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The research was conducted within the European Foundation for the

Improvement of Living and Working Conditions (EUROFOUND). The views expressed in this article are those of the authors and do not necessarily reflect those of the European Foundation.

References

- Abbott LF (2012) *Statutory Minimum Wage Controls: A Critical Review of Their Effects on Labour Markets, Employment and Incomes*. Manchester: Industrial Systems Research.
- Borrás S and Radaelli CM (2010) *Recalibrating the open method of coordination: Towards diverse and more effective usages*. Report 7, December. Stockholm: SIEPS.
- Brandolini A, Rosolia A and Torrini R (2010) The distribution of employees' labour earnings in the European union: Data, concepts and first results. In: Atkinson AB and Marlier E (eds) *Income and Living Conditions in Europe*. Luxembourg: Publications Office of the European Union, pp. 265–287.
- Brown C, Gilroy C and Kohen A (1982) The effect of the minimum wage on employment and unemployment. *Journal of Economic Literature* 20(2): 487–528.
- Busch K, Hermann C, Hinrichs K and Schulten T (2013) *Euro Crisis, Austerity Policy and the European Social Model: How Crisis Policies in Southern Europe Threaten the EU's Social Dimension*. Berlin: Friedrich-Ebert-Stiftung.
- Eldring L and Alsos K (2012) *European minimum wage: A Nordic outlook*. Oslo: Fafo-report 2012:16. Available at: http://www.faf.no/~faf/media/com_netsukii/20243.pdf
- Eurofound (2014) *Pay in Europe in the 21st century*. Report EF1388, April. Luxembourg: Publication Office of the European Union.
- European Trade Union Confederation (ETUC) (2012) Solidarity in the crisis and beyond: Towards a coordinated European trade union approach to tackling social dumping. Discussion Note to ETUC Winter School, Copenhagen, February.
- Freeman RB (1996) The minimum wage as a redistributive tool. *Economic Journal* 106(436): 639–649.
- Garnero A, Kampelmann S and Rycx F (2013) *Minimum wages in Europe: Does the diversity of systems lead to a diversity of outcomes?* Report 128. Brussels: ETUI.
- Herr H and Kazandziska M (2011) *Principles of minimum wage policy: Economics, institutions and recommendations*. Working paper 11, March. Geneva: ILO.
- Martins PS (2014) *30,000 minimum wages: The economic effects of collective bargaining extensions*. IZA Discussion Paper 8540, October. Bonn: IZA.
- OECD (2002) *Main Economic Indicators Comparative Methodological Analysis: Wage Related Statistics*, vol. 2002, suppl. 3. Paris: OECD.
- Rasmussen PN and Delors J (2006) The new social Europe. Report to the PES Congress, Porto, December.
- Schulten T (2008) Towards a European minimum wage policy? Fair wages and social Europe. *European Journal of Industrial Relations* 14(4): 421–439.
- Schulten T (2012) European minimum wage policy: A concept for wage-led growth and fair wages in Europe. *International Journal of Labour Research* 4(1): 85–105.
- Soumeli E (2011) Cyprus: Ministry announces further minimum wages increases. *EIR Online*, July. Available at: <http://www.eurofound.europa.eu/eiro/2011/05/articles/cy1105029i.htm>

Author biographies

Enrique Fernández-Macías is a Research Manager at Eurofound, Dublin.

Carlos Vacas-Soriano is a Research Officer at Eurofound, Dublin.

7. Conclusions

The different papers making up this thesis show how the recent crisis had an uneven impact across European labour markets and societies. Countries in the European periphery were typically more affected than those in the core, while lower-paid employees and less well-off individuals fared typically worse within most European societies.

The negative and uneven effect of the crisis on European labour markets resulted in a downwards impact on wages and an upwards impact on unemployment. The combination of these two factors explains the main patterns in wage and income disparities across European countries revealed by this thesis, which can be broadly summarised in four points.

One, low-pay work expanded across most countries due to declining real wages. Two, cross-country trends in wage inequalities were rather mixed because widening pay differentials were often off-set by compositional effects consisting in lower-paid employees exiting employment and squeezing the wage distribution from the bottom. Three, the full extent of the impact of the crisis is revealed when observing trends in income disparities, which increased across most countries mainly due to growing unemployment levels. Four, from an EU perspective, the crisis has reverted the significant reduction in EU-wide wage and income inequality levels that was taking place prior to the crisis because it largely interrupted its main driving factor, the notable process of convergence in wage and income levels between European countries.

Low-pay segments expanded across most European countries

The literature predicts an undetermined evolution of low-pay segments due to the opposing effect that a downwards impact on wages and the exit of lower-paid employees from employment would have on low-pay shares. The analysis of this thesis shows that the Great Recession reversed previous trends by generally pushing low-pay shares upwards as a result of a negative impact on wage levels, although compositional effects may have masked the real extent of this wage correction and limited the expansion of low-pay segments across European countries. Moreover, this study revealed the importance of part-time and self-employment in the expansion of low-pay in Europe from the onset of the crisis.

The empirical analysis uses an inflation-adjusted low-pay threshold anchored at 60% of national median wages in 2007 and showed that low-pay shares expanded in a majority of European countries and, for the EU as a whole, from 16% in 2008 to 18% in 2013. Nevertheless, the impact of the crisis was uneven. Among the six countries that account for around 80% of low-paid European employees, low-pay shares expanded in the UK, Spain, Italy and France, remained rather stagnant in Germany and declined notably in Poland.

The main driver behind the expansion of low-pay shares was a downwards impact of the crisis on real wages, as shown by the empirical analysis conducted on these six selected countries. The general picture that emerges is one where wages were not able to keep up with inflation, while nominal wage corrections were limited. Growing low-pay shares are only revealed when the low-pay threshold is adjusted by inflation, although declines in nominal wages occurred among some segments of the workforce in some of the countries most affected by the crisis, such as Spain or Italy. Declines in real wages were common and occurred notably in the UK, Spain and Italy, and in Germany to a lower extent. Moreover, the downwards impact of the crisis on real wage levels was relatively stronger at the bottom of the wage distribution and among those employees shifting jobs, who are generally more sensitive to deteriorating pay conditions than those staying at their posts.

Importantly, the analysis showed that workforce compositional effects masked the real extent of the downwards wage correction and limited the expansion of low-pay work in Europe during the recession. These compositional effects had a upwards impact on average wage levels and a downwards impact on low-pay shares that were mainly the result of: one, lower-paid employees being generally more affected by exits from employment; two, declining employment shares of employees being lower-educated, younger and those changing jobs, all three groups being typically more affected by low-pay work.

Additionally, two worrisome developments were identified that deserve to be monitored because they suggest this analysis provided a lower-bound estimate of the expansion of low-pay work from the crisis. On the one hand, growing part-time employment emerged as a significant source of low-pay work from the onset of the crisis in Europe. The analysis shows that part-time employees account for a growing proportion of low-paid employees and the expansion of low-pay work from the onset of the crisis would have been larger if the wages of part-time employees were not made full-time equivalent in the analysis (and if the European dataset used for this analysis, EU-SILC, did not fail to reflect in full the expansion

in part-time employment taking place in almost all European countries). On the other hand, the expansion of precarious self-employment is a cause of concern in some countries (especially the UK), and this development would result in a larger expansion of low-pay work if the analysis included the whole workforce instead of only dependent employment.

EU-wide wage inequality stagnated due to halt in wage convergence between countries...

A key added value of this PhD is its adoption of a truly EU-wide approach to cover wage inequalities, which implies considering all European wage earners as part of a single wage distribution shaped by trends between and within European countries. As predicted by the literature, a process of convergence in wage levels is taking place between European countries. This thesis characterised this process and showed it was strong and largely responsible for the notable decline in EU-wide wage inequality prior to the crisis, but it was interrupted thereafter and contributed to a stagnation in EU-wide inequality levels.

The EU was a strong engine of economic integration throughout the period 2004-2015, especially in the area of wages. But this was mainly the case prior to the crisis, when EU-wide wage inequality levels were significantly reduced due to a process of upwards wage convergence between European countries, driven by a strong catch-up in Eastern Europe and wage moderation in the core of Europe.

The Great Recession broke this trend because its downwards impact on wage levels was stronger in the European periphery, resulting in EU-wide wage inequalities remaining rather stagnant between 2008 and 2015, although two sub-periods exist. During the initial years of the financial crisis, the wage convergence process was interrupted. But in the most recent years, the process of upwards wage convergence seems to have reactivated moderately (due to a continuation of the catch-up process in Eastern Europe, despite a protracted wage correction in Mediterranean countries).

Nevertheless, compositional effects emerging from the lay-offs of lower-paid employees in those countries most affected by the crisis may also have partially contributed to this process of wage convergence from the onset of the crisis.

...although wage inequality patterns across European countries were mixed

While the crisis had an upwards impact on low-pay work and EU-wide wage inequality levels, trends in wage inequalities across European countries failed to reflect a clear business cyclicity and a mixed cross-country picture emerged. This lack of a strong business cycle behaviour in wage inequalities is consistent with the literature, although this analysis showed that a pro-cyclical pattern seems to have been more common and identified the importance of employment compositional effects to explain it. Moreover, the results showed support to the theories of international trade and the convergence model identified in the literature.

Prior to the crisis, wage inequalities increased in almost two-thirds of the countries against a background of economic and employment growth. Moreover, cross-country developments were generally consistent with what would have been predicted by theories of international trade. Wage inequalities declined across most Eastern European countries, where the strong wage growth described above generally benefitted more lower-educated and lower-paid employees. Conversely, subdued wage progress among lower-educated employees pushed wage inequalities upwards in some core European countries, as it was generally the case in Continental countries (or Sweden and Denmark).

From the onset of the crisis and against a background of employment reductions across many countries, a rather mixed picture emerges. Even though wage inequalities increased significantly in some countries (mainly in Estonia, Denmark, Cyprus, Czech Republic and Slovakia), there were more cases of reductions (significant in some Mediterranean and Eastern European countries). This thesis showed that employment compositional effects were often behind these declines in wage inequalities: growing unemployment and lower-paid employees being relatively more affected by it had the paradoxical effect of compressing the wage distribution from the bottom and pushed wage inequality downwards, especially in some of the countries most affected by the crisis, such as Greece, Portugal or Italy. This explains why the negative impact of the crisis on wage levels, which was relatively stronger among those employees at the bottom of the wage distribution, did not translate into a general increase in wage inequality levels across European countries.

Interestingly, another process of convergence took place between countries: wage distributions converged towards intermediate levels of wage inequality between 2005 and 2015. This process resulted from wage inequality increases in the initially more egalitarian countries (including most Scandinavian, Continental and Mediterranean countries) and

reductions among the initially most unequal countries (in Eastern Europe and the UK). This development offers support to the convergence model identified in the literature and its thesis that cross-country differences in inequality levels are being reduced over time, although again in this case, this process may be partially explained by lay-offs of lower-paid employees pushing wage inequality downwards in those countries most affected by the crisis.

The negative impact of the Great Recession is better reflected by income disparities trends

Patterns in household disposable income are a more adequate measure of the well-being of European citizens and how it has been affected by the crisis, and they offer a wider context to interpret trends in wage disparities. While trends in EU-wide income inequality are broadly similar to those in wage inequality, cross-country trends in income inequality were much more affected by the crisis and moved upwards across most countries, as predicted by the literature. This thesis revealed that the main driver behind this trend was growing unemployment and its associated losses of labour income, while European welfare states largely cushioned the increase in inequalities. Moreover, this study suggests a wider set of indicators is needed to adequately capture trends in living standards.

As it occurred in the case of wages, EU-wide income inequality declined notably prior to the crisis, due to income convergence between European countries as a result of income catch-up in eastern European countries and income stagnation in several Continental countries and the UK. But the impact of the crisis was even more obvious in this case, as EU-wide income inequality levels increased due to two facts. One, convergence in real income levels between countries stalled due to their significant decline in the European periphery (in several eastern European countries in the initial years and in Mediterranean Member States more protractedly) and their resilience in core Member States generally. Two, the within-country component of EU-wide income inequality expanded, reflecting the generally growing income inequalities across most countries, which was not the case for wage inequalities.

Cross-country income inequalities behaved counter-cyclically since they grew in around two-thirds of the European countries from the onset of the crisis, especially in some peripheral countries hit hardly by the crisis (such as Cyprus, Spain, Estonia, Hungary and Slovakia), but as well in some core European and traditionally egalitarian countries (such as Denmark and Sweden). The role played by employment turbulences explains why income inequalities were

more affected by the crisis than wage inequalities: this thesis found that rising unemployment was the main driver behind growing inequalities in household disposable income across most European countries as a result of the Great Recession. This finding complements (and contrasts) previous relevant studies by the OECD (2008) that identified widening pay differentials as the main force behind growing income inequalities over the decades that preceded the current crisis. Moreover, the analysis found that European welfare states cushioned the growing market income inequalities (especially in some of the countries hit hard by the crisis in the European periphery such as the Mediterranean countries or Ireland) and prevented a larger expansion of disposable income inequalities.

The magnitude of the decline in living standards associated with the Great Recession was not fully captured by data on GDP per capita, and this was not only the case in some of those countries most affected by the crisis but also in countries that weathered the crisis better such as Germany. This highlights the need to use a wider set of indicators when assessing the well-being and prosperity of European societies. For instance, this analysis showed that real household disposable income levels were notably impacted by the crisis across almost all European countries (either declining or reducing their pre-crisis growth rates) and the size of the middle class shrank across most countries, significant developments that are not captured by standard measures of economic growth.

EU minimum wage coordination as a policy tool to tackle wage disparities

This thesis showed that real wages suffered a downwards impact as result of the crisis, pushing upwards the already significant shares of low-pay work that threaten to become a structural reality across European labour markets. Wage inequality grew as well in many European countries, only compositional effects preventing a more generalised increase.

Against this background, European countries have at their disposal several tools they may use to tackle wage disparities in labour markets. This is illustrated by the introduction of a new statutory minimum wage in Germany in 2015, which had a notable impact in reducing wage inequality levels. As a contribution to the economic policy field, this thesis discusses the introduction of a hypothetical EU-wide statutory minimum wage set at 60% of the median national wage in each Member State and assessed its feasibility and impact, distinguishing between the institutional and the quantitative impact.

On the one hand, the impact that the introduction of this EU-wide minimum wage would have in the national industrial relations systems would be lowest in those countries with statutory minimum wage systems; intermediate in those countries where a single national wage floor exists as a result of collective bargaining at the national level; and highest in those countries where minimum wages are collectively agreed at the sectoral/occupational level and therefore several wage floors coexist and apply to specific groups within the workforce (Scandinavian countries, Italy, Austria and Germany before it decided to introduce a statutory minimum wage from 2015).

On the other hand, the quantitative impact was measured by the proportion of employees earning wages below 60% of the national median in each country, that is, the low-pay share as defined in this thesis. The quantitative impact was considered to be lowest in Belgium, France, the Nordic countries, Portugal and Slovakia, and highest in the Baltic countries, Germany (before 2015), Ireland, Poland, Romania and the UK.

Interestingly, the analysis revealed a certain trade-off between both dimensions, because the institutional impact would be highest in those countries where the quantitative impact would be lowest, and vice versa. This is due to minimum wages being generally higher in those countries where they are collectively agreed at the sectoral/occupational level (although they do not apply to the whole workforce) than in those countries where national wage floors exist, which explains why low-pay shares tend to be lower in the former group of countries, represented by Scandinavian countries and Austria, and Italy to a lower extent. Germany was the main exception within this group, because it was characterised by very high low-pay shares (largely due to weakening collective bargaining leaving growing segments of the workforce uncovered by minimum wage floors), which helps to understand the introduction of a statutory minimum wage at a relatively high level (8,5 euros per hour) from 2015.

The German decision to introduce a statutory minimum wage, and current discussions in Austria to follow the same path, would seem to increase the feasibility of an EU-wide minimum wage policy such as the one proposed in here, in case there was the political will to do so, since a large majority of EU countries have now single national wage floors.

This policy would seem especially suited to tackle some of the developments identified in this thesis. On the one hand and from a national perspective, it would be helpful in tackling wage disparities and it would eliminate low-pay work across European countries as defined in this thesis. On the other hand and from an European perspective, it could be useful in

reducing EU-wide wage inequalities further. This thesis showed that differentials in average wage levels between countries have been notably reduced in recent years, resulting in EU-wide wage inequality being largely and increasingly explained by inequalities within countries. This means policies aimed at reducing inequalities at the national level would be the most relevant policy option for the future from an European perspective.

7. Conclusiones

Los diferentes artículos que componen esta tesis muestran que la reciente crisis tuvo un impacto desigual en los mercados de trabajo y sociedades europeas. Los países de la periferia europea sufrieron generalmente un mayor impacto que los del centro, mientras que los empleados peor remunerados y los individuos de menor renta se vieron también más afectados en la mayoría de las sociedades europeas.

El efecto negativo y desigual de la crisis en los mercados de trabajo europeos dio como resultado un impacto a la baja sobre los salarios y un impacto al alza sobre el desempleo. La combinación de estos dos factores explica las principales tendencias de las disparidades de salarios y rentas en los países europeos que se describen en esta tesis, que pueden resumirse en cuatro puntos.

Uno, el trabajo de baja remuneración se expandió en la mayoría de los países debido a la disminución de los salarios reales. Dos, la evolución de las desigualdades salariales entre los países fue bastante heterogénea, ya que la ampliación de los diferenciales salariales fue a menudo compensada por efectos de composición consistentes en la pérdida del empleo de los asalariados peor remunerados, hecho que comprimió la distribución salarial desde abajo. Tres, el alcance completo del impacto de la crisis se revela cuando se observan las tendencias de las disparidades de rentas disponibles de los hogares, que aumentaron en la mayoría de los países debido principalmente al aumento de los niveles de desempleo. Cuatro, desde una perspectiva global de la UE, la crisis ha revertido la significativa reducción en los niveles de desigualdad salarial y de rentas en el agregado de la UE que se estaba produciendo antes de la crisis porque interrumpió en gran medida el principal factor que la explicaba, el proceso de convergencia en los niveles de salarios y de rentas entre los países europeos.

El trabajo de bajos salarios se expandió en la mayoría de los países europeos

La literatura predice una evolución indeterminada del trabajo de bajos salarios debido al efecto opuesto que un impacto a la baja sobre los salarios y la salida de los empleados peor remunerados tendría en la proporción de asalariados con bajos salarios. El análisis de esta tesis muestra que la Gran Recesión revirtió las tendencias de los años anteriores al elevar la proporción de trabajos de bajos salarios como resultado de un impacto negativo en los niveles

salariales, aunque los efectos de composición pudieron enmascarar el alcance real de esta corrección salarial y limitar la expansión del trabajo de bajos salarios en los países europeos. Además, este estudio reveló la importancia del trabajo a tiempo parcial y por cuenta propia en la expansión del trabajo de bajos salarios en Europa desde el inicio de la crisis.

El análisis empírico utiliza un umbral de bajos salarios anclado en el 60% de los salarios medianos nacionales en 2007 y ajustado por inflación. Mostró que la proporción de asalariados con bajos salarios se expandió en la mayoría de los países europeos y, para el agregado de la UE, del 16% en 2008 a 18% en 2013. Sin embargo, el impacto de la crisis fue desigual. Entre los seis países que representan alrededor del 80% de los empleados europeos de baja remuneración, la proporción de asalariados con bajos salarios aumentó en el Reino Unido, España, Italia y Francia, se mantuvo bastante estable en Alemania y disminuyó notablemente en Polonia.

El principal motor detrás de la expansión de la proporción de asalariados con bajos salarios como consecuencia de la crisis fue un impacto a la baja sobre los salarios reales, como lo demuestra el análisis empírico realizado en estos seis países seleccionados. El panorama general que surge es uno donde los salarios no consiguieron crecer al nivel de la inflación, mientras que las correcciones salariales nominales fueron limitadas. El crecimiento del trabajo de bajos salarios sólo se revela cuando el umbral se ajusta a la inflación, si bien los salarios nominales han disminuido entre algunos sectores de la fuerza de trabajo en algunos de los países más afectados por la crisis, como España o Italia. Los descensos de los salarios reales fueron comunes y se produjeron notablemente en el Reino Unido, España e Italia, y en Alemania en menor medida. Por otra parte, el impacto a la baja de la crisis sobre los salarios reales fue relativamente más fuerte en la parte baja de la distribución salarial y entre los empleados que cambiaron de puesto de trabajo, generalmente más sensibles al deterioro de las condiciones salariales que los empleados que permanecen en sus puestos.

Es importante destacar que el análisis mostró que los efectos de composición del empleo enmascararon el alcance real de la corrección salarial y limitaron la expansión del trabajo de baja remuneración en Europa durante la recesión. Estos efectos de composición, que tuvieron un impacto al alza en los niveles salariales medios y un impacto a la baja en la proporción de asalariados con bajos salarios, fueron principalmente el resultado de dos hechos. Uno, los empleados con salarios más bajos fueron generalmente los más afectados por las pérdidas de empleo. Dos, la disminución de la proporción de empleo representada por las personas de

menor educación, más jóvenes y aquellos que cambian de trabajo, tres grupos caracterizados por una mayor incidencia de trabajo de baja remuneración.

Además, se identificaron dos desarrollos preocupantes que merecen ser monitoreados, ya que sugieren que este análisis proporcionó una estimación conservadora de la expansión del trabajo de bajos salarios a causa de la crisis. Por un lado, el crecimiento del empleo a tiempo parcial ha surgido como una causa importante de trabajo de bajos salarios desde el inicio de la crisis en Europa. El análisis muestra que los empleados a tiempo parcial representan una proporción cada vez mayor de los empleados con baja remuneración y la expansión del trabajo de bajos salarios desde el inicio de la crisis habría sido mayor si los salarios de los empleados a tiempo parcial no fueran convertidos a tiempo completo en el análisis (y si la base de datos utilizada para este análisis, EU-SILC, reflejara correctamente la expansión del empleo a tiempo parcial que se produjo en casi todos los países europeos). Por otra parte, la expansión del trabajo por cuenta propia precario es motivo de preocupación en algunos países (especialmente el Reino Unido) y habría resultado en una mayor expansión del trabajo de baja remuneración en el caso de que el análisis incluyera a toda la fuerza de trabajo en lugar de sólo a los asalariados.

La desigualdad salarial en el agregado de la UE se estancó debido a la interrupción de la convergencia salarial entre los países...

Una aportación clave de este doctorado es la adopción de un enfoque auténticamente global a escala de la UE para cubrir las desigualdades salariales, lo que implica considerar a todos los asalariados europeos como parte de una única distribución salarial configurada por tendencias entre y dentro de los países europeos. Como predice la literatura, se está produciendo un proceso de convergencia en los niveles salariales entre los países europeos. Esta tesis caracterizó este proceso y mostró que era intenso y largamente responsable de la notable disminución de la desigualdad salarial en el agregado de la UE antes de la crisis, pero este proceso de convergencia se interrumpió con el cambio de ciclo económico y contribuyó al estancamiento de los niveles de desigualdad salarial para el agregado de la UE.

La UE fue un fuerte motor de integración económica durante el período 2004-2015, especialmente en el ámbito de los salarios. Pero esto ocurrió principalmente antes de la crisis, cuando los niveles de desigualdad salarial para el agregado de la UE se redujeron

significativamente debido a un proceso de convergencia salarial al alza entre los países europeos, impulsado por un fuerte crecimiento en Europa del Este y moderación salarial en los países del centro europeo.

La Gran Recesión rompió esta tendencia porque su impacto a la baja en los niveles salariales fue más fuerte en la periferia europea, lo que hizo que las desigualdades salariales en el agregado de la UE permanecieran estancadas entre 2008 y 2015, aunque existen dos subperíodos. Durante los primeros años de la crisis financiera, el proceso de convergencia salarial entre países se interrumpió totalmente. Sin embargo, en los últimos años, el proceso de convergencia ascendente se ha reactivado moderadamente (debido a la continuación del proceso de crecimiento en Europa del Este y a pesar de una prolongada corrección salarial en los países mediterráneos).

Sin embargo, los efectos de composición en el empleo derivados de los despidos de asalariados peor remunerados en los países más afectados por la crisis también pueden haber contribuido en parte a este proceso de convergencia salarial desde el inicio de la crisis.

...aunque las tendencias de las desigualdades salariales en los países fueron variadas

Si bien la crisis tuvo un impacto al alza en el trabajo de bajos salarios y en los niveles de desigualdad salarial para el agregado de la UE, un panorama variado surgió en la evolución de las desigualdades salariales en los países europeos, que no reflejaron un comportamiento cíclico claro. Esta ausencia de fuerte relación entre las desigualdades salariales y el ciclo económico es consistente con la literatura, aunque este análisis mostró que un patrón procíclico parece haber sido más común e identificó la importancia de los efectos de composición del empleo para explicarlo. Por otra parte, los resultados ofrecen apoyo a las teorías de comercio internacional y el modelo de convergencia identificados en la literatura.

Antes de la crisis, las desigualdades salariales aumentaron en casi dos tercios de los países en un contexto de crecimiento en la economía y en el empleo. Además, las tendencias en los países fueron generalmente consistentes con lo que habría sido predicho por las teorías del comercio internacional. Las desigualdades salariales disminuyeron en la mayoría de los países de Europa del Este, donde el fuerte crecimiento de los salarios descrito anteriormente benefició relativamente más a los trabajadores con menor nivel educativo y con salarios más bajos. Por el contrario, el progreso más moderado en los salarios de los trabajadores de menor

nivel educativo hizo que las desigualdades salariales aumentaran en algunos países del centro europeo, como sucedió generalmente en los países continentales (o en Suecia y Dinamarca).

Desde el inicio de la crisis y en un contexto de reducciones de empleo en muchos países, surge un panorama bastante heterogéneo, pero aunque en algunos países las desigualdades salariales aumentaron considerablemente (principalmente en Estonia, Dinamarca, Chipre, República Checa y Eslovaquia), hubo más casos de reducciones (importantes en algunos países del Mediterráneo y de Europa del Este). Esta tesis demostró que los efectos de la composición del empleo estuvieron a menudo detrás de estas disminuciones en las desigualdades salariales: el aumento del desempleo y su mayor impacto sobre los trabajadores peor remunerados tuvo el efecto paradójico de comprimir la distribución salarial desde abajo y presionar la desigualdad salarial a la baja, especialmente en algunos de los países más afectados por la crisis, como Grecia, Portugal o Italia. Esto explica por qué el impacto negativo de la crisis sobre los niveles salariales, que fue relativamente más fuerte entre los empleados en la parte baja de la distribución salarial, no se tradujo en un aumento general de los niveles de desigualdad salarial en los países europeos.

Curiosamente, se produjo otro proceso de convergencia entre los países: las distribuciones salariales convergieron hacia niveles intermedios de desigualdad salarial entre 2005 y 2015. Este proceso fue el resultado de los aumentos de la desigualdad salarial en los países inicialmente más igualitarios (incluyendo la mayoría de los países escandinavos, continentales y mediterráneos) y de las reducciones en los países inicialmente más desiguales (Europa del Este y Reino Unido). Este desarrollo ofrece apoyo al modelo de convergencia identificado en la literatura y su tesis de que las diferencias en los niveles de desigualdad entre países se están reduciendo con el paso del tiempo, aunque en este caso este proceso puede ser parcialmente explicado por los despidos de empleados con baja remuneración empujando la desigualdad salarial hacia abajo en los países más afectados por la crisis.

Las disparidades de rentas reflejan mejor el impacto negativo de la Gran Recesión

La evolución de la renta disponible de los hogares es una medida más adecuada del bienestar de los ciudadanos europeos y de cómo se ha visto afectado por la crisis, y ofrece además un contexto más amplio para interpretar lo ocurrido con las disparidades salariales. Si bien las tendencias de la desigualdad de rentas y de salarios para el agregado de la UE son

generalmente similares, las desigualdades de rentas en los países europeos se vieron mucho más afectadas por la crisis, aumentando en la mayoría de ellos. Esta tesis reveló que el principal motor detrás de esta tendencia fue el creciente desempleo y las pérdidas de ingresos laborales que conlleva, mientras que los estados de bienestar europeos amortiguaron en gran medida el aumento de las desigualdades. Además, este estudio sugiere que un conjunto más amplio de indicadores es necesario para captar mejor la evolución de los niveles de bienestar.

Como ocurrió en el caso de los salarios, la desigualdad de renta disponible de los hogares en el agregado de la UE disminuyó notablemente antes de la crisis, debido a la convergencia de rentas entre los países europeos como consecuencia de su notable progreso en los países de Europa del Este y su estancamiento en varios países continentales y el Reino Unido. Pero el impacto de la crisis fue aún más evidente en este caso, ya que los niveles de desigualdad de rentas en el agregado de la UE aumentaron debido a dos hechos. En primer lugar, la convergencia en los niveles reales de renta entre los países se estancó debido a su importante disminución en la periferia europea (en varios países de Europa del Este en los primeros años y en los Estados miembros mediterráneos más prolongadamente) y su mayor estabilidad en los países del centro europeo. En segundo lugar, el componente de la desigualdad de rentas en el agregado de la UE que mide la desigualdad dentro de los países aumentó, reflejando las desigualdades generalmente crecientes en la mayoría de los países, lo que no ocurrió en el caso de las desigualdades salariales.

Las desigualdades de rentas a nivel nacional se comportaron de forma anti-cíclica, ya que crecieron en alrededor de dos tercios de los países europeos desde el inicio de la crisis, especialmente en algunos países periféricos más afectados por la crisis (Chipre, España, Estonia, Hungría y Eslovaquia), pero también en algunos países del centro europeo y tradicionalmente más igualitarios (como Dinamarca y Suecia). El papel desempeñado por las turbulencias en el empleo explica por qué la crisis ha tenido un mayor impacto sobre las desigualdades de rentas que sobre las de salarios: esta tesis identificó el aumento del desempleo como el principal motor de las crecientes desigualdades en las rentas disponibles de los hogares en la mayoría de los países europeos como resultado de la Gran Recesión. Este hallazgo complementa (y contrasta) anteriores estudios relevantes de la OCDE (2008), que señalaron al aumento de las diferenciales salariales como la principal fuerza detrás de las crecientes desigualdades de rentas durante las décadas que precedieron a la actual crisis. Por otra parte, el análisis mostró como los Estados de bienestar europeos amortiguaron las crecientes desigualdades de rentas de mercado (especialmente en algunos de los países más

afectados por la crisis en la periferia europea, como los países mediterráneos o Irlanda) e impidieron una mayor expansión de las desigualdades de rentas disponibles de los hogares.

La magnitud de la disminución del nivel de bienestar asociada a la Gran Recesión no fue plenamente captada por los datos del PIB per cápita, y esto no sólo ocurrió en algunos de los países más afectados por la crisis, sino también en países que la afrontaron más favorablemente como Alemania. Esto pone de manifiesto la necesidad de utilizar un conjunto más amplio de indicadores para evaluar el bienestar y la prosperidad de las sociedades europeas. Por ejemplo, este análisis mostró que los niveles reales de renta disponible fueron impactados notablemente por la crisis en casi todos los países europeos (disminuyendo o moderando sus tasas de crecimiento respecto a antes de la crisis) y el tamaño de la clase media se redujo en la mayoría de los países, desarrollos significativos que no son captados por las medidas estándar de crecimiento económico.

La coordinación de los salarios mínimos a nivel de la UE como instrumento político para luchar contra las disparidades salariales

Esta tesis mostró que los salarios reales sufrieron un impacto a la baja como resultado de la crisis, impulsando hacia arriba las ya significativas tasas de trabajo de bajos salarios que amenazan con convertirse en una realidad estructural en los mercados de trabajo europeos. La desigualdad salarial también creció en muchos países europeos y sólo los efectos de composición del empleo impidieron un aumento más generalizado.

En este contexto, los países europeos tienen a su disposición varios instrumentos que pueden utilizar para hacer frente a las disparidades salariales en los mercados de trabajo. Esto ha sido evidenciado por la introducción del nuevo salario mínimo estatutario en Alemania en 2015, que ha tenido un efecto notable en la reducción de las desigualdades salariales. Como contribución al campo de la política económica, esta tesis propone la introducción de un hipotético salario mínimo estatutario a nivel de la UE fijado en el 60% del salario mediano en cada Estado miembro y evaluó su viabilidad e impacto, distinguiendo entre el impacto institucional y el cuantitativo.

Por un lado, el impacto que la introducción de este salario mínimo a nivel de la UE tendría en los sistemas nacionales de relaciones industriales sería menor en los países con sistemas de salario mínimo estatutario; intermedio en los países en los que existe un salario mínimo

nacional como resultado de la negociación colectiva a nivel nacional; y mayor en los países donde los salarios mínimos son negociados colectivamente a nivel sectorial/ocupacional y por lo tanto varios salarios mínimos coexisten y aplican a grupos específicos de la fuerza de trabajo (países escandinavos, Italia, Austria y también Alemania antes de que decidiera introducir un salario mínimo estatutario en 2015).

Por otra parte, el impacto cuantitativo se midió por la proporción de empleados que perciben salarios por debajo del 60% de la mediana nacional en cada país, es decir, la proporción de asalariados con bajos salarios como ha sido definida en esta tesis. El impacto cuantitativo se consideró menor en Bélgica, Francia, los países nórdicos, Portugal y Eslovaquia; y mayor en los países bálticos, Alemania (antes de 2015), Irlanda, Polonia, Rumanía y Reino Unido.

Curiosamente, el análisis reveló una cierta relación inversa entre ambas dimensiones, ya que el impacto institucional tiende a ser mayor en aquellos países donde el impacto cuantitativo sería menor y viceversa. Esto se debe a que los salarios mínimos son generalmente más altos en aquellos países donde se negocian colectivamente a nivel sectorial/ocupacional (aunque no apliquen a toda la fuerza de trabajo) que en los países donde existen salarios mínimos nacionales, lo que explica por qué la proporción de asalariados con bajos salarios tiende a ser menor en el primer grupo de países, representado por los países escandinavos y Austria, e Italia en menor medida. Alemania fue la principal excepción dentro de este grupo, debido a que se caracterizaba por tener tasas muy altas de asalariados con baja remuneración (en gran medida debido al debilitamiento de la negociación colectiva, que dejaba segmentos cada vez mayores de la mano de obra no cubiertos por salarios mínimos), lo que ayuda a comprender la introducción de un salario mínimo estatutario a un nivel relativamente alto (8,5 euros por hora) a partir de 2015.

La decisión alemana de introducir un salario mínimo estatutario y las discusiones actuales en Austria para seguir el mismo camino parecerían aumentar la viabilidad de una política de salario mínimo a nivel de la UE como la que se propone aquí, en caso de que existiera la voluntad política de hacerlo, ya que una gran mayoría de los países de la UE tienen en la actualidad salarios mínimos de aplicación nacional.

Esta política parecería especialmente adecuada para luchar contra algunos de los desarrollos identificados en esta tesis. Por un lado y desde una perspectiva nacional, sería útil para hacer frente a las disparidades salariales y eliminaría el trabajo de bajos salarios en los países europeos tal como se ha definido en esta tesis. Por otra parte, y desde una perspectiva

europea, podría ser útil para reducir las desigualdades salariales en el agregado de la UE. Esta tesis mostró que las diferencias en los niveles salariales medios entre países se han reducido notablemente en los últimos años, lo que implica que la desigualdad salarial en el agregado de la UE se explica en gran medida y cada vez más por las desigualdades dentro de los países. Esto significa que las políticas destinadas a reducir las desigualdades a nivel nacional emergen como la opción política más relevante para el futuro desde una perspectiva europea.