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Social Classes and the Great Recession. Evidence from Europe and the United States

Moawad Jad

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FACULTÉ DES SCIENCES SOCIALES ET POLITIQUES

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THÈSE DE DOCTORAT

présentée à la

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pour l'obtention du grade de

Docteur ès Sciences Sociales

par

Jad Moawad

Directeur de thèse
Prof. Daniel Oesch

Jury de thèse
Prof. Stephanie Steinmetz, Université de Lausanne, Lausanne, Suisse
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IMPRIMATUR

Le Décanat de la Faculté des sciences sociales et politiques de l'Université de Lausanne, au nom du Conseil et sur proposition d'un jury formé des professeurs

- M. Daniel OESCH, Directeur de thèse, Professeur à l'Université de Lausanne
- Mme Stéphanie STEINMETZ, Professeure à l'Université de Lausanne
- M. Philipp HESSEL, Docteur au Département de Santé Publique au Swiss Tropical and Public Health Institute d'Allschwil, Suisse
- Mme Leire SALAZAR, Professeure au Département de Sociologie de l'Université de Madrid, Espagne
- M. Lucio BACCARO, Professeur et Directeur de The Max Planck Institute for the Study of Societies, à Cologne, Allemagne

autorise, sans se prononcer sur les opinions du candidat, l'impression de la thèse de Monsieur Jad Moawad, intitulée :

« Social Classes and the Great Recession. Evidence from Europe and the United States »

Nicky LE FEUVRE
Doyenne

Lausanne, le 2 février 2023

Abstract

Summary
This thesis studies the impact of the 2008 financial crisis on the employment, wages and health of individuals from different social classes or different social class origins. The theoretical framework is inspired by the cumulative disadvantage theory, and uses it in the context of the Great Recession. The empirical analysis relies on three large surveys that allow the comparison across countires: the Luxembourg Income Study, the European Union Statistics on Income and Living Conditions, and the European Social Survey. Results show that the middle class did not lose in terms of employment nor earnings between 1980 and 2020. Instead, the major loser over the past decades was the working class. The Great Recession accelerated this trend of class inequalities by widening the earnings gap between the working class and the upper-middle class. The longitudinal data suggests that the working class was not only negatively affected in terms of earnings following the Great Recession, but also in terms of health but only among individuals that are near retirement. The thesis concludes that the 2008 financial crisis disproportionally affected the working class.

Résumé
Cette thèse examine l'impact de la crise financière de 2008 sur l'emploi, les salaires et la santé des individus issus de différentes classes sociales et origines. Le cadre théorique s'inspire de la théorie du désavantage cumulatif et l'applique au contexte de la Grande Récession. L'analyse empirique repose sur trois enquêtes majeures permettant une comparaison entre pays : Luxembourg Income Study, European Union Statistics on Income and Living Conditions, et European Social Survey. Les résultats révèlent que la classe moyenne n'a pas subi de pertes en termes d'emploi ou de revenus entre 1980 et 2020. En revanche, la classe ouvrière a été la plus affectée au cours de ces dernières décennies. La Grande Récession a amplifié cette inégalité entre classes en creusant l'écart de revenus entre la classe ouvrière et la classe moyenne supérieure. Les données longitudinales suggèrent que la classe ouvrière a été touchée non seulement en termes de revenus suite à la Grande Récession, mais également en termes de santé - particulièrement chez les individus proches de la retraite. La thèse conclut que la crise financière de 2008 a affecté la classe ouvrière de manière disproportionnée.

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Whenever someone asks me about the experience of getting a Ph.D., I tell them that the last five years were the most challenging but most rewarding years of my life. It was highly rewarding because of the intellectual challenge and the personal growth. However, the challenges are many and if you are lucky and wise enough, you surround yourself with people who help you appreciate and enjoy these challenges.

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Chapter 1

Introduction

1.1 The Great Recession and its consequences

The Great Recession was a strong economic recession, and its aftermath left deep scars in several Western countries. The housing bubble started in the early 2000s and was fuelled by speculation, easy credit, and lax lending standards. The stock market crashed, the housing bubble that had been gradually building up for several years collapsed, and housing prices fell in several countries. The burst was felt deeply in the United States, Ireland, Iceland, Spain, and Greece, but the repercussions of the 2008 financial crisis extended to most European countries. Many banks stopped lending, and several sectors (e.g., construction and manufacturing) were severely affected (Redbird and Grusky, 2016). These changes led to massive unemployment in many European countries and the United States. Although European countries experienced the 2008 financial crisis differently (Pontusson and Baccaro, 2021), overall, the repercussions felt in those countries were more profound and persisted longer compared with those in the United States. The unity of the European Union was at stake (Armingeon and Baccaro, 2012), and the continent faced deep political challenges as Greece was about to exit the union in 2015 (Tooze, 2019).

This thesis investigates the repercussions of the Great Recession from the viewpoint of social stratification. It tests whether vulnerable subgroups (e.g., the working class) were disproportionately more affected by the 2008 economic downturn compared with more

advantaged subgroups (e.g., the upper-middle class). Specifically, this thesis examines the trends in earnings, chances of employment, and health inequalities during and following the Great Recession.

Economic recessions can be detrimental to the world order and the cohesion of our societies. On the one hand, economic downturns can lead to a significant drop in personal income at the individual level, and on the other hand, they depress GDP and tax revenues at the macro level. Following the Great Depression in 1929, several Western countries questioned the viability of both democracy and capitalism (Berman, 1998). The economic turmoil during that era led many politicians to take bold moves, hoping to restore economic development to their countries. Scholars have argued that the Great Depression contributed not only to the New Deal in the United States but also to the eruption of World War II in Europe (Rauchway, 2008). While the repercussions of the 2008 financial crisis might not be as detrimental as those of the Great Depression, they are still strong enough to be worthy of investigation. Thus, it is necessary to examine the aftermath of the Great Recession for the short and long term.

In the Annual Review of Sociology, Redbird and Grusky (2016) examined the sociological literature on the repercussions of the Great Recession. They suggested that there has been much more sociological research on the causes of the 2008 financial crisis than on the consequences of the recession on inequalities. Moreover, other disciplines, notably the field of economics, has produced more research on the repercussions of the financial crisis than sociology. This shortfall is regrettable because sociology's toolbox includes particularly useful concepts such as cumulative disadvantages that may shed light on the repercussions of economic recessions.

1.2 Outcomes of interest

This thesis investigates three major outcomes: earnings, chances of employment, and health. Earnings are a critical element of social stratification. Individuals who experience

earnings losses will face a lower standard of living. This will in turn limit their purchases of goods and services. Moreover, financial strain will likely increase conflict and irritability in family interactions (McLoyd, 1989; Conger et al., 1994). Parents who experience a drop in income may also invest less in their children's human capital, which might perpetuate inequalities in the long term. For example, disadvantaged parents are less likely to push their children to pursue a career that requires long years of education (e.g., medicine). Even children lower their educational expectations during economic recessions, which is more pronounced among disadvantaged families (Salazar et al., 2020). When individuals face reduced earning potential and increased financial stress, they are more likely to enter cycles of poverty. Some of these individuals might bail out on their mortgage or change houses because they cannot afford rent. If families relocate to poorer neighbourhoods, such a change may lower their children's mobility later on (Chetty et al., 2022) and negatively affect their health (Carlisle-Frank, 1992).

The second outcome of interest in this thesis is the chances of employment. Analysing chances of employment is significant because it has major economic implications. Individuals may experience prolonged spells of unemployment following a job loss (Fallick, 1996), particularly during economic recessions (Kletzer, 1998). Job loss is also problematic because it can lead to large earning losses even when unemployment is short (Cha and Morgan, 2010). This disadvantage is the largest when job loss occurs during economic recessions. Moreover, when young adults experience job loss, they often face long-term negative consequences on earnings and future employment that can persist even ten years after the job loss (Mroz and Savage, 2006; Kawaguchi and Murao, 2014). A study in the United States that observed workers from 1974 to 2008 found that job loss leads, on average, to a cumulative loss of $77,557 over 20 years (Davis and von Wachter, 2011). This finding has been corroborated by several other studies (Couch and Placzek, 2010; Stevens, 2018). Moreover, while the risk of being reemployed as a part-time worker is high following a job loss, it is even more so during economic downturns (Farber, 2005).

The third outcome of interest in this thesis is health, which may be negatively affected

by jobs and earnings losses experienced during economic recessions. Thus, it is natural to investigate health after examining the latter outcomes. Job loss can lead to mental and physical distress because it affects people's status and time structure. Additionally, it can elevate anxiety levels due to feelings of shame in social circles (Newman, 1988). While job loss leads to acute stress, it can easily perpetuate and evolve into chronic stress due to economic, social and psychological strain (Pearlin et al., 1981). Additionally, individuals can feel social isolation as they are far from their workspace (Jahoda, 1982). Moreover, financial strain can disrupt people's lives, as they struggle to make ends meet. Many adults feel anxious, as they cannot support their loved ones once they experience financial difficulties. On the other hand, it is worth noting that economic recessions are not always detrimental to health but may ameliorate it in some instances. The mechanisms at play here are that people work less, which leads to less stress (Burgard and Kalousova, 2015). Moreover, individuals who experience job loss have more time for socialising, training, and sleeping. All of these factors may improve their health (Aguiar et al., 2013).

All three outcomes of interest can be interrelated and, as previously discussed, can be affected by the Great Recession. However, not all the categories of the population are equally vulnerable during an economic recession; thus, we are interested in analysing which subgroups suffered more during the Great Recession.

1.3 Social class

While social class has always been subject to a never-ending debate about its conceptualisation and relevance over time, it is one of the most important aspects of social stratification research. An analysis of the Web of Science reveals that "social class" appeared in the title or abstract of 20,0483 articles between 1970 and 2023. Interestingly, there is a clear increase in its use over time. This growing number not only indicates that social class is important but also suggests that the concept is here to stay.

This thesis investigates whether individuals with different social classes (or social class

origins) experienced the shock caused by the 2008 financial crisis differently. We follow an operationalisation of social class that is similar to that used by previous research (Erikson and Goldthorpe, 1992; Goldthorpe, 2000; Oesch, 2006). This is because these scholars have pragmatic approaches and avoid the use of abstract constructions such as the one of Bourdieu (1984). We will not discuss the latter literature, as it is challenging to conceptualise empirically; notably, Bourdieu's concept of social class is represented in a multidimensional hierarchical space (Bourdieu, 1984). Our construction of social class follows a hierarchical criterion that represents the amount of advantage in the employment relationship. Erikson and Goldthorpe (1992) argue that if individuals share a similar employment relationship, they face similar life chances and belong to the same social class. The authors aggregated their scheme into seven categories.

Erikson and Goldthorpe's concept of social class and their main argument follow Max Weber's view; i.e., individuals who experience a similar market condition are considered in the same social class because their life chances are largely influenced by their jobs (Weber, 1964). We follow previous studies and choose occupation as the basis of three of four empirical chapters (Erikson and Goldthorpe, 1992; Oesch, 2006). To simplify the comparison across social classes, we divide social classes into three categories: the upper-middle class of managers and professionals (ISCO 1 and 2); (2) the lower-middle class of associate managers, semiprofessionals, technicians, and skilled clerks (ISCO 3 and 4); and (3) the working class of craft, production, sales and service workers (ISCO 5 to 9).

The working class includes individuals working in occupations with greater job insecurity and economic vulnerability than the lower-middle and upper-middle classes. Members of the working class possess fewer marketable skills and are therefore easier to replace, earn less and possess more precarious contracts. Additionally, they are more likely to be paid by the hour or per item produced (Goldthorpe and McKnight, 2006). Their low bargaining power becomes even weaker during economic recessions (Western and Healy, 1999). As companies aim to cut costs during economic downturns, they are more likely to fire workers and less likely to hire new ones. Thus, the working class is more

likely to face challenges in terms of employment or wages. This disadvantage may not only be heightened by cyclical slumps such as the Great Recession but could also be part of a long-term structural trend that started earlier with globalisation and technological expansion.

In chapter two, we propose a more nuanced measure of social class and add education and self-employment alongside occupation. We believe that a combination of these three variables renders the measure of social class more precise. Previous research has highlighted that it is essential to distinguish between employers, self-employed and employees when constructing a social class measure; thus, we follow in the footsteps of these scholars (Erikson and Goldthorpe, 1992; Wright, 1985; Oesch, 2006). For instance, a carpenter employer experiences different life circumstances than his or her carpenter employees. Their different labour market positions are reflected not only in their income but also in differences in their day-to-day job autonomy. Thus, we argue that these individuals should be disaggregated into different social classes.

Our decision to include education in our social class measure is motivated by theoretical and practical reasons. Theoretically, education and occupations are systematically linked as educational trajectories feed into specific occupations; thus, access to many occupations is conditional on distinctive educational degrees. This is the case for vocational degrees that are a prerequisite for skilled working class positions in many European countries (Allmendinger, 1989), as well as for many professions that require university degrees, such as medical doctors, lawyers, or psychologists (Weeden, 2002). Individuals cannot work in these professions without higher education.

Other stratification variables

We leave out other stratification dimensions, such as gender or migration, for different reasons. While migratory background is relevant to research analysing inequalities, it is missing from many different datasets we use. In other cases, when it is present, it still

lacks consistency across countries and years. To avoid biasing our analysis, we leave out this measure when it is not systematically present. We still include it directly in Chapter Three and indirectly in Chapter Five, where we use individual fixed effects, which control for constant individual characteristics over time.

Although we believe the gender dimension is important to investigate, we decide to focus more on social class. Previous research shows that men and women tend to segregate into different occupations and sectors in the labour market (Polachek, 1979). For example, women tend to work more in the service sector, and men tend to be over-represented in the industrial sector (Organisation, 2010). Previous literature has found that the Great Recession hit sectors predominantly represented by men, such as the construction, manufacturing and financial sectors (Verick and Islam, 2010). Since previous research indicates that women were not particularly affected by the 2008 financial crisis, we decide to focus on social class.

Cumulative disadvantage

Merton (1968) introduced the Matthew effect to describe how early inequalities can accumulate and widen over time. For example, a simple Matthew effect occurs when the rich grow richer and the poor grow poorer. The effect of an advantage or disadvantage can grow in magnitude over time. This concept was extended to the stratification literature on cumulative (dis)advantages such as career trajectories, education and social class (DiPrete and Eirich, 2006). In this thesis, we use this concept in the context of the financial crisis because a deep economic shock may affect individuals belonging to distinct social classes or age groups differently.

Traditionally, the working class is vulnerable in the labour market. Their jobs are easily replaceable, which means that they have less bargaining power with their employers. Consequently, economic recessions tend to lead to higher unemployment rates among the working class than among more advantaged social classes. Moreover, the working

class ends up in more precarious contracts, part-time jobs or short-term work than more advantaged classes. Economic recessions can further exacerbate this disadvantage. For instance, the 2008 financial crisis strongly hit certain sectors (e.g., construction and manufacturing) where the working class is overrepresented. This likely negatively influenced the bargaining power of vulnerable workers following the Great Recession (Baccaro et al., 2010), which may have resulted in large employment cuts or earning losses.

The working class is not the only vulnerable subgroup of the population; young adults are also sensitive to the business cycle, as they experience a higher unemployment rate than older individuals. Even when putting objective measures (e.g., earnings, employment) of the labour market aside, previous research suggests that young individuals exposed to economic downturns are associated with worse physical health later in life (Hessel and Avendano, 2016). Following the 2008 financial crisis, young adults were affected by several austerity measures as governments, such as the United Kingdom and Spain, cut support for students and increased tuition fees (Theodoropoulou and Watt, 2011; Antonucci and Hamilton, 2014). However, young adults from different social origins likely experienced the repercussions of the 2008 financial crisis differently. Advantaged parents can help their children find a job through their networks. Moreover, they can finance their children for further education or sustain them until they find a job that meets their skills. On the other hand, disadvantaged parents have fewer financial means to support their children in the same way. Therefore, we expect that the repercussions of the 2008 financial crisis were experienced differently among young adults with different parental social origins.

Previous research shows that economic downturns can even aggravate declines in cognitive function among older people (Hessel et al., 2018). Older adults who are near retirement may be vulnerable during economic recessions, as they are at a vulnerable stage of their careers. Some may have to postpone their retirement to catch up with the earnings or wealth losses caused by the economic crisis. Others may experience involuntary early retirement as they lose their jobs and cannot get rehired in the following

period. These experiences are aggravated by financial losses at the end of their career and can be highly stressful, as individuals can become financially vulnerable. These labour market hardships are likely to be different among individuals of different social classes. As the working class is relatively vulnerable in the labour market, they may experience more spells of unemployment, which will aggravate their health. Additionally, they will suffer more while finding a new job, as they are generally less educated and possess fewer skills than those in a higher class. Last, beyond job loss, the working class accumulates less wealth during their careers. Thus, a financial shock is likely to be more detrimental to their health compared with the unemployed upper-middle class, who can sustain themselves better with their savings.

1.4 Comparative approach and operationalisation

This thesis starts with an overview of how different social classes have fared in the last four decades. Technological advancement, globalisation and the decrease in the power of unions are likely to have shaped the labour market. These changes could have harmed the working class, and the 2008 financial crisis may have been an event that accelerated inequalities that were occurring earlier.

As disentangling the effect of economic recessions is challenging, we compare countries that were relatively strongly hit with others that were less touched by the 2008 financial crisis. This approach is important because it allows accounting for counterfactual scenarios. For example, we might discover that following the Great Recession, earnings inequalities increased in Spain and Greece, which both experienced a deep financial crisis. Our analysis will likely be biased if we do not examine earnings inequality in Poland and Germany over the same period. This is because earnings inequality might have increased in all European countries instead of only in Spain and Greece. Thus, the inclusion of countries in this thesis is driven by our design and analytical approach. In some chapters, the inclusion of more countries was restricted by data limitations. For instance, in

chapter two, we select countries with consistent data on occupations over time, which has limited our selection of countries to twelve.

When modelling the effect of the financial crisis on our outcomes of interest, we decide to operationalise it using different measures. Among several existing methods, one consists of using the year 2008 as an indicator of the crisis. The interaction between the year 2008 and the variables identifying the subgroups (e.g., social classes) allows us to compare whether a specific outcome (e.g., earnings, health, employment) significantly changed after the crisis in different ways among the different subgroups. For example, this strategy allows us to identify whether the gap in health between the working class and the upper-middle class increased following the 2008 financial crisis. The advantage of this strategy is that it is more comprehensive than other measures of economic recessions. For instance, the debt and banking crisis, which affected the intensity of the financial crisis, is difficult to quantify and can be accounted for by using the year 2008 as a proxy for the Great Recession. On the other hand, using the period 2008 to measure the economic recession is less precise than other measures, such as the unemployment rate or output gap in GDP. The latter measures can account for the intensity of the crisis in different years and countries. As we discuss a large number of countries in Chapters Three and Five, we use all the above-mentioned mentioned macroeconomic measures to operationalise the 2008 financial crisis.

We acknowledge that other measures of economic recessions are also useful. For example, the gender-specific macro unemployment provided by the Organisation for Economic Co-operation (OECD) highlights how economic recessions affect men and women differently. However, as discussed earlier, this thesis focuses on social class. Another measure of economic recessions is age-specific macro unemployment, which underlines heterogeneities across age groups. We avoid this measure because the cut-off age of the OECD (or Eurostat) unemployment is not detailed enough. For instance, they provide the unemployment rate for ages 15 to 24 and 25 to 74. We believe that this measure is problematic, as many young individuals are still pursuing an education between the

ages of 15 and 24. Moreover, their approach does not capture any nuances between near-retirement individuals and middle-aged groups. Of course, other measures of economic recessions may be less problematic and fit well with our research questions. However, using all economic recession measures is out of the scope of this thesis. While it has its limitations, the unemployment rate measure we choose is the most common measure used to gauge economic recessions (Krishnarajan, 2019). Additionally, as mentioned earlier, we use the period 2008 and the output gap in GDP as measures that capture some of the effects of the Great Recession.

1.5 Data and research questions

This thesis uses data sources related to social stratification that are among the best. These sources are the Luxembourg Income Study (LIS), the European Union Statistics on Income and Living Conditions (EU-SILC), and the European Social Survey (ESS). These datasets provide representative samples and have high external validity.

The LIS is the largest available comparative income database. Its primary mission is to promote cross-national comparative research on socioeconomic outcomes and the institutional factors that shape those outcomes (Luxembourg Income Study, 2020). The LIS gathers microdata sets from each country separately. It performs a quality check and then harmonises the data internally. The LIS's main advantage is that it spans five decades and thus is considered optimal for analysing trends over time. The LIS data is ideal for Chapter two, which analyses how different social classes have fared in earnings in the last four decades. This chapter also analyses various changes in the composition of the workforce.

While the LIS is the largest available income database for comparative research, the EU-SILC has richer data across the European continent around the period of the 2008 financial crisis. The EU-SILC project started in 2003 and expanded in the following years to include more than twenty European countries. It consists of two types of data: cross-

sectional and longitudinal. The EU-SILC invests in both structures because they have different strengths and weaknesses and respond to different research questions. The main strength of these data frames is that they cover objective and subjective measures such as income, employment, and self-perceived health. The main objective of the EU-SILC is to create a harmonised dataset that permits comparison across European countries. Chapter Three of our thesis uses the cross-sectional data of the EU-SILC to examine whether the 2008 financial crisis widened earnings inequalities between different social classes. We use repeated cross-sectional data from 2004 to 2017.

Even though the EU-SILC is an excellent data source for comparing labour market indicators across European countries, it falls short of gathering parental background information. Only two modules (2005 and 2011) include such information around the period of the 2008 financial crisis. Therefore, we also use the ESS to enrich our data with the parental background dimension (Norwegian Centre for Research Data, 2020). Chapter Four utilises both datasets (EU-SILC and ESS) and analyses whether the gap in employment or earnings between young adults of different social origins widened following the 2008 financial crisis. The ESS has a cross-sectional design and has been conducted biennially since 2002 using face-to-face interviews. It contains much information on attitudes and includes data on labour market outcomes. Countries are supposed to meet minimum standards set by the ESS. This ensures consistency and comparability, making it ideal for comparative research. For example, all countries use probability sampling without relying on quota controls or substitutions. This strategy is vital in social science research because it allows researchers to make inferences about the population from which they are drawn.

Chapter Five uses the longitudinal section of the EU-SILC. To avoid large cumulative attrition over the years, the EU-SILC limits their follow-up to four years. Thus, we limit our selection of the data from 2007 to 2010, which are the main years of the Great Recession. Moreover, the longitudinal sample is refreshed yearly with new respondents. It is worth noting that generally, the respondents cannot be linked between the cross-

sectional and longitudinal sources. Chapter Five uses the health dimension of the EU-SILC and investigates two particular outcomes: self-perceived health and chronic illness. In particular, it analyses whether health inequalities have widened following the Great Recession between individuals of different social classes.

Table 1 below gives an overview of the different research questions asked in the main chapters of this thesis. It also mentions the data used, the number of countries and the range of years included.

Table 1.1: Overview of substantive chapters, their respective research questions, the data, countries and years used to answer them.

Chapter	**Research question**	**Data**	**Countries & years**
2	How have different social classes fared in terms of earnings and class composition in Europe and the United States in the last four decades?	LIS	12 countries, 1980-2020
3	Do earnings inequalities increase between different social classes following the 2008 financial crisis?	EU-SILC	23 countries, 2004-2017
4	Does the gap in employment and earnings increase between young adults of different social origins following the 2008 financial crisis?	EU-SILC & ESS	6 countries, 2005-2012
5	Does the gap in health widen among different social classes? Does this gap remain after controlling for job loss?	EU-SILC	26 countries, 2007-2010

1.6 Summary of the four empirical chapters

Four empirical chapters and a conclusion follow this introduction. Before we discuss the findings of our second chapter, we highlight its theoretical contribution. To present how different social classes have fared in the last four decades, we need to define and discuss how different social classes should be categorised. This is important because after an

extensive review of the literature, we find that the middle class is miscategorised among many economists (see Pressman, 2007; Autor and Dorn, 2013*a*; Vaughan-Whitehead, 2020), the International Labour Organisation (ILO), and the OECD. These individuals and entities include approximately 60% of the population in the middle-class category. We argue that this is problematic since in some cases, individuals with $20,000 and $120,000 in annual earnings are lumped together as middle class. However, these individuals have very different purchasing power and experience financial hurdles differently. We criticise this categorisation and argue that the middle class does not begin when poverty ends.

To construct our measure, we return to occupation building blocks of the class structure and propose an occupation-based class indicator that reflects salient differences in the labour market hierarchy in affluent societies. By distinguishing the low-skilled from the skilled working class and the middle class from the upper-middle class, we obtain a class measure that is both meaningful to lay people and easy to implement in international surveys.

Our findings suggest that there has been no middle class squeeze in recent decades, neither in terms of employment nor income. In the 1980s and early 1990s, the middle and upper-middle classes were still outnumbered by the skilled and low-skilled working classes in all observed countries. However, over the last four decades, the relative sizes of the higher end of the spectrum have shifted as job opportunities expanded for managers, professionals and technicians, while these sizes have declined for labourers, assemblers, craft workers and clerks. Both in terms of employment and income, the most disadvantaged by the circumstances over the past decades has been the working class. In the wake of skill-biased technological change, globalisation and the neoliberal political turn, labour demand has become increasingly biased against the working class, thereby reducing its size, weakening its bargaining power and holding back its incomes. In terms of income growth, the two working-class segments fared systematically worse than the two middle-class categories in 11 out of 12 countries under study, with Poland being the only exception.

Chapter Three investigates more closely whether the increasing inequalities observed in Chapter Two were accelerated by the Great Recession. Several sociological studies have shown how social classes fared differently during the Great Recession (Albertini, 2013; Whelan and Maître, 2014; Wodtke, 2016; Albertini et al., 2020). It remains unclear, however, whether these differences between social classes were homogenous across European countries and how macroeconomic factors such as the unemployment rate and GDP gap affected earnings inequality. This chapter adds to this line of research by gauging whether a major cyclical slump widens or compresses the earnings gap between different social classes. Addressing this empirical gap sheds important light on the theory of cumulative (dis)advantages in the context of economic recessions. We find supportive evidence that the Great Recession increased the earnings gap between the working and upper-middle classes. With a few exceptions, the evidence from our analysis casts considerable doubt on the notion that the effects of the Great Recession align with the predictions of countercyclicality theory, which suggests that the earnings of top earners are more volatile than their peers at the bottom of the income distribution (Parker and Vissing-Jorgensen, 2010; Guvenen et al., 2014). Overall, our findings align with cumulative disadvantage theory and previous studies that have examined Italy (Albertini, 2013) and the United States (Wodtke, 2016).

The fourth chapter focuses on young adults (25-34), as this specific subgroup may be more vulnerable in terms of labour market conditions than older individuals. We investigate young adults of different social origins, as parental background can be decisive in mitigating the repercussions of an economic recession. This is because parents can use their social networks and wealth and know how to help and guide their children through economic hardships. These parents may also sustain their children until they find a job that meets their standards for their level of education. Additionally, advantaged parents can invest in their children's education during economic recessions. Disadvantaged parents, instead, are likely to be financially vulnerable during economic recessions and unable to support their offspring. Analysing young adults' outcomes at the beginning of their

career is important for two reasons; first, prior evidence shows that early career unemployment has long-lasting scarring effects (Gregg and Tominey, 2005; Gangl, 2006), and second, starting a career at a lower-paying employer may generate less mobility thereafter (Kahn, 2010; Oreopoulos et al., 2012).

We find that the gap in employment between young adults of different social origins contracted following the 2008 financial crisis in Spain and the United Kingdom, two countries that were highly affected by the 2008 financial crisis. Such contraction can happen if young adults of high social origin do not find a job that matches their skills or expected salary during an economic recession and thus extend their search period of employment. This is less likely to occur among young adults of low social origin who might have to step in and support their parents or partner in case of a financial burden or a job loss. Our second main finding shows a widening in earnings among young adults of different social origins in Spain. On the other hand, our results show a null finding in the earnings gap in the rest of the countries.

While previous chapters analyse objective measures, the fifth chapter examines subjective measures. It examines whether the Great Recession affected health inequalities among different social classes. The working class may possess more precarious contracts and thus may be more likely to be laid off than the upper-middle class during economic recessions. Thus, the former may experience more health deterioration than the latter, as job loss is associated with increased levels of stress, anxiety and depression (Brand, 2015). However, an opposite scenario is also possible. The upper-middle class owns more wealth, such as houses and financial assets, which lost much of their original value in several countries following the Great Recession (Wachter, 2015). Given that the upper-middle class may have fallen from a greater height, it is possible that the Great Recession may have disproportionately impaired their health.

This chapter contributes to the literature in several important ways. In addition to analysing inequalities in self-perceived health, Chapter Five also examines inequalities in chronic illness during the Great Recession, which is a topic that has been overlooked

by previous research. Chapter Five also analyses an understudied area in sociological research, namely, the social class gradient in health by different age groups during the 2008 financial crisis. Our findings are in line with the cumulative (dis)advantage theory; i.e., the working class possesses higher levels of chronic illness than the upper-middle class, and this initial disadvantage was exacerbated by the Great Recession. We find that the social class gradient in health holds even after accounting for several employment transitions. Finally, we observe that the social class gradient is present only among near-retirement adults (50-64) compared with younger cohorts.

Chapter 2

The Myth of the Middle Class Squeeze: Employment and Income by Class in Six Western Countries, 1980-2020

Authors: Jad Moawad and Daniel Oesch

Abstract

The public debate depicts the middle class as the victim of employment polarization and income stagnation. This narrative of a squeezed middle class suggests that people above and below fared better in terms of job and income growth. However, this narrative ignores basic insights from class theory and lacks empirical evidence. Based on the Luxembourg Income Study, we trace the evolution of employment and income by class for six large Western countries - France, Germany, Poland, Spain, the UK and US -, 1980-2020. Over this period, employment of the upper-middle and middle class strongly expanded, while the skilled and low-skilled working class shrank everywhere. Working-class households also made consistently smaller income gains than middle-class household in all countries except Poland. Real labor income of the working class declined in Germany, stagnated in the US and grew by less than one percent annually in France and the UK. A cohort analysis of wage growth shows that the promise of doing better than one's parents and grand-parents held for middle-class households. However, this same promise vanished for the working class - most evident in Germany and the US. The great economic loser of the last decades was not the middle, but the working class.

2.1 Introduction

Over the last two decades, income inequality has moved to the top of the research agenda in sociology (e.g. Alderson and Nielsen, 2002; Gornick and Jäntii, 2013; McCall and Percheski, 2010) and economics (e.g. Atkinson, 2015; Autor, 2014; Piketty, 2014). In contrast, less attention has been devoted to the question of how absolute incomes have evolved over time (Kenworthy, 2013; Nolan and Thewissen, 2018). Yet while individuals only have a very vague idea of income inequality (Engelhardt and Wagener, 2018; Kenworthy and McCall, 2008), they are keenly aware of how their absolute income evolves year by year.

Since the 1980s, the median household income growth has slowed down across the Western world, stagnating over long periods in Germany, France or the US (Nolan, 2020). Income stagnation not only means that productivity growth is not shared equally, but also translates into stalled living standards for successive cohorts. In the public debate, income stagnation has been linked with middle class squeeze. Across the Western world, a common narrative considers the middle class as the primary victim of the new gilded age - both in terms of falling employment (Autor and Dorn, 2013*b*; Jaimovich and Siu, 2019) and eroding incomes (Grabka and Frick, 2008; Pressman, 2007). Primarily proposed by economists, this narrative has found a large echo in the mass media.[1]

The corrosive effect of stagnating incomes on households is undisputed. However, we challenge the thesis of a middle-class squeeze and argue instead that the great loser of the last four decades was not the middle class, but the people laboring below them, the working class. Our goal is to show empirically how different social classes fared between 1980 and 2020. We trace the evolution of employment and income by class in six large

[1]For the US: New York Times, "What's really squeezing the middle class?", 25. 4. 2007. Financial Times, "The crisis of middle class America", 30. 7. 2010. Wall Street Journal, "The middle class squeeze", 25. 9. 2015. For the UK: Guardian, "Robots will not lead to fewer jobs - but the hollowing out of the middle class", 20. 8. 20217. For Germany: Spiegel, "Deutschlands Mittelschicht schrumpft dramatisch" [Germany's middle class shrinks dramatically], 13. 12. 2012. Süddeutsche Zeitung, Schrumpfende Mittelschicht: arbeite hart, aber besser geht es dir nicht" [Shrinking middle class: work hard, but you won't fare any better], 29. 8. 2015. For Spain: El Diario "Adiós a la clase media" [Farewell to the middle class], 18. 12. 2014. El País: "La Clase media menguante" [The declining middle class], 29. 9. 2019.

Western countries - France, Germany, Poland, Spain, the United Kingdom and the United States.

Our selection of six Western high-income countries is based on three criteria. The first criterion is the availability of comparable occupational data over several decades which excludes Italy. The second criterion is population size and we include, besides the US, five out of Western Europe's six most populous countries (without Italy). A third criterion relates to institutional variety in terms of markets and states - welfare capitalism. Our study compares examples of the liberal Anglo-Saxon regime, the conservative continental regime, the conservative Mediterranean regime and the post-socialist regime (Esping-Andersen, 1999; Ferragina and Seeleib-Kaiser, 2011). However, we believe that our main argument that the working and not the middle class lost out over the last decades holds more broadly and we therefore provide additional evidence for six small and affluent European countries.

Our analysis is based on the best available comparative micro-dataset, the Luxembourg Income Study (LIS), which combines several dozen country surveys such as the Current Population Survey for the US or the Socio-Economic Panel for Germany. We focus on the household level as the decisive locus of people's life chances and show how the working-age population fared over the last decades in terms of household labor income and household disposable income.

Our paper makes four contributions to the literature on inclusive growth, an economic scenario in which incomes increase equally for all social classes (Nolan, 2018; Parolin and Gornick, 2021). Our first contribution is conceptual and delves into class theory. We argue that most income-based definitions of the middle class are at odds with the economic history of industrial societies. By considering everyone as middle class except the poor and the very well-off, these income-based definitions ignore the working class (e.g. OECD, 2009). Instead, we go back to occupations as the building blocks of the class structure and propose an occupation-based class indicator that reflects salient differences in the labor market hierarchy of affluent societies. By distinguishing the low-skilled from

the skilled working class and the middle class from the upper-middle class, we obtain a class measure that is both meaningful to laypeople and easy to implement in international surveys.

Second, we show that the evolution of household incomes is usefully analyzed in terms of social class as the economic trajectories of classes diverged dramatically since the 1980s. But rather than to support the popular view of a middle-class squeeze, our results reveal that the working class has come under greater pressure. Since the 1980s, both the skilled and low-skilled working class have done significantly worse in terms of household income growth than the middle and, above all, upper-middle class.

Third, we take full advantage of our comparative design and contrast the income trajectories of different classes across affluent countries, moving beyond the strong single country studies on the class-income nexus (e.g. Wodtke, 2016; Zhou, 2019). While our comparison reveals systematic parallels - the income hierarchy of social classes looks very similar across Western countries -, it also points to differences. Since the early 1980s, the working class fared worse in terms of income growth in Germany and the United States than in Spain and, above all, Poland, with France and the United Kingdom in-between.

Fourth, our analysis shows how the diverging class destinies played out over time for different birth cohorts. Throughout the post-war decades, each successive generation obtained higher incomes than the preceding generation. However, this mechanism of increasing real incomes broke down in Germany and the United States in the 1980s for the working class. While middle-class members born into Generation X (1966-1980) continued to earn more than previous middle-class generations, the working class of Generation X earned no more than their working-class parents (born 1946-1965) or grand-parents (born 1926-45).

Our paper first discusses the decoupling of productivity growth and income growth, before arguing that the commonly used income-based definitions of the middle class are misleading. We propose to replace them by an occupation-based class indicator and discuss our key hypothesis that the working class has done worse in terms of employment

and income growth than the middle class over the last decades. The results section presents how employment evolved in different classes and compares change in real income on an annualized basis across classes and countries. The conclusion discusses the far-reaching political implications of working-class decline.

2.2 Theoretical Background

2.2.1 The decoupling of productivity and income

Over the last two decades, the absolute evolution of incomes received much less sociological attention than relative changes in incomes as captured by indicators of inequality. However, while the meaning of the Gini index remains obscure to most people, workers intuitively grasp what annual changes in their incomes mean for their lives.

In the long run, the evolution of labor income is determined by growth in productivity. For lack of a better measure, productivity is often approximated by GDP per capita and shows for the Western world a continuous slow-down. Averaged for France, Germany, Spain, the UK and US, productivity growth fell from a mean annual increase of 3 percent in the 1970s to 2.5 percent in the 1980 and 2 percent in the 1990s, before levelling off at 1 percent between 2000 and 2020 (OECD statistics).

The key question is whether productivity growth feeds into higher labor incomes. In the three decades after World War II, wages rose in line with productivity for the large majority of Western workers (Iversen and Soskice, 2019; Piketty, 2014). Indeed, annual wage raises were the central mechanism that translated the economy-wide productivity gains into broad-based improvements in living standards (Baccaro et al., 2022). The 1980s constitute the watershed decade when the Keynesian class compromise based on full employment and collective bargaining fell apart - and when the nexus between productivity growth and workers' earnings became loose (Piketty, 2014; Stansbury and Summers, 2017).

As a consequence, the distribution of national income shifted from labor (wages) to

capital (profits) (Karabarbounis and Neiman, 2014; Kristal, 2010). The decreasing labor share meant that workers relying on wages lost out relative to capital owners living off profits. In parallel, wage inequality soared among wage-earners. As a disproportionate share of labor income went to the employees at the very top of the pay scale, many workers in the lower half of the distribution were left empty-handed (Atkinson, 2015; Piketty, 2014). The public discussion in economics (e.g. Boehm, 2014; Jaimovich, 2020) and the media (see footnote 1) suggest that it was primarily the middle class that lost out from economic growth. Yet we argue that this narrative runs contrary to basic insights from class sociology.

2.2.2 The crux of defining the middle class as middle-income group

The narrative of a squeezed middle class implicitly suggests that people both above and below fared better in terms of income and job growth than people in the middle class. However, few concepts are as hazy and difficult to define as that of the middle class (Chauvel, 2014; Cherlin, 2014). This difficulty has been heightened by recent interest in class analysis by economists who began to churn out studies on the decline of the middle class, measuring the middle class as an income group (e.g. Grabka and Frick, 2008; Pressman, 2007; Ravallion, 2010). Notably two income-based definitions of the middle class proved influential.

A first definition endorsed by the OECD considers the middle 60 percent - households between the 20th and 80th income percentile - as middle class (Dallinger, 2013; OECD, 2015). However, close to 20 percent of the working-age population in Western Europe receive benefits from unemployment, disability, sickness or social assistance (OECD, 2003, pg. 175). This definition, thereby, includes basically all households in the middle class except those living on social benefits. For the United States in 2021, this definition means that households with gross incomes between $27,012 and $141,100 belonged to the middle

class. The lower bound is almost identical to the threshold for workers receiving food assistance (SNAP) for a two-person household with earned income.[2] According to this definition, either people struggle to afford food and are eligible for SNAP - or they are middle class and lumped together with households gaining five times as much as they do.

A second income-based definition - favored by the ILO (Vaughan-Whitehead et al., 2016) and recently also adopted by the OECD (2019) - includes all households with more than 60 percent and less than 200 percent of the median income in the middle class (see also Atkinson and Brandolini, 2013). However, in France, Poland, Spain or the UK, the minimum wage amounted to 55 to 60 per cent of the median wage in 2020 (OECD statistics). This means that whoever lives in a one-person household and earns the minimum wage belongs to the middle class - and thus workers toiling in the most menial jobs in fast-food restaurants, textile factories or cleaning services.

Both definitions lead to very large and heterogeneous middle classes. In the first case, they encompass, by construction, 60 percent of households. In the second case, they comprise more than two thirds of all households in Germany, Italy and the UK, and more than three quarters in Denmark, Norway and the Netherlands (Bosch and Kalina, 2008; Grimshaw and Rafferty, 2016; Kochhar, 2017).

These inflated conceptualizations of the middle class lend little help for empirical analysis. Moreover, by including in the middle class whoever holds a job and is not poor, these definitions are ahistorical as they totally ignore the working class. The widely held view in economics that middle class living standards begin when poverty ends (Ravallion, 2010, pg. 446) is at odds with the history of Western industrial societies that were dominated by large - and increasingly affluent - working classes over much of the 20th century (Cherlin, 2014; Goldthorpe et al., 1969; Todd, 2014). Historically, the middle class comprised a small category of non-manual employees such as doctors, lawyers, priests,

[2]In New York State in 2021, eligibility to the supplemental nutrition assistance program (SNAP) for a two-person household with earned income (and no elderly or disabled member) was 26,136$ (see: https://otda.ny.gov/programs/snap/ website accessed on 8 March 2022). The income percentiles are based on the Household Income Percentile Calculator for the United States: https://dqydj.com/household-income-percentile-calculator/ (accessed on 8 March 2022).

scientists and other professionals, professors and teachers. They were situated below the tiny, but powerful elite of landlords and nobles, factory owners and entrepreneurs, but above the large working class laboring in manual jobs as farmworkers, construction workers, assemblers, or domestic aides (Hobsbawm, 1999; Kocka, 1995). Over most of the 20th century, the term working class appeared more often in English-language books than middle class (based on Google's ngram corpus of English books, Oesch, 2022, pg. 9).

The distinction between the middle and working class is not only entrenched in the daily lexicon - between workers and employees, manual and non-manual work, blue-collar and white-collar jobs -, but many people also continue to consider themselves as working class. An analysis of the International Social Survey Programme (ISSP) shows that in 2009 36 percent of Americans and 40 percent of Brits perceived themselves as working class. By contrast, only a few percent perceived themselves as upper class (Oesch and Vigna, 2023). This dispels the misunderstanding that the middle class clusters around the middle of the income structure. In most Western countries, carpenters and mechanics, brick masons and truck drivers earn wages close to the national average. Yet few historians and sociologists would consider these working-class occupations to represent the middle class.

2.2.3 Advantages of an occupation-based class definition

If the dominant income-based definitions of the middle class simply reflect middle-income groups (Gornick and Jäntii, 2013), how else can the middle class be conceptualized? We follow the dominant tradition in stratification research and consider occupations to be the cornerstones of contemporary labor markets and the resulting class system (Grusky, 2005; Treiman, 1977)[3]. Besides levels of income, occupations share other crucial properties such as training requirements and channels of recruitment, typical working conditions and social protection, and even geographical location (e.g. farmers, miners and dockers).

[3]However, note that some claims concerning occupations are overstretched: Contrary to an influential argument (e.g. Erikson and Goldthorpe, 2002), occupations are not better predictors of permanent income over the life course than single measures of income (Brady et al., 2018; Shahbazian and Bihagen, 2022).

The class hierarchy then arises from the technical division of labor that is rooted in the occupational structure. Workers in different occupations control different amounts of productive resources which, in turn, place them into asymmetrical social relations to each other (Wodtke, 2016; Wright, 1985). Typical examples are the contrasts between medical doctors and nursing aides, managers and secretaries, engineers and machine operators.

The broad social recognition of occupations is usefully exploited in the micro-class approach (Weeden and Grusky, 2005). Yet for the debate on the squeezed middle class, occupations need to be merged into larger and hierarchically ordered social classes. The two key productive resources that differentiate occupations hierarchically are the amount of authority and, above all, expertise (Wright, 1997). The more authority and expertise an occupation requires, the more difficult the workers are to replace, the more bargaining power they wield and the more advantageous their work contracts are (Goldthorpe, 2000; le Grand and Tåhlin, 2013). Authority and expertise are thus usefully summarized as productive resources that determine an occupation's position in the class hierarchy. These resources are mainly acquired through formal education as well as informal training and work experience. For empirical research, productive resources can be equated with the skill requirements of a given occupation.[4]

We propose to distinguish four social classes that comprise occupations with similar levels of skill requirements: an upper and upper-middle class (short: upper-middle class), a middle class, a skilled working class, and an unskilled working class. We separate the upper-middle class of professionals and managers from the core of the middle class that includes semi-professionals, associate managers and technicians. While access to the professions and many positions in management requires the equivalent of a university degree, shorter post-secondary degrees are typically sufficient to become an associate professional or technician. A similar logic applies to the division within the working class. Skilled working-class occupations normally require a few years of post-compulsory

[4]In Western societies where close to 90 percent of labor market participants do not own their business, but work as employees, the main productive resource for the mass of people is not capital, but expertise and skills.

education - often in the form of vocational training -, whereas low-skilled working class occupations are entry-level jobs that can be learnt in a few months of on-the-job training.

This four-fold class hierarchy has strong parallels with the four hierarchical skill levels distinguished in the ILO's International Classification of Occupations (ISCO) (Elias, 1997). Schematically, a four-fold hierarchy also exists in large organizations, be it in manufacturing (engineers, technicians, welders and assemblers), hospitality (general managers, accountants, cooks and dishwashers) or health care (doctors, nurses, nursing aides and cleaners).

2.2.4 The squeezed working class

Once the working class is brought back from oblivion, it becomes easier to argue that the middle-class squeeze is actually a working-class squeeze. It is the working class that fared worst in terms of employment and income growth. The decline of the working class began in the 1970s, which mark both the high-point and end of the Golden Age of industrial capitalism. Under the influence of skill-biased technological change and globalization, the working class began to shrink as labor demand for welders and mechanics, assemblers and machine operators dried up. Besides technological change and offshoring, the working class was further put under pressure from the neoliberal turn in political economy (Jacobs and Myers, 2014) and the return of mass unemployment in the 1980s (Eichengreen, 2008).

Over the same period, the middle class was anything but in decline. The ongoing race between technology and education - between skill-biased technological change and educational expansion - led to a steady increase in its ranks. This shift in employment from the working to the middle class can be observed across the Western world. In Britain, the proportion of the labor force set in working-class occupations dwindled from 55 to 30 percent among men and from 50 to 35 percent among women between 1951 and 2011. In parallel, the middle class - defined as lower and higher managerial and professional occupations - increased its share from 11 to 40 percent among men and from 8 to 30 percent among women (Bukodi and Goldthorpe, 2018, pg. 36). Likewise, over

the 20th century in Germany and the United States, every subsequent birth cohort was less likely to work in an unskilled manual job and more likely to hold a middle class job (Breen and Müller, 2020, pg. 252). In the United States over the period of 1980-2015, employment dropped among production workers, laborers and office clerks, but expanded steeply among technicians, professionals and managers (Autor et al., 2020, pg. 114). The simultaneous losses in working class jobs and gains in middle class jobs have also been documented for France between 1982-2018 (Goux and Maurin, 2019) as well as in Germany and Spain between 1992-2015 (Oesch and Piccitto, 2019).

As working-class jobs became harder to find, trade unions saw their membership erode and the working class lost bargaining power. Between 1980 and 2020, union density was halved in France, Germany, the UK and the US (OECD statistics). Over the same 40 years, coverage with collective bargaining remained stable only in a few countries - at over 80 percent in France and Spain -, but eroded in many other countries, decreasing from 25 to 12 percent in the US and from over 80 percent to half of the workforce in Germany and to a quarter in the UK (OECD statistics).

The weaker bargaining power of the working class also shows in the reduction of industrial conflict. In OECD countries, strikes fell to historically low levels in the 2000s and 2010s (Vandaele, 2016; Van der Velden, 2007). Their declining number closely mirrors the downward trend in union density (Kelly, 2015). The working class did not only lose economic, but also political power as left parties - their traditional allies - moved towards the center. Confronted with a shrinking base of working-class voters, the working class ceased to be the prime priority of the left which instead began to court the salaried middle class (Hall, 2017).

In the context of weaker labor demand, neoliberal economic policy and eroding bargaining power, the working class struggled to secure its share of economic growth. In an American study based on the General Social Survey, Wodtke (2016) finds that income differences between social classes increased by about 60 percent between 1980 and 2019. This disparity was driven by growing incomes for senior managers and stagnating incomes

for workers. Similarly, Ikeler and Limonic (2018) show with U.S. census data for 1970 to 2010 that the middle class did not only benefit from disproportionate job expansion, but also saw its earnings advantage increase relative to the working class. In the same logic, between 1980 and the mid-2010s, the wages of men with only a high-school education declined, whereas the wage returns to tertiary education increased (Lleras-Muney, 2017). Over that period, the median real wage in the US remained almost flat, even though the average real wage rose by over one percent per year (Machin, 2016). The higher people were in the American income hierarchy, the more strongly their incomes rose between 1980 and 2018 - with negative growth for the bottom 15 percent and exponential growth for the top one percent (Saez and Zucman, 2020, pg. 16).

The finding that median household income lagged behind mean household income does not just apply to the US, but to most Western countries since the 1980s - because households at the top pocketed a disproportionate share of total national income (Nolan, 2018; Nolan and Thewissen, 2018; Nolan and Weisstanner, 2022). In a comparative analysis, Kenworthy (2013) finds that the income gap between high-income (75th percentile) and low-income households (25th percentile) tended to widen in a large number of countries between the mid-1980s and 2010. Similarly, previous research shows that the Great Recession increased the disparity in work income between social classes in Western Europe (Albertini et al., 2020; Moawad, 2022*a*). The economic situation of the upper class improved between 2005 and 2014, whereas working-class incomes worsened. An analysis for Spain shows that while the middle class was not immune to the Great Recession, the lower classes suffered much larger income losses in its wake (Muñoz de Bustillo and Antón, 2016).

2.2.5 Summing-up the argument

Our paper's key hypothesis is that in affluent Western countries, the working class (notably the low-skilled working class) has fared worse in terms of income growth in comparison to the middle class (and particularly the upper-middle class) since the 1980s. This

hypothesis is based on the argument that labor demand and political power have become increasingly biased against the working class, reducing its size and eroding its income. For this argument to hold, our empirical analysis needs to establish that different classes diverged in terms of employment evolution and, crucially, labor income growth.

A crucial argument that we need to address is how the diverging class destinies played out over time and notably across birth cohorts. Over the Golden Age of the post-war decades, the Silent Generation (1926-45) and Baby Boomers (1946-65) enjoyed rising material standards across the Western world as real incomes increased for every successive cohort. This upward movement slowed down and may even have come to a standstill for Generation X (born 1966-1980), particularly in France (Chauvel and Schroder, 2014; Chauvel and Schröder, 2015) and the UK (Anderson, 2022; Rahman and Tomlinson, 2018). Our argument thus expects that the income trajectories of later birth cohorts differed by social class. The economic slow-down experienced by Generation X should have left much deeper marks on the incomes of the working than the middle class.

2.3 Data and Methods

2.3.1 Data and sample

Our analysis uses data from the Luxembourg Income Study (LIS) and focuses on six large Western countries. Besides the United States, we include five of Western Europe's six most populous countries: Germany, the United Kingdom, France, Spain and Poland (Italy was excluded because occupations were measured too coarsely to create a class variable). As argued above, these countries were selected for reasons of data availability, institutional variety and large populations. Moreover, these six countries are major players of the world economy. At the starting point of our study in 1980, they accounted together for almost half of the world's industrial production (Christian, 2004). However, we expect our argument of the squeezed working class to hold more widely and also show results for six small and affluent European countries, namely Austria, Denmark, Finland, Ireland,

the Netherlands and Switzerland.

The LIS database constitutes a unique source of cross-nationally comparable income data. For each of our selected countries, it assembles over a dozen annual surveys, such as the Current Population Survey for the US, the Socio-Economic Panel for Germany, the Household Budget Surveys for France, Poland and Spain or the Family Resources Survey for the UK. We select the first survey year that contains consistent information on occupation and allows us to distinguish social classes. Our analysis covers three to four decades, with the longest time spans for the US (1979-2019), Spain (1980-2016), France and Germany (1984-2018), and shorter periods for the UK (1991-2018) and Poland (1999-2020).

Our analysis focuses on household labor income of the working-age population. We therefore exclude households without any annual labor income and households where the main earner was younger than 25 (and thus possibly still in education or training) as well as those older than 60 (and thus possibly retired). After further removing observations with missing values on income and occupation, we still have very large analytical samples of, on average, 5,564 observations per survey year in Germany, 21,619 in France, 20,045 in Poland, 6,003 in Spain, 11,329 in the UK and 39,070 in the US. We replicate our analysis on a larger sample that also includes households without any annual labor income, but the results for income growth over time remain unchanged.

2.3.2 Measures

Our dependent variable is household labor income, adjusted for inflation (with LIS consumer price indices) and household size (with the LIS equivalence scale, the square root of the number of household members). As our interest lies on how different classes fared over time within a given country, we avoid the fluctuation of exchange rates and do not convert incomes into U.S. dollars based on purchasing power parities (see Atkinson et al., 2017).

Our analytical focus is on household income because people's life chances are primarily

determined by the economic situation of their household, and not just their personal finances. Indeed, most families pool their resources among household members, and the household is thus the decisive unit of consumption, notably in terms of housing and food. Within the household, our key focus is on labor income because we argue that the economic rewards on labor markets changed over time for different classes. While labor income is by far the most important contributor to household incomes (Salverda and Haas, 2014, pg. 79), government transfers also play a relevant role for many working-class households. We therefore also show results for household disposable income, which includes labor and capital income as well as government transfers, but deduces taxes. In addition, we provide robustness tests for individual labor income in the Appendix and show that including all respondents aged 25 to 60 into our analysis, regardless of whether they had any annual labor income or not, makes no differences for the class pattern of income growth over time.

Our key independent variable is social class. We try to measure our four-class indicator as consistently as possible across countries by using information from three harmonized variables: (i) occupation based on ISCO-88 at the 1-digit level; (ii) employment status separating employers, the self-employed and employees; (iii) education distinguishing low, middle and high attainment. The four classes are constructed based on the following logic.

- The upper and upper-middle class (henceforth upper-middle class) includes all employed and self-employed managers (ISCO 1), except those without post-compulsory education, as well as all employed and self-employed professionals (ISCO 2) with higher education. In addition, it encompasses all employers whose occupation is manager or professional.

- The middle class includes managers (ISCO 1) without post-compulsory education, professionals (ISCO 2) without higher education, all associate managers, associate professionals and technicians (ISCO 3) as well as office clerks (ISCO 4) with higher education. Moreover, the middle class also comprises all employers and

self-employed whose occupation is neither manager nor professional.

- The skilled working class includes all occupations that are set at ISCO's second skill level and require a few years of post-compulsory education, often in the form of vocational degrees (Elias, 1997), namely clerks without higher education (ISCO 4), service and sales workers (ISCO 5), skilled agricultural workers (ISCO 6), craft workers (ISCO 7), as well as plant and machine operators (ISCO 8). Workers in these occupations are considered to be part of the skilled working class if they obtained upper-secondary education (but not tertiary education in the case of office clerks).

- Otherwise, if holders of these same occupations (ISCO 4-8) have no post-compulsory education and hence did not formally learn their trade, they are attributed to the low-skilled working class, which additionally includes all laborers in elementary occupations (ISCO 9).

We assign a class position to each household based on the occupation, employment status and education of what LIS calls the household head. Depending on the country survey, the household head is either self-defined by household members or attributed to the member with the highest income or the member responsible for accommodation. This procedure is close to the dominance method, which uses the household member with the dominant labor market position to determine a household's social class (Erikson, 1984). Over the period under study, households were more frequently headed by men than women. In the appendix, we show results disaggregated by the household head's gender in the appendix. The descriptive statistics of our variables and the coding of our class variable are shown in A.1 and A.2 (appendix A)[5].

[5]Our 4-class indicator closely resembles the class scheme of Erikson, Goldthorpe and Portocarero (EGP) (Erikson and Goldthorpe, 1992). Our upper-class and upper-middle class correspond to EGP's higher-grade service class I, our middle class to EGP's lower-grade service class II, our skilled working class includes EGP's higher-grade routine non-manual employees (IIIa), lower-grade technicians (V) and skilled workers (VI), our low-skilled working class is composed of lower-grade routine non-manual employees (IIIb) and semi- and unskilled manual and agricultural workers (VII). Finally, we allocate the small proprietors (EGP IV) to the middle class: Even when active in working-class occupations,

Some stratification scholars may be doubtful about the use of education when constructing class measures. Our decision is motivated by theoretical and practical reasons. Theoretically, education and occupations are systematically linked as educational trajectories feed into specific occupations, and access to many occupations is conditional on distinctive educational degrees. This is not only the case for vocational degrees that are a prerequisite for skilled working class positions in many European countries (Allmendinger, 1989), but also applies to many professions that require university degrees, such as medical doctors, lawyers, or psychologists (Weeden, 2002). Individuals cannot work in these professions without higher education.[6]

Moreover, our analysis of several countries over several decades runs into the practical problem that consistent occupational information is available only at an aggregate level. By crossing occupation with education, we obtain a more precise measure of people's productive resources and, hence, their class position. It helps us, for instance, to avoid misclassifying managers with only compulsory education (e.g. lower-grade managers of small shops and restaurants) as upper-middle class. Likewise, it permits us to remove from the upper-middle class individuals classified as professionals (ISCO 2), but who don't have higher education and may work in professions that did not require higher education over much of the period under study (e.g. nurses and mid-wives, pre-primary teachers, artists).

2.3.3 Method

Our analytical strategy is straightforward. We try to give readers a tangible sense of how real incomes evolved over time by showing income change by social class on an annualized basis. We first do so with descriptive statistics and then estimate separate multivariate

the self-employed are not subject to anyone's authority and have enough productive resources to employ themselves.

[6]For this reason, the practice of entering occupational class and education as two seemingly independent variables into the same wage regression answers the non-sensical questions of What would medical doctors or lawyers earn if they had low education? What would farmhands or dishwashers earn if they had university education?

income regressions for each country. In these regressions, we use the logarithm of income and account for the influence that aging and rising female employment have on workforce composition by controlling for the age and gender of the household head as well as household size. For easier comparison, results are again shown as annualized percentage change in labor income over the period covered for each class and based on the following equation:

$$\gamma(log\_income)_{it} = \beta_0 + \beta_1 Class_{it} + \beta_2 Period_t + \beta_3 Controls_{it} + \varepsilon \tag{2.1}$$

For clarification purposes, suppose that the predicted inflation-corrected labor income for an unskilled working class household is $30,000 in 1979 as compared to $31,200 in 2019. This represents an income gain of 4.0 percent [(31,200 - 30,000)/30,000)] over 41 years, which corresponds to a mean annual increase of 0.1 percent (4.0/41). Our results section will feature these mean annual changes in inflation-corrected labor incomes.

Our key argument is that the labor market prospects of the working class were hampered by a historical trend that started in the early 1980s and carried over the following three decades. When calculating the annual mean income growth for a given class over a given period, the actual range of years considered can make a large difference because of business cycle fluctuations. Data availability makes it difficult to use the same starting year for all countries. Yet even a common starting year would not correct for country differences in business cycles (Nolan, 2020). Instead, we address this issue by also showing how annual income varied by decade in each country.

Finally, we examine how the historical trend played out for different birth cohorts. We do so by distinguishing three sociologically meaningful birth cohorts who began their work careers in different historical contexts: the Silent Generation, born 1926-1945, the Baby Boomers 1946-1965 and Generation X 1966-1980 (Howe and Strauss, 1992). For this analysis, we restrict the sample to individuals aged 35 to 50 years in order to compare the same age range for each cohort and thus avoid out-of-sample predictions (our data

contain no observations for individuals below age 35 in the Silent Generations or above age 50 in Generation X).

These three birth cohorts allow us to analyze how labor incomes evolved over the life course for workers in the same social class who were born in different periods of the 20th century. This answers the question as to whether working-class children born in the 1970s were worse off than their working class parents and grand-parents. Our goal is descriptive and does not aim to causally disentangle cohort, period and age effects. We estimate the following equation:

$$\gamma(log\_income)_{it} = \beta_0 + \beta_1 Class_{it} + \beta_2 Cohort_t + \beta_3 Class_{it} * Cohort_t + \beta_4 Controls_{it} + \varepsilon \tag{2.2}$$

The interaction effect between class and cohort allows us to show how classes' income trajectories varied across cohorts, controlling for age, gender and household size.

2.4 Findings

Change in employment

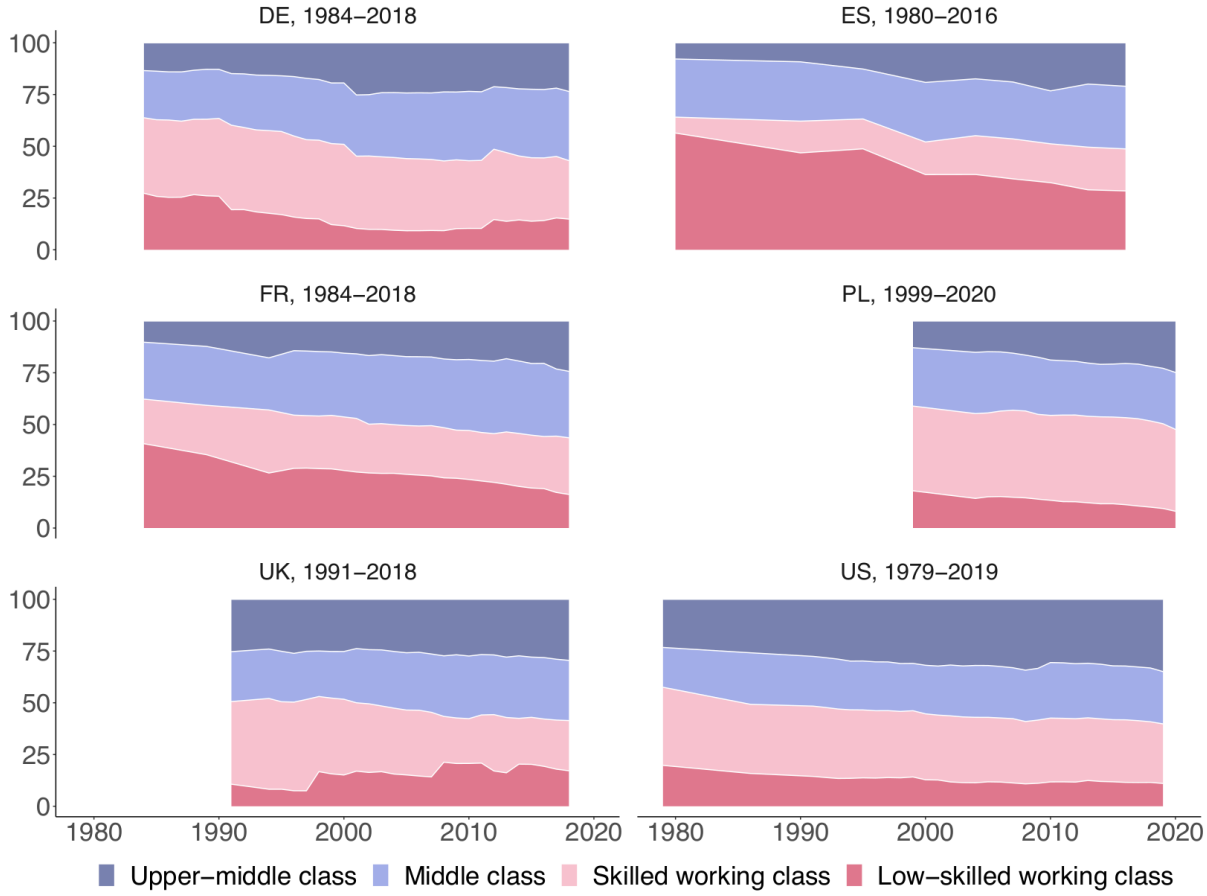
Before analyzing the evolution in income, we need to document that labor demand has been biased against the working class. For this reason, Figure 2.1 shows how the class composition of the economically active population aged 25 to 60 evolved over the last four decades. In the 1980s and early 1990s, the two working classes jointly outnumbered the two middle classes in all six countries. With over a third of the labor force, the skilled working class was initially the largest single class in Germany (37% in 1984), Poland (41% in 1999), the UK (40% in 1991) and the US (38% in 1979), whereas the low-skilled working class was numerically predominant in France (41% in 1984) and Spain (56% in 1980).

Three to four decades later, the class composition looks very different as the middle

class and upper middle class jointly outnumber the skilled and unskilled working class in every one of the six countries. While the upper-middle class has become the most sizeable single class in the UK (30%) and the US (35%) at the end of the 2010s, it is the middle class that predominates in Germany (33%), France (32%) and Spain (30%). Only in Poland has the skilled working class remained the largest class category with 40 percent of the workforce in 2020.

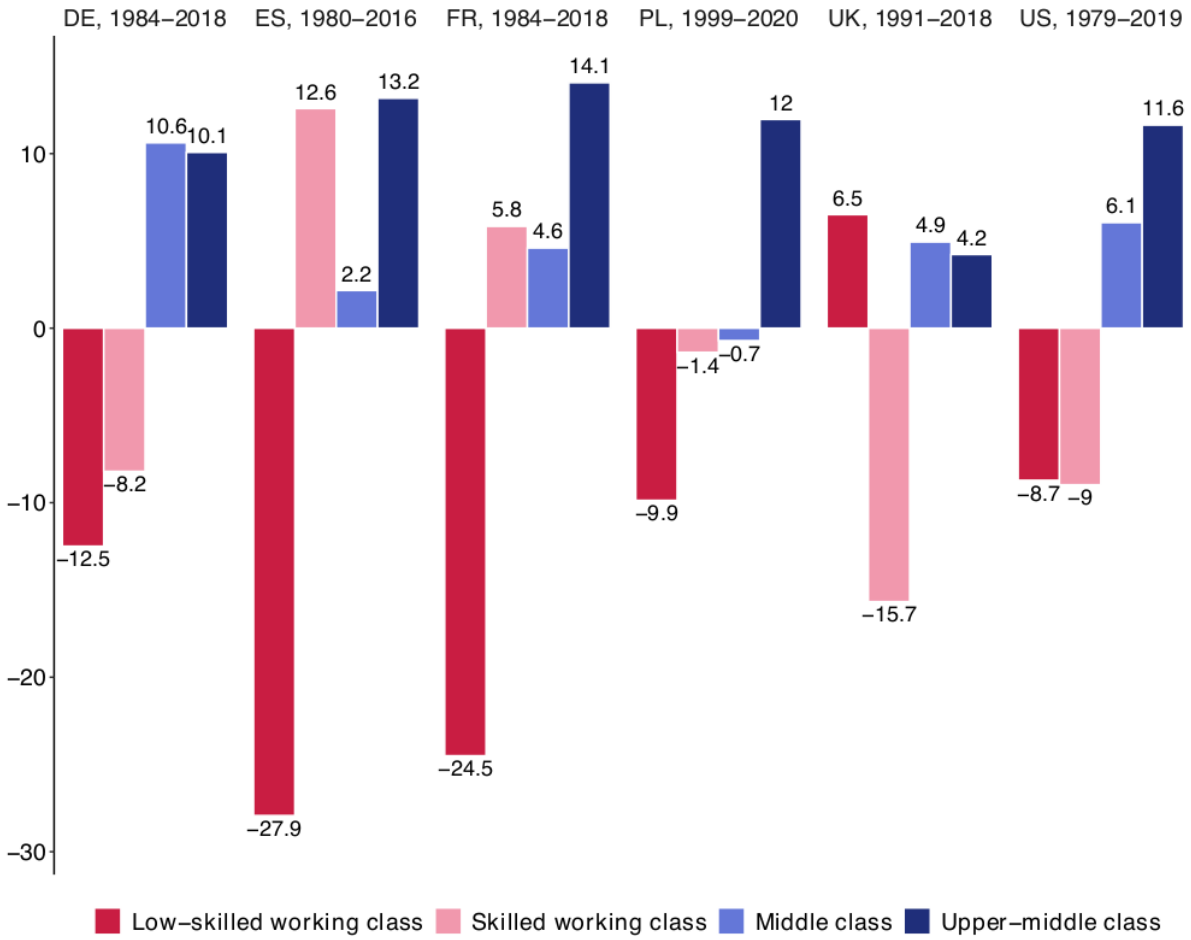
These findings do not seem to be driven by differential selection into employment over time either. For the five countries under study which we observe for three decades and more (all except Poland), the share of households headed by an adult aged 25 to 60 where no member was in paid employment - because of unemployment or economic inactivity - decreased over time: from 31% in the 1980s to 28% in the 1990s and 24% in the 2000s and 2010s.

Figure 2.1: The class composition of the workforce over time (in %).



The employment shifts observed for the different classes are summarized in Figure 2.2. The transformation of the class structure was particularly profound in France and Spain where the share of the low-skilled working class shrank by 25 and 28 percentage points, respectively, between the early 1980s and late 2010s. In parallel, the upper-middle class expanded its employment share by over 13 points in both countries. In Germany and the US, the proportion of the skilled and low-skilled working class each declined by around 10 points, whereas the two segments of the middle class each increased their employment share by almost 10 points. In Poland, the decrease mainly concerned the low-skilled working class, whereas the employment gains benefitted exclusively the upper middle class.

Figure 2.2: Change in the employment share of different classes (in percentage points).



For these five countries, our results paint a clear-cut picture of occupational upgrad-

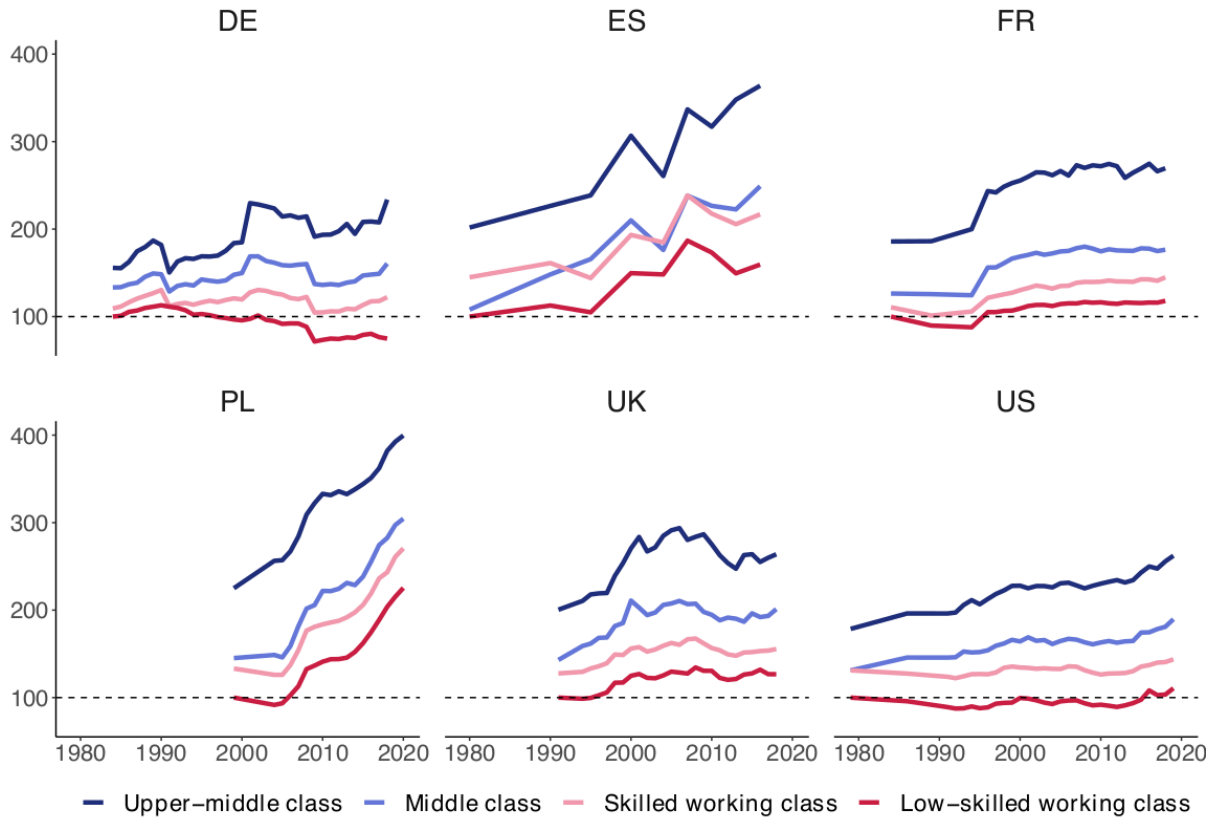
ing as employment expanded in the upper-middle and middle class at the expense of the working class. The evolution looks different in the UK where job growth was concentrated at both ends of the class hierarchy. While employment declined in the skilled working class, it expanded in the low-skilled working class and the two segments of the middle class. The outcome is a polarizing class structure that sets the British employment trajectory apart from that of other Western European countries - and confirms the findings of earlier studies based on the UK labor force survey (Goos and Manning, 2007; Oesch and Piccitto, 2019).

Change in labour income In terms of employment, we find no evidence for the argument that the middle class has been squeezed, yet the middle class may still have lost out in terms of incomes. We examine this possibility in Figure 2.3 by showing how inflation-corrected household labor income evolved for different classes over the last decades. For easier interpretation, we set the income of the low-skilled working class at 100 in the first year within each country and express all other incomes relative to this reference value. Figure 2.3 shows for each country the expected income hierarchy between social classes. Upper-middle class households receive, on average, the highest labor income and low-skilled working class households the lowest, with the middle class and the skilled working class in-between. Our class indicator appears to capture the different levels of labor market rewards.

When comparing the income evolution of the working class between countries, three patterns can be distinguished. In Germany and the United States, both the skilled and unskilled working class treaded water over the last three decades, their inflation-corrected labor incomes stagnated between the beginning of the 1980s and 2018. In the UK and France, the working classes experienced some income growth during the 1990s, but the increase was modest. Finally, in Poland and Spain, working-class households enjoyed substantial income growth. The period of rising incomes spanned two decades for Poland (2000-2020), and lasted in Spain from the mid-1990s to 2008 when its housing bubble burst.

Contrary to the working class, the incomes of the middle and upper-middle class followed everywhere a consistently upward trajectory over the last decades. In Germany and the United States, notably upper-middle class households were on a path of rising incomes that stands in stark contrast with the stagnation (in the US) and even income loss (in Germany) experienced by the low-skilled working class.

Figure 2.3: Evolution of indexed real household labour income by social class over four decades.



Note: household labour income is corrected for inflation and adjusted for household size. Values are indexed for the low-skilled working class in the first year of observation (that is, all incomes are expressed relative to the income of the low-skilled working class which is set, within each country, at 100 at the beginning of the time series).

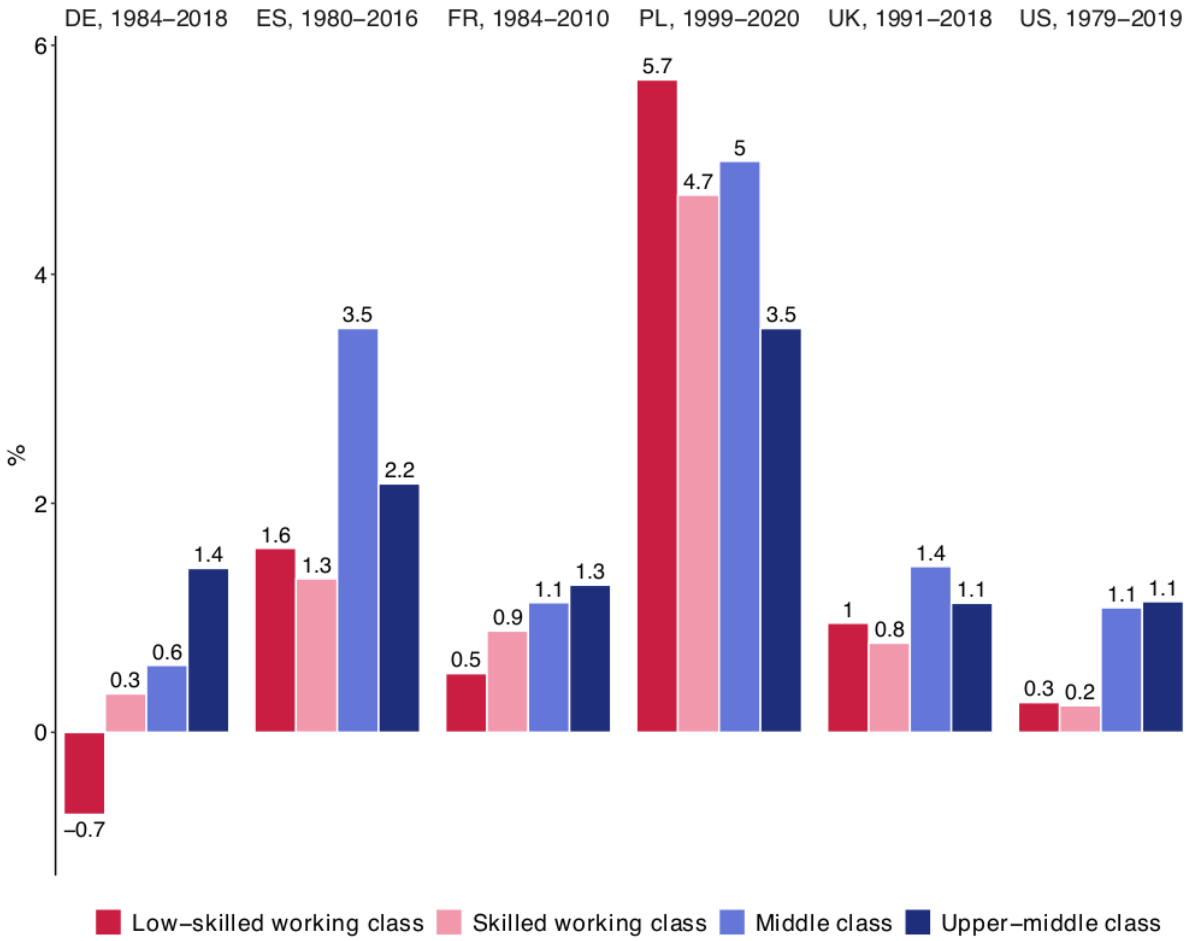
The income evolution of different classes becomes more tangible when presented on an annualized basis. This is done in Figure 2.4 and confirms that the class destinies diverged most strongly in Germany. Between 1984 and 2018, the low-skilled middle class lost, on average, 0.7 percent of income per year, whereas the upper-middle class experienced substantial income gains of 1.4 percent annually. The skilled working class did also poorly with weak income gains of 0.3 percent per year, followed by the middle class with annual gains of 0.6 percent.

A similar pattern can be observed for the US where the household labor incomes of the low-skilled and skilled working class were almost stagnant over the last four decades. Between 1979 and 2019, they increased by only 0.2 to 0.3 percent per year, whereas the middle and upper-middle class experienced robust gains of 1.1 percent annually. For France, we observe similar orders of magnitude at the two ends of the class structure, with income growth of 0.5 percent for the low-skilled working class and 1.3 percent for the upper-middle class. Class disparities in income growth were thus more modest in France than in Germany and the US. They were even smaller in the UK, where all four classes saw their incomes grow by about 1 percent annually between 1991 and 2018, with only a minor advantage for the two middle-class segments.

Annual incomes rose fastest in Spain and, above all, Poland. In Spain, all four classes enjoyed rising incomes of over one percent per year. However, the income gains were almost double among the middle and upper-middle class. The sizeable income gains in Spain were dwarfed, in turn, by the economic boom that Poland witnessed over the first two decades of the 21st century. Unlike in the other countries, the rewards of Poland's strong economic growth were not skewed towards the upper-middle class, but benefitted the low-skilled working class most. With annual income gains of almost 5 and 6 percent respectively, Poland's skilled and low-skilled working class households more than doubled their real income between 1999 and 2020.

We examine the class-income nexus in greater detail with a multivariate model that accounts for age, gender and household size. The upper panel of Figure 2.5 shows the adjusted predictions of these models (also known as marginal effects), again expressed on an annualized basis, and compares household labor income with household disposable income. These results lead to very similar conclusions. We observe again that Poland is the only country where working-class households obtained comparable gains in labor income as did middle-class households. Poland's broadly shared income growth contrasts with the situation in the US, Spain and, above all, Germany where the middle and upper-middle class earned, on average, one percent more per year over the last three

Figure 2.4: Annual mean change in household labour income, in % (descriptive statistics).



Note: household income is corrected for inflation and adjusted for household size.

decades than did the low-skilled working class. Summed up over thirty years, this led to a widening of the labor income gap by 33 percent.

If the focus is shifted to household disposable income rather than household labor income, conclusions remain almost unchanged (Figure 2.5, lower panel). Thanks to the redistributive character of taxes and transfers, the low-skilled and skilled working class fared a bit better in Germany and the UK in terms of disposable income rather than labor income. Germany's low-skilled working class lost one percentage point less of disposable income than labor income - but still had to contend with negative growth in disposable income between 1984 and 2018. Similarly, in the UK, the income trajectories become more similar across classes if we compare disposable rather than labor household income.

As the majority of household heads are men, we also depict change in labor and

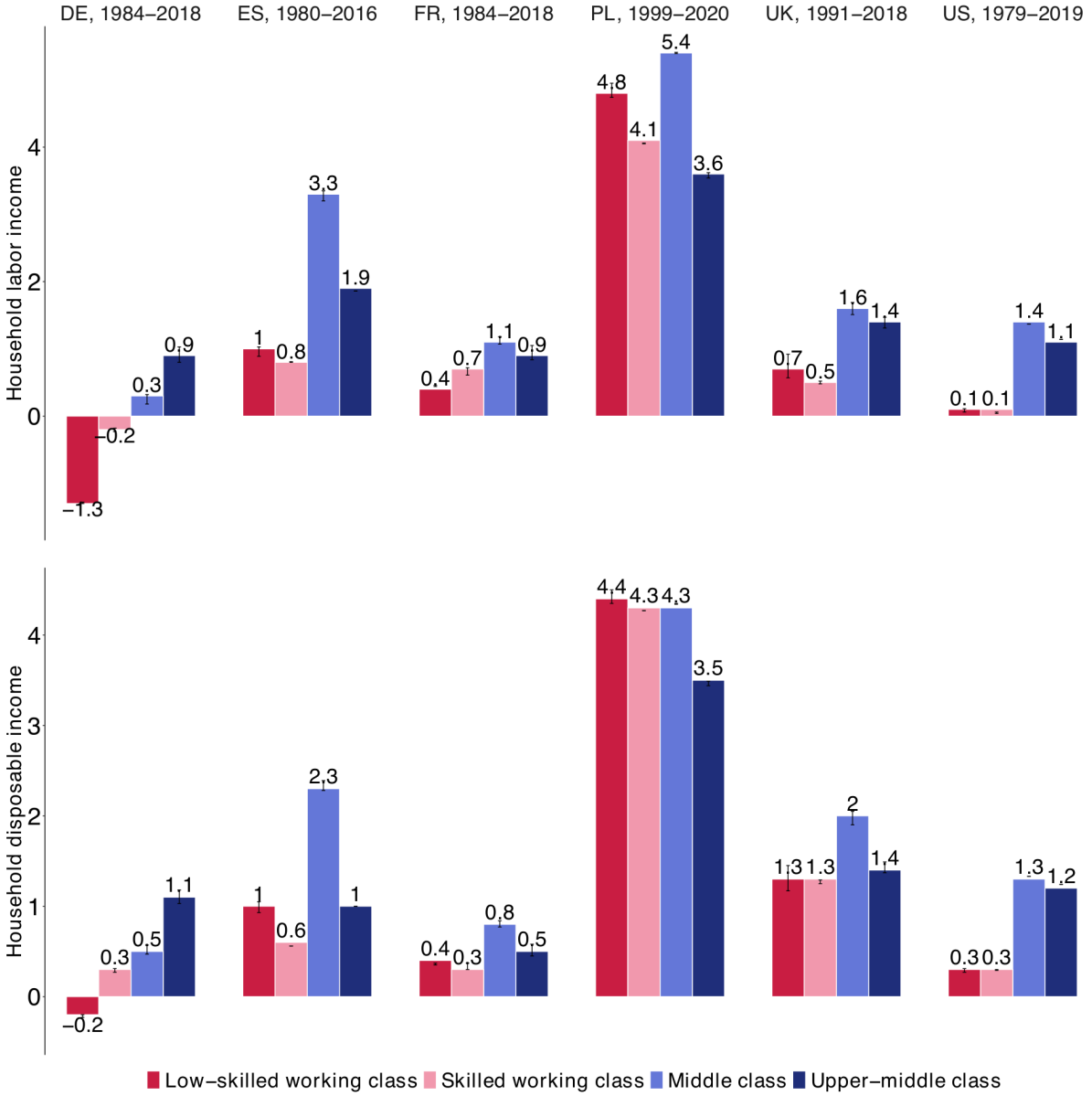
disposable income for the subsample of households headed by women (see Figure A.1 in Appendix A). The same class pattern holds for this subsample: Except in Poland and the UK, working-class households fared systematically worse than middle-class households, notably in Germany and the US. While the subsample of households headed by women saw their incomes rise somewhat faster in the UK, their income evolution was particularly dire in France, with basically no increase at all over the last four decades.

Results remain unchanged if we include all households into our analysis (headed by an individual, men or women, aged 25 to 60), regardless of whether they had any annual labor income or not (see Figure A.2 in Appendix A). If the focus is further shifted to the evolution of individual labor income rather than household labor income, results change slightly (see Figure A.3 in Appendix A). While the hierarchical pattern of income gains remains unchanged in Germany, Spain and the US, overall increases in annual income become a bit smaller everywhere, notably in Spain and Poland. The explanation is that over the last decades, households in Poland and Spain were able to raise their labor incomes not only because earnings per hour increased (i.e., the price of labor increased), but also because more people per household were in paid employment because notably women increased their labor market participation (i.e., the volume of labor increased). However, this factor only affects the absolute level of labor income gains (which are higher at the household than the individual level), but not the relative class disparities in income gains. The conclusion that the working class lost out over the last decades - notably in Germany and the US - also holds with respect to individual labor income.

Differences across birth cohorts

The question arises of how the income evolution of classes varied across birth cohorts. Figure 2.6 provides an answer by showing the predicted household labor income by class for three cohorts. These analyses control for age (in single years), gender and household size and are restricted to individuals aged 35 to 50. For easier interpretation, we set the income at 100 for the low-skilled working class born into the Silent Generation (1926-45) and express all other incomes relative to this reference value.

Figure 2.5: Annual change in household labour income and household disposable income, in % (adjusted predictions).



Note: Results are based on a linear regression on the log of household income with controls for class, age, gender and household size (see equation (1) above). We calculate the predicted income for a given class at the beginning and the end of each period, then take the difference and divide this difference by the number of intervening years.

When comparing the experience of different working-class cohorts, three income trajectories can be distinguished. First, a downward trajectory describes the German experience where working-class incomes at a given age were highest in the Silent Generation, stagnated for workers belonging to the Baby Boomers (1946-65) and declined for workers in Generation X (1966-1980). In Germany's low-skilled working class, each successive generation had to settle for lower incomes than the Silent Generation whose early working

lives coincided with the Wirtschaftswunder - economic miracle - of the post-war decades.

Second, a stagnant trajectory applies to the working-class experience of the three birth cohorts in the United States. In clear contrast to the American middle and upper-middle class, the working class born into the Baby Boomer and Generation X cohorts made no income gains compared to their working-class parents and grand-parents. In the US, as in Germany, the living standards of the working class had stalled for successive birth cohort.

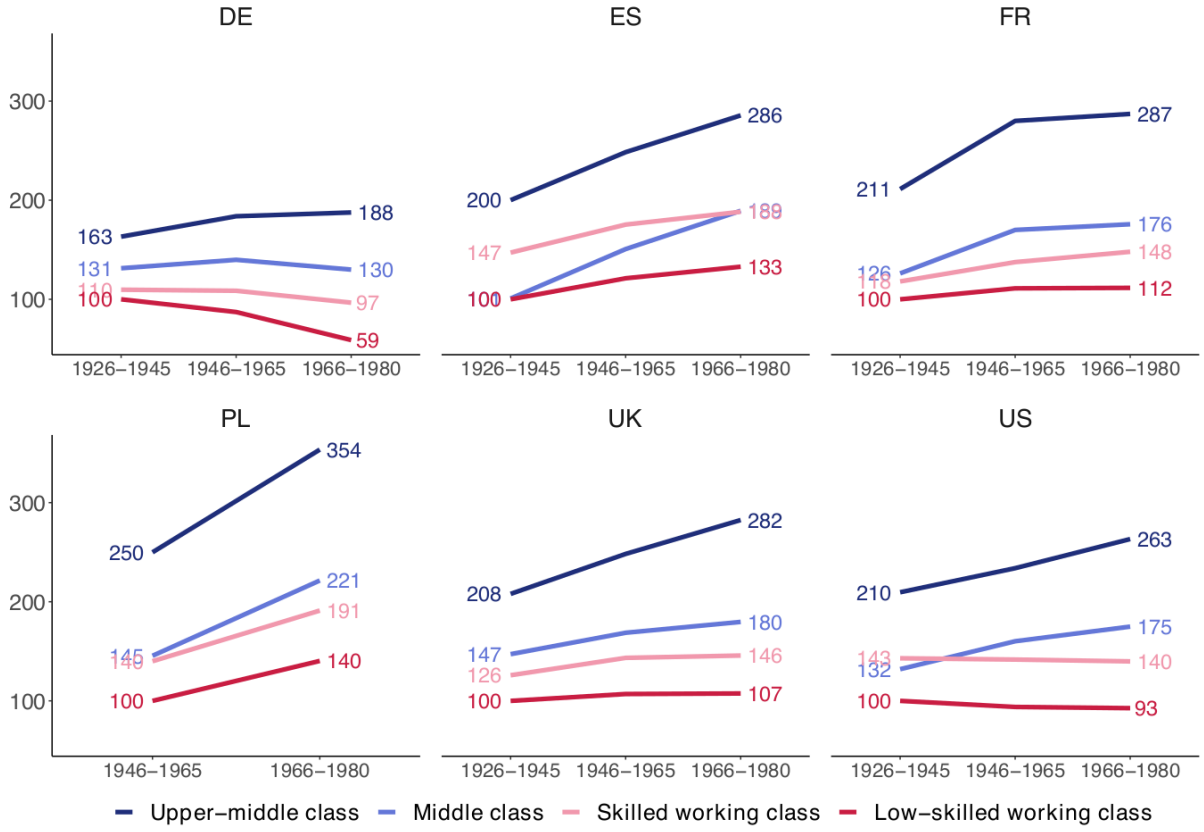
Third, an upward trajectory applies, in a weak version, to France and UK where ensuing working-class cohorts did slightly better than the working class in the Silent Generation. However, income gains were meager and remained below the increases observed for the same birth cohorts in the middle and upper-middle class. A clear upward trajectory can only be observed for Poland and Spain. In Spain, working-class households of Generation X earned inflation-corrected labor incomes that exceeded those of working-class households in the Silent Generation by almost 50 percent in Spain. Similarly, in Poland where our data cover a shorter time span, the working-class incomes of Generation X surpassed those of the Baby Boomer working class by 50 percent.

If the focus is shifted to the middle and upper-middle class, country differences shrink. The incomes of the middle and upper-middle class barely grew across birth cohorts in Germany. In France, the US and the UK, households of the middle and upper-middle class saw their incomes grow slowly, but they fared clearly better in the Baby Boomer cohort than in the Silent Generation and, with the notable exception of France, somewhat better in Generation X than among Baby Boomers. Again, we observe the strongest income gains of the upper-middle and middle class across birth cohorts in Spain and, over just one generation, in Poland.

2.5 Robustness tests

Differences across decades

Figure 2.6: Household labour income by class and cohort (at the same age - adjusted predictions).



Note: Results are based on a linear regression on the log of household income with controls for class, cohort, class*cohort, age, gender and household size. They show the adjusted predictions for the cohort term and interaction term between class and cohort, based on equation (2) shown above. All incomes are expressed relative to the income of the low-skilled working class in the Silent Generation which is set, within each country, at 100.

So far, our focus was on average income growth over 30 to 40 years, but these periods may hide large period differences. Figure 2.7 therefore shows annual income growth for each decade between 1980 and 2020. Findings are again striking for Germany where the 1990s and, above all, early 2000s were lost decades that brought income stagnation for the two middle-class segments; it is therefore true that the incomes of the German middle class were squeezed between 1990 and 2010. Yet the two working-class segments fared even worse - with income losses of up to 2 percent per year between 1990 and 2010. Moreover, while Germany's low-skilled working class saw its incomes grow in the boom period of the late 1980s, it was left out from the economic recovery from 2010 to 2018 that only benefitted the three other classes.

In the US, income growth was substantial during the Clinton boom of the 1990s and,

again, during the recovery after the Great Recession in the 2010s. In contrast, in the 1980s and the 2000s, there was modest income growth for the middle and upper-middle class, whereas both decades brought income losses of up to one percent annually for working-class households.

The income evolution over the last decades looks similar in France and the UK. In both countries, the only decade with sizeable income growth was the 1990s which led to much larger gains among the two middle classes than the working-class segments. In the 2000s, income growth hovered below one percent, and in the 2010s it was close to zero for all classes.

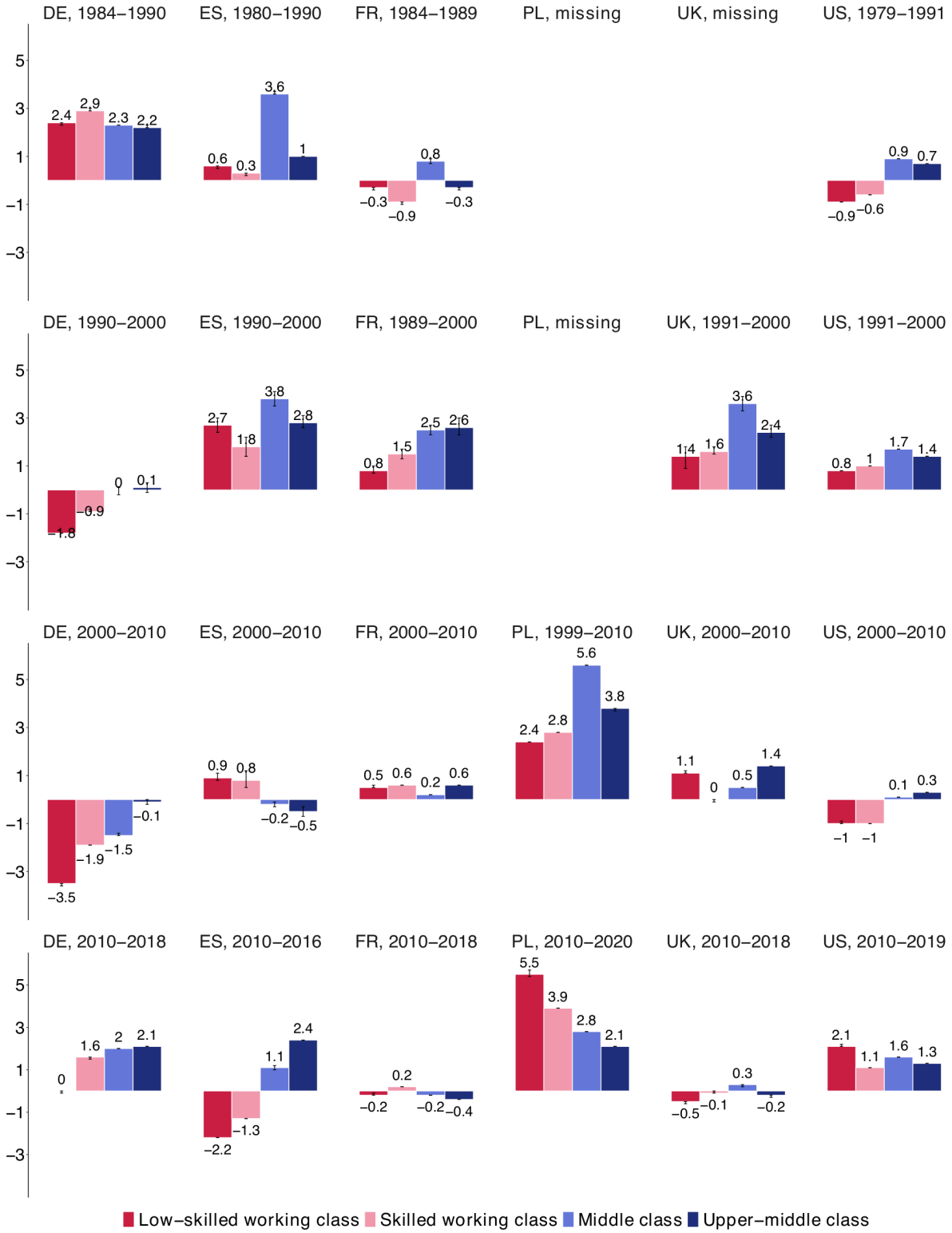
For Spain, the analysis by decade shows strong income growth across the economy in the 1990s. This catch-up growth was slowed down in the 2000s by the Great Recession. The recovery in the 2010s exclusively benefitted the middle and upper-middle classes, whereas the two working-class segments continued to lose 1 to 2 percent annually. Finally, Poland's households enjoyed strong income increases in the 2000s and 2010s, but it was only in the last decade that it became skewed in favor of the two working-class segments.

A different measure of stratification

A second concern is that our finding of a working-class squeeze is simply a matter of definition. We examine this possibility by re-running our analysis with the income-based middle-class definition used by the (OECD, 2015). It consists in separating the bottom (p0-p20) and top quintile (p80-p100) of the income distribution from the middling households set between the 20th and 80th income percentile. These middle-income households are seen as the middle class, which we further divide into a lower (p20-p50) and upper segment (p50-80).

This analysis allows us to also address the concern that lower income growth for the working class is driven by a selection effect. As educational expansion and occupational upgrading allowed many working-class children to move into middle-class jobs (Breen and Müller, 2020), the decreasing number of people employed in working-class occupations may have become more negatively selected. To the extent that the relative size of income

Figure 2.7: Annual change in household labour income by class and decade, in % (adjusted predictions).



Note: For technical details, see note below Figure 2.5.

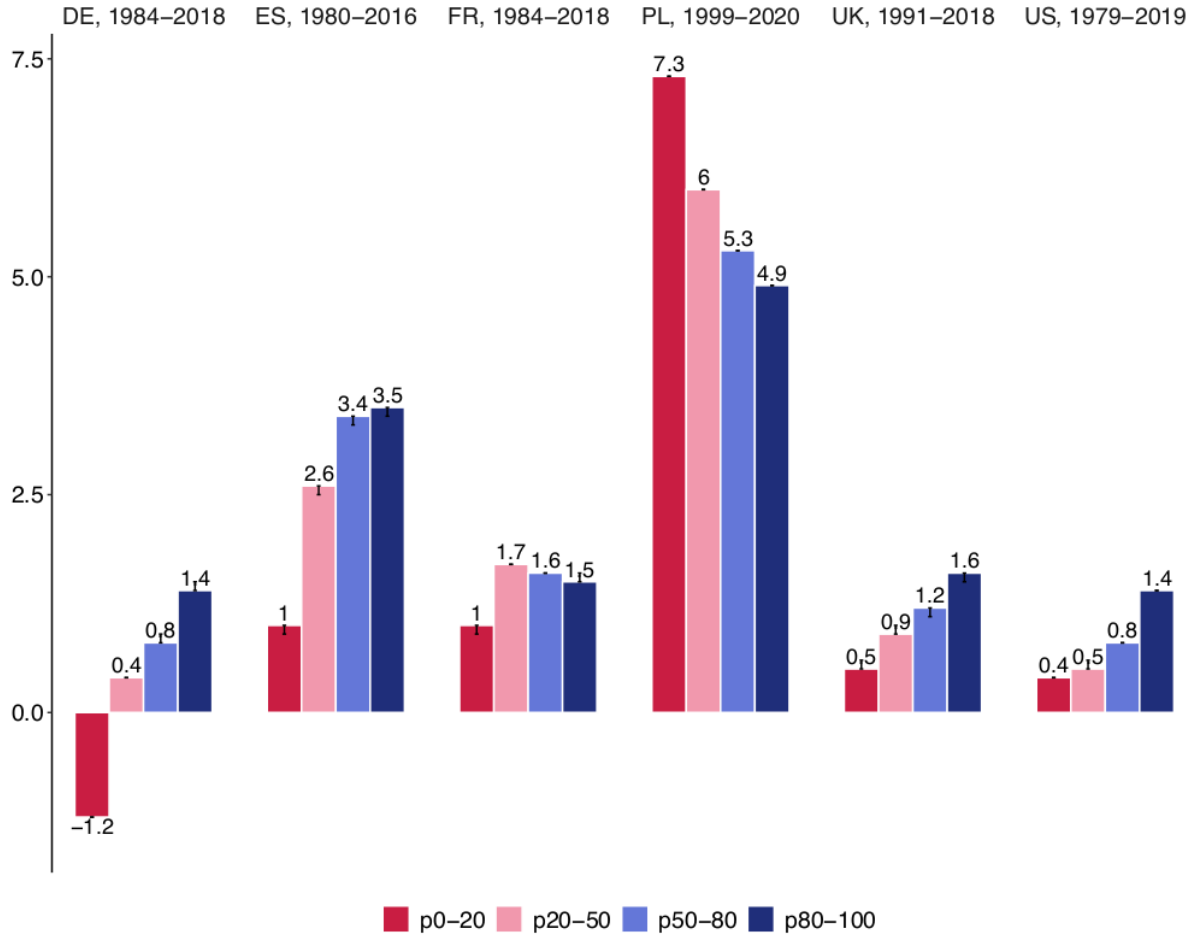
groups in the OECD definition is held constant over time (20% at the bottom and top, 60% in the middle), the bottom income quintile should be more negatively selected in 2020 than in 1980.

When re-running our analysis with these income groupings, we do not find the u-shaped pattern of income growth associated with the squeezed middle narrative (see Figure 2.8). On the contrary, incomes evolved most sluggishly in the bottom quintile in every single country except Poland. Likewise, the lower segment of middle-income households (p20-p50) fared everywhere worse than the upper segment (p50-p80), again with the exception of Poland and France where differences between income groups are minimal. Over the last decades, the higher a household was in the income hierarchy, the more substantial was its income growth - a feature previously shown by Piketty (2014) and colleagues (notably Saez and Zucman, 2020, pg. 16).

Figure 2.8 not only discards the idea that middle-income households were the great losers, but also throws doubt on the claim that our earlier findings of unequal income growth across classes are biased by increasingly negative selection into the shrinking working class.

The results based on income groups suggest that our conclusions are not sensitive to a particular measure of social stratification. The same conclusion holds if we create an additional category of the lower-middle class that includes small employers, the self-employed and office clerks. We replicate our analyses with this more detailed 5-class measure in Appendix B. With respect to employment, we still observe in all countries strong growth in the middle and upper-middle classes and decline in the low-skilled working class. The lower-middle class remained constant in Germany, Spain and the US, but saw its employment share decrease in France, Poland and the UK (see Figures B.1 and B.2 in Appendix B). When comparing the evolution of labor incomes, the lower-middle class fared better than the working class in all six countries, but experienced less income growth than the middle and upper-middle class in Germany, France and the UK (see Figures B.3 and B.4 in Appendix B). Given the similarity of results, the more

Figure 2.8: Annual change in household labour income by income quartile (adjusted predictions).



parsimonious 4-class schema seems preferable to the 5-class schema.

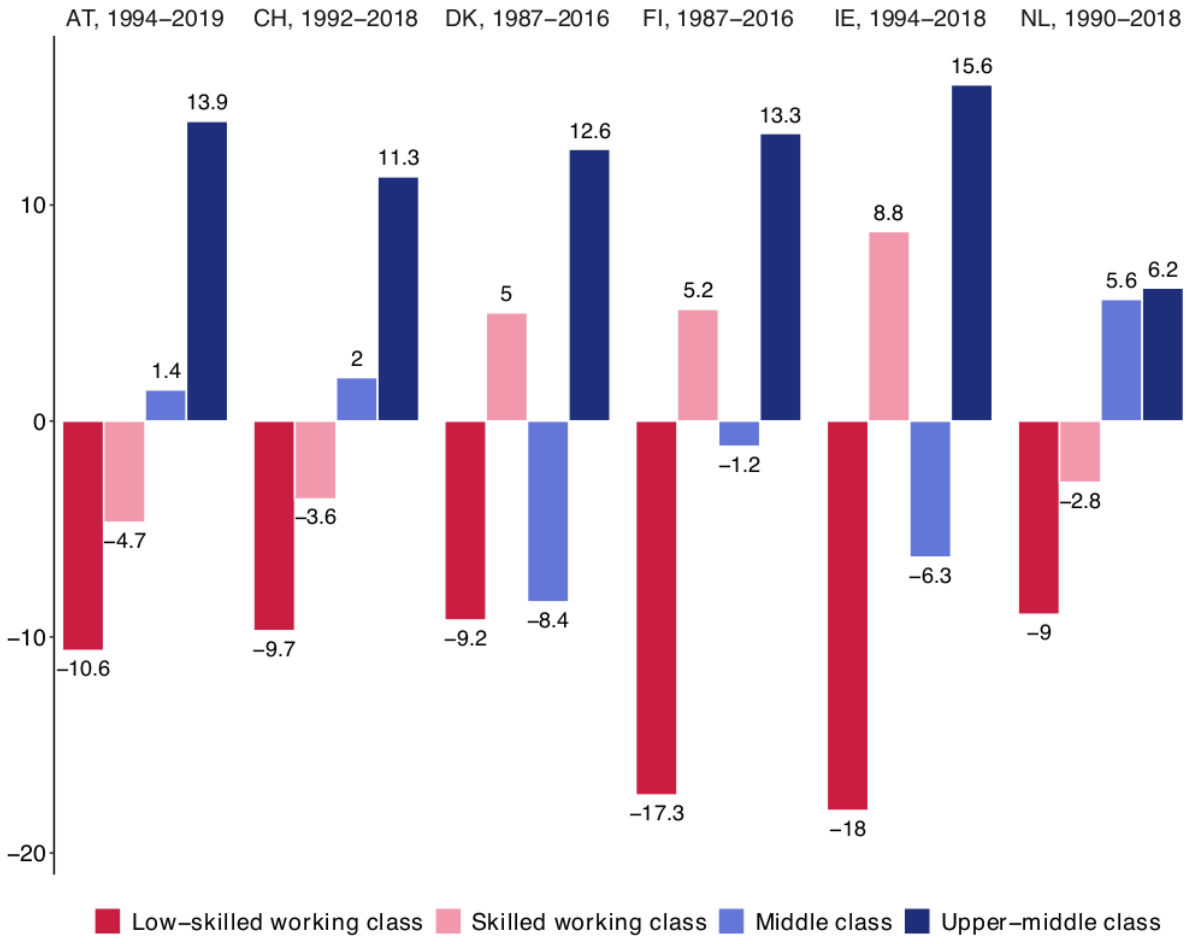
A different set of countries

Our results do not show a middle-class squeeze in terms of employment or income. However, skeptical readers may wonder to what extent this finding for six large countries generalizes to other Western countries. We address this concern by running the same analysis on six small and affluent West European countries, which we select because LIS provides consistent information on incomes and occupations over the last three decades.

Figure 2.9 shows that in every single one of these countries, employment decreased most in the low-skilled working class and expanded most in the upper-middle class. For these small countries, we also observe a clear pattern of occupational upgrading. The

upwards change in the class structure is particularly clear for Austria, the Netherlands and Switzerland, where employment shifts were linear: the higher a class in the hierarchy, the more employment increased - with job growth in the two middle-class segments and decline in the two working-class segments. In Denmark, Finland and Ireland, there was a relative increase in the skilled working class and a relative decline in the middle class. The analysis of a sample restricted to employees (and thus without employers and the self-employed) suggests that this fall in the middle class was exclusively due, in Finland and Ireland, to the declining employment among small business owners and the self-employed, including shop owners, small artisans and farmers (see Figure A.4 in Appendix A).

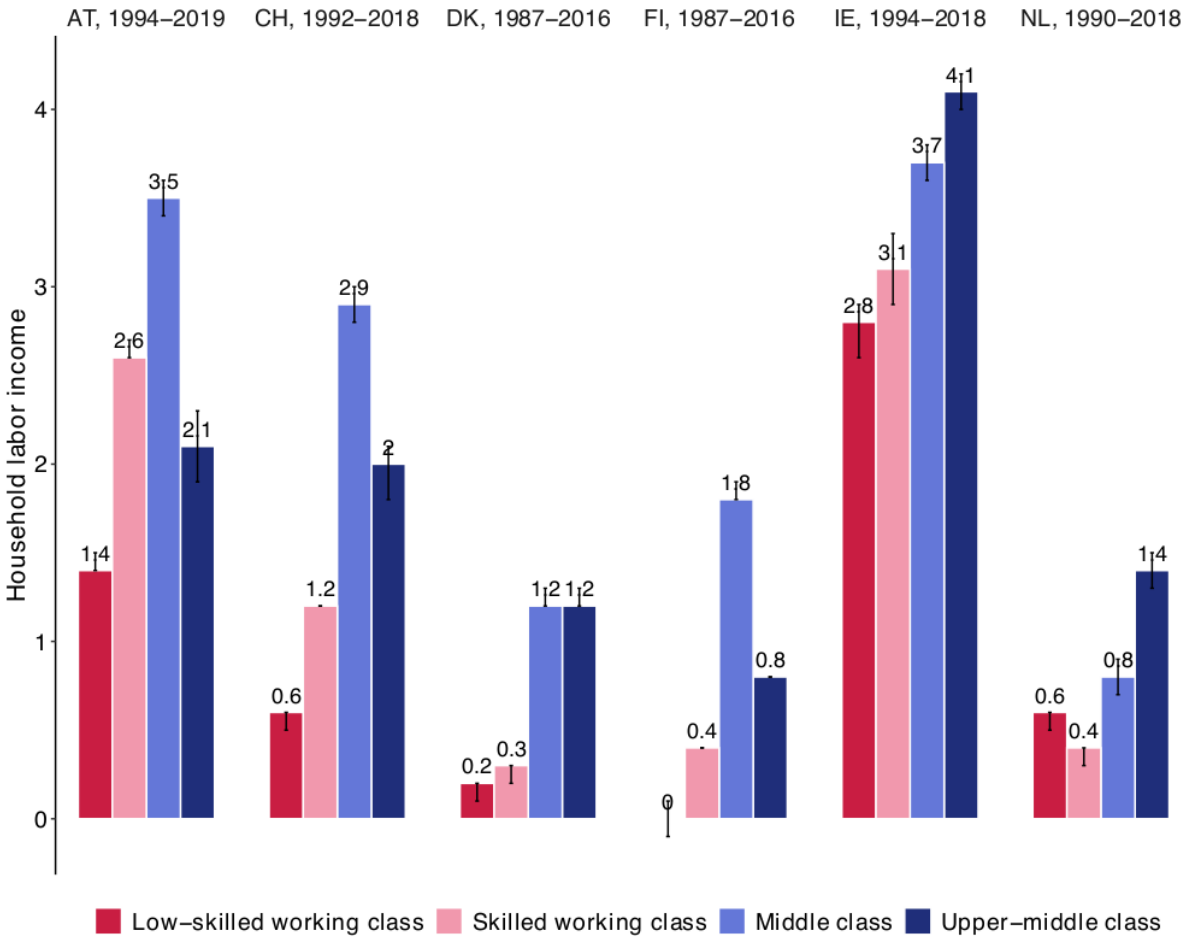
Figure 2.9: Employment change by class in small European countries (in percentage points).



For the same six small European countries, Figure 2.10 shows the evolution of incomes

and confirms that middle-class households everywhere experienced greater increases in labor income than the two working-class segments - with the low-skilled working class seeing the lowest income gains (except in the Netherlands where the skilled working class fared even worse). Income growth was stronger in some countries than in others. In Austria, the labor incomes of the working class increased annually by 1 to 2 percent and those of the middle class by 2 to 3 percent. In Ireland, the annual income gains of the working and middle class even reached 3 and 4 percent, respectively. In contrast, the incomes of working-class households almost stagnated in Finland, the Netherlands and Denmark over the last three decades - and only increased by about one percent among the middle class.

Figure 2.10: Annual change in household labour income in small European countries, in % (adjusted predictions).



For technical details, see note below Figure 2.5.

2.6 Conclusion

In their recent forays into class analysis, prominent economists argued that the middle class was declining (Pressman, 2007), eroding (Vaughan-Whitehead, 2020) and had been wrecked by technology (Autor and Dorn, 2013*a*). The dominant thesis was that technology led the middle class to experience a hollowing out in terms of wages and employment (Jaimovich, 2020, pg. 4). Our paper rejects this thesis on the basis of three main findings.

The middle class experienced gains in both employment and income: There has been no middle class squeeze over the last decades, neither in terms of employment nor income. In the 1980s and early 1990s, the middle and upper-middle class were still outnumbered by the skilled and low-skilled working class in the six large Western countries that we studied. Yet over the last four decades, the relative sizes shifted as job opportunities expanded for managers, professionals and technicians, while they declined for laborers, assemblers, craft workers and clerks. The ranks of the (upper-)middle class swelled by 10 to 20 percentage points, while those of the working class decreased to the same extent. Consistent with a host of recent comparative studies (Fernández-Macías and Hurley, 2016; Haslberger, 2021; Oesch and Piccitto, 2019), we observe the upgrading of the class structure in all countries except the UK where the class structure polarized, with employment growth in the upper-middle and middle class as well as in the low-skilled working class.

Over the last three to four decades, there was no income squeeze of the middle class either as household labor income of the middle and upper-middle class increased, on average, by about one percent per year in France, the UK and the US. This may appear modest when compared to the post-war decades, but corresponds nonetheless to an income increase of 33 percent over thirty years. The income trajectory of middle and upper-middle class households was steeper in Spain with annual increases of 2 to 3 percent and in Poland with 3 to 4 percent, but flatter in Germany with less than one percent. Over the last decades, the promise of doing economically better than one's parents and grand-parents still held for the members of the middle and upper-middle class in France,

Poland, Spain, the UK and US. The only exception is Germany where living standards stagnated for successive middle-class cohorts.

The working class lost out: Both in terms of employment and income, the great loser over the last decades was the working class. In the wake of skill-biased technological change, globalization and the neoliberal turn in politics, labor market opportunities deteriorated for the working class. The employment share of the low-skilled working class fell massively in both the large and small countries we studied, the UK being the sole exception. The skilled working class also shrank in most countries, albeit less strongly. As a result, in the 21st century, the working class lost its majority status that it had held in Europa and the US over most of the 20th century.

In terms of income growth, the two working-class groups fared systematically worse than the two middle-class groups, Poland being the only exception. Over the last decades, working-class households saw their labor income decline in Germany, stagnate in the US and increase by less than one percent per year in France and the UK. Only Spain and, above all, Poland saw a substantial rise in the household labor income of the working class. The trend was particularly bleak in Germany and the US. In the US, the march towards economic prosperity had stalled for the working class among Baby Boomers and Generation X. In Germany, working-class households in the two successive cohorts even had to settle for lower labor incomes than working-class households in the Silent Generation.

Country differences: In the large Western countries under study, annual growth of inflation-corrected household income was weak since the 1980s, barely one percent per year for the middle class and barely half a percent for the working class. The two exceptions are Spain and Poland. Starting from a lower level of economic prosperity, these two countries experienced robust GDP growth and (almost) caught up to the more affluent Western countries. In Spain and Poland, not only the incomes of the middle class, but also those of the working class are today substantially higher than they were in the birth cohorts of their parents and grand-parents.

Poland's households enjoyed particularly large income increases, and these increases skewed in favor of the working class - a pattern that is exceptional among both the large and small countries considered. Over much of the last two decades, Poland's anti-liberal Law and Justice Party (PiS) was in power. While internationally known for its disdain of the rule of law and minority rights, PiS also introduced labor-friendly policies, increasing minimum wages and social spending, notably on child benefits (Meardi and Guardiancich, 2022). Buoyed by rapid economic growth, these policies boosted working-class incomes and secured the party a disproportionate share of working-class votes (Ost, 2018; Siemsen, 2020).

The opposite scenario applies to Germany where the 1990s and 2000s were lost decades. In the 1990s, the post-reunification recession resulted in rising unemployment that weakened trade unions, collective bargaining and work councils. In the early 2000s, the Hartz laws introduced new forms of marginal employment (mini-jobs) and curtailed unemployment benefits (Baccaro and Höpner, 2022; Carlin and Soskice, 2009). Mass unemployment, weaker unions and labor market deregulation resulted in large annual income losses for the working class between the early 1990s and the early 2000s. In the 2010s, Germany left its long slump behind and embarked on sustained GDP growth that benefitted the upper-middle, middle and skilled working class with annual income rises of two percent - but left the low-skilled working class empty-handed. However, given the introduction of a legal minimum wage in 2015 and the return to full employment in the mid-2010s, future growth in Germany will probably be less unequally distributed as it was in the 1990s and 2000s.

The shifts in Germany's recent economic history remind us that results are sensitive to period definitions. Had we focused on shorter periods such as the decade from 2010 to 2020, we would have stressed the unequal income growth across classes in Spain, the stagnation in France and the UK, robust increases in Germany and the US as well as massive gains in Poland.

Implications of the working-class decline: Our paper's main findings is the extraordi-

nary decline that the working class experienced over the last decades, both in terms of employment and incomes. In our view, much of the recent political turmoil in Western democracies is due to the working class losing out. As neither markets nor politics delivered any real improvement in living standards over the last decades, growing shares of the working class turned towards candidates and parties of the radical right. In the context of insecure jobs and stagnant incomes, these parties' vociferous resistance to globalization, multiculturalism and national elites struck a chord with the discontented working-class electorate (Bornschier and Kriesi, 2012).

Given the empirical evidence, we see only one way in how the thesis of a middle class squeeze could be rescued: by arguing that there is no such a thing as the working class because the middle class begins when poverty ends (Ravallion, 2010). This semantic argument has gained substantial traction among economists and international organizations such as the OECD. Yet it is so clearly inconsistent with the recent history of industrial societies that it requires a healthy measure of amnesia. Between 1945 and 2020, 34 articles mentioned the working class in the title of the American Sociological Review and 76 articles in the American Journal of Sociology. This is a lot of attention for a non-existent class.

A final question remains: Why did the narrative of a middle-class squeeze gain so much public prominence despite the lack of evidence? Besides the argument that the middle class has replaced the working class in the language of the 21st century, two additional arguments focus on morals and expectations. According to a moral argument, the stagnation of working-class incomes may not have been overly worrisome to many pundits, as it only seemed natural that in the knowledge economy workers without higher education would see their incomes stall. The perception of the problem changed, however, once white-collar employees with post-secondary educational degrees experienced a slowdown of income growth. For the educated middle-class, the halted economic elevator appeared altogether undeserved and was seen as a broken promise.

Finally, the thesis of the middle class squeeze may also be linked to people's expecta-

tions of income growth. Three decades of massive GDP growth after 1945 led to firmly entrenched expectations of rising incomes and living standards. Workers socialized in this context came to view annual income gains of half to one percent as a step back (Inglehart and Norris, 2017). Moreover, the slow-down in economic growth did not only mean that there was less income to distribute - but, crucially, this income was distributed unequally as a small elite class pocketed the lion's share in the new gilded age (Hacker and Pierson, 2010; Piketty, 2014).

The statement that the middle class has been left behind is therefore correct when compared with the fortune of those above. However, it completely ignores that the real losers of the last few decades were situated below - the working class.

Chapter 3

How the Great Recession Changed Class Inequality: Evidence from 23 European Countries

Author: Jad Moawad
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Abstract

The question of whether economic recessions increase or decrease the earnings gap between the working and upper-middle class is debated. We study this issue and examine the Great Recession period using two different analytical strategies: three-level multilevel models and multivariate analysis over time. Based on EU Statistics on Income and Living Conditions (EU-SILC) data in 23 countries from 2004 to 2017, our results under both analytical strategies provide robust evidence that, by and large, the Great Recession widened the earnings gap between the working and upper-middle class. The effect magnitude is sizable; an increase of 5 percentage points in the unemployment rate is associated with an increase in the class earnings gap of approximately 0.10 log points.

3.1 Introduction

Following the Great Recession, many workers struggled economically across European countries. The crisis led to a media focus on widening class divisions, with the rich growing richer and the poor poorer. Recent scholarship suggests that the current rise in nationalism and populism is linked to the 2008 financial crisis (Caiani and Graziano, 2019). While the recession probably affected various societal outcomes, we are interested in its effect on class inequalities.

Several sociological studies have shown how social classes fared differently during the Great Recession (Albertini, 2013; Whelan and Maître, 2014; Wodtke, 2016; Albertini et al., 2020). It remains unclear, however, whether these differences were homogenous across European countries and how macroeconomic factors such as unemployment rate and GDP gap affected earnings inequality between social classes. This article adds to this line of research by gauging whether a major cyclical slump widens or compresses the earnings gap between different social classes. Put differently, we analyze whether the effect of the 2008 financial crisis was heterogeneous across social classes. Addressing this empirical gap sheds important light on the theory of cumulative (dis)advantages in the context of economic recessions. Substantively, this question is important for two reasons. First, if the working class suffers more than the upper-middle class, this can lead to a costly societal and political divide, which in turn can affect the viability of our societies (Atkinson and Morelli, 2011). Second, if we thoroughly understand the repercussions of the 2008 economic crisis, we might be able to better address future economic recessions.

The study of class inequalities in the labour market is well established in sociology. The working class earns less and experiences more unemployment spells than the upper-middle class (Goldthorpe, 2010). Previous studies have found that economic crises can widen the class gap due to two major elements. First, while the bargaining power of all workers decreases during an economic crisis as companies react to financial losses, the working class is particularly vulnerable, as its skills are more easily replaceable than

those of the upper-middle class (Goldthorpe and McKnight, 2006). Second, as companies stop hiring during and following a financial crisis, a form of crowding-out occurs as the supply of workers applying for less skilled occupations increases (Reder, 1955; Devereux, 2002). Such an increase in the supply of workers in certain occupations is likely to put downward pressure on wages.

However, an opposite scenario to an economic crisis - an event that reshuffles the cards in favor of the working class - is also possible. For example, income inequality decreased between the working and upper class following the Great Depression (Piketty, 2014). This is because deep recessions can decrease higher wages more than lower wages, as the former are largely tied to the performance of the financial markets (Atkinson and Morelli, 2011). Economic recessions may also lead to policies that increase the progressivity of taxes and the regulation of labour markets (Piketty, 2014; Roine and Waldenström, 2015; Scheidel, 2017).

We analyze earnings inequality between social classes for 23 European countries over the period of 2004 to 2017 using the European Union Statistics on Income and Living Conditions (EU-SILC). We perceive the Great Recession similarly to a natural experiment whereby people and countries are exposed to an event without selecting it themselves. As countries were hit differently by the financial crisis, our design can compare earnings gaps across social classes between strongly affected countries (e.g., Spain, Ireland) and countries less affected by the economic downturn (e.g., Poland, Germany). We deploy two analytical strategies: (1) three-level multilevel models for time-series cross-sectional data and (2) multivariate analyses over time.

The results from both analytical strategies show that, by and large, the earnings gap between the working and upper-middle class widens under negative macroeconomic conditions. These findings are robust across several macro indicators and other sensitivity analyses. We next investigate whether the intensity of the 2008 financial crisis influenced the direction of the effect. For instance, countries that experienced a severe economic

recession might have a contracting class gap[1] scenario similar to what occurred during the Great Depression. To answer this question, we rely on our findings from the multivariate analyses over time, which facilitate comparison across countries. The results reveal that the intensity of the financial crisis does not seem to lead to a contraction in the class earnings gap.

3.2 Background

3.2.1 Class and income inequality

While economists and sociologists are both interested in earnings differences, they tend to estimate them differently. Economists often measure the extent to which income is distributed unevenly across people in a country using different indicators, such as the Gini coefficient, the Theil index, and the variance of log income (Allison, 1978; Schwartz and Winship, 1980). These indicators have some shortcomings since they respond differently to various shifts in the income distribution (Zhou and Wodtke, 2019). There is recent important research in economics that extends beyond these indicators and examines the level of income composition inequality (Ranaldi and Milanovi, 2022; Ranaldi, 2022). Specifically, these studies examine whether capital and labour income are distributed randomly across people or whether they are concentrated more toward the top rather than the bottom of the income distribution. A high concentration of capital income at the top suggests a classical capitalist country compared with a classless society where capital income is more equally distributed across the income distribution (Ranaldi, 2022). This line of research suggests that countries that have a low level of capital income inequality seem to also have a low level of labour income inequality, with the exception of China (Ranaldi and Milanovi, 2022).

Sociologists consider individuals to be part of subgroups (e.g., social classes) that

[1]As this article is interested in analyzing the change in the earnings gap between the working and upper-middle class, the terms social-class gap' and class gap' are used to refer to this phenomenon.

are essential in explaining inequalities between people. They believe that inequalities are not randomly assigned across individuals but rather that these differences are part of a hierarchal grouping (Wright, 2005). Even though social classes do not need to be strictly hierarchal, they tend to display some forms of economic distinctions from the top to the bottom of the social hierarchy (Goldthorpe, 2007). This is because social class reflects the extent of advantage that individuals possess in the labour market (Wright, 1997; Goldthorpe and McKnight, 2006). Two major resources that separate occupations hierarchically are the amount of authority and expertise. A high amount of authority and expertise required by a certain occupation provides its incumbents with a high leverage as they are more difficult to replace. This translates into a higher bargaining power that is reflected in their more advantageous contracts and wages (le Grand and Tåhlin, 2013). While our article acknowledges that there are several plausible methods for disentangling earnings inequalities, it contends that a class-based approach offers important insights, as shown in previous research (Wodtke, 2016; Albertini et al., 2020).

Another rationale for analyzing earnings differences between social classes is that the degree of class stratification strongly influences the social and political sphere (Zhou and Wodtke, 2019). For instance, the Great Recession may have had either homogeneous or heterogeneous effects across social classes. If the working and lower-middle class suffered more than the upper-middle class, this could generate a costly societal and political divide. However, if the repercussions of the 2008 financial crisis were more evenly distributed between different social classes, then the social and political consequences should not be the same.

In the following, we elabourate a possible scenario whereby the earnings differences between social classes could widens. We then discuss the opposite scenario, that is, an economic recession that disproportionately affects the upper-middle class in comparison with the working class.

3.2.2 Cumulative (dis)advantage

A simple Matthew effect occurs when the rich grow richer and the poor grow poorer, as the effect of an advantage or disadvantage can grow in magnitude over time (Merton, 1968). This concept has been extended in different works in the stratification literature on cumulative (dis)advantages, for example, in careers, education and social class (DiPrete and Eirich, 2006). Redbird and Grusky 2016 claim that the Great Recession generated a cumulative (dis)advantage among poorly educated workers. Consequently, one would expect larger losses among the working class than among the upper-middle class, and scholars have proposed a number of mechanisms to explain this effect.

During economic recessions, companies face two options: either laying off their employees or keeping them until the storm passes. Companies tend to keep their skilled employees, as they have usually invested heavily in them. Firing them can lead to a comparative loss, as it is costly and time intensive to replace skilled labour once market demand picks up again. Therefore, many workers remain valuable even during an economic crisis (Biddle, 2014). However, this may not be the case across all social classes, as routine occupations might be easier to fill than managerial positions.

An additional factor that could also disproportionately affect the working class and the lower-middle class during economic recessions can be explained by labour substitution. During economic hardships, firms accelerate efforts to lower labour costs by increasing automation. A technological change can increase the wage differential through two pathways. First, it leads firms to hire more skilled workers and rely less on unskilled workers. Second, it may weaken the bargaining power of unions (Acemoglu, 2002). Moreover, an increase in automation during an economic recession not only leads to mass unemployment but also renders the skills of many workers obsolete as firms raise their requirements. Recent evidence that used data from electronic posting between 2007 and 2015 suggests two notable findings in areas that were more affected by the Great Recession compared with other less affected areas in the United States. First, there was a higher increase

in skill requirements in routine cognitive occupations, which remained even when the economy recovered. Second, there was a large job loss in routine-manual occupations (Hershbein and Kahn, 2018). This decline in routine occupations seems to be more severe with the Great Recession compared to previous economic recessions (Jaimovich and Siu, 2020). Such developments are class-graded, and the upper-middle class is expected to be more protected from them compared with their peers of lower social classes.

The working class may also fall prey to a crowding-out mechanism following an economic recession. Lower-middle and upper-middle class workers who struggle to find a job may apply for positions below their initial ordinary reservation wage during periods of crisis (Devereux, 2002). This likely leads to a greater asymmetry in bargaining power between workers and employers in working-class occupations. Previous research supports this notion and indicates that economic conditions affect workers' bargaining power: the higher the unemployment rate is, the weaker their bargaining power (Western and Healy, 1999). Companies are likely to take advantage of this situation by cutting wages and raising hiring standards in the face of the increasing influx of workers (Reder, 1955). The consequent crowding-out mechanism places more wage pressure on working-class occupations, as they experience more layoffs than the upper-middle class. According to this theory, we should observe a wider difference in earnings between the working class and the upper-middle class during economic recessions (Hypothesis 1 [H1]).

Empirical evidence shows that income differences grew by approximately 13% between occupational classes in the United States between 1980 and 2010 (Wodtke, 2016). It also suggests that the increase in income differences across occupational classes seems to have started following the early 1990s. One may wonder whether the Great Recession accelerated, halted or reversed this trend in class inequality. Recent empirical evidence supports the acceleration argument and shows a widening of the earnings gap between the self-employed and the working class, on the one hand, and the upper class, on the other, between 2005 and 2014 in some European countries (Albertini et al., 2020). Nevertheless, there are some variations within countries: while income differences have strengthened

in Germany, Spain, Italy, the Netherlands and Poland, this widening in the earnings gap was less salient in Sweden and the United Kingdom.

There is also evidence of cumulative (dis)advantages across different educational backgrounds in the wake of the Great Recession in the United States (Curry, 2019). Individuals with a college degree seem to have been relatively protected in terms of earnings and employment during that period. In contrast, those without a college degree experienced higher earnings losses than their highly educated peers (Curry, 2019).

3.2.3 Socioeconomic reshuffling

Piketty (2014) argues that inequality moves procyclically. It increases during economic expansions and decreases during economic recessions. This is because when national income increases during an economic expansion, people at the top are more likely to have a higher increase in their wages than people at the bottom. On the other hand, following an economic recession, high earners may take a large hit, as their labour income is largely tied to the performance of financial markets (Atkinson and Morelli, 2011). At the same time, political factors influence wage progression and likely compress income inequality (Piketty, 2014). In addition, new public policies such as progressive taxation, increases in the minimum wage and rent control can be introduced to level off the repercussions of an economic recession. As a result, these measures can enhance equality (Piketty, 2014; Roine and Waldenström, 2015; Scheidel, 2017).

Evidence on early economic recessions suggests that the Great Depression contracted the differences in earnings between top and low earners. This compressive effect even persisted following the New Deal era, long after the 1929 crisis (Piketty, 2014). Findings on more recent recessions in the United States suggest that the top one percent lost 30% and 36% in real income growth during the dotcom bubble and the Great Recession, respectively. In contrast, average real income growth decreased by 11% and 17% during the same period (Saez, 2013). While this compressive effect may be attributed to large losses in capital income and wealth, there is evidence that the procyclical case also extends

to labour income. Empirical evidence supports this notion and shows that the wages of top earners are more cyclical than the wages of lower earners. Parker and Vissing-Jorgensen (2010) scrutinized the cyclicality of labour income in the United States and Canada between 1982 and 2005. The study suggests that cyclicality is asymmetrically U-shaped; it is higher at both ends of the income distribution than in the middle, yet the cyclicality is stronger at the top than at the bottom. Put differently, the earnings of people at the top of the income distribution are more volatile during economic recessions than those of people at the bottom. A recent study that investigated the cyclicality of labour income also supports this finding (Guvenen et al., 2014). If economic recessions affect class inequality in this way, we can expect earnings differences to contract between the upper-middle class and the working class (Hypothesis 2 [H2]).

However, these findings that economic shocks decrease inequality between top and low earners are not fully supported by a study that looked over the effect of macroeconomic shocks on inequality in 25 countries over the period of 1911 to 2010 (Atkinson and Morelli, 2011). In the wake of the 29 crises studied, inequality decreased in eight cases, remained stable in another eight cases and increased in 13 cases. This evidence suggests that any generalization of the effect of financial crises on earnings inequality should be taken with caution. Notably, earnings inequality dropped drastically following the Great Depression (Atkinson and Morelli, 2011). On the other hand, earnings inequality increased in other financial crises that were less severe. If the severity of the financial crisis influences the direction of earnings inequality, we may expect earnings differences to contract between the upper-middle class and the working class in countries that experienced severe economic recession, such as Greece and Iceland. Conversely, we can expect widening earnings inequality in countries experiencing a moderate economic recession (Hypothesis 3 [H3]).

3.3 Data, measures and analytical strategy

3.3.1 Data

Our analysis of earnings differences between social classes covers 23 European countries[2] and is based on 14 cross-sectional survey rounds from the European Union Statistics on Income and Living Conditions (EU-SILC) between 2004 and 2017 (Eurostat, 2020). The EU-SILC is a survey that employs probability sampling methods and aims at providing harmonized data. Countries may differ in questionnaire design, sample design and mode of data collection (Trindade and Goedemé, 2020). However, this dataset is among the highest-quality comparative surveys undertaken, specifically if income is the outcome variable. We select 23 European countries to widen the perspective and provide an up-to-date account of class and earnings inequality[3].

3.3.2 Measures

Our outcome variable is labour income (corrected for inflation[4] and expressed in euros) in a given year. It captures income generated from employment, which includes wages and salaries, remuneration for a certain time not worked, overtime compensation, commissions, profit sharing and bonuses. Our outcome excludes capital gains such as profits collected from renting or selling an asset. We include the working population, that is, all the employed individuals in our sample. A portion of the working population reported zero or negative earnings. As we aim to use the logarithm of earnings, we bottom code[5] our income variable as it includes the zero and negative earnings. That is, any value

[2]These countries are Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Italy, Ireland, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

[3]We aimed to include all countries represented in the EU-SILC; however, we had to exclude some. First, we excluded Bulgaria, Cyprus, Croatia, Lithuania, Latvia, Malta, Romania and Serbia because no information on their output gap in GDP is available. Second, we excluded Slovenia because its country of birth variable is missing one category (EU citizen).

[4]We extract the consumer price indices from the OECD: https://stats.oecd.org/.

[5]Sensitivity analysis on non-logged income including zeros and negatives values shows similar findings to our original models (see Table C.4).

below 15% of the median wage in a certain country module is set to 15% of the median wage. This threshold is recommended by the data producers when bottom coding (Neri et al., 2009). We limit the age range between 25 and 64, leaving aside younger people, who are often still in education, and older people, who generally leave the workforce or are in transition toward retirement.

We follow the dominant tradition in stratification research and argue that occupations are the cornerstones of contemporary labour markets and the resulting class system (Treiman, 1977). Thus, we use occupations as the building blocks of social class as our main predictor. We transform the original occupational variable ISCO-08 (2 digit) according to a version developed by Oesch (2006) into three different classes: (1) the upper-middle class of managers and professionals (ISCO 1 and 2); (2) the lower-middle class of associate managers, semiprofessionals, technicians and skilled clerks (ISCO 3 and 4); and (3) the working class of craft, production, sales and service workers (ISCO 5 to 9). These three categories mirror the scheme made by Erikson and Goldthorpe (1992) in terms of employment relationships. We show in Table C.1 a detailed listing of the two digit occupations that comprise our class variable.

Our second key independent variable represents macroeconomic shocks, which we measure in two different ways. First, we use the standardized unemployment rate among prime-age workers as our aggregate measure of adversity in the labour market. Second, we employ the output gap in GDP, which refers to the difference between actual and potential GDP. This measure indicates whether a country experienced a macroeconomic demand shortage. Both macro variables are extracted from the OECD (2021). We further control for respondents' age, gender and country of birth. The descriptive statistics of all the variables are shown in Table C.2 in the appendix.

3.3.3 Analytical strategy

Our analysis deploys two analytical strategies. First, we run a three-level multilevel regression analysis within 23 countries, 290 country-year units, and 2,234,878 individu-

als. This strategy analyses the association between social class and earnings across the different measures of macroeconomic shocks (unemployment rate and GDP gap). This approach is important because it takes into consideration the intensity of the crisis in different years across countries. For example, the increase in the unemployment rate in Poland was negligible compared to that in Spain during the sample period.

Second, we use the survey year as a measure of economic crisis and compare the earnings gap in 2007 with that in the years that followed. This strategy is used because the unemployment rate and GDP gap cannot fully capture the effect of the 2008 financial crisis. For example, the debt and banking crisis - which affected the intensity of the financial crisis in certain areas - are not accounted for by these indicators. Therefore, we use the survey year as a proxy. This analytical strategy estimates a separate multivariate linear regression for each country for the years between 2004 and 2017 and is modeled in Equation 2. We explain the details of both analytical strategies next.

To design our first analytical strategy, we follow the recommendations of Schmidt-Catran and Fairbrother (2016), which are specific to comparative cross-sectional data over time. That is, Equation 1 treats country-years as nested within countries and respondents as nested in country-years. This approach is advantageous for several reasons. First, it assumes that individuals embedded in one country are more similar than those in other countries. Second, it recognizes that individuals observed in the same country and the same year are more similar than individuals from the same country but different years (Schmidt-Catran and Fairbrother, 2016). The number of higher-level units in our sample (290 country-years) exceeds the minimum number of units (30) required for unbiased estimates (Bryan and Jenkins, 2016).

$$\begin{aligned}\gamma_{ijl} = \beta_0 + \beta_p Class_{ijl} + \beta_q Unemployment\_rate_{jl} + \beta_t Year\_dummies_{jl} \\ + \beta_{pq} Class_{ijl} * Unemployment\_rate_{jl} + \beta_c Controls_{ijl} + u_{jl} + u_l + \varepsilon\end{aligned} \tag{3.1}$$

The subscript i represents respondents, jl represents country-years, and l represents

countries. β_p indicates the individual-level variables such as social class, age, gender and country of birth. q represents country-year level variables such as the unemployment rate and output gap in GDP. β_{pq} indicates the cross-level interactions, that is, the interaction between social class and both country-year-level variables (the unemployment rate and output gap in GDP), where each interaction resides in a separate model. β_{pq} is our coefficient of interest, and a negative and significant slope suggests that the earnings gap between the working class and the upper-middle class widened following the Great Recession. β_t represents the period fixed effects (a set of year dummies) and accounts for general trends over time. The random part consists of the error terms u_{jl} (country-years), u_l (countries), and ε_{ijl} (individuals). We follow recent recommendations to include a random slope at the country level for our main predictor (social class) involved in a cross-level interaction (Heisig and Schaeffer, 2019). Our first estimation strategy is important because it controls for any possible statistical dependence and takes into account the variation in the timing and severity of the financial crisis across countries. Models are estimated using the MixedModels (Bates et al., 2022) and the Effects (Alday et al., 2022) packages in Julia.

The second equation below estimates a separate linear regression for each country for the years between 2004 and 2017:

$$\gamma_i = \beta_0 + \beta_p Class_{it} + \beta_q Year_t + \beta_{pq} Class_{jt} * Year_t + \beta_c Controls_{it} + \varepsilon \tag{3.2}$$

The subscript i represents respondents, and t represents the time period. where γ is the logarithm of annual wages for individual i. Our two main predictors are individuals' social class $class_i$ and the survey year $year_t$. The coefficient β_{pq} is an interaction between social class and year, which estimates the differences in the earnings gap among different social classes between 2004 and 2017. A negative and significant slope would suggest that the social-class gap in terms of earnings widened following the Great Recession. Put

differently, such a finding would support the hypothesis that the working class was more negatively affected by the Great Recession than the upper-middle class. β_c includes a vector of control variables such as country of birth, gender and age, and ε_{it} represents the error term.

3.4 Results

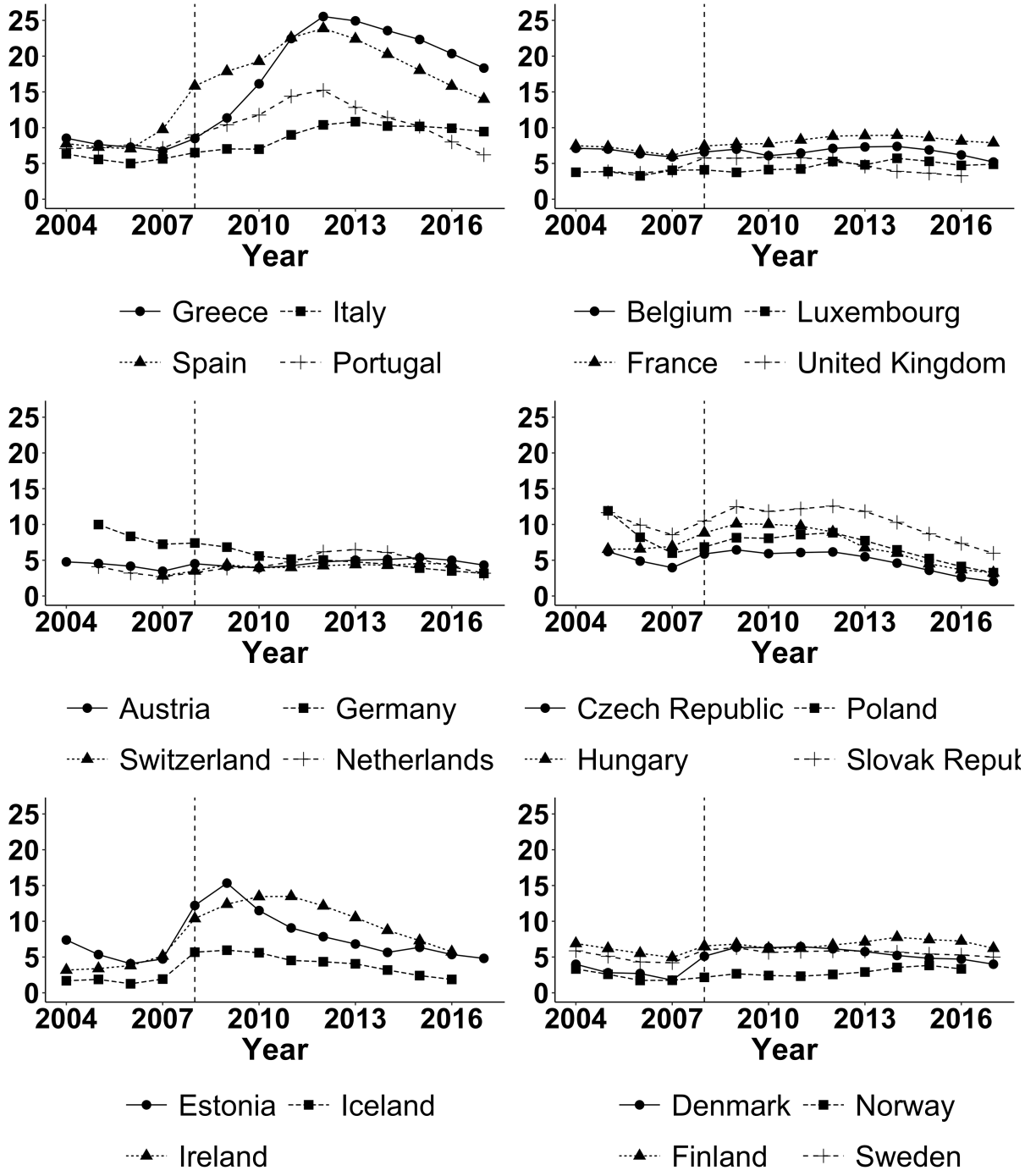
3.4.1 Evolution of the financial crisis in Europe

Figure 3.1 shows the unemployment rate in 23 European countries from 2004 to 2017. The increase in the unemployment rate following the 2008 financial crisis varied widely in Europe. For example, Finland, Sweden, Norway, Poland, the Czech Republic, Austria, Switzerland, France, the Netherlands, Belgium, Luxembourg and the United Kingdom experienced a modest increase in unemployment that ranged from 1 percentage point (pp.) to 3 pp. Other countries, such as Denmark, Iceland, Hungary, Slovakia and Italy, were hit harder by the economic crisis, seeing increases in unemployment rates of 4 pp. to 6 pp. The economic crisis was strongest in Estonia, Ireland, Portugal, Spain, and Greece, where the unemployment rate surged to a range of 9 pp. to 16 pp. On the other hand, in Germany, the unemployment rate decreased by 2 pp. following the 2008 financial crisis. In sum, Figure 3.1 shows that European countries experienced the intensity of the Great Recession differently. To evaluate whether these differences across countries hold using a different crisis indicator, we show the output gap in GDP in Figure C.1 and find that the trend mostly mirrors that of the unemployment rate (see the appendix).

3.4.2 The effect of macroeconomic shocks on earnings

We turn to our central question, that is, whether the Great Recession had a heterogeneous effect on the working and upper-middle class. To explore this, we add cross-level interactions between social class and key macrolevel variables (the unemployment rate

Figure 3.1: Unemployment rate between 2004 and 2017 (in %).



Source: OECD Labour Market Statistics, extracted 2021.

Table 3.1: Main effects and interaction effects with social class and macroeconomic shocks on labour income.

Predictors	Model 1	Model 2
Unemployment	0.006	
Lower-middle class * Unemployment	-0.013***	
	(0.001)	
Working class * Unemployment	-0.020***	
	(0.001)	
GDP gap		-0.003
Lower-middle class * GDP gap		-0.011***
		(0.000)
Working class * GDP gap		-0.014***
		(0.000)
Random slope - country level	Yes	Yes
Year dummies	Yes	Yes
N (individuals)	2,234,878	2,234,878
N (country-years)	290	290
N (countries)	23	23

Note: Coefficients from multilevel linear models. Standard errors are in brackets. Dependent variable: log income. Models control for (1) age, gender, country of birth and social class; (2) macrolevel: unemployment rate (Model 1), GDP gap (Model 2).

and GDP gap). This interaction is shown in equation (1) as β_{pq}. We present the empirical results for these cross-level interactions graphically as the gap in predicted values between the working class and upper-middle class in Figure 3.2, and we also document the corresponding coefficients in Table 3.1. We include the detailed findings in Table C.3 and Figure C.2.

Model 1 represents the interaction pq in equation (1) between the unemployment rate and social class and supports hypothesis (H1). This suggests that the earnings gap rose between the working and upper-middle class as the estimate of β_{pq} = - 0.02. An increase in the unemployment rate of approximately 5 percentage points implies a jump of approximately 0.10 log points in the earnings gap between the working and upper-middle class. The left panel in Figure 3.2 shows this association and makes clear that the difference in earnings between the working class and the upper-middle class widens with every unit increase in unemployment rate. If we analyze the difference at both extremes, we see that an increase of 15 percentage points in the unemployment rate is associated with an increase in the gap between the working and upper-middle class by approximately 0.30 log points (i.e., 0.791-0.495 = 0.296).

To check that our findings hold across different financial crisis measures, we use the

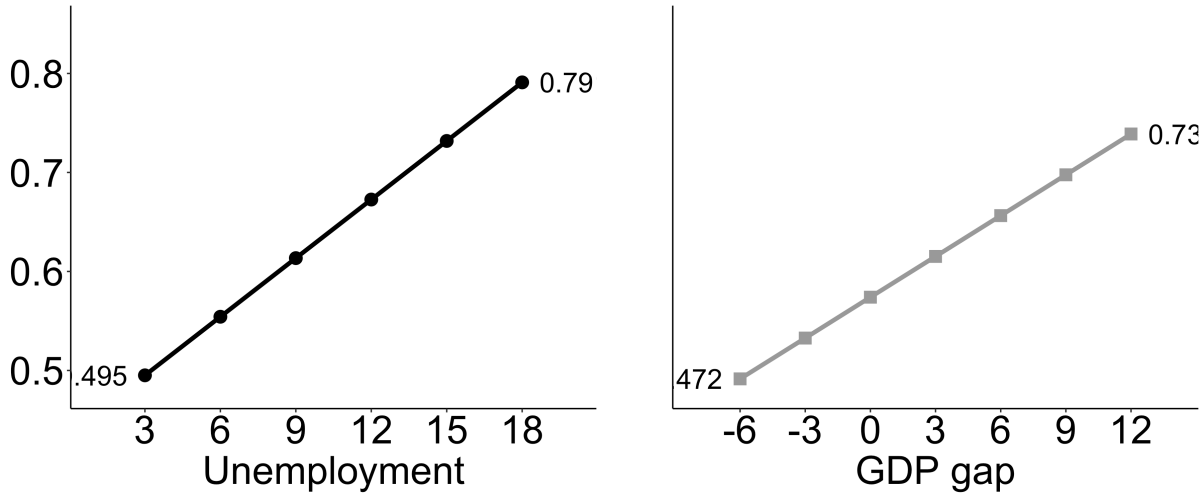
output gap in GDP as a robust indicator of the business cycle. It captures the macroeconomic demand shortages of European countries by comparing actual GDP (output) and potential GDP (maximum-efficiency output). Model 2 presents the corresponding coefficients of the cross-level interaction pq in equation (1) between the GDP output gap and social class (see Table 3.1). In brief, we find results similar to those of our original analysis; that is, an economic recession is associated with an increase in the earnings gap between the working class and upper-middle class. The right panel in Figure 3.2 exhibits this association by showing an increase in the earnings gap between the working class and the upper-middle class with every unit increase in the GDP gap. More specifically, it shows that an increase of 15 percentage points in the GDP output gap is associated with an increase in the earnings gap between the working class and the upper-middle class by approximately 0.26 log points (i.e., 0.733-0.472 = 0.261).

While this effect size is slightly smaller than that identified for the unemployment rate, it indicates that our findings are robust. In sum, our results support hypothesis (H1) that the Great Recession widened earnings inequality between the working and upper-middle class. The earnings gap between the lower-middle and upper-middle class seems to have widened, as Model 1 and Model 2 suggest in Table 3.1. This finding suggests that the working class was not the only loser during the Great Recession, but the lower-middle class seems to have suffered as well.

3.4.3 The association between individual earnings and social class over time

Our previous analysis sheds some light on the effect of macroeconomic shocks on earnings across different social classes. While this multilevel design is suitable for answering our research question, one can argue that analyzing the association between individual earnings and social class over time for each country separately could add value to our analyses. To investigate this, we add an interaction between social class and survey year.

Figure 3.2: The class gap in predicted values of labour income by macroeconomic shocks.



Note: Difference in predicted values of working class relative to upper-middle class; multilevel linear models. Left panel corresponds to Model 1 and right panel corresponds to Model 2 in Table 3.1. Y-axis models log income.The models control for (1) age, gender, country of birth and social class; (2) macrolevel: main effects of interacted macrolevel variables, unemployment rate, GDP gap. Full graph can be found in the appendix in Figure C.2. Source: EU-SILC, 2004-2017.

This interaction is shown in equation (2) as pq. We present the empirical results for this interaction in Figure 3.3.

Figure 3.3 analyses how the earnings gap between the working and upper-middle class evolved between 2004 and 2017. We omit from the plot the period that preceded 2008 for brevity. We fix our reference category for the survey year of the working class as 2007, the year that preceded the Great Recession. This allows us to compare whether the earnings gap widened in each subsequent year. Figure 3.3 shows that 13 out of the 23 countries experienced an increase in the earnings gap between the working class and the upper-middle class following the 2008 economic recession[6]. These countries are Italy, Spain, Portugal, Greece, Ireland, Austria, Finland, the Netherlands, France, Belgium, Germany, Switzerland, and Denmark.

These countries generally saw an increase in the earnings gap relative to that in the reference year of 2007 in at least two modules that followed. The effect size is substantively large in several countries that were strongly hit by the Great Recession, such as Italy, Spain, Portugal, Greece and Ireland. It may seem that the earnings gap could be diminishing over time in some modules in Spain (following 2014), Portugal

[6]The earnings gap between the lower-middle class and the upper-middle widened in twelve countries, remained stable in six countries and contracted in five countries (see Figure C.3).

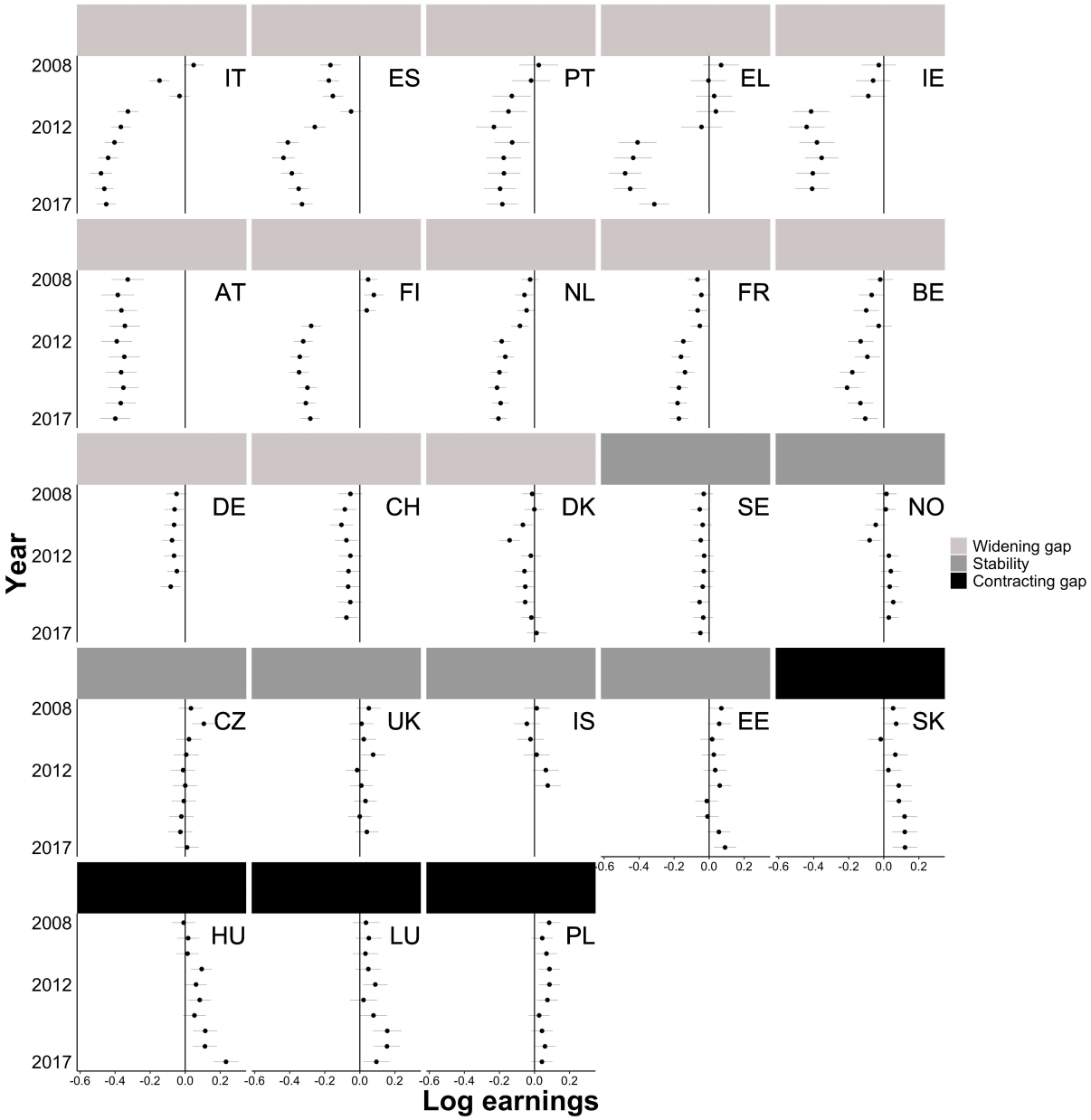
(following 2012) or Greece (following 2015); however, this shift is unfounded, as the confidence intervals overlap between modules within these countries. This hints that the widening gap in earnings between the working class and upper-middle class seems to be stable over the period observed in Ireland and the Southern European countries.

The class gap in earnings also widens in some Nordic countries, such as Denmark and Sweden, but the effect size is small. Moreover, this widening in the class gap is only statistically significant at the 0.05 level in 2009 in Sweden. The widening in the class gap is not different than zero relative to 2007 in several modules in Denmark following 2013. This could be driven by the fact that these countries experienced a relatively mild economic recession. Finland stands out as an exception among the Nordic countries, as the earnings gap among the working class and upper-middle class widened. While Finland experienced a modest increase in the unemployment rate, its GDP gap contracted the most compared with the rest of the Nordic countries, except for Iceland. This could influence the widening gap observed in Finland.

Figure 3.3 shows that four out of the 23 countries experienced a decrease in the earnings gap between the working class and the upper-middle class following the Great Recession. Among countries with this scenario, we find Poland and Luxembourg. Both countries were little affected by the Great Recession. In fact, Poland experienced economic growth according to its GDP gap trajectory. This could benefit the working class, as previous studies show that an economic boom can be particularly helpful for the earnings of the disadvantaged (Hines et al., 2001; Moawad, 2022*b*).

The class gap in earnings also contracted in countries that were hit by the Great Recession, such as the Slovak Republic and Hungary. This beget the question of why countries that faced an economic recession such as some Eastern European countries experienced a different trajectory than Ireland and the Southern European countries? In short, there is no clear pattern, and this remains a puzzle for future studies to explore further. We explore whether groups with divergent trajectories implemented different social policies in response to the Great Recession and find no systematic differences among

Figure 3.3: Change in labour income 2004-2017 of working class adults relative to upper-middle class adults.



Note: Coefficients from linear models. Confidence intervals 95%. Dependent variable: log income. Models control for age, gender, country of birth, social class and year of interview. Reference category of y-axis is year 2007*working class. Countries displayed are IT: Italy, ES: Spain, PT: Portugal, EL: Greece, IE: Ireland, AT: Austria, FI: Finland, NL: Netherlands , FR: France, BE: Belgium, DE: Germany, CH: Switzerland, DK: Denmark, SE: Sweden, NO: Norway, CZ: Czech Republic, UK: United Kingdom, IS: Iceland, EE: Estonia, SK: Slovak Republic, HU: Hungary, LU: Luxembourg, PL: Poland. Source: EU-SILC, 2004-2017.

them (Helgason, 2019). Then, we compare whether employment rates systematically differed across both groups and find no notable divergence in their trajectories (OECD, 2021).

3.4.4 Additional sensitivity tests

In additional analyses available in the appendix, we included country fixed effects to examine the robustness of our findings to country-level fixed unobserved heterogeneity (see Table C.5). Second, we reran our models separately excluding each of the eight countries with the largest population in our data: Germany, France, the United Kingdom, Italy, Spain, Poland, the Netherlands and Belgium (see Table C.6 and Table C.7). Without exception, all the replicated results show that our findings are robust. The findings reveal that the earnings gap between the working and upper-middle class increases in deteriorating macroeconomic conditions.

We also ran sensitivity tests on our multivariate analysis over time. Originally, we fix our reference category to 2007, the last year that preceded the Great Recession. However, if this year is an outlier from a general trend, our models might be biased. Consequently, we pool the four years (2004-07) that preceded the Great Recession and fix them as a reference category. The replicated analysis mirrors similar findings to our original models (see Figure C.4). Only two countries out of 23 reveal a different trend. The earnings gap between the working and upper-middle class contracts instead of stabilizing in Iceland and Estonia. Finally, we ran a robustness check and include all unemployed individuals in our sample to account for any differential selection into unemployment across social classes. We find similar findings to our original analyses (see Table C.8 and Figure C.5).

3.5 Discussion

Against the background of considerable academic concerns about a possible cumulative disadvantage scenario for disadvantaged subgroups resulting from the Great Recession

(Redbird and Grusky, 2016), our article examined the extent to which such concerns are warranted. To do so, we analyzed whether the earnings gap between the working and upper-middle class increased between 2004 and 2017 in 23 European countries. We address our question using two different analytical strategies. First, we conduct a three-level multilevel approach that takes into account macro indicators, notably the unemployment rate and GDP gap. Second, we run a multivariate regression model over time for each country separately.

The study presents a number of original and relevant findings. First, our article provides supportive evidence that the Great Recession increased the earnings gap between the working and upper-middle class. This is evident under both of our analytical strategies. Thus, our findings support (H1). With a few exceptions, the weight of the evidence from our analysis casts considerable doubt on the notion that the effects of the Great Recession align with the predictions of countercyclicality theory (H2). That is, the earnings of top earners are more volatile than their peers at the bottom of the income distribution (Parker and Vissing-Jorgensen, 2010; Guvenen et al., 2014). Overall, our findings are in line with previous studies that examined Italy (Albertini, 2013) and the United States (Wodtke, 2016).

Second, we test whether the intensity of the financial crisis positively or negatively influences the earnings gap between the working and upper-middle class - that is, whether severe economic recessions such as the Great Depression are more likely to contract the class gap in earnings than less severe economic recessions (H3). We find that the class gap in earnings widened in Southern European countries and Ireland, all of which faced a severe economic recession. These findings reject H3 and hint that what drives earnings inequality upward or downward is not strictly related to the severity of the financial crisis but may be influenced by other factors.

Beyond our findings, some caveats must be taken into consideration. First, earnings data are not collected using the same method across countries. This probably leads to some measurement errors; nonetheless, the EU-SILC is considered among the best cross-

country comparative datasets in terms of earnings measures. Second, as our data are cross-sectional, we could not examine whether the losses experienced by the respondents persisted over time. Future research using longitudinal data may investigate this possibility, especially in countries that face a large increase in the earnings gap between the working and upper-middle class, such as Spain and Italy.

New concerns regarding inequalities in OECD countries have been raised in public discourse (Keeley, 2015). We contribute innovative evidence with respect to this topic, as we investigate whether a macroeconomic shock - the Great Recession - affected earnings inequalities between social classes. Our contribution may be relevant to the recent economic crisis that unfolded following the COVID-19 pandemic and the eruption of the war in Ukraine. If we thoroughly understand the repercussions of the 2008 financial crisis, we might be able to better address the aftermath of the current economic crisis. To the extent that the earnings gap between the working and upper-middle class generally widened following the Great Recession, one might speculate that there could be some reasons for concern over how the recent economic crisis might expand this gap even further.

Chapter 4

Labour market prospects of young adults in Europe: differential effects of social origin during the Great Recession

Author: Jad Moawad
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Abstract

Research on the direct effect of social origin (DESO) focuses on how background influences later labour market outcomes after accounting for education. Growing up in a household of low social origin might decrease the chances of certain future outcomes; however, the extent to which this matters is contingent on the economic cycle. Using the EU Statistics on Income and Living Conditions (EU-SILC) and the European Social Survey (ESS) between 2002 and 2014, we analyse whether the gap in the DESO in terms of employment and earnings widened following the Great Recession for young adults (25-34) in France, Germany, Italy, Poland, Spain and the United Kingdom. Our results suggest that young adults of high social origin faced more disadvantages in terms of employment than young adults of low social origin in France, Spain and the United Kingdom. On the other hand, analyses show that young adults of low social origin experienced more disadvantages in terms of earnings than their counterparts of high social origin in Spain.

4.1 Introduction

The Great Recession was the largest economic crisis since the Great Depression nearly 90 years prior, leaving deep scars across the global economy. The economic downturn in 2008 caused GDP growth to plummet, led to a surge in unemployment rates and struck not only the construction sector but also other sectors that were considered a safe haven for workers in the past decades (Grusky et al., 2011). While the economic crisis reached almost everyone, young people were among the major losers (Bell and Blanchflower, 2011).

In this context, when good jobs are rare and employers are more selective, social origin may become more important, as it can mitigate hardships generated by the economic crisis (Macmillan, 2014; Zwysen, 2016). This means that young adults of high social origin may benefit more from their parents' economic and social capital than young adults of low social origin, even after taking education into consideration (Breen and Luijkx, 2004; Ballarino and Bernardi, 2016). However, an opposite perspective is possible as well. Similar to the course of events during the Great Depression, an economic crisis may completely reshuffle cards (Piketty and Saez, 2013; Piketty, 2014). This article examines whether the direct effect of social origin (DESO) in terms of employment and earnings widened or contracted following the Great Recession.

Our article thus joins a handful of studies that try to understand how young adults fared during the Great Recession (Genda et al., 2010; Aassve et al., 2013; Cozzolino et al., 2018; Sironi, 2018; Curry, 2019; Schoon and Bynner, 2019; Salazar et al., 2020). To date, no research has investigated whether the DESO of young adults changed after the 2008 financial crisis. Substantively, this is important for two reasons: prior evidence shows that early career unemployment has long-lasting scarring effects (Gregg and Tominey, 2005; Gangl, 2006), and starting a career at a lower paying employer may generate less mobility thereafter (Oreopoulos et al., 2012; Kahn, 2010).

The study of the DESO is well established in sociology. Even after accounting for

education, adults of lower social origin tend to have lower employment levels and earnings (Hällsten, 2013; Ballarino and Bernardi, 2016; Passaretta et al., 2018). Previous research ascribes some of these labour market disparities to two major elements. First, economic capital: financial resources can sustain young adults while looking for a job that matches their qualifications (Wiborg and Hansen, 2009), a process that requires a longer search period during a financial crisis. Second, social capital: families of high social origin often possess more influential social networks than families of low social origin (Corak and Piraino, 2011; Oesch and von Ow, 2017).

This article uses two data sources: the EU-SILC (rounds 2005 and 2011) and the ESS (all rounds between 2002 and 2014). Our focus is on young adults aged between 25 and 34 in six large European countries, namely, France, Germany, Italy, Poland, Spain and the United Kingdom. We estimate a series of regression models separately for each country that quantify whether the direct effect of social origin changed in terms of employment and earnings between young adults of low and high social origin between 2002 and 2014.

This article first gives an overview of the literature on social mobility. Next, it reviews how young adults fared during the Great Recession. It then discusses the theoretical arguments for or against an increase in the DESO during the Great Recession. Then, it describes the disparities in economic fluctuation across countries. We then present the data and elaborate the analytical methods used in this article before showing and discussing our results.

4.2 Theoretical background

4.2.1 Social mobility

In the wake of World War II, sociologists proposed several hypotheses about social mobility. The modernization hypothesis advocates that industrial societies are becoming more equal due to educational expansion and industrialization (Dahrendorf, 1959; Lipset, 1960; Bell, 1973). These scholars argued that educational institutions would be influential in

allocating individuals to jobs according to their expertise and skills in the labour market. They also expected that educational expansion would reach most individuals, as economic growth and democratic pressure prioritize the focus on human resources. Other hypotheses inspired by Marxism expected that the importance of class division in social mobility would not only persist but possibly grow larger over time (Braverman, 1974; Wright, 1989).

Within the growing body of research, two large comparative studies seem particularly noteworthy. Based on surveys collected in the 1990s, Erikson and Goldthorpe (1992) showed large differences in absolute class mobility rates among 12 industrial countries. They argued that these disparities were possibly due to the variation in the class structure across countries and its development over time. On the other hand, while they showed differences in relative mobility rates across countries and over time, these differences were small. The second main comparative study found that the patterns in absolute mobility flows became more similar among most countries in the 1990s than in the 1970s (Breen, 2004; Breen and Luijkx, 2004). However, they reported greater variations across countries in relative rates than did Erikson and Goldthorpe (1992). While these differences in relative rates tended to converge over time, they did not appear to have any systematic relationship with economic development (Breen and Luijkx, 2004).

While the effect of origin on destination is mediated in large part through education, as shown in a previous study (Blau and Duncan, 1967), there is still a residual effect of origin on destinations after controlling for educational attainment. One might expect that the direct effect of social origin would decrease following the expansion of accessible education in the past several decades, but this effect on income and socioeconomic status seems to persist in most countries over time (Ballarino and Bernardi, 2016). Previous research in the United States suggested that the DESO is more pronounced among low educated individuals than among individuals with college degrees (Hout, 1988). However, later evidence challenged these findings and found little or no difference in the DESO among different educational groups in France (Falcon and Bataille, 2018), Spain (Bernardi and

Gil-Hernández, 2021), the United Kingdom (Laurison and Friedman, 2016), and the United States (Zhou, 2019).

While there might be some debate regarding whether the DESO is heterogeneous between low- and high-educated individuals, there is a consensus that this effect seems stable and even increases in several countries over time (Ballarino and Bernardi, 2016). The focus of this article is the question of whether the DESO changed after the 2008 financial crisis in the six largest countries of the European Union in that period: France, Germany, Italy, Poland, Spain, and the United Kingdom.

Previous findings show no time trend in the DESO on socioeconomic status in Germany, Italy, Spain and the United Kingdom. In contrast, in France, the DESO increased over time (Ballarino and Bernardi, 2016), while in Poland, it declined (Meraviglia, 2017). With respect to the DESO on earnings, there seems to be no change in the United Kingdom over time (Ballarino and Bernardi, 2016) and a U-shaped relationship in France, where this effect decreased between 1977 and 1985 and then rose (Bouchet-Valat et al., 2016).

4.2.2 The Great Recession and labour markets for young people

The 2008 financial crisis worsened the labour market conditions of young adults more than it did for older workers, as the former are more sensitive to the business cycle (OECD, 2010). This is due to three mechanisms. First, the experience trap' is a challenge, as most young adults enter the labour market with no prior experience. As most jobs require a minimum amount of experience, this can lead to a vicious cycle of unemployment early in the career. Second, know-how in the job search favours older workers over younger workers, as the former are often more efficient in finding a job. Third, young adults have lower financial commitments (e.g., loans, child expenses) than older adults. This puts less pressure on young people to find employment, and they can also be supported for a while by their parents (Bell and Blanchflower, 2011).

While the labour market conditions of young people improved in the early 2000s,

this optimism disappeared following the 2008 financial crisis. Unemployment was higher among young adults than among all older cohorts. The repercussions of the economic crisis also extend to the type of employment: young workers are more likely to be faced with precarious employment than older workers. For example, part-time jobs and zero-hour contracts were more prevalent among young adults in some European countries, such as Italy and the United Kingdom, following the 2008 financial crisis than in the period that preceded it (Eurofound, 2016; Prassl, 2018).

Following the Great Recession, some governments implemented new schemes to enhance the difficult labour market situation of young people (OECD, 2009; Bell and Blanchflower, 2011). However, they did not last very long in many European countries because debt rose sharply, consumption plunged, budget deficits increased, and GDP decreased following the 2008 financial crisis. In an attempt to fight budget deficits, the EU, the IMF and the ECB pushed for an agenda that included austerity measures and tax increases. Young people were not spared from these new measures, and some governments cut support for students and increased tuition fees, such as in the United Kingdom and Spain (Theodoropoulou and Watt, 2011; Antonucci and Hamilton, 2014). Needless to say, these retrenchments further aggravated young individuals' labour market conditions.

A comparative study for the period between 2000 and 2010 found that the likelihood of being poorly paid among young adults increased following the Great Recession in Spain, the United Kingdom and the United States, but this effect was less pronounced in Norway and almost absent in Germany (Sironi, 2018). Other studies show either no evidence of a strong impact of economic recessions or procyclical findings - an association in which inequalities decrease when the economy declines. As noted by Pöyliö (2020), inequalities in college enrolment among young adults of different social origins decreased following the Great Recession in the United States. Another study analysed whether the Great Recession increased the co-residence of young adults with their parents due to financial difficulties (Aassve et al., 2013). Although the youth experienced more unemployment and financial hardships, co-residence notably increased in only Hungary, France

and Sweden out of 24 countries.

4.2.3 Economic recessions and employment

There are different mechanisms at play that can influence the employment behaviour of young adults of different social origins during an economic recession. Young adults may benefit from their parents' social capital. People tend to choose friends who resemble themselves. In this logic, one would expect people in higher class positions (e.g., managers or professionals) to befriend one another. This means that families with high social origin are more likely to know about openings of high-prestige jobs. Consequently, they can indirectly influence the process of selection to favour their children. Since one-third to half of all jobs are obtained through informal contacts in advanced economies (Granovetter, 1995; Pellizzari, 2010), it is expected that social capital is important to obtain a good career start. On the other hand, families of low social origin might struggle to mobilize their friends to help their children, as their network contacts are generally not in influential positions (Corak and Piraino, 2011; Oesch and von Ow, 2017). As much as these social dynamics are important during an expanding economic cycle, they probably matter even more during an economic recession, as employers raise their hiring standards and become more selective (Reder, 1955; Devereux, 2002). Subtle favouritism can also be practised by employers during that period. They can perceive direct or indirect signals from the interviewees' behaviour, such as their accents and etiquette, that are more present among circles of high social origin (Friedman and Laurison, 2019).

Economic capital may play a protective role during a financial crisis. Young adults of high social origin are less likely to quickly accept a job that does not match their skills, as they can be sustained financially by their parents (Bell and Blanchflower, 2011). On the other hand, financial pressure might incentivize young adults from disadvantaged backgrounds to accept any job during an economic recession. A study in the United States found that wealth inequalities increased in favour of highly educated people following the 2008 economic recession. It shows that the median wealth of households whose heads had

a BA degree fell by 2011 to 70% of the 2003 level compared with 19% in households whose heads had no high school education (Pfeffer et al., 2013). Even beyond the role of parents, the labour market supply could change during an economic recession if people cohabit or marry partners with similar social origin, education or social class, as can occur under the influence of homogamy (Kalmijn, 1991). Consequently, if one partner experiences job loss or financial difficulties during an economic recession, the other partner might step in and become employed to support the household. Previous research supports this notion and reports that wives entered the labour market in response to their husbands' job loss following the Great Recession in the United States (Mattingly and Smith, 2010). This increase in labour market supply is likely to be more common among young adults of low social origin, as they experience more financial strains during economic recessions.

There are other counterfactual outcomes to employment during economic recessions that can be advantageous to young adults, such as education. Previous research suggests that enrolment rates in education are countercyclical (Dellas and Koubi, 2003). That is, people are more likely to pursue education during economic recessions. This is likely to occur because economic downturns lead to higher job loss and decrease new employment openings. However, the opportunity cost of pursuing further education is likely to be different between young adults of different social origins. Education might include costs of tuition, housing, and books. During economic recessions, these financial burdens are more likely to hinder the enrolment - or increase the drop-out - of young adults of disadvantaged background compared with young adults of advantaged background. Moreover, parents of low social origin might face a reduction in earnings or experience a layoff at a higher rate than parents of high social origin. This could put more pressure on young adults of low social origin to find employment and contribute to family income. Empirical evidence in the United States supports this claim, where it examined the period between 1968 and 2000 and reports that the rate of college enrolment among young people was lower in households that expected to have lower incomes (Christian, 2007). Other evidence from Italy reports that the drop-out probability increased for students with disadvantaged

backgrounds following the Great Recession (Adamopoulou and Tanzi, 2017).

Young adults of low social origin are more pressed to find a job because they have less economic capital than young adults of high social origin. On the other hand, young adults of high social origin are more likely to find a job due to their parents' social capital. As arguments seem to support both directions, we hypothesize the following:

H1: The social origin gap in employment should have remained stable following the Great Recession.

4.2.4 Economic recessions and earnings

The Great Recession changed the economic structure in several countries, as some sectors, such as manufacturing and, above all, construction workers, were disproportionately hit (Redbird and Grusky, 2016). In many countries, employment in the construction sector contracted after the housing bubble burst. The increase in unemployed workers put pressure on wages, especially because skilled workers who lost their jobs may have applied for positions with lower wages, as happened during earlier economic crises (Devereux, 2002). This form of crowding out mechanism is likely to lead to a greater asymmetry in bargaining power between workers and employers. Generally, during and immediately after recessions, companies take advantage of this situation by cutting wages and raising hiring standards in the face of the increasing influx of workers. This situation might be more common among young adults of low social origin than among young adults of high social origin, who may be financially supported by their parents until they find jobs that match their skills or their expected salary.

The economic recessions between 1976 and 1995 affected Canadian college graduates differently. Students with low predicted wages experienced more earnings losses than students with high predicted wages (Oreopoulos et al., 2012). Students in the United States also faced this penalty when the economy was slack. Those who graduated during the economic crisis of the early 1980s experienced approximately 20 percent more wage losses than those who graduated during an expansionary economic cycle. Moreover, the

earning losses persisted over almost the entire period observed between 1979 and 1989 (Kahn, 2010). Empirical studies for the period between the 1980s and early 2000s show that economic recessions tend to aggravate the employment prospects and earnings of low educated labour market entrants in Japan and the United States (Genda et al., 2010). The findings suggest that those losses are stronger for the low educated and longer lasting in Japan than in the United States. Similarly, in Germany, young adults of low social origin experienced more earnings losses than young adults of high social origin when local unemployment rates were high between 1984 and 2011 (Zwysen, 2016). An American study found that having a college degree protected young adults during the Great Recession in the United States. However, this premium was experienced only by individuals with an advantaged social background and not by their peers from disadvantaged backgrounds (Curry, 2019). The overview of this literature leads us to formulate the following hypothesis:

H2: The social origin gap in earnings among young adults grew following the Great Recession.

4.2.5 The Great Recession and countries' differences

Although all European countries were affected by the Great Recession of 2008/09, the extent of the crisis differed across them. Schematically, one can distinguish two groups of countries. The first consists of Austria, Germany, Nordic countries, and several Eastern European countries that have close economic links with Germany. These countries recovered quickly after the crisis and resumed their previous economic growth. The second group consists of Ireland, Southern European countries and some Eastern European countries that struggled in the aftermath of the crisis. Many of them started to recover economically only at the beginning of 2014, experiencing long periods of unemployment and an increase in the level of public debt (House et al., 2017).

Figure 4.1 presents data on the unemployment rate for France, Germany, Italy, Poland, Spain and the United Kingdom from 2002 to 2014. This Figureshows that Spain,

Italy and the United Kingdom had the highest increase in unemployment rates following the Great Recession. During the same period, France had a slight surge in unemployment rate. On the other side of the spectrum, Germany and Poland[1] experienced drops in unemployment rates over the same period. The unemployment rate in Poland before the Great Recession stands out from the rest of the countries, as its unemployment rate was approximately 20% in 2002 and decreased gradually to 9% in 2007. In that sense, we analyse Poland as a country that experienced economic expansion. In sum, Figure 4.1 indicates that compared with the other three countries, Italy, Spain and the United Kingdom were affected the most by the Great Recession. As discussed in the previous sections, deteriorating macroeconomic conditions are likely to influence the gap in earnings between young adults of different social origins. This leads us to our third hypothesis:

H3: The social origin gap in earnings changed in the countries most strongly affected by the Great Recession: Italy, Spain and the United Kingdom.

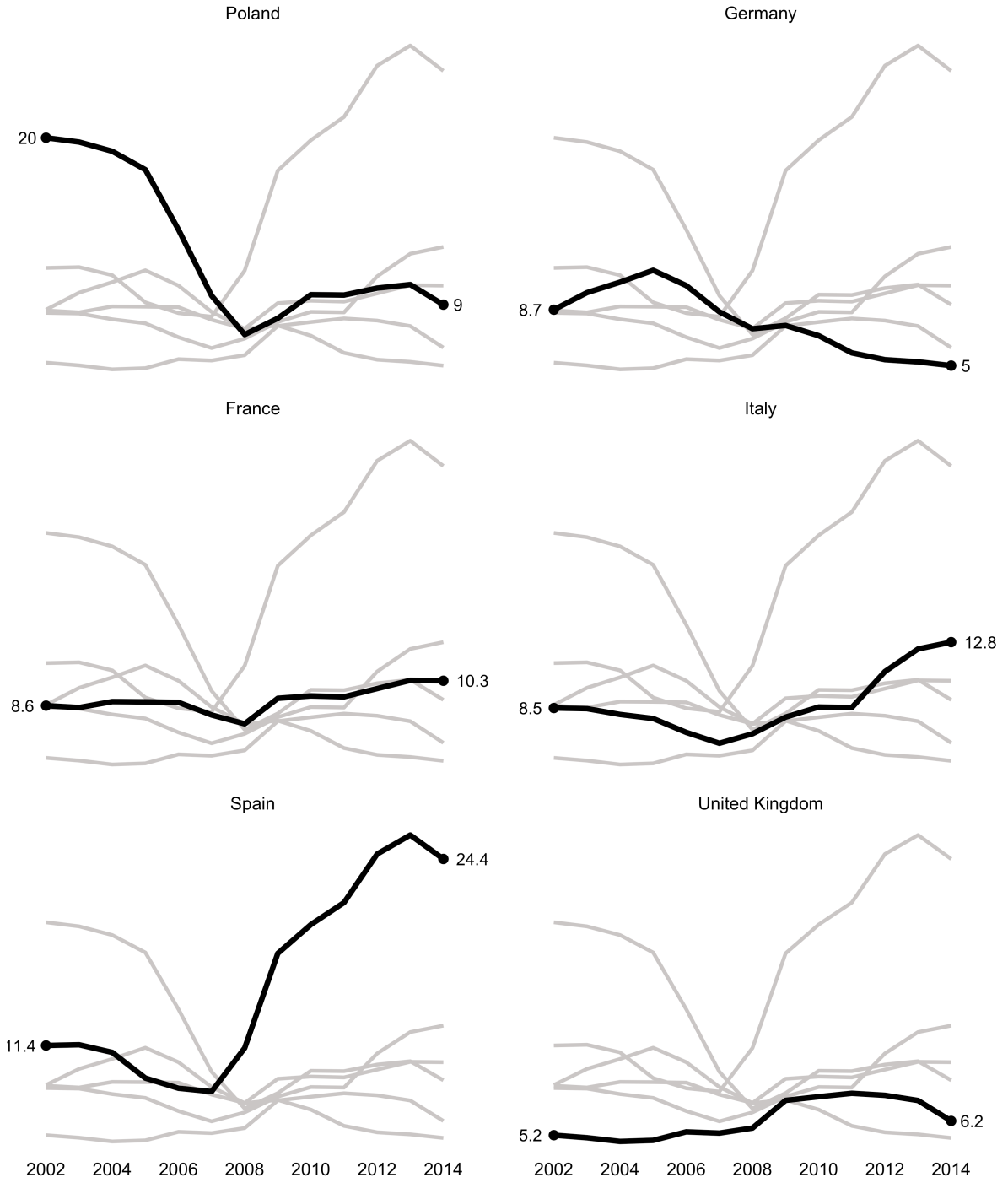
4.3 Data and methods

4.3.1 Data

Our analyses are based on two surveys. First, we use two rounds from the European Union Statistics on Income and Living Conditions (EU-SILC) in 2005 and 2011 (Eurostat, 2020). As our purpose is to examine the association between social origin and young adults' earnings and employment, these two cross-sectional surveys are selected because they are the only rounds that cover a period close to the 2008 financial crisis and that include information on parental background, in the case of the EU-SILC. Second, we use seven rounds of the biennial European Social Survey (ESS) between 2002 and 2014 (Norwegian Centre for Research Data, 2020). We then select six EU countries with the largest population, which account for approximately 70% of the EU's residents: France,

[1]Even though Poland experienced a currency devaluation at the onset of the Great Recession, the literature suggests that Poland was one of the European countries that was least affected by the 2008 financial crisis (Polanski, 2014; Allington and McCombie, 2016; Giugni and Grasso, 2018)

Figure 4.1: Unemployment rate between 2002 and 2014.



Source: OECD Labour Market Statistics, extracted 2021.

Germany, Italy, Poland, Spain and the United Kingdom. In addition to having demographic importance, these countries are interesting to study because they possess different welfare regimes and experienced different trajectories before and after the 2008 financial crisis. We focus only on adults aged between 25 and 34, as young people were particularly

vulnerable during the Great Recession (Bell and Blanchflower, 2011; Rothstein, 2021).

4.3.2 Measures

Our first outcome variable is self-reported employment. It is a binary variable: the non-employed versus those who work part-time or full-time jobs. The non-employed include all young adults who are not working regardless of whether they are actively looking for a job or not. The second key outcome is annual earnings and is only extracted from the EU-SILC, as the ESS does not contain a continuous annual earnings variable at the individual level but provides household income only in categories. Earnings are corrected for inflation[2] and only concern young adults with a paid job. We use the natural logarithm[3] of the Euro. The EU-SILC reports earnings in the Euro currency for all countries, even Poland and the United Kingdom, which have their own national currencies.

Our key independent variable is social origin, and we measure it using parental education. The most detailed version of parental education that we could construct across both data sources (i.e., EU-SILC and ESS) distinguishes three hierarchical categories: (1) both parents with lower secondary degree or below, (2) at least one parent with upper secondary and post-secondary non-tertiary education and (3) at least one parent with tertiary education[4].

We replicate our analysis using parental social class instead of parental education in the robustness section. The parental social class variable is harmonized across both data sets (i.e., EU-SILC and ESS) and is divided into three hierarchical categories. We use a merged version of the scheme developed by Oesch and Piccitto (2019), which distinguishes

[2]The EU-SILC data are harmonized and suitable for comparison; however, for Italy and Spain, there is information only on net earnings in both modules, while Germany and the United Kingdom are missing information on net earnings in 2011. The rest of the countries include information on gross and net earnings. The Spearman correlation between the two indicators reveals that they are closely linked, with a correlation of 99%. Therefore, we use net earnings in Italy and Spain and gross earnings in the rest of the countries.

[3]We recode zero earnings to one before taking the natural logarithm.

[4]In case of missing information on one of the parent's education, the educational attainment of the other parent was selected.

three employee classes: 1) upper-middle class: managers and professionals (ISCO 1 and 2); 2) lower-middle class: technicians, clerical, service, sales, skilled (i.e., agriculture, forestry and fish) and craft workers (ISCO 3 to 7); and 3) working class: plant and machine operators and elementary occupations (ISCO 8 and 9). These three categories closely mirror the scheme developed by Erikson and Goldthorpe (1992) between the service relationship for occupations at the top, intermediate occupations in the middle and the labour contract for working-class occupations at the bottom.

As we aim to measure the net effect of social origin on destination, we include respondents' education level as a control with three categories: (1) lower secondary and below (ISCED 0, 1 and 2), (2) upper secondary (ISCED 3), and (3) post-secondary and tertiary (ISCED 4 and 5). We add a binary period variable that differentiates between the periods that preceded and followed the Great Recession. For the EU-SILC dataset, the 2005 survey is considered the period that preceded the Great Recession compared with the 2011 survey. For the ESS data set, if the respondents were interviewed between 2002 and 2007, they were coded as prior to the crisis. On the other hand, if the respondents were interviewed in any period between 2008 and 2014, they were aggregated together and coded as post-crisis. We control for respondents' sex, age, and the interaction between social origin and education. We further control for the interaction between respondents' education and the time variable. When the employment outcome is used, we add a binary variable that distinguishes between the data sources to account for differences across them. Table D1 in the appendix provides the descriptive statistics.

4.3.3 Analytical strategy

Our goal is to investigate whether the social origin gap widens between young adults of low and high social origin following the 2008 financial crisis. We thus analyse whether the Great Recession had heterogeneous effects on young adults of different social origins. We use the following regression model separately for six countries:

$$\gamma_{it} = \beta_0 + \beta_1 Soc\_Origin_{it} + \beta_2 Period_t + \beta_3 Soc\_Origin_{it} * Period_t + \beta_4 Controls_{it} + \varepsilon \tag{4.1}$$

where γ stands for the logarithm of earnings or the employment status of individual i at time t. We estimate the binary variable of employment status using a linear probability model, as it makes the interpretation of the coefficients and the comparison across models easier (Mood, 2010). The coefficient β_3 is an interaction between social origin and period that estimates the differences in the gap of earnings - or employment - of young adults of high social origin compared with their counterparts of low social origin before and after the Great Recession. Controls$_{it}$ includes a vector of control variables, such as sex, education and age. The error term ε includes everything unobserved by the model, such as measurement error or luck. As our analysis of the social origin gap in earnings is limited to two modules and the number of higher-level units in our sample does not exceed the minimum number of units (30) required for unbiased estimates of the individual- and country-level effects, we do not follow a multilevel approach (Bryan and Jenkins, 2016). While our study must be regarded as unearthing potential associations rather than showing pure causal effects, the presence or absence of a (possibly changing) association between social origin and labour market outcomes appears of interest per se.

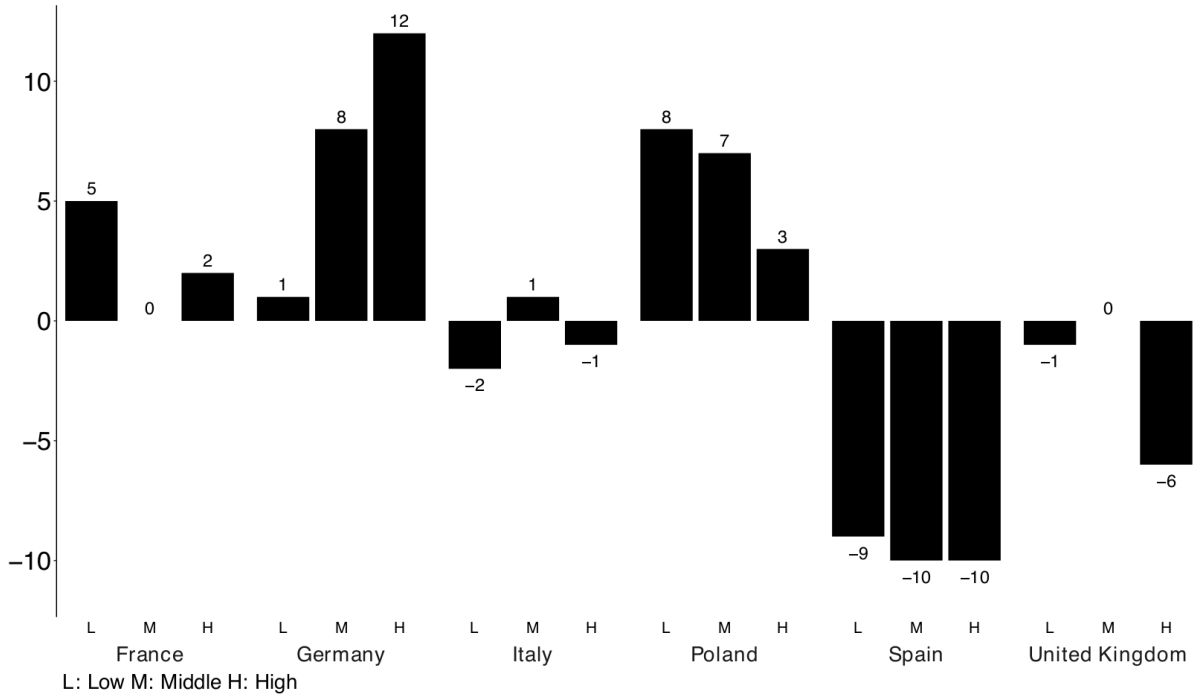
4.4 Descriptive results

4.4.1 Employment

We examine the descriptive evidence for a moderating impact of the Great Recession on the employment of young adults of different social origins in Figure 4.2. This Figure uses data from the EU-SILC and the ESS, reports the change in employment in percentage points and displays the period that preceded and followed the Great Recession. All mod-

ules from both data sources prior to 2008 were pooled together and were compared with all modules that came after that period, which were also combined jointly. Over that period, we see that following the Great Recession in Germany, employment increases by one percentage point for young adults of low social origin compared to an increase of twelve percentage points for young adults of high social origin. We observe a different pattern in France, Poland and the United Kingdom, where young adults of high social origin were more disadvantaged in terms of employment than young adults of low social origin following the 2008 financial crisis. For example, in the United Kingdom, employment decreases by one percentage point for young adults of low social origin compared with a fall of six percentage points for young adults of high social origin. In Italy and Spain, we see more or less a similar change in employment between young adults of low and high social origin following the Great Recession.

Figure 4.2: Change in employment in percentage points before (2002-07) and after (2008-14) the Great Recession, by parental education. Source: EU-SILC and ESS, computations by the authors.

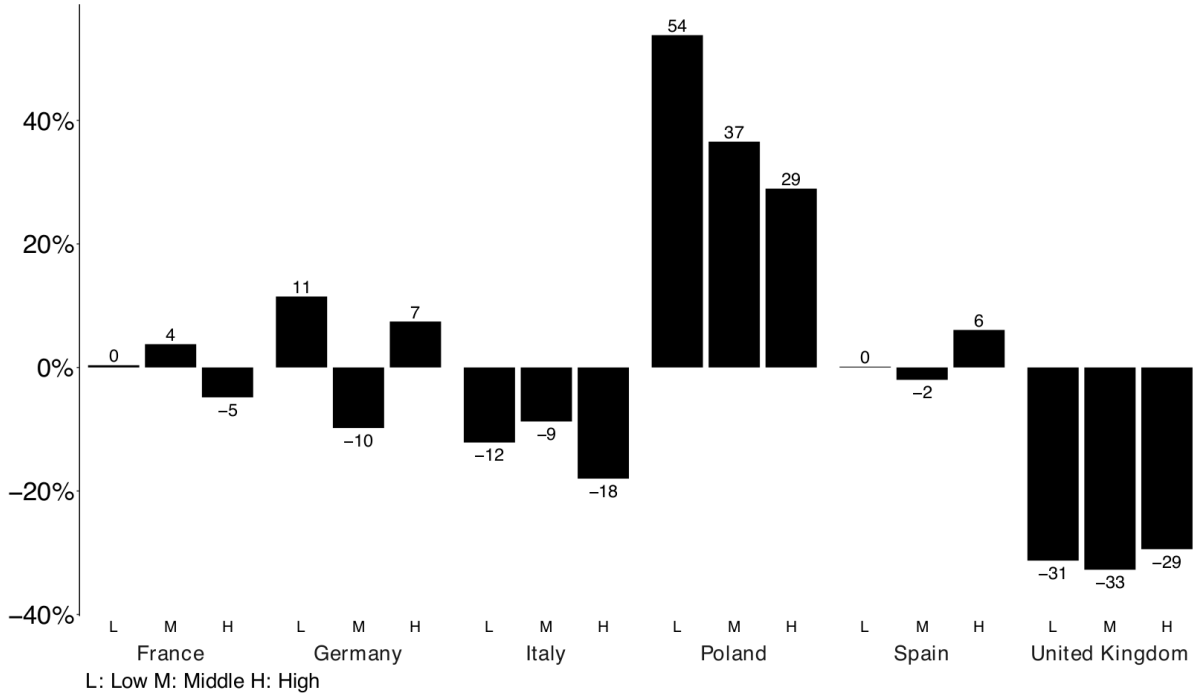


Note: The dummy period variable prior to the Great Recession includes the EU-SILC survey year in 2005 and the ESS rounds in 2002, 2004 and 2006. Following the Great Recession the dummy period variable includes the EU-SILC survey year in 2011 and the ESS rounds in 2008, 2010, 2012 and 2014.

4.4.2 Earnings

Figure 4.3 uses data from the EU-SILC and reports the change in earnings in percent among young adults of different social origins between 2005 and 2011[5]. It shows that the earnings remained stable for young adults of low social origin compared with an increase of 6% for young adults of high social origin in Spain. In other words, young adults of low social origin experience more disadvantages in terms of earnings than their counterparts of high social origin following the Great Recession in Spain. On the other hand, young adults of high social origin experience more disadvantages in terms of earnings than their counterparts of low social origin in France, Germany, Italy and Poland following the 2008 financial crisis. Among this group, we find the most notable difference in Poland, as earnings increase by 54% for young adults of low social origin compared with an increase of 29% for young adults of high social origin.

Figure 4.3: Change in inflation-adjusted earnings before (2005) and after (2011) the Great Recession, by parental education. Source: EU-SILC, computations by the authors.



Note: The dummy period variable prior to the Great Recession includes the EU-SILC survey year in 2005. Following the Great Recession the dummy period variable includes the EU-SILC survey year in 2011.

[5]Earnings are measured in Euro in the EU-SILC. The large decrease in earnings of young adults in the United Kingdom is strongly influenced by the devaluation of the British Pound relative to the Euro between 2005 and 2011.

4.5 Results from multivariate models

We move on to analyse our multivariate models (see Tables D2 and D3 in the appendix). Figure 4.4 shows the coefficient β_3 in equation 4.1, that is, the interaction effect of parental education with the period variable. This interaction shows whether the direct effect of social origin changed following the Great Recession by comparing young adults of low social origin with their counterparts of high social origin. The left panel is estimated using linear probability models[6], and the right panel is estimated using OLS. Negative values of the interaction indicate that, net of education, young adults of low social origin experienced more disadvantages in terms of employment (left panel) or earnings (right panel) compared with young adults of high social origin following the Great Recession. Figure 4.5 illustrates the predicted probabilities of employment (left panel) and earnings (right panel) of young adults of low and high social origin before and after the Great Recession (conditional on education). The left panel in Figure 4.4 and Figure 4.5 uses the EU-SILC and ESS data, represents the employment outcome and compares the periods of 2002-07 and 2008-14. The right panel in Figure 4.4 and Figure 4.5 represents the log earnings outcome, compares the period of 2005 and 2011 and uses only the EU-SILC data, as the ESS does not include a continuous annual earnings variable at the individual level.

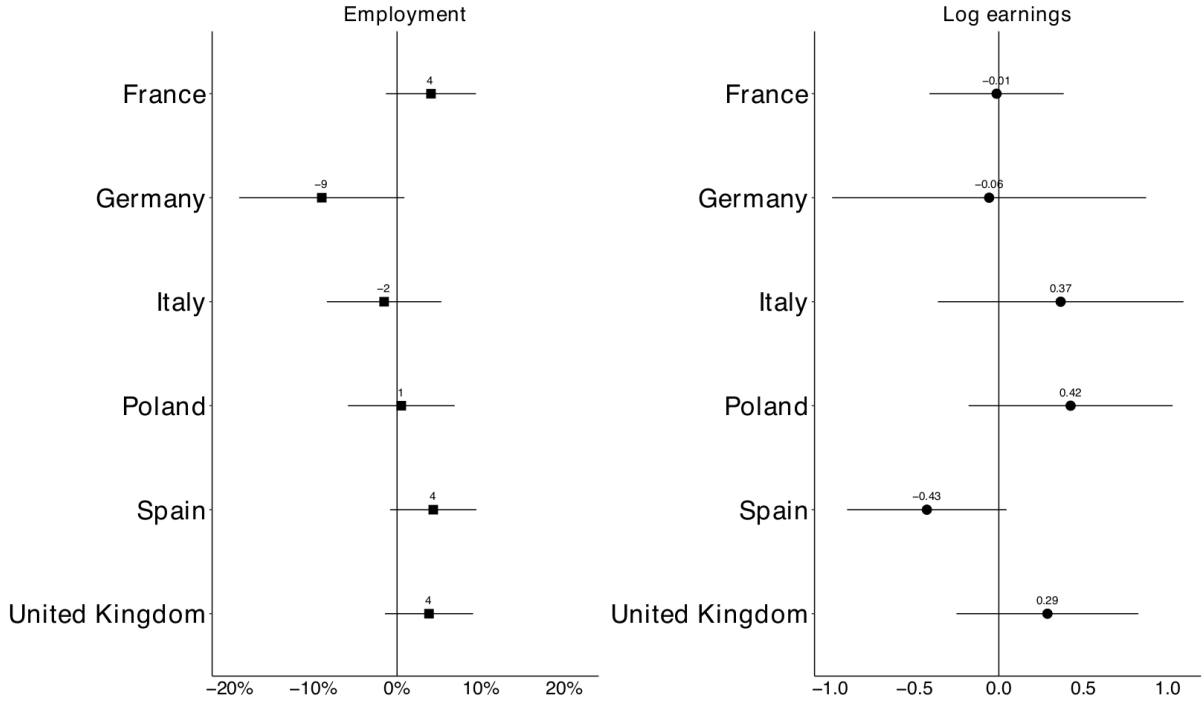
4.5.1 Employment

The left panel in Figure 4.4 shows that there is a negative coefficient for Germany, suggesting that the gap in the direct effect of social origin in terms of employment changed by 9 percentage points following the Great Recession. However, this estimate is only significant at the 0.1 level (p=0.0740). On the other hand, we see a different trend in France, Spain, and the United Kingdom, whereby the gap in the direct effect of social

[6]We plot the predicted probabilities of the logistic regression models in D1. The results suggest that the use of linear probability models or logistic regression models leads to identical substantive findings.

origin changed by 4 percentage points in terms of employment following the Great Recession. However, the estimates do not reach statistical significance at the 0.05 level in all three countries.

Figure 4.4: Change in the direct effect of social origin on employment (left) and log earnings (right) comparing low-origin adults relative to high-origin adults aged between 25 and 34.



Note: Left panel displays the interaction between parental education and period on employment. Coefficients from linear probability models. 95 percent confidence intervals are plotted horizontally. Dependent variable: employment. Models control for age, sex, respondent education, parental education, period, parental education* respondent education, respondent education*period and data source. The dummy period variable prior to the Great Recession includes the EU-SILC survey year in 2005 and the ESS rounds in 2002, 2004 and 2006 (coded=0). Following the Great Recession the dummy period variable includes the EU-SILC survey year in 2011 and the ESS rounds in 2008, 2010, 2012 and 2014 (coded=1). Full Table can be found in the appendix in Table D2. Sample size: France: 6501; Germany: 6280; Italy: 11396; Poland= 10708; Spain= 9817; United Kingdom= 5370. Right panel displays the interaction between parental education and period on log earnings. Coefficients from linear regression models. 95 percent confidence intervals are plotted horizontally. Dependent variable: log earnings. Models control for age, sex, respondent education, parental education, period, parental education*respondent education and respondent education*period. The dummy period variable prior to the Great Recession includes the EU-SILC survey year in 2005 (coded=0). Following the Great Recession the dummy period variable includes the EU-SILC survey year in 2011 (coded=1). Full Table can be found in the appendix in Table D3. Sample size: France: 3803; Germany: 2652; Italy: 7522; Poland= 6379; Spain= 5522; United Kingdom= 2698.

The model in Figure 4.5 predicts a value of 0.76 for employment for young adults of low social origin (grey line) and 0.7 for young adults of high social origin (black line) in Spain before the 2008 financial crisis (conditional on education). Both predicted estimates decrease following the Great Recession, as the model predicts a value of 0.71 for employment for young people of low social origin compared to 0.61 for their counterparts of high social origin (conditional on education). These predicted values translate to a

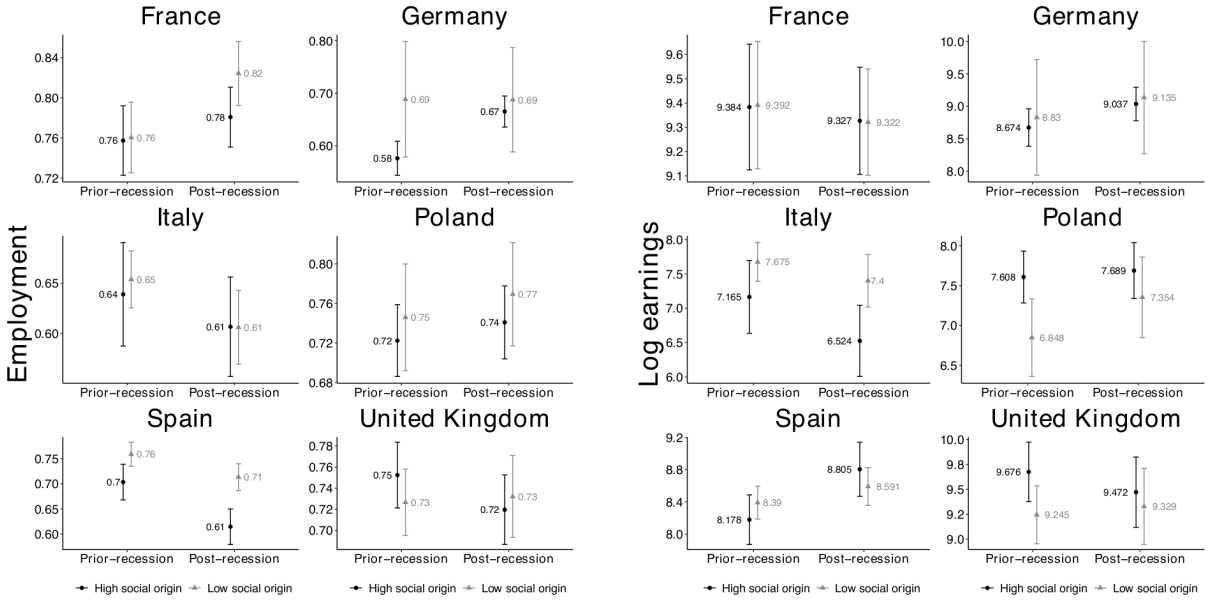
change of 4 percentage points ((0.7-0.76) - (0.61-0.71) = 0.04) in the gap of the direct effect of social origin in terms of employment in Spain following the Great Recession, as shown in Figure 4.4. Figure 4.5 suggests that net of education, the likelihood of employment did fall more for young adults of high social origin than for those of low social origin in Spain following the 2008 financial crisis. Figure 4.5 displays a similar pattern in the United Kingdom. On the other hand, while Figure 4.4 also shows a positive size effect of 4 percentage points in France, Figure 4.5 suggests that it is driven by a different pattern. That is, net of education, the likelihood of employment increased for young adults following the Great Recession, but this increase was higher for young adults of low social origin than for their counterparts of high social origin.

4.5.2 Earnings

Next, the right panel in Figure 4.4 shows that the interaction between parental education and period on log earnings yields a large negative effect size in Spain following the Great Recession. Point estimates show that the gap in the direct effect of social origin negatively changed by 0.43 in terms of log earnings. However, this estimate is only significant at the 0.1 level (p=0.0768). The model in Figure 4.5 predicts a value of 8.39 for log earnings for young adults of low social origin and 8.178 for young adults of high social origin in Spain prior to the Great Recession (conditional on education). Both predicted values increase in 2011, as the model predicts a value of 8.591 for log earnings for young adults of low social origin and 8.805 for their counterparts of high social origin following the 2008 financial crisis (conditional on education). These predicted values translate to a change of 0.43 ((8.178-8.39) - (8.805-8.591) = - 0.43) in the gap of the direct effect of social origin in terms of log earnings in Spain following the Great Recession, as shown in Figure 4.4. We plot the predicted probabilities for earnings[7], rather log earnings, in Figure D2 and find

[7]To check whether our findings change substantively in case earnings are used instead of log earnings, we compare the change in the gap of the direct effect of social origin for both outcomes in Figure D3. The Figure suggests that there is no substantive difference between both outcomes in all countries except for Poland. This divergence in Poland seems to be influenced by the highly negative skewness in the earnings variable. This is clear in Figure D4 where we plot the density of earnings and log earnings. Figure D4

Figure 4.5: Predictive probabilities of employment (left panel) and log earnings (right panel) by social origin and period.



Note: Left panel displays the predictive probabilities from linear probability models. 95 percent confidence intervals are plotted vertically. Dependent variable: employment. Models control for age, sex, respondent education, parental education, period, parental education* respondent education, respondent education*period and data source. The dummy period variable prior to the Great Recession includes the EU-SILC survey year in 2005 and the ESS rounds in 2002, 2004 and 2006 (coded=0). Following the Great Recession the dummy period variable includes the EU-SILC survey year in 2011 and the ESS rounds in 2008, 2010, 2012 and 2014 (coded=1). Sample size: France: 6501; Germany: 6280; Italy: 11396; Poland= 10708; Spain= 9817; United Kingdom= 5370.
Right panel displays the predictive probabilities from linear regression models. 95 percent confidence intervals are plotted vertically. Dependent variable: log earnings. Models control for age, sex, respondent education, parental education, period, parental education*respondent education and respondent education*period. The dummy period variable prior to the Great Recession includes the EU-SILC survey year in 2005 (coded=0). Following the Great Recession the dummy period variable includes the EUSILC survey year in 2011 (coded=1). Sample size: France: 3803; Germany: 2652; Italy: 7522; Poland= 6379; Spain= 5522; United Kingdom= 2698.

that this change in the gap of the direct effect of social origin is sizable and corresponds to - 737 euros ((11977.5-11075.3) - (12544.6-10905) = - 737).

Table D3 suggests that not only young adults of low social origin faced more disadvantages in terms of log earnings in Spain following the Great Recession, but this also applies to young adults of middle social origin when compared with their counterparts of high social origin. Point estimates show that the gap in the direct effect of social origin negatively changed by 0.67 in terms of log earnings in Spain following the 2008 financial crisis (see Table D3). This estimate is statistically significant at the 0.05 level.

On the other hand, point estimates in Figure 4.4 suggest that the gap in the direct

also shows that the tail of the distribution of log earnings is less skewed than the one of earnings in all countries. This is not surprising as log earnings are used to avoid issues with non-normality and growing error variance (see Ermini and Hendry, 2008).

effect of social origin in terms of log earnings positively changed by 0.42 in Poland following the 2008 financial crisis. However, this coefficient is not statistically significant at the 0.05 level. Figure 4.5 indicates that while log earnings increased for both young adults in Poland following the Great Recession, this increase was higher among young adults of low social origin compared with their counterparts of high social origin. In the rest of the countries, the social origin gap in terms of log earnings remained stable following the Great Recession.

4.5.3 Robustness checks

A concern with our analyses is that including individuals with marginal part-time jobs may bias our findings. Thus, we discard observations with marginal part-time work, that is, individuals working less than 10 hours per week. Figure D5 shows that there are two notable differences between our original findings and the robustness checks that are present in Spain and Germany. Our original findings indicate that net of education, young adults of low social origin experienced more disadvantages in terms of employment than their counterparts of high social origin in Germany following the Great Recession. On the other hand, young adults of high social origin experienced more disadvantages in terms of employment than their peers of low social origin in Spain. Our findings in Figure D5 reveal a null finding for both countries over the same period. Our robustness checks in terms of log earnings are robust, as we find similar results to our original analysis in all countries (see Figure D5 in the appendix).

Likewise, a sceptical reader might consider that social origin is better measured with parental social class. Therefore, we rerun our regression analyses on employment and earnings, as shown in Figure D6 in the appendix. The robustness checks on employment show different findings in France, Spain and the United Kingdom. While our original findings show that, net of education, young adults of high social origin faced more disadvantages in terms of employment than their counterparts of low social origin in these three countries, this is not the case if we use parental social class as a measure of social

origin. This implies that this robustness check is more in line with our first hypothesis - that the social origin gap in employment should remain constant following the Great Recession - than our original results. Furthermore, our robustness checks in terms of log earnings do not hold in Spain or Poland in case parental social class is used as a measure of social origin instead of parental education.

4.6 Discussion

Amidst considerable concerns about a heterogeneous effect scenario whereby the Great Recession disproportionally affects disadvantaged groups (Redbird and Grusky, 2016), our article examined the extent to which such concerns are warranted. To do so, we examined whether the direct effect of social origin in terms of employment and earnings changed among young adults of low and high social origin after the Great Recession in the six largest countries of the European Union. A first group consisting of Italy, Spain and the United Kingdom was strongly hit by the recession, in contrast with a second group including France, Germany and Poland, which was less touched by the recession.

Three main findings emerge from our empirical analysis. First, against our expectations, we find that, net of education, the chances of employment of young adults of high social origin were more negatively affected compared with their counterparts of low social origin following the Great Recession in France, Spain and the United Kingdom. This contradicts H1, which proposed that the social origin gap in employment would remain stable following the Great Recession. Our findings suggest that employment fell more for young adults of high social origin than for their counterparts of low social origin in Spain and the United Kingdom. This could happen if young adults of high social origin do not find a job that matches their skills or expected salary during an economic recession and thus extend their search period of employment. This is less likely to occur among young adults of low social origin who might have to step in and support their parents or partner in case of a financial burden or a job loss.

Second, with respect to earnings, our results indicate that young adults of low social origin seemed to be more harmed than their counterparts of high social origin following the Great Recession in Spain. Our findings point to a higher increase in earnings for young adults of high social origin compared with their counterparts of low social origin. This might be driven by the social capital of the parents. When the economy is slack, parents of high social origin are more likely to influence their children's chances of finding employment with better pay than their counterparts of low social origin. In general, this finding provides only partial support for H3, which proposes that the social origin gap in earnings changed in the countries most strongly affected by the Great Recession. One possible explanation for the null findings in Italy and the United Kingdom may be linked to the intensity of the financial crisis. While the unemployment rate increased by 12 percentage points in Spain between 2005 and 2011, it rose by only 4 and 3 percentage points in Italy and the United Kingdom, respectively. It could be that the gap in the direct effect of social origin changes only in countries that experience a severe financial crisis. Third, we found that in Poland, the gap in the direct effect of social origin in terms of employment remained stable following the Great Recession. On the other hand, the analysis showed that the gap in the direct effect of social origin in terms earnings contracted following the 2008 financial crisis. These findings suggest that an economic boom is particularly helpful for the earnings of young adults of low social origin. Hence, macroeconomic policy that stimulates growth and employment seems especially effective for the earnings of disadvantaged youth. Our findings in this respect are in line with previous research showing that the disadvantaged benefit the most from economic expansion (Hines et al., 2001).

Our findings were not consistently robust and should be taken with caution. This is the case if parental social class is used instead of parental education. Parental education and parental occupation have been used interchangeably in intergenerational research. After all, parental education precedes parental occupation and highly influences it. While both indicators can be used to measure social origin, scholars also argue that they can

operate - to some extent - through different mechanisms (Jæger and Holm, 2007; Bukodi and Goldthorpe, 2013; Erola et al., 2016). Parental education is more likely to influence children's outcome through skills, traits and cultural capital. On the other hand, parental social class is more likely to affect children's outcome through status and prestige (Erola et al., 2016). However, it is important to note that these different mechanisms of parental education and parental social class are not completely independent from each other and can largely overlap. Our findings suggest that parental education seems to matter more than parental social class with respect to the change in the direct effect of social origin between young adults of low and high social origin. This is in line with previous research which shows that parental education is more important than parental social class for young adults' socioeconomic status (Erola et al., 2016). Alternatively, the differences in our findings between parental education and parental social class could be driven by the lack of detailed data on parental occupation. We could only construct a parental social class using one digit of precision.

Our study presents several limitations. First, earnings are self-reported by the respondents, which likely leads to some measurement errors. However, to the best of our knowledge, there are no better-quality comparative European data on earnings that include information on parental background over the time span under study. Second, our findings with respect to earnings capture only two time points, which could be outliers of a general trend. To check whether this is the case, we plot the overall trends of earnings inequality in our countries in Figure D7 and find that the two time points in 2005 and 2011 are not outliers. Finally, we capture only whether the direct effect of social origin changed in the short term following the Great Recession. It would also be interesting to measure the long-term repercussions, as the 2008 economic crisis may have led to structural changes in the labour market. Detailed data on single countries might be used to address this possibility, but data that cover multiple countries face more constraints.

New concerns regarding social mobility in OECD countries have recently been raised (OECD, 2018). Our analysis of the aftermath of the Great Recession may also be relevant

to the recent economic crisis unfolding after the COVID pandemic. As our findings suggest that only severe economic recessions could disproportionally affect the earnings of disadvantaged groups, there may be no strong reason for concern, as the economic recession following the COVID crisis is less severe than the Great Recession thus far.

Chapter 5

The Impact of the Great Recession on Health Inequalities in Europe: Evidence from 26 Countries

Author: Jad Moawad

Abstract

The frequent recurrence of economic crises threatens public health. To buffer against some of the detrimental effects, governments intervene to support vulnerable groups. We present evidence of the association between macroeconomic indicators and long-standing illness. We use longitudinal data from the European Union Statistics on Income and Living Conditions (EU-SILC) in 26 countries from 2007 to 2010. Our results provide robust evidence that the Great Recession widened the health gap between the working class and the upper-middle class who are near retirement (50-64). The magnitude of the effect is sizable; an increase of 5 percentage points in the unemployment rate is associated with an increase in the health gap of approximately 1%.

5.1 Introduction

The 2008 financial crisis was one of the largest economic shocks of the last hundred years in the Western world. In addition to generating losses in trillions of euros, the financial crisis had widespread social effects. An important byproduct of the economic recession was its effect on health. Previous research found that in general, the Great Recession worsened various health outcomes (see Burgard and Kalousova, 2015). We contribute to this literature by examining whether working class adults of different age groups are at a higher risk of long-standing illness than the upper-middle class following the Great Recession. Our article is relevant for social policies that target health inequalities because economic recessions can affect the viability of societies (Atkinson and Morelli, 2011). If we understand how the 2008 economic crisis affected health disparities, we might be better equipped to address these disparities when the next crisis hits. This is important because previous research suggests that exposure to macroeconomic downturns can have long-lasting health consequences (Hessel and Avendano, 2016).

The study of how economic recessions affect individuals' health is well established in sociology. In general, vulnerable subgroups of the population are at a greater risk of experiencing a deterioration in health following a financial crisis. For example, members of the working class may possess more precarious contracts and thus may be more likely to be laid off than their upper-middle class counterparts during economic recessions. Because job loss is associated with increased levels of stress, anxiety and depression (Brand, 2015), the working class might be more affected by economic recession than the upper-middle class.

Our article examines this issue in 26 European countries using longitudinal data from the European Union Statistics on Income and Living Conditions (EU-SILC) surveys from 2007 to 2010. We perceive the Great Recession similarly to a natural experiment whereby people and countries are exposed to an event without selecting themselves to it. As countries were hit differently by the financial crisis, our design can compare health

gaps across social classes between strongly affected countries (e.g., Spain, Ireland) and countries less affected by the economic downturn (e.g., Poland). We analyze our research questions using two health outcomes: long-standing illness and self-perceived health. We contribute to the literature in two ways. First, we provide findings on how the Great Recession is associated with long-standing illness across different social classes and age groups. To the best of our knowledge, this is the first study to do so. Second, we complement the shortcomings of several previous studies on self-perceived health by i) leveraging the longitudinal aspect of our data, ii) examining the intersection between age groups and social class, and iii) including several measures to gauge the Great Recession.

We find no differences in health outcomes among young adults (18-34) of different social classes following the Great Recession. On the other hand, our findings suggest that the health gap between working class near-retirement adults (50-64) and their peers in the upper-middle class widens under negative economic conditions. This gap holds even after controlling for job loss and several employment transitions. Finally, our findings are robust across several sensitivity tests.

5.2 Theoretical Framework

5.2.1 Impact of economic recessions on health

A major factor in the worsening of health conditions during economic recessions is stress, which can be caused by work. Acute and chronic stress increase anxiety, depression and inflammation levels in the body, which in turn can lead to physiological sickness. The stressor-elicited endocrine response is another factor whereby stressors increase the likelihood of disease risk. Acute and chronic stress can be linked to cardiovascular, autoimmune, infectious, and coronary artery diseases (Cohen et al., 2007).

Job loss or a decrease in working hours can lead to financial strain because many people fall behind on their mortgage payments or change their lifestyle to accommodate a new budget (Turunen and Hiilamo, 2014). Beyond the financial aspect, job loss disrupts

people's self-esteem, time structure and skills (Pearlin et al., 1981; Brand, 2015). It is disputed whether an inverse causality exists (Schmitz, 2011); that is, people who feel unwell may be more likely to lose their jobs because they perform worse than their healthy counterparts during economic recessions. However, previous research challenges this notion by showing that job loss caused by unforeseen plant closure negatively affects displaced workers' mental and physical health (Brand and Burgard, 2008).

Worsening health conditions can also be linked to ambient environmental factors that cause stress during worsening economic conditions. For example, as foreclosure rates increase, changes in community and social support can lead to stress. Another factor that contributes to deteriorating health during economic recessions is excessive consumption of alcohol and tobacco as a coping mechanism. Following the dot-com bubble crisis in the early 2000s, while alcohol consumption in the United States decreased on a national level, binge drinking increased (Dee, 2001; Dávalos et al., 2012). The repercussions of binge drinking are detrimental to individuals' mental and physical health. During hard times, people are likely to abuse different substances to cope with stress, which can worsen their health and lead to a vicious cycle (Catalano et al., 2011).

The Great Recession was among the largest shocks in many European countries. Therefore, we expect that it worsened health outcomes (Hypothesis 1).

5.2.2 Heterogeneous effect

Social class differences

Previous research shows that social classes have distinctive lifestyles and consumption behaviors that can reflect differently on their health (Fein, 1995). The working class is more often exposed to unhealthy environments and poorer housing conditions than their peers in the upper-middle class. This is also reflected in the work environment as the working class face more occupational hazards than the upper-middle class. Furthermore, the working class does not always have the means, access, or knowledge to utilize medical services. Individuals at the bottom of the social class possess few resources to control

their environment. They therefore experience less freedom and more uncertainty and helplessness than their peers who are positioned above them (Simandan, 2018). The latter have more financial independence and intellectual resources at their disposal, which contribute to better control over their life circumstances and less uncertainty compared with the working class. As a result, the working class is more likely to experience psychological and physical distress throughout their lives than the upper-middle class. While there are other reliable measures (e.g., education) to analyze health inequalities, empirical evidence suggests that social class explains a different part of the variance for several health outcomes (Wohlfarth, 1997).

It is likely that the social class gradient in health has exacerbated during and following the Great Recession. The working class is more likely to experience financial strain compared with the upper-middle class. This can reflect poorly on their environment or housing conditions. The rate of foreclosures surged in several European countries (Moore et al., 2014), and it is likely that any house relocation would be a downgrade. Furthermore, the working class is over-represented in this wave of foreclosures. The effect of economic recessions may also be heterogeneous across individuals in different social classes with regard to mechanisms related to job security. For instance, because working class individuals tend to hold occupations that are routine-based, they are more easily replaceable by employers than members of the upper-middle class, who possess better bargaining power (Chung and Mau, 2014). Previous literature has found that the working class experiences more precariousness than the upper-middle class, which translates to shorter contracts and less employment protection (Goldthorpe and McKnight, 2006). To the extent that unemployment rates surge during economic recessions, job loss is likely to be more common among the working class than the upper-middle class. This can increase health disparities between both groups because a considerable amount of research shows the detrimental effect of job loss on individuals' health (Pearlin et al., 1981; Brand, 2015).

Based on these mechanisms, we expect that the 2008 financial crisis widened the gap in health between the working class and the upper-middle class (Hypothesis 2).

Above and beyond job loss

In addition to job loss, individuals' perception of their future economic conditions might influence their health and life satisfaction. Previous research conducted in the United States suggests that job insecurity predicts approximately twice the risk of cardiovascular diseases in the next two years (Lee, 2004). A study using panel data during the 2008 financial crisis in Spain found that poor economic perceptions negatively affected individuals' life satisfaction. Furthermore, this relationship was more salient among individuals of lower and intermediate social backgrounds than among individuals from high social backgrounds (Fernandez-Urbano and Kulic, 2020). Because the working class holds more precarious contracts, they are more likely to anticipate or worry about their jobs under worsening macroeconomic conditions.

Beyond the subjective perception of economic conditions, firms use precarious practices during economic recessions that can disproportionally affect the health of the working class. For example, to reduce costs in the face of volatile demand, firms may unexpectedly alter their employees' working hours. This practice is common in industries such as agricultural labour, unskilled and semiskilled manual work, service, retail and hospitality (Lambert, 2008). Managers may make last-minute changes to their employees' working schedules by terminating their shifts if demand is not adequate (Alexander and Haley-Lock, 2015; Halpin, 2015). These practices can disproportionally increase the levels of stress of working class adults.

According to the mechanisms discussed above, we expect that the Great Recession disproportionally affected the health of the working class compared with the upper-middle class even after controlling for job loss or inactivity (Hypothesis 3).

The intersection between social class and age groups

Young people were strongly affected by the Great Recession and experienced the highest unemployment rate among all age groups in most countries (Bell and Blanchflower, 2011). Additionally, young people were affected by several austerity measures

that followed the 2008 financial crisis, such as a reduction in financial aid for students (Theodoropoulou and Watt, 2011). When young people feel stressed, they may abuse drugs as a coping mechanism. Evidence from 28 European countries suggests an association between a rise in the unemployment rate and an increase in drug consumption among young people (Ayllón and Ferreira-Batista, 2018). In turn, the excessive consumption of drugs may worsen health outcomes. Young individuals that belongs to the working class are more likely to be affected by the Great Recession than their peers of the upper-middle class. If they experience job loss, working class young adults may be more vulnerable to financial strain as they are less likely to be supported by their parents compared with their peers of the upper-middle class. Thus, we propose that the social class gradient in health widened among young adults following the Great Recession (Hypothesis 4a).

Although the Great Recession affected all age groups, adults near retirement may have been even more vulnerable than young adults. The housing bubble that started in the United States extended to Europe and led to a sharp decrease in housing prices over several years in most European countries (Wachter, 2015). Previous research shows that home foreclosure following 2007 also rose in the European continent: the default rate doubled in Greece, tripled in Ireland and quadrupled in Spain (Moore et al., 2014). Previous research suggests that housing instability is associated with poor mental and physical health (Pevalin, 2009).

The drop in wealth caused by an economic recession might push older workers to extend their retirement plans in hopes of offsetting some of the losses (McFall, 2011). A study using European panel data found that the 2008 financial crisis led workers aged 55-65 to postpone their retirement (Meschi et al., 2013). This effect was larger in the Northern and Southern European countries than in the Central European countries. Involuntary late retirement can cause stress for older workers because they must work more years than they had initially anticipated.

Another stressor for older workers is that job loss may be highly costly because the chances of reemployment are slim (Lassus et al., 2015). The Great Recession not only

led to involuntary late retirement but also increased involuntary early retirement. In this case, adults near retirement might exhibit poor health because many still have financial obligations, such as paying their mortgage or supporting their young adult children (Burgard and Kalousova, 2015). Evidence suggests that involuntary job loss among older workers can change their consumption behavior as they attempt to cope with their loss. For instance, older workers who experienced job loss were over two times more likely to relapse into smoking than their peers who did not experience job loss, and smokers increased their consumption of cigarettes when they experienced job loss (Falba et al., 2005). Furthermore, older workers are more likely to face a heart attack or a stroke in the years following unemployment (Gallo et al., 2006).

The negative mechanisms caused by economic recessions are likely to interact between social class and age. Near-retirement individuals who belong to the upper-middle class possess better working conditions and employment contracts and more wealth and savings compared with their working class peers. This can buffer the financial strain from an unexpected job loss. At the same time, it leads to fewer experiences of involuntary late or early retirement among the upper-middle class. We expect that the 2008 financial crisis widened the health gap between working class older workers and their counterparts in the upper-middle class (Hypothesis 4b).

5.3 Offsetting buffers

Several potential mechanisms can offset the detrimental effects of the financial crisis on health. Jobs can be major stressors because many individuals experience long working hours, short deadlines or physically demanding tasks (Karasek and Theorell, 1990). Thus, one can assume that a job loss or a reduction in working hours might alleviate mental and physical stress (Boone and van Ours, 2006; Davies et al., 2009). At the same time, economic recessions can positively alter individuals' habits. A job loss or reduced working hours gives people more leisure time that can be invested in sports or cooking

healthy meals. In addition to these activities, evidence from the United States shows that during the Great Recession, individuals used their forgone market hours to sleep longer, which may reflect positively on their health (Aguiar et al., 2013). Worsening macroeconomic conditions lead to less traffic and fewer work accidents, which can positively affect individuals' health (Ruhm, 2003, 2005).

Early studies conducted in the United States and the United Kingdom suggested that economic recessions are associated with decreasing mortality (Ogburn and Thomas, 1922; Thomas, 1927). During economic hardships, mortality was lower than in expanding economic cycles. Several studies corroborated this finding later on. For instance, Ruhm (2000) documented that the mortality rates decreased when unemployment increased in the United States between 1972 and 1991. The size effect of this association is around a 0.5 percent decrease in the mortality rate for every one point increase in the unemployment rate. Specifically, the cause of mortality increases for cases of cardiovascular disease, influenza/pneumonia, liver disease and motor accidents.

Another study corroborated these findings for 23 OECD countries between 1960 and 1997 and found that mortality rises when the economy expands (Gerdtham and Ruhm, 2006). This study also found similar increases in the causes of death related to cardiovascular disease, influenza/pneumonia, liver disease and accidents. Moreover, this study suggested that the association between economic recessions and mortality is particularly pronounced in countries with weak social insurance systems.

This association does not hold across all age groups, as later research showed that individuals near retirement are worse off following a financial crisis (Coile et al., 2014). Even though some of the positive association between the unemployment rate and mortality may hold for this group for a short period, the association becomes negative for extended periods. In other words, an individual at age 58 who experienced job loss following an economic recession has a lower chance of dying in the short term but will live three fewer years in the long term compared to someone with the same characteristics who remained employed (Coile et al., 2014). The suggested mechanism is that experienc-

ing job loss harms your health insurance coverage and access to health care. This might be vital for long-term well-being. More recent research that examined the United States between 1976 and 2011 found that the procyclicality of mortality has weakened chiefly in recent years (Ruhm, 2015). It is worth noting that the positive and negative mechanisms cancel each other out, leading to a null finding. Disentangling their association is difficult given the available data on health outcomes and is beyond the scope of this article.

5.4 Previous findings

There are prominent studies that contribute to our understanding of the ways that economic hardship affects health outcomes. Most notably, Elder (1998) studied the children of the Great Depression. Both studies suggest that economic hardships and shocks can be detrimental to various health outcomes. Recent evidence on the Great Recession suggests that health outcomes deteriorated in Spain; however, this effect disappeared once employment was taken into account (Bartoll et al., 2013). During the same period, anxiety and depression rose among men in the United Kingdom (Katikireddi et al., 2012), and poor self-rated health increased in Greece (Vandoros et al., 2013). Previous research found that job loss during the Great Recession worsened self-perceived health outcomes in several European countries (Tøge and Blekesaune, 2015; Tøge, 2016).

5.5 Data, Measures, and Method

5.5.1 Data

We use longitudinal data from the EU-SILC for 26 European countries[1]. The EU-SILC is a survey that employs probability sampling methods and aims to provide harmonized data. We use data covering the period between 2007 and 2010, which includes the main events of the Great Recession. This period encompasses the health outcomes of our respondents before and after the 2008 financial crisis. Moreover, the EU-SILC respondents were followed for a maximum of four consecutive years[2]. Our analytic sample contains 496,532 individuals aged between 18 and 64.

5.5.2 Measures

The outcome variable concerned individuals' physical health and was measured using the following question: Do you suffer from any long-standing illness or chronic condition? Responses were binary yes or no. Interviewers were instructed to be as inclusive as possible when gathering answers. For example, the interviewers included respondents who perceived that they had a long-standing illness even if their illness was not confirmed or diagnosed by a doctor because access to medical care is not equal among all subgroups of the population. Individuals were included if they experienced sickness or a health problem that lingered or was expected to persist for approximately six months. We added a robustness check for long-standing illness by using a different health outcome, namely, self-perceived health. Individuals reported whether they felt very bad, bad, fair,

[1]These countries are Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom. We exclude Croatia, Germany, Switzerland and Serbia because they did not collect data between 2007 and 2010. Luxembourg is excluded because the ID variable is inconsistent in 2007 and 2008, leading to a high level of duplicates. Malta is excluded because the occupational variable is harmonized differently compared with the rest of the countries in our data.

[2]The EU-SILC is a four-year rotating panel. There are some exceptions, such as France, where people were followed for a longer period. To ensure proper comparability across countries, we followed the dominant design and limited the observations to a total of four consecutive years.

good, or very good. We aggregated these five answers into three categories: bad/very bad, fair, and good/very good. We then analyzed three worsening transitions in self-perceived health, from (i) fair to bad/very bad, (ii) good/very good to fair, and (iii) good/very good to bad/very bad.

The first key independent variable was social class. According to a version developed by Oesch (2006), we transformed the original occupational variable ISCO-08 (2-digits) into three classes: (1) the upper-middle class of managers and professionals (ISCO 1 and 2); (2) the lower-middle class of associate managers, semiprofessionals, technicians and skilled clerks (ISCO 3 and 4); and (3) the working class of craft, production, sales and service workers (ISCO 5 to 9). These three categories mirror the distinction made by Erikson and Goldthorpe (1992) of employment relationships between the service class at the top and the working class at the bottom, with an intermediate category in the middle. Because the events of the Great Recession may have influenced upward or downward mobility differently among social classes, we chose the class reported in the first wave by our respondents and disregarded any change that followed.

The second key independent variable was the age group. We divided this variable into three groups: young adults aged 18-34, middle-aged adults aged 35-49 and near-retirement adults aged 50-64. We excluded individuals older than 64 or younger than 18 because they are less affected by labour market conditions. We kept all respondents regardless of their employment status. This means that we included unemployed and inactive individuals in our sample. Individuals who never worked, who always held inactive status, or who were pursuing education but did not transition to the labour market were also included in our sample.

The third key independent variable measured the Great Recession. We used the aggregate unemployment rate for the working-age population. We resorted to two additional measures as a robustness test. First, we employed the output gap in GDP, which refers to the difference between actual and potential GDP. This measure indicates whether a country experienced a macroeconomic demand shortage. Both macro variables were extracted

from the OECD (2021). Additionally, we used a binary period measure that compared 2007 with the three waves that followed in 2008-2010. This measure is important because it can capture different aspects of the crisis that are not easily quantifiable, such as a banking crisis.

To check whether health inequalities persisted even after job loss or involuntary early or late retirement, we controlled for different employment transitions. To this end, we aggregated our status variable into three categories: i) employed: full-time and part-time, ii) unemployed, and iii) inactive: student, retirement, disabled, compulsory military, domestic tasks and other inactive persons. Then, we added three controls for the following transitions: employment to unemployment, employment/unemployment to inactivity, and inactivity to employment. These three controls were important because they allowed us to test our third hypothesis (H3), that is, whether there is an association between the unemployment rate and long-standing illness above and beyond individuals' employment transitions. We further controlled for sex, a time-invariant variable. The descriptive statistics of our main variables are shown in Table E1 in the appendix.

5.5.3 Analytical strategy

We used a cross-classified multilevel model. Observations were nested in both individuals and country-years. In turn, individuals and country-years were both nested in countries. The data structure was similar to a diamond, with a point (observations) at the bottom, another point (countries) at the top, and the other two levels in between. This approach is advantageous for several reasons. First, it assumes that individuals embedded in one country are more similar to those in other countries. Second, it recognizes that individuals observed in the same country and the same year are more similar to individuals from the same country but different years (Schmidt-Catran and Fairbrother, 2016). The number of higher-level units in our sample (104 country-years) exceeded the minimum number of units (30) required for unbiased estimates (Bryan and Jenkins, 2016). This strategy analysed the association between social class and health under different unemployment

rates. This approach is important because it takes into consideration the intensity of the crisis in different years across countries.

We present four equations and develop them in a stepwise order. The first equation is the baseline model.

$$\gamma_{oijt} = \beta_0 + \beta_p Class_{oijt} + \beta_c Controls_{oijt} + u_i + u_{jt} + u_l + \varepsilon_{oijt} \tag{5.1}$$

The subscript o represents observations, i represents respondents, jt represents country-years, and l represents countries. β_p indicates the individual-level variables such as social class and age group. β_c represents the control variables, such as gender. The random part consists of the error terms u_i (individuals), u_{jt} (country-years) and u_l (countries).

$$\begin{aligned}\gamma_{oijt} = \beta_0 + \beta_p Class_{oijt} + \beta_c Controls_{oijt} + \beta_q Unemployment\_rate_{ojt} \\ + \beta_{pq} Class_{oijt} * Unemployment\_rate_{jt} + u_i + u_{jt} + u_l + \varepsilon_{oijt}\end{aligned} \tag{5.2}$$

We add the unemployment rate to our second equation. β_q represents country-year level variables such as the unemployment rate. β_q is the coefficient of interest for our first hypothesis (H1). A positive significant slope suggests that long-standing illness increased during and following the Great Recession. Furthermore, we add the cross-level interaction between social class and unemployment rate to our second equation as β_{pq}. It represents our coefficient of interest with respect to our second hypothesis (H2). A positive and significant slope suggests that the health gap between the working class and the upper-middle class widened following the 2008 financial crisis.

$$\gamma_{oijt} = \beta_0 + \beta_p Class_{oijt} + \beta_c Controls_{oijt} + \beta_q Unemployment\_rate_{ojt} + \beta_{pq} Class_{oijt} * Unemployment\_rate_{jt} + \beta_e Employment\_transitions_{oijt} + u_i + u_{jt} + u_l + \varepsilon_{oijt} \quad (5.3)$$

We add the employment transitions - control variant variables - to our third equation, represented by the coefficient β_e. The inclusion of these controls informs us of whether any health gaps due to the Great Recession persist even after controlling for personal job loss or other employment transitions.

$$\gamma_{oijt} = \beta_0 + \beta_p Class_{oijt} + \beta_c Controls_{oijt} + \beta_z Age\_Group_{oijt} + \beta_e Employment\_transitions_{oijt} + \beta_q Unemployment\_rate_{ojt} + \beta_{pq} Class_{oijt} * Unemployment\_rate_{jt} + \beta_{zq} Age\_group_{oijt} * Unemployment\_rate_{jt} + \beta_{pz} Age\_group_{oijt} * Class_{oijt} + \beta_{pq^2} Age\_group_{oijt} * Class_{oijt} * Unemployment\_rate_{jt} + u_i + u_{jt} + u_l + \varepsilon_{oijt} \quad (5.4)$$

Our fourth equation adds a three-way interaction between age group, social class and unemployment rate and is represented by β_{pq2}. To facilitate interpretability, we present this interaction graphically using the effects package in Julia (Alday et al., 2022). We follow recent recommendations to include a random slope at the country level for our main predictor (social class) involved in a cross-level interaction (Heisig and Schaeffer, 2019). We estimate the binary variable of chronic illness using a linear probability model, which makes the interpretation of the coefficients and the comparison across models easier (Mood, 2010). We employ another analytical strategy as a robustness test by running two-way fixed effects for countries and individuals. In other words, this analytical strategy includes dummies for countries and individuals. It assesses concerns about context-level and individual-unobserved heterogeneity. We find that our conclusions are the same as

those of our original models (see Table E3).

5.6 Empirical Results

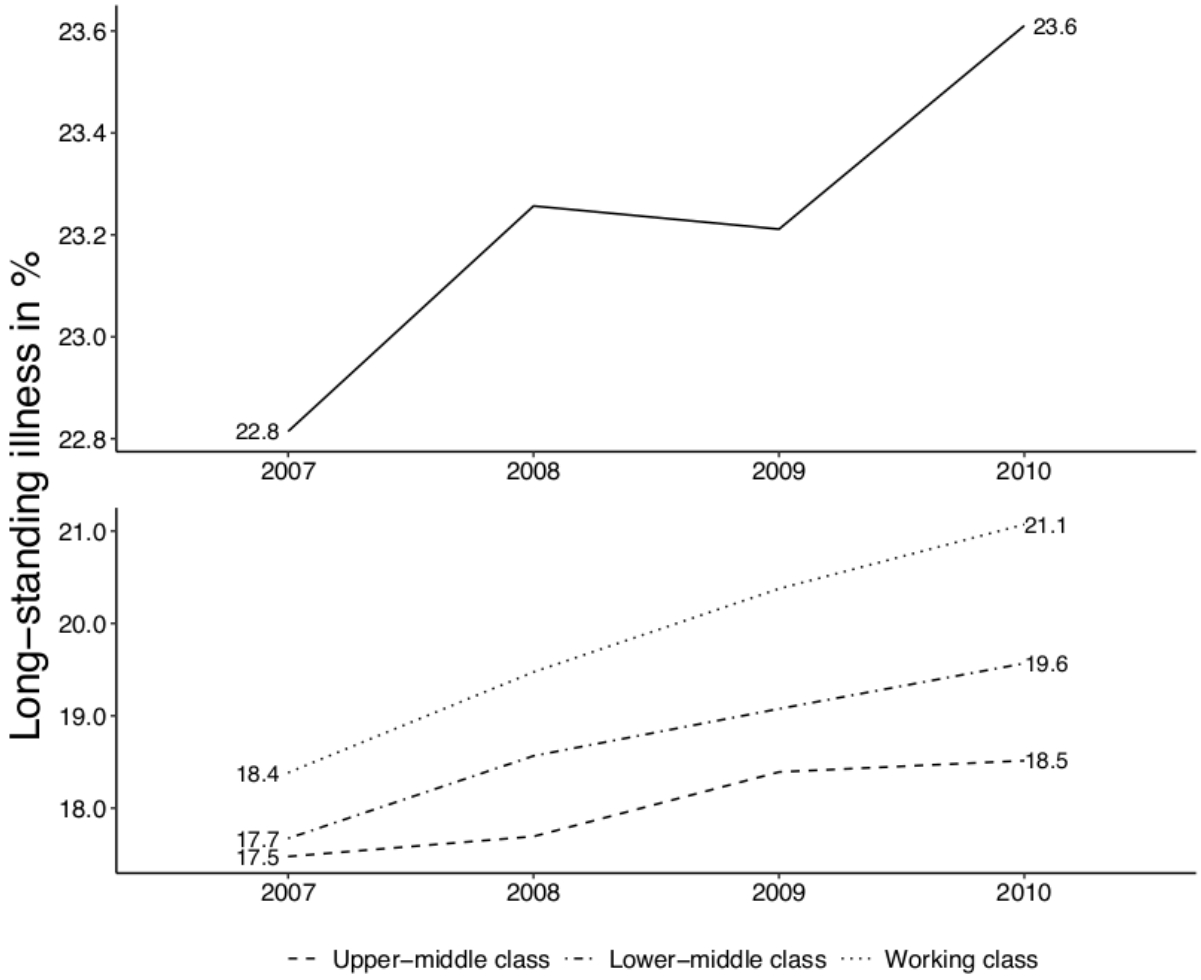
5.6.1 Descriptives

We examine the descriptive evidence for a moderating impact of the Great Recession on long-standing illness in Figure 5.1. The top panel in Figure 5.1 shows the findings for our sample, while the bottom panel depicts the results by social class. The top panel clearly shows an increase in long-standing illness for our sample in 2008 and 2010. We then examine whether this increase is homogenous or heterogeneous across different social classes in the bottom panel of Figure 5.1. We observe the smallest increase of 1% (18.5-17.5) in worsening health outcomes between 2007 and 2010 among the upper-middle class. The bottom panel depicts a rise of 1.9% (19.6-17.7) for the lower middle class following the Great Recession. While this rise in long-standing illness for the lower-middle class is approximately double that reported by the upper-middle class, it falls short of the increase in long-standing illness reported by the working class. We see clearly in Figure 5.1 that the working class is the most vulnerable group in terms of long-standing illness following the 2008 financial crisis. Their worsening health outcomes increased by 2.7% (21.1-18.4) between 2007 and 2010.

5.6.2 Empirical findings

Table 5.1 presents the findings of our analysis. We first discuss the baseline model (Model 1) and then test our hypotheses in subsequent models. Model 1 suggests that the working class experiences a higher rate of chronic illness than the upper-middle class. We also observe an age gradient in health; that is, middle-aged (35-49) and near-retirement individuals (50-64) report a higher rate of long-standing illness than young individuals (18-34). This finding is not surprising because individuals are more prone to long-standing

Figure 5.1: Change in long-standing illness over time.



Note: The top panel represents the change in long-standing illness for our sample. The bottom panel represents the change in long-standing illness by different social class. Source: EU-SILC, 2007-2010. Computations by the authors.

illnesses as they age. Moreover, Model 1 indicates that men experience fewer health problems than women.

Model 2 tests our first hypothesis (H1), that is, whether there is an association between the unemployment rate and long-standing illness. Our model rejects this claim because the coefficients are not different from zero. As discussed in our theoretical framework, one possible explanation is that the positive and negative mechanisms can cancel each other out. This result might also be due to different trajectories experienced by individuals with different social backgrounds and age groups.

Model 2 tests our second hypothesis (H2), whether the association between the unemployment rate and long-standing illness is steeper among the working class than among

the upper-middle class. To investigate this, we add our cross-level interaction β_{pq} between the unemployment rate and social class and find that it is statistically significant. This finding indicates that when the unemployment rate increases, the risk of chronic illness is higher among the working class than among the upper-middle class. Our estimate of $\beta_{pq} = 0.001$ suggests that an increase of 5 percentage points (pp.) in the unemployment rate implies a jump in the health gap of approximately 0.5%. Our finding from Model 2 is consistent with our expectations that the Great Recession was significantly associated with an increase in the health gap between the working class and the upper-middle class.

Model 3 tests our third hypothesis (H3), which claims that the social class gradient in health worsens under worsening macroeconomic conditions even after accounting for different employment transitions. To investigate this, we account for the following transitions in employment status: i) from employed to unemployed, ii) from employed/unemployed to inactive, and iii) from inactive to employed. All our substantive findings remain identical after including the mentioned controls. Moreover, the effect size of our coefficient of interest holds and confirms our third hypothesis (H3). Model 3 suggests that each employment transition of the three added control variables is associated with a higher rate of long-standing illness on average.

Model 4 tests our fourth hypotheses (H4a and H4b). Hypothesis (H4) claims that the association between the unemployment rate and health is heterogeneous among different social classes and age groups. More specifically, hypothesis (H4a) assumes that working class young adults (18-34) are at a higher risk of long-standing illness than their peers in the upper-middle class following the Great Recession. Hypothesis (H4b) suggests a similar assumption between working class older adults (50-64) and upper-middle class older adults. To investigate this, we include a three-way interaction between social class, age group and the unemployment rate. We present the predicted values graphically in Figure 5.2. We observe no change in the health gap between working class and upper-middle class young adults when the unemployment rate increases. This rejects our hypothesis H4a. On the other hand, the social class gradient in health becomes clear when we ana-

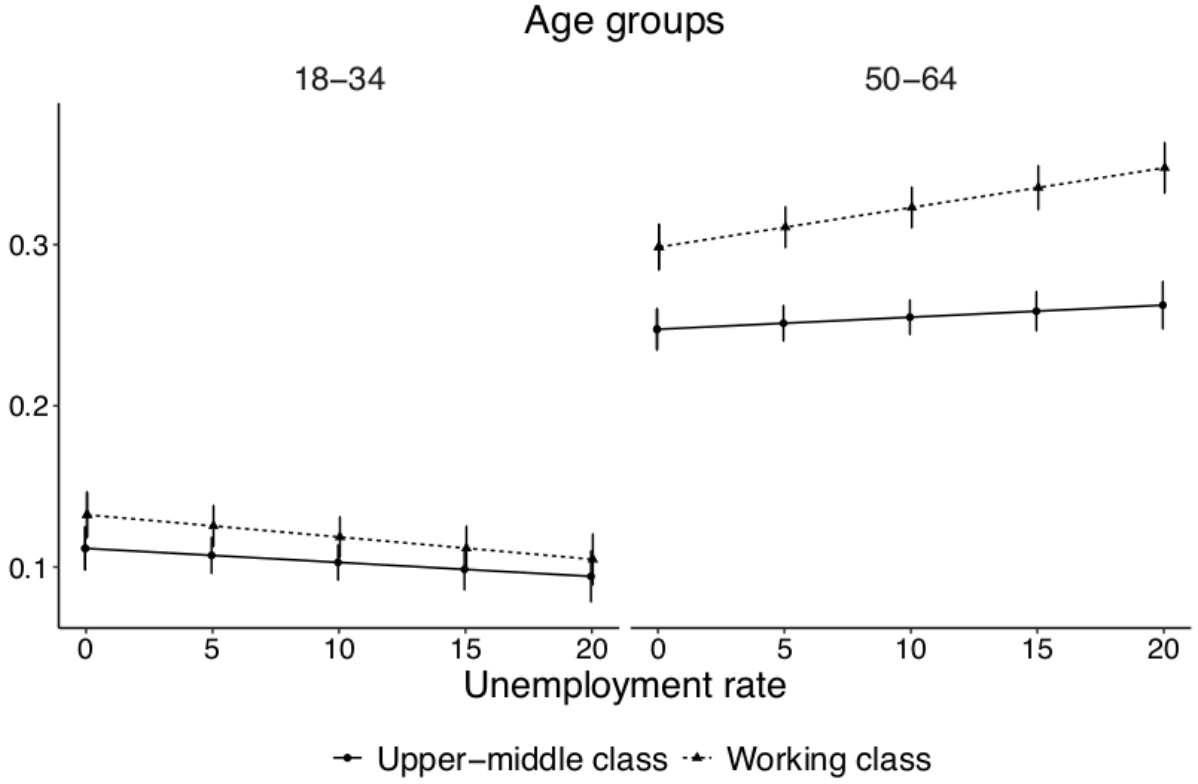
Table 5.1: Main effects and interaction effects with social class, age groups and macroeconomic shocks on long-standing illness

	M1	M2	M3	M4
(Intercept)	0.099***	0.101***	0.099***	0.120***
	(0.010)	(0.012)	(0.012)	(0.013)
Upper-middle class (Ref.)				
Lower-middle class	0.019***	0.022***	0.022***	0.022*
	(0.003)	(0.005)	(0.005)	(0.009)
Working class	0.045***	0.036***	0.036***	0.021*
	(0.005)	(0.006)	(0.006)	(0.009)
18-34 (Ref.)				
35-49	0.068***	0.068***	0.070***	0.055***
	(0.002)	(0.002)	(0.002)	(0.008)
50-65	0.179***	0.178***	0.180***	0.136***
	(0.002)	(0.002)	(0.002)	(0.008)
Male	-0.022***	-0.022***	-0.021***	-0.020***
	(0.002)	(0.002)	(0.002)	(0.002)
Unemployment rate		-0.000	-0.001	-0.001
		(0.001)	(0.001)	(0.001)
Lower-middle class * unemployment rate		-0.000	-0.000	-0.002
		(0.000)	(0.000)	(0.001)
Working class * unemployment rate		0.001**	0.001*	-0.001
		(0.000)	(0.000)	(0.001)
Unemployed			0.023***	0.023***
			(0.003)	(0.003)
Inactive			0.067***	0.066***
			(0.003)	(0.003)
Active			0.027***	0.027***
			(0.003)	(0.003)
Lower-middle class * age group: 35-49				-0.004
				(0.010)
Working class * age group: 35-49				0.019*
				(0.009)
Lower-middle class * age group: 50-65				0.002
				(0.011)
Working class * age group: 50-65				0.030**
				(0.010)
35-49 * unemployment rate				-0.000
				(0.001)
50-65 * unemployment rate				0.002
				(0.001)
Lower-middle class * age group: 35-49 * unemployment rate				0.002
				(0.001)
Working class * age group: 35-49 * unemployment rate				0.001
				(0.001)
Lower-middle class * age group: 50-65 * unemployment rate				0.001
				(0.001)
Working class * age group: 50-65 * unemployment rate				0.002*
				(0.001)
N (observations)	496,532	496,532	496,532	496,532
N (individuals)	189582	189582	189582	189582
N (country-year)	104	104	104	104
N (country)	26	26	26	26
Random slope - country level	Yes	Yes	Yes	Yes
*<p 0.05 **p<0.01 ***p<0.001				

Note: Coefficients from cross-classified multilevel linear probability models. Standard errors are in brackets. Dependent variable: long-standing illness. Models control for (1) gender, transition from employed to unemployed, transition from employed/unemployed to inactive, transition from inactive to employed; (2) macrolevel: unemployment rate. Source: EU-SILC, 2007-2010.

lyze the trajectories of near-retirement individuals (50-64). While both the working class and the upper-middle class experience a higher risk of long-standing illness with every unit increase in unemployment, the slope is steeper for the former. The coefficient β_{pq} = 0.002 is statistically significant at the 0.05 level (see Table 5.1). Our estimate ofβ_{pq} = 0.002 suggests that an increase of 5 pp. in the unemployment rate implies a rise in the health gap of approximately 1% among near-retirement individuals of different social classes. This finding supports H4b.

Figure 5.2: Predicted values of long-standing illness by social class, age groups and unemployment rate.



Note: This three-way interaction is presented in Model 4 in Table 5.1. Source: EU-SILC, 2007-2010.

5.6.3 Additional sensitivity tests

We replicate our analysis using a different health indicator, namely, self-perceived health. A concern about long-standing illness is that it is more prevalent among older people than younger people. This might lead to biased findings with respect to our youngest

age group (18-34). For the self-perceived health variable, individuals reported whether they felt very bad, bad,fair, good, or very good. We analyzed three worsening transitions in self-perceived health, from (i) fair to bad/very bad, (ii) good/very good to fair, and (iii) good/very good to bad/very bad. For the first transition (i), we found no social class gradient in health among different age groups following the Great Recession. For the second transition (ii), we found that the association between the unemployment rate and health was steeper for near-retirement individuals than for young people. However, this difference did not differ among different social classes. For the third transition (iii), which represents the strongest worsening health transition, we found the same substantive conclusions as our original analysis in Table 5.1. These findings are available in the appendix in Table E2.

There are several other concerns with our analysis. Our analytical strategy may not fully capture unobserved heterogeneity at the individual and country levels. In the analyses available in the appendix, we include two-way fixed effects for countries and individuals to address these concerns (see Table E3). Second, we reran our models separately while excluding each of the eight countries with the largest populations in our data: France, the United Kingdom, Italy, Spain, Poland, Romania, the Netherlands and Belgium (see Table E4). Third, we used two additional measures to gauge the Great Recession. We included the output gap in GDP, which refers to the difference between actual and potential GDP. This item indicates whether a country experienced a macroeconomic demand shortage. Then, we used a binary period measure that compared 2007 with the three waves that followed in 2008-2010 (see Table E5 and Table E6). Without exception, all the replicated results show that our findings are robust.

5.7 Discussion and Conclusion

In the context of considerable academic concern about possible cumulative (dis)advantage scenarios for disadvantaged subgroups resulting from the Great Recession (Redbird and

Grusky, 2016), our article examined whether such concerns are warranted. To do so, we analyzed whether the gap in long-standing illness increased following the 2008 economic recession between the working class and the upper-middle class across different age groups. We explored 26 European countries and used EU-SILC longitudinal data. We limited our time to the period 2007-2010, which preceded and followed the Great Recession. We analyzed our question using cross-classified multilevel models and used the unemployment rate as our measure of the economic recession. Our findings are robust across sensitivity tests.

5.7.1 Summary of results

This study presents several original and relevant findings. First, the evidence suggests no association between the unemployment rate and long-standing illness. Contrary to our expectations in Hypothesis 1, our findings suggest that the Great Recession did not worsen long-standing illness in Europe. Previous research highlights some positive mechanisms of economic recessions on different health outcomes (see Catalano et al., 2011; Burgard and Kalousova, 2015). Our findings with respect to Hypothesis 1 may be due to positive and negative mechanisms canceling each other out and leading to a null effect. Another possible scenario that explains the null effect from our findings is that older people experienced a worsening while younger people an improvement in long-standing illness during and following the Great Recession. These divergent slopes may cancel each other out and lead to no association between the unemployment rate and long-standing illness in our sample.

Next, we examined the social class gradient in health following the 2008 financial crisis. We found support for Hypothesis 2 because the findings suggested a heterogeneous effect in line with the cumulative (dis)advantage theory. The working class possesses higher levels of long-standing illness than their peers in the upper-middle class, and this initial disadvantage is exacerbated by the Great Recession. To the best of our knowledge, this is the first study to examine whether long-standing illness widened among different social

classes following the Great Recession. A few case studies have focused on occupational differences using cross-sectional data. Our findings are in line with previous research conducted in Spain that found wider gaps in self-perceived health outcomes between different occupational groups following the Great Recession (Bartoll et al., 2013).

Third, we find that the social class gradient in health holds even after accounting for several employment transitions: i) employment to unemployment, ii) employment/unemployment to inactivity, and iii) inactivity to employment. This result supports our third hypothesis (H3) and suggests that the detrimental effect of worsening macroeconomic conditions persists above and beyond job loss and other employment transitions. While we could not gauge the mechanism at play, the perception of economic insecurity may increase stress levels, which in turn deteriorates health outcomes. This is not surprising and is in line with previous research (Lee, 2004; Fernandez-Urbano and Kulic, 2020).

In their review of 49 empirical articles published between 2012 and 2017 that examined the effect of the Great Recession on health, Heggebø et al. (2019) could not discuss differences in health between age groups due to different operationalizations of the age variable across the studies. We contribute by analyzing differences in health outcomes across age groups and social classes. In general, we found no social class gradient among younger adults (18-34). On the other hand, working class older adults (50-64) experienced a higher rate of long-standing illness compared with their upper-middle class peers. While the former group was at higher risk of long-standing illness before the Great Recession, this disadvantage widened during and following that period. This finding is in line with our expectations and supports our hypothesis (H4b). One main scenario can explain these findings: near-retirement working class adults experience more stress and financial strain and abuse more substances (e.g., alcohol, tobacco, drugs) as a coping mechanism than their upper-middle class peers. This may lead to a higher rate of long-standing illness among the working class than among the upper-middle class.

5.7.2 Causal inferences

We acknowledge that causal claims cannot be presented with observational data. However, we regard this issue from the perspective of a continuum rather than a dichotomy. Prominent recent research discusses the taboo of using causal language in observational data in the field of public health (Hernán, 2018). It encourages researchers to adapt more causal language while being transparent about the limitations of their designs. While we avoid this debate, we believe that both of our analytical strategies are at the higher end of the causality continuum when combined with longitudinal data.

5.7.3 Limitations

We acknowledge several limitations of our study. First, attrition is a problem in longitudinal survey data and may influence our findings. This article does not treat the biases caused by attrition because the EU-SILC does not contain sufficient background information. For example, the EU-SILC does not follow individuals when they emigrate. If emigration was more common among the upper-middle class following the 2008 financial crisis, our findings may face some downward bias.

Second, our data follow individuals for a maximum of four consecutive years. Thus, we are unaware of whether the social class gradient in health for older adults is transitory or long lasting. It would be interesting to measure the long-term repercussions because the 2008 economic crisis may have left a long-term scar on this vulnerable subgroup. We encourage future research to address this question using longitudinal data for single countries and following individuals over longer periods.

Third, both of our outcomes (long-standing illness and self-perceived health) are reported by our respondents. Self-reported measures may suffer from biases. The long-standing illness measure can suffer from recall bias where respondents may not accurately remember the period of their sickness. Additionally, some individuals may overreport experiencing long-standing illness due to financial incentives such as receiving disability

benefits. However, we limit that bias by controlling for the spells of unemployment experienced by the respondents. Finally, the self-perceived health measure can suffer from cultural bias as individuals interpret the meanings of a good or bad day differently. Some cultures may be less likely to complain and thus underreport their symptoms. However, the validity of self-rated health has been validated by several previous studies (Jylhä, 2009; Schnittker and Bacak, 2014).

5.7.4 Implications for future research

Our study examines whether the Great Recession affects vulnerable subgroups of the population. Our contribution may thus also be relevant to the recent economic crisis that unfolded during the COVID pandemic and the Ukrainian war. If we understand the repercussions of the 2008 financial crisis, we might better address the aftermath of the current economic crisis. Early findings on the recent economic downturn show that employment loss was more prevalent among lower-paying occupations (Cortes and Forsythe, 2020). Future research should investigate whether this situation leads to a heterogeneous impact on health across different social classes and age groups.

Chapter 6

Concluding remarks

6.1 An overview of a few central findings

In the last decade, public concerns have been widely voiced in OECD countries regarding increasing inequalities in the intergenerational transmissions of economic advantages (OECD, 2018), health (OECD, 2017), and earnings (OECD, 2011; Keeley, 2015; OECD, 2015). Our thesis focuses on the same concern and addresses the following simple question: did the 2008 financial crisis widen inequalities between the advantaged and disadvantaged? We find that the answer to this question is not as straightforward as expected. Before investigating the periods before and after the 2008 financial crisis, we analyse the several decades that precede this event. It could be that the inequalities between the advantaged and the disadvantaged were already widening and that the Great Recession accelerated this trend.

Over the longer period, the first main finding is that the working class has decreased in size in all Western countries observed between the 1980s and 2020s. A clear expansion in the share of the middle and upper-middle classes has accompanied this shrinkage in the working class share. While this expansion is good news, it comes with a loss in bargaining power for the people located at the bottom of the occupational ladder. Currently, members of the working class earn no more, and maybe even less, than they did 40 years ago, even though labour productivity has continued to increase during the period. In contrast, the middle and upper-middle classes pocketed sizeable gains from

this productivity growth in 11 countries out of 12 during the examined period. Only Poland stands out as the exception, as the working class made gains similar to those of the other social classes during the examined period. Our first main finding shows that some dimensions of cumulative (dis)advantage apply to most countries observed between the 1980s and 2020s. The middle and upper-middle class are in more favourable positions 40 years later. On the other hand, even in cases where the working class has not worsened, their economic gains appear to be meagre at best compared to those of the advantaged classes in 11 out of 12 countries.

The second main finding is that the Great Recession accelerated and widened the economic gap between the working class and upper-middle class in Europe. The effect magnitude is sizable. Our analysis suggests that an increase of 5 percentage points in the unemployment rate is associated with an increase in the earnings gap between social classes of approximately 0.10 log points. This finding goes along with our expectation that adverse economic shocks likely widen or accelerate inequalities. We believe this outcome is due to the weaker bargaining position of the working class, especially during economic downturns. This is because the bargaining power of the working class is much weakened, as they are often the least educated and skilled members of the workforce and therefore have fewer options in regard to finding employment during a financial crisis. In contrast, the upper-middle class is generally less affected by economic recessions. With more education and often more specialised expertise, these individuals are more costly to replace once the business cycle improves; thus, they enjoy greater economic security.

The third main finding of this thesis is that the disproportionate effects of the Great Recession on the advantaged and disadvantaged may have been experienced as an indirect effect. For example, following the Great Recession, the employment chances of young adults from low social origins seem to have been slightly larger than those of their peers from higher social origins. While this finding may be counterintuitive at first glance, it may have occurred because young adults of low social origin may accept any job during harsh economic downturns. On the other hand, young adults of high social origin may

pursue further education and exit the labour market. If these mechanisms drive the decrease in the employment gap between young adults of different social origins, then the Great Recession may be associated with an indirect form of cumulative disadvantage. This is because prior evidence shows that starting a career at a lower-paying employer may generate less mobility thereafter (Kahn, 2010; Oreopoulos et al., 2012). While our data do not allow us to test some of these mechanisms, we find that the earnings gap between young adults of different social origins widened substantially in Spain following the 2008 financial crisis.

A last central finding of this thesis is that the disproportionate effect of the Great Recession has been heterogeneous among different subgroups of the population. For example, we find that the gap in chronic illness has widened between near-retirement working class individuals and their upper-middle class counterparts; however, this widening gap is absent among younger cohorts. One may argue that older people are more vulnerable to chronic illnesses than younger people, which may be what caused this heterogeneity among age groups. However, we find the same pattern when we analyse self-perceived health. Due to several factors, working-class near-retirement individuals may be more vulnerable in terms of health to economic recessions than their younger counterparts. First, older individuals are more likely to have a fixed income and a limited ability to adjust to changing economic conditions. They are more likely to have higher fixed costs, such as mortgages, medical bills, and other expenses linked to their near-retirement stage. They may also have less access to credit, making it harder for them to find additional sources of income. Furthermore, older individuals have fewer years left to save and prepare for retirement, leaving them with fewer resources with which to weather a recession. Of course, these disadvantages are more pronounced among the members of the working class who are near retirement than among their upper-middle class counterparts.

6.2 Limitations

This thesis has several limitations that we must acknowledge. We use repeated cross-sectional data to examine a net change for the overall population. The advantage of repeated cross-sectional over longitudinal data is that it does not suffer from panel attrition and thus provides us with better representative samples. This may be crucial when analysing trends that span more than a decade. Moreover, few countries have consistent and reliable longitudinal data, which makes larger cross-country comparisons difficult. Despite these advantages of repeated cross-sectional data, their use does present limitations. For example, cross-sectional data are farther along on the spectrum of claiming "causality" than longitudinal data. This is because we compare different individuals before and after the 2008 financial crisis. Therefore, our thesis must be regarded as unearthing potential associations rather than identifying clear causal effects. However, we believe that the presence or absence of (possibly changing) associations between (dis)advantaged groups and different outcomes over time are of interest in themselves.

To analyse the 2008 financial crisis using different lenses, we nonetheless use longitudinal data and provide evidence on the short-term effect of the Great Recession on various health outcomes. Attrition can be a problem in longitudinal survey data, as individuals are not followed when they emigrate. If emigration was more common among the upper-middle class in the hardest hit countries following the 2008 financial crisis, this might lead to some downwards bias in our findings. Another issue is that the EU-SILC follows individuals for only four years. If the Great Recession caused long-term repercussions, our longitudinal data will not be able to show them.

This thesis only measures one dimension of economic recession, namely, the increase in the unemployment rate (or GDP output gap). However, other dimensions of the Great Recession could also have influenced our outcomes of interest. For example, many individuals lost their homes following the 2008 financial crisis, which had health consequences that extended beyond job loss. Furthermore, the Great Recession sparked another major

event, namely, the sovereign bond crisis. While analysing this event is out of the scope of this thesis, it is worth mentioning that the crisis was central to the debates that erupted during that period (Tooze, 2019). Greece, Italy, Portugal, Ireland, Spain, and Cyprus had to negotiate with the European Central Bank and the International Monetary Fund to pay their debts back. These negotiations led to a massive amount of tension and shook the unity of the European Union.

6.3 Policy implications and future directions

Social policies can mitigate the inequalities caused by the 2008 financial crisis in different ways. Our findings show that the Great Recession led to a mass increase in earnings inequalities, especially in the GIIPS (Greece, Ireland, Italy, Portugal and Spain) countries. Previous research has cautioned about the possible detrimental effects of internal devaluation policy as a response to the Great Recession in these countries (Armingeon and Baccaro, 2012). Internal devaluation aims to reduce a country's trade deficit by lowering domestic costs, which can decrease wages and prices. As GIIPS countries could not devalue their currencies in the Eurozone to be more competitive, they were pushed to achieve the same result by reducing costs within their own economies. Armingeon and Baccaro (2012) argue that these policies are ineffective and counterproductive and may depress growth. We follow that line of research and claim that the working class was the biggest loser following the Great Recession and seems to have suffered the most from such policies, especially in the GIIPS countries. It seems that harsh austerity measures harm the weakest groups of society and thus should be avoided when future economic recessions hit.

Other interventions include further job training and education investments for individuals from lower social classes who are disproportionately affected by the crisis. Furthermore, policymakers are encouraged to push for policies that generally reduce income inequality, such as progressive taxation. Another policy stream that can mitigate reper-

cussions such as those caused by the 2008 financial crisis is that which targets interventions addressing the increased health inequalities between the working class and the upper-middle class in Europe, especially among individuals near retirement age. These interventions could include programs that aim to improve access to affordable healthcare for individuals in this age group from working-class backgrounds and initiatives that promote public health and preventive care. Additionally, policymakers may want to consider implementing policies that aim to reduce health inequalities more generally, such as increasing funding for community health clinics and other healthcare facilities that serve low-income populations.

What are the future directions? It is worth noting that the effects of the 2008 financial crisis were not limited to Europe and North America. In fact, the economic downturn had global ramifications and most likely caused deep social issues in many countries worldwide. Therefore, researchers are encouraged to investigate the repercussions of the 2008 financial crisis in countries outside of Europe and the United States to gain a more complete picture of the full range of effects of the crisis. Such a broader investigation would improve the effectiveness of future policies in economic recessions, as the related findings would provide valuable insights for policymakers working to address inequality and promote economic and social justice on a global scale.

Recent research shows that the recession caused by the novel coronavirus disease (COVID-19) has sparked similar repercussions for vulnerable groups as those sparked by the Great Recession. Holst et al. (2021) found that lower social classes have experienced increased levels of vulnerability in Germany regarding health and economic risks following the COVID-19 recession. This disadvantage has been particularly pronounced among production and service workers. Cortes and Forsythe (2020) found that job losses have been larger and extended for longer in lower-paying occupations in the United States. Similarly, Osuna-Gomez (2023) found that less tenured workers have faced a higher probability of job loss during the pandemic-induced recession in Mexico. While job losses seem to be associated with a higher retirement rate, this disadvantage has

been found to be homogeneous across different social classes in England (Rowson et al., 2022). It is worth noting that it appears that the COVID-19 recession will be shorter than the Great Recession, as most countries have already regained their prepandemic unemployment rate levels.

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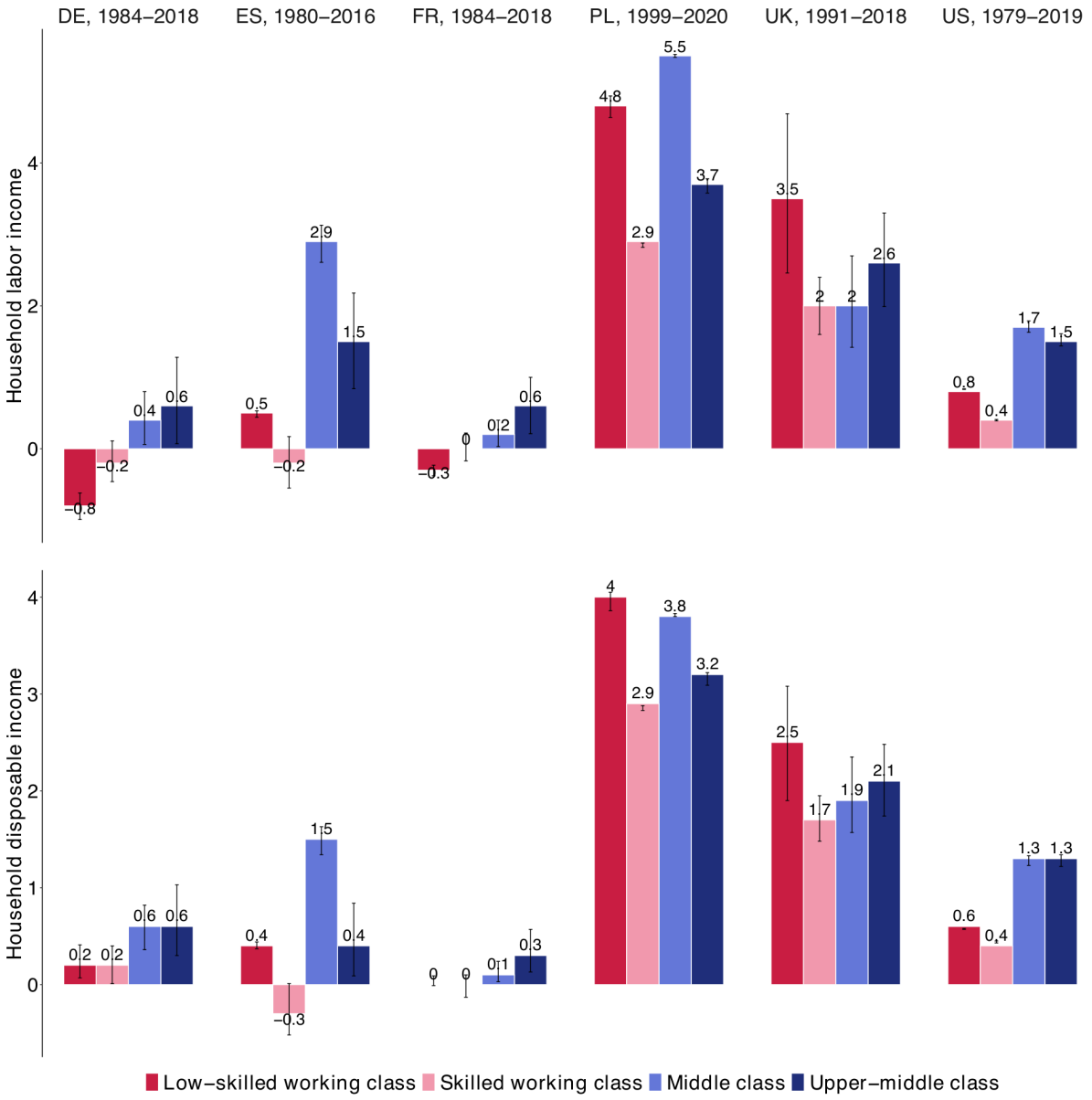
Appendix A

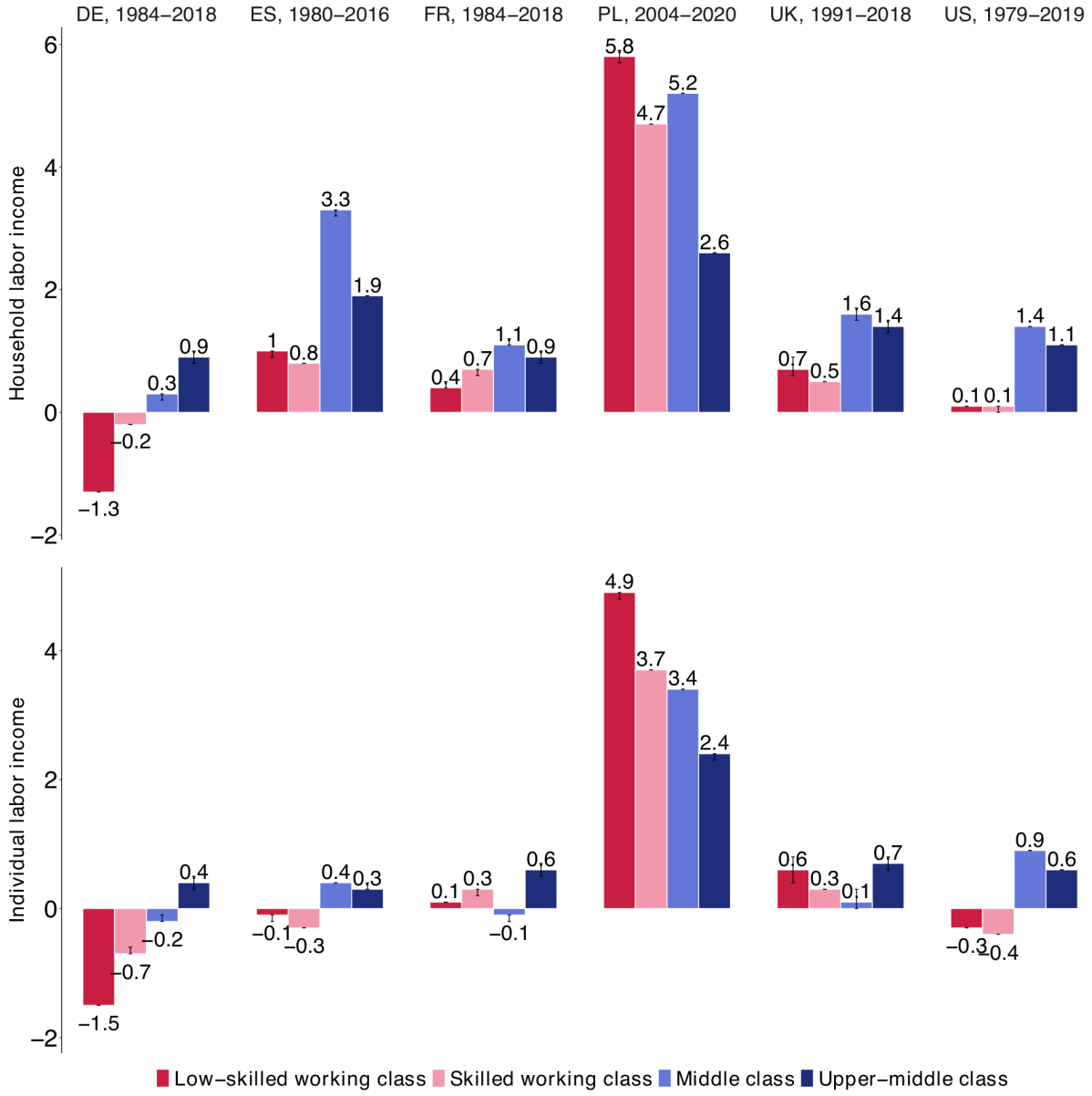
The Myth of the Middle Class Squeeze: Employment and Income by Class in Six Western Countries, 1980-2020

Figure A.1: Annual change in household labour income and household disposable income, in % (adjusted predictions) households headed by women only.



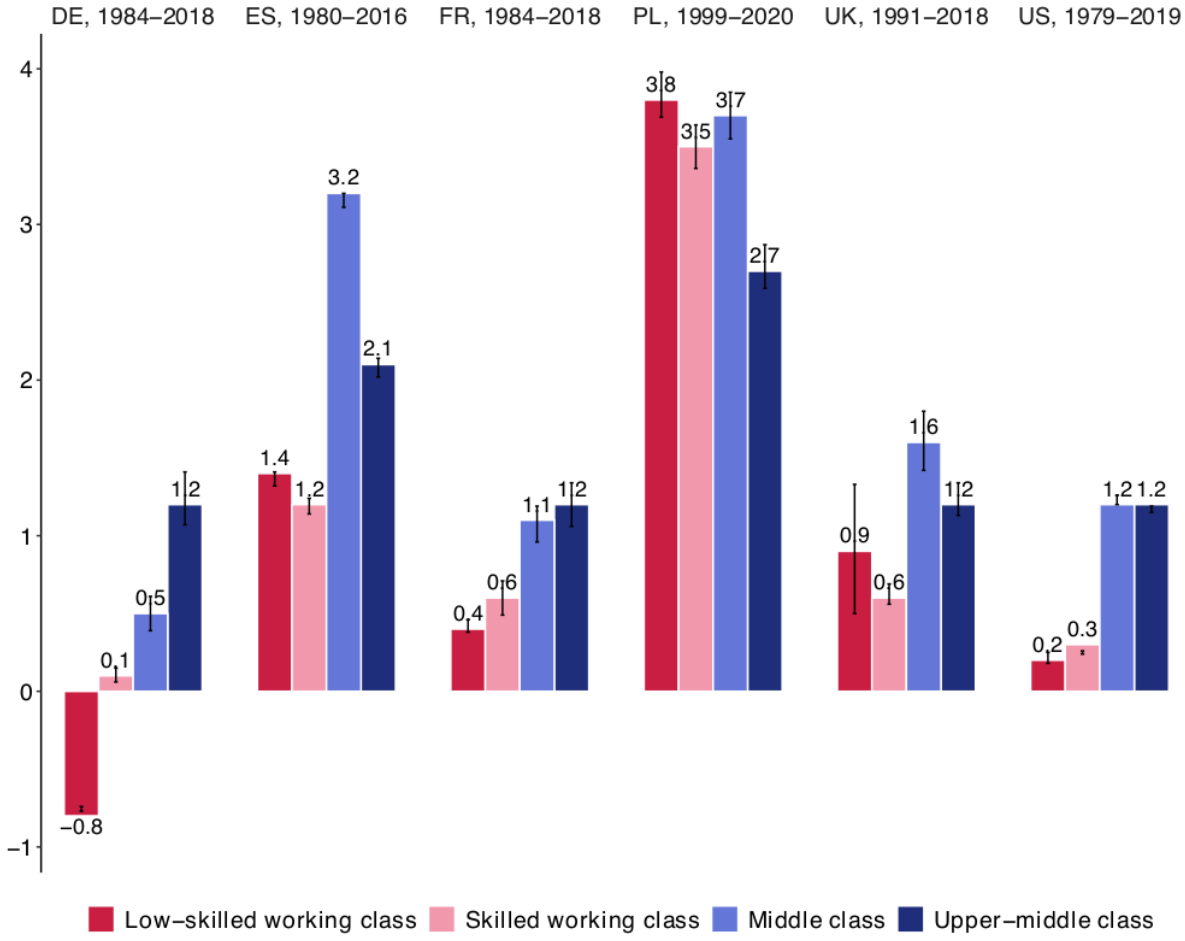
Note: Results are based on a linear regression on the log of household income with controls for class, age and household size (see equation (1) above). We calculate the predicted income for a given class at the beginning and the end of each period, then take the difference and divide this difference by the number of intervening years.

Figure A.2: Annual change in household labour income (above) and individual labour income (below), in % (adjusted predictions).



Note: Results are based on a linear regression on the log of household income or individual income with controls for class, age, gender and household size. We calculate the predicted income for a given class at the beginning and end of each period, then take the difference and divide this difference by the number of intervening years.

Figure A.3: Annual change in household labour income, in % also including households with zero annual labour income (adjusted predictions).



Note: For technical details, see note below Figure A.2.

Figure A.4: Employment change by class in small and affluent European countries employees only, employers and self-employed respondents excluded (in percentage points).

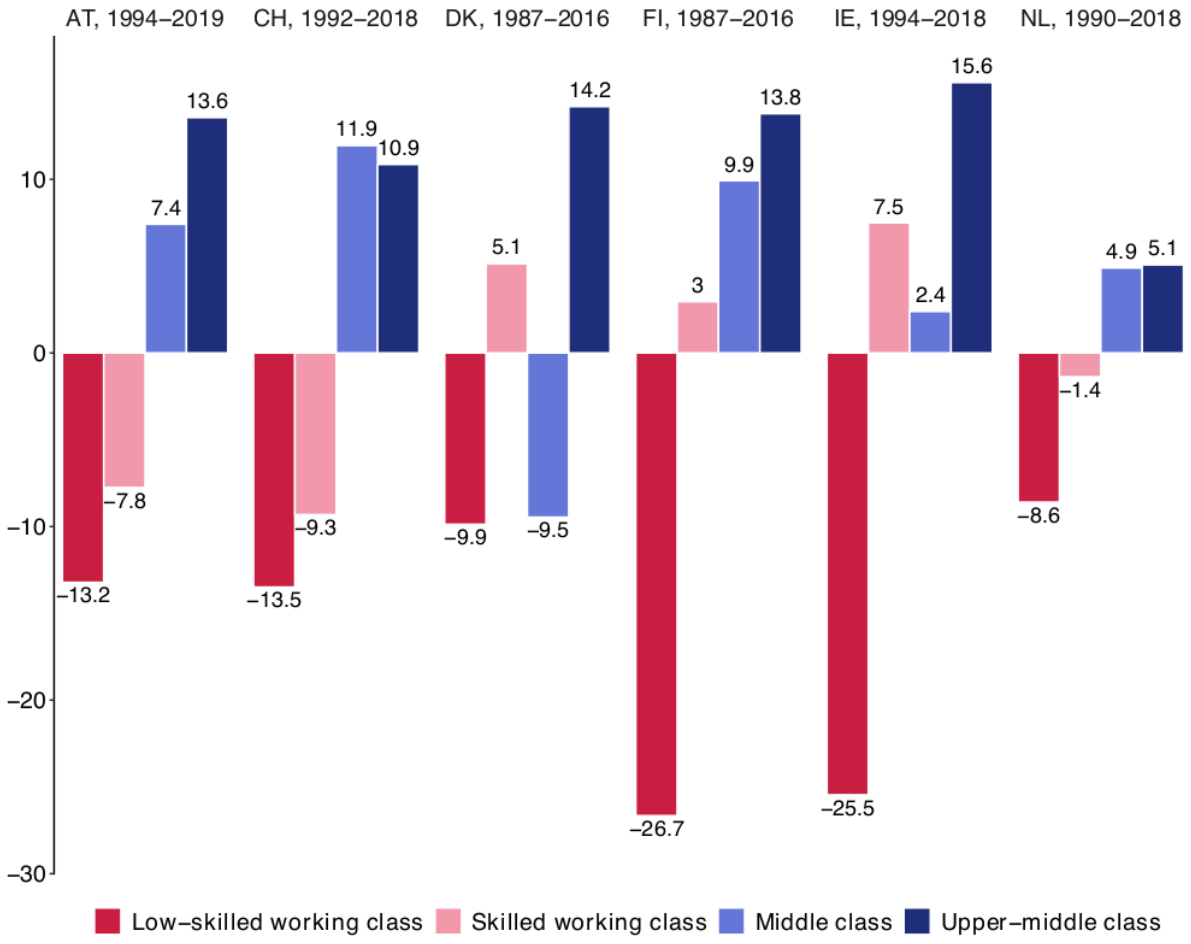


Table A.1: Descriptive statistics.

			DE		ES		FR		PL		UK		US	
			1984	2018	1980	2016	1984	2018	1999	2020	1991	2018	1979	2019
Household labour income		Mean	29,107€	43,922€	10,443€	20,947 €	21,425€	31,813€	16,477zł	36,890zł	23,358 £	31,340 £	44,059$	62,001$
Class	Low-skilled workng class	%	23	13	56	28	37	15	16	8	9	17	20	10
	Skilled workng class	%	38	27	8	20	23	28	41	39	36	21	36	27
	Middle class	%	23	34	28	30	28	32	28	27	26	29	18	26
	Upper-middle class	%	16	26	8	22	12	25	15	26	29	33	26	37
Household size		Mean	3.2	2.8	4.2	3.0	3.3	2.8	3.7	3.2	2.9	2.8	3.2	3.0
Head of household	Male	%	90	52	95	66	88	79	70	68	88	61	82	55
Household size		Mean	42	45	43	46	40	45	42	44	41	44	40	43
N observations			6,966	19,198	34,815	15,829	12,912	45,378	42,411	36,777	6,974	17,182	75,085	68,333

Table A.2: Coding of the class variable with LIS-data.

Upper-middle class	ISCO == 1 & education != "Low" ISCO == 2 & education == "High" (ISCO == 1 | ISCO ==2) & status == "Employer" ISCO == 2 & status == "Self-employed" & education == "High" ISCO == 1 & status == "Self-employed" & education != "Low"
Middle class	ISCO == 4 & education == "High" ISCO == 3 ISCO == 1 & education == "Low" ISCO == 2 & education != "High" (ISCO == 4 | ISCO == 5 | ISCO ==6 | ISCO ==7 | ISCO == 8 | ISCO == 9) & status == "Self-employed
Skilled working class	(ISCO == 5 | ISCO ==6 | ISCO ==7 | ISCO == 8) & education != "Low" ISCO == 4 & education == "Medium" ISCO == 10
Low-skilled working class	ISCO == 9 (ISCO == 4 | ISCO == 5 | ISCO ==6 | ISCO ==7 | ISCO == 8) & education == Low

Appendix B

The Myth of the Middle Class Squeeze: Employment and Income by Class in Six Western Countries, 1980-2020

Analyses with a 5-class schema including the lower-middle class

Figure B.1: The class composition of the workforce over time (in %).

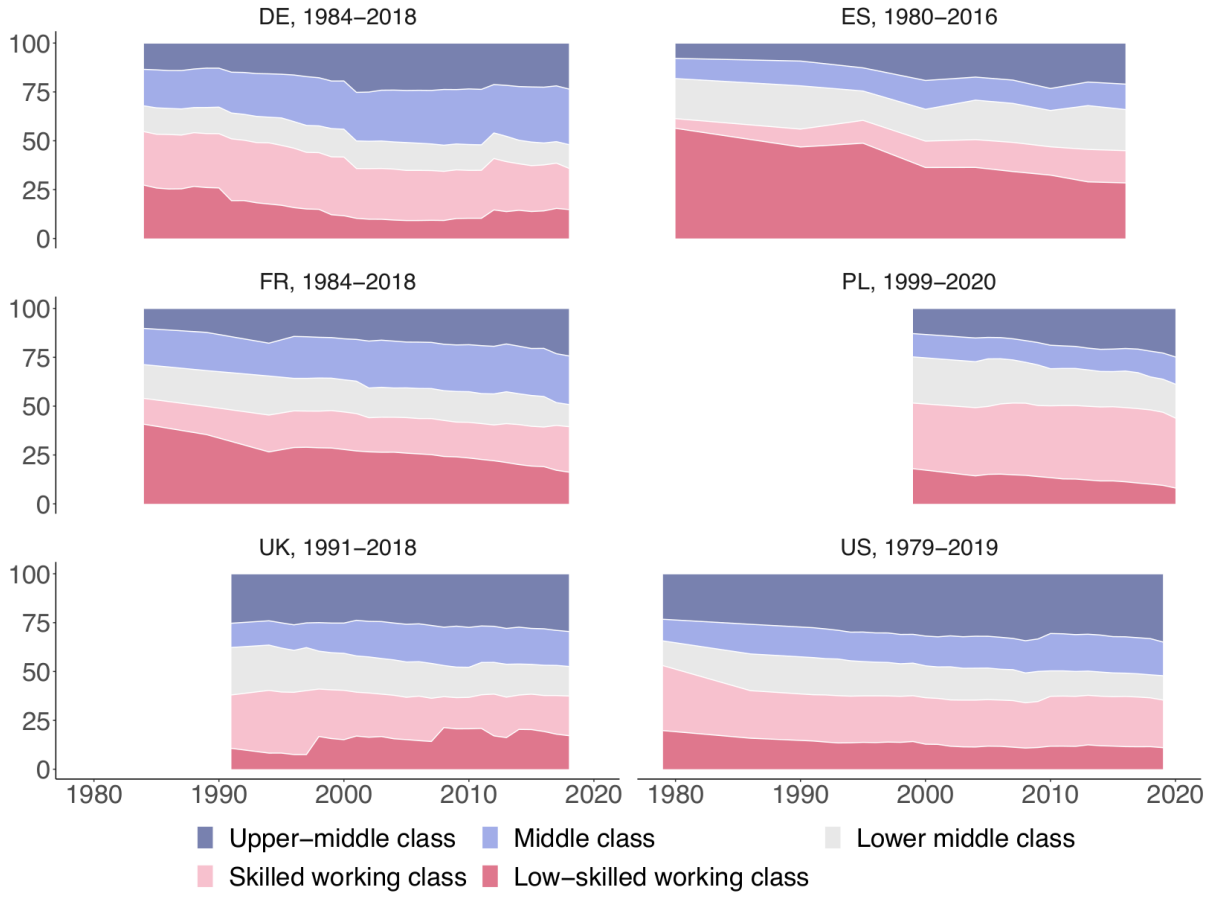


Figure B.2: Change in the employment share of different classes (in percentage points).

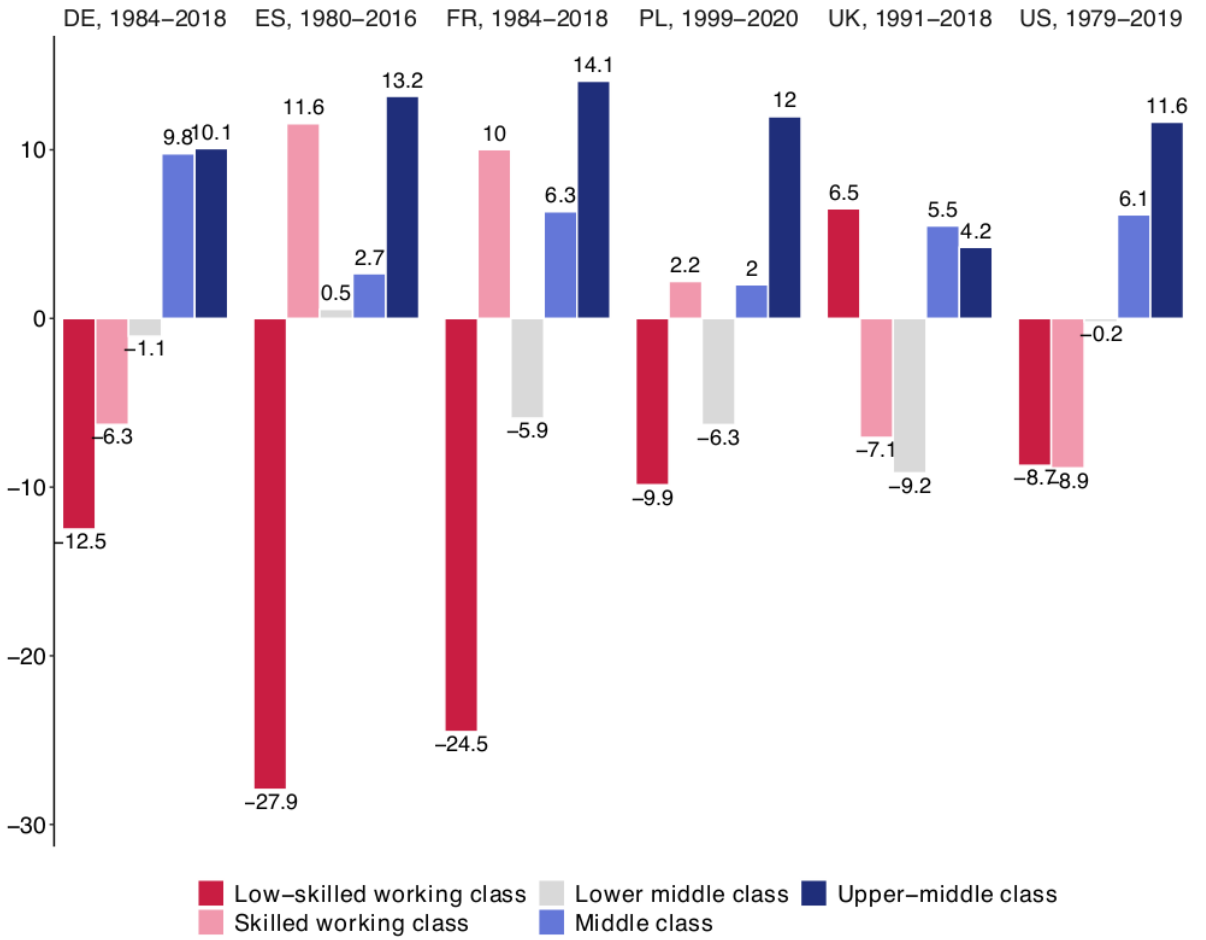
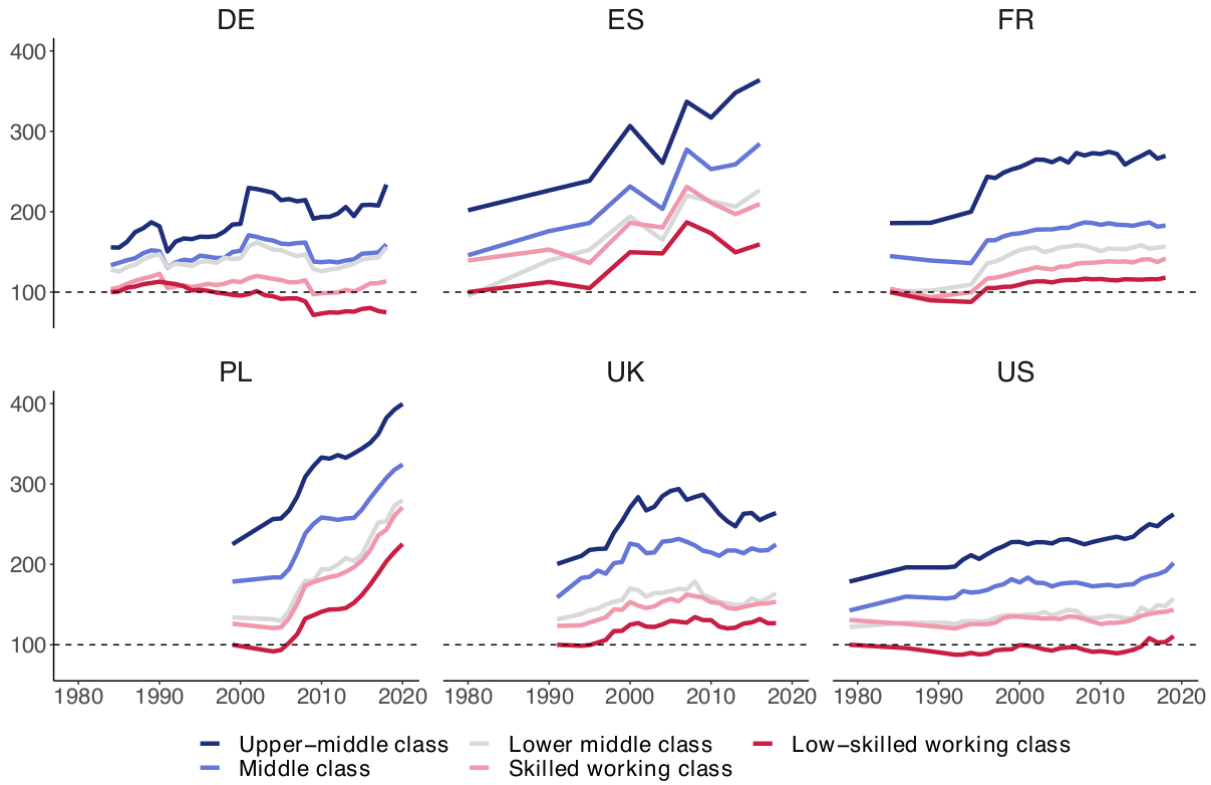
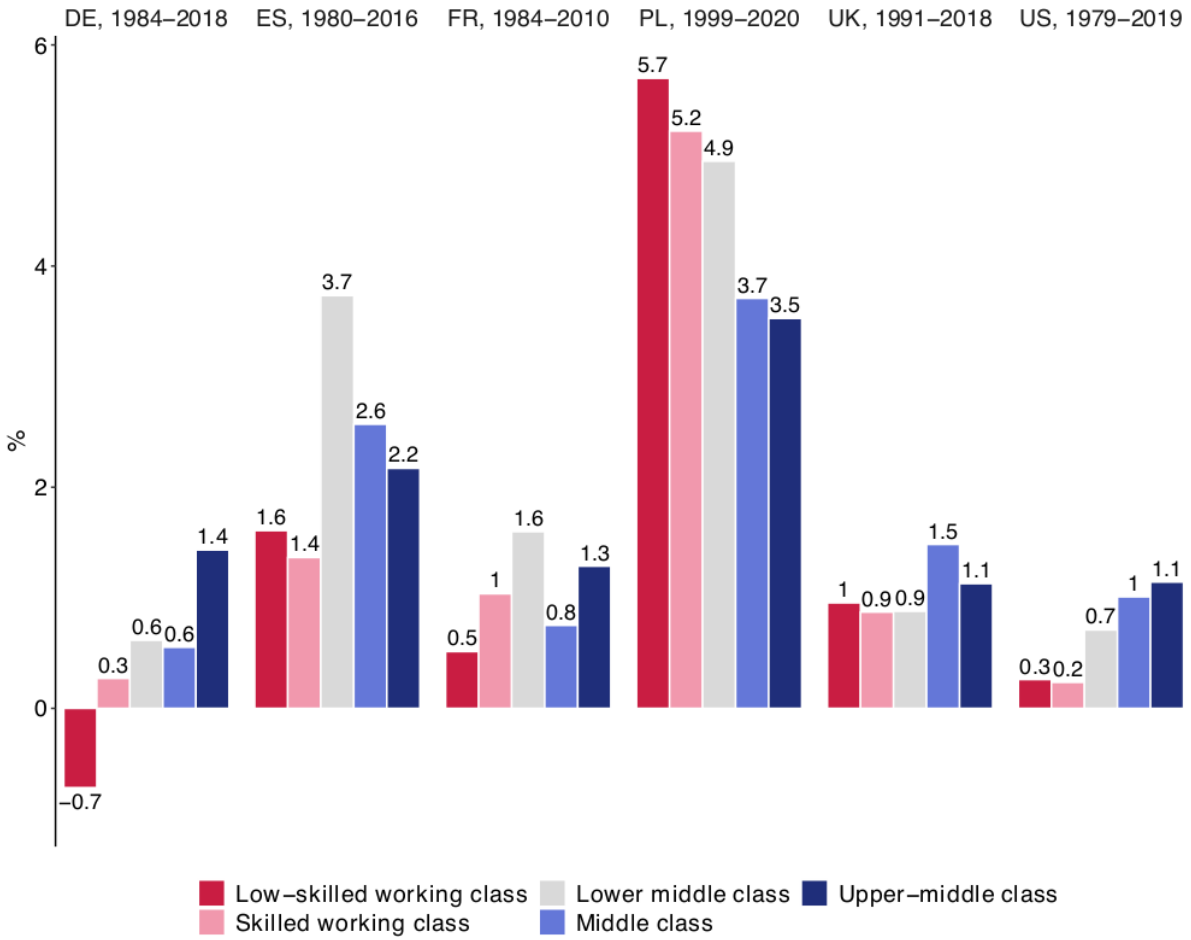


Figure B.3: Evolution of indexed real household labour income by social class over four decades.



Note: household labour income is corrected for inflation and adjusted for household size. Values are indexed for the low-skilled working class in the first year of observation (that is, all incomes are expressed relative to the income of the low-skilled working class which is set, within each country, at 100 at the beginning of the time series).

Figure B.4: Annual mean change in household labour income, in % (descriptive statistics).



Appendix C

How the Great Recession Changed Class Inequality: Evidence from 23 European Countries

Table C.1: Detailed listing of the class variable

ISCO-88	Label	ISCO-08	Label	Class
11	Legislators and senior officials	11	Chief executives, senior officials and legislators	Upper-middle class
12	Corporate managers	12	Administrative and commercial managers	Upper-middle class
13	Managers of small enterprises	13	Production and specialized services managers	Upper-middle class
		14	Hospitality, retail and other services managers	Upper-middle class
21	Physical, mathematical and engineering science professionals	21	Science and engineering professionals	Upper-middle class
22	Life science and health professionals	22	Health professionals	Upper-middle class
23	Teaching professionals	23	Teaching professionals	Upper-middle class
24	Other professionals	24	Business and administration professionals	Upper-middle class
		25	Information and communications technology (ICT) professionals	Upper-middle class
		26	Legal, social and cultural professionals	Upper-middle class
31	Physical and engineering science associate professionals	31	Science and engineering associate professionals	Lower-middle class
32	Life science and health associate professionals	32	Health associate professionals	Lower-middle class
33	Teaching associate professionals	33	Business and administration associate professionals	Lower-middle class
34	Other associate professionals	34	Legal, social, cultural and related associate professionals	Lower-middle class
		35	Information and communications technicians	Lower-middle class
41	Office clerks	41	General and keyboard clerks	Lower-middle class
42	Customer services clerks	42	Customer services clerks	Lower-middle class
		43	Numerical and material recording clerks	Lower-middle class
		44	Other clerical support workers	Lower-middle class

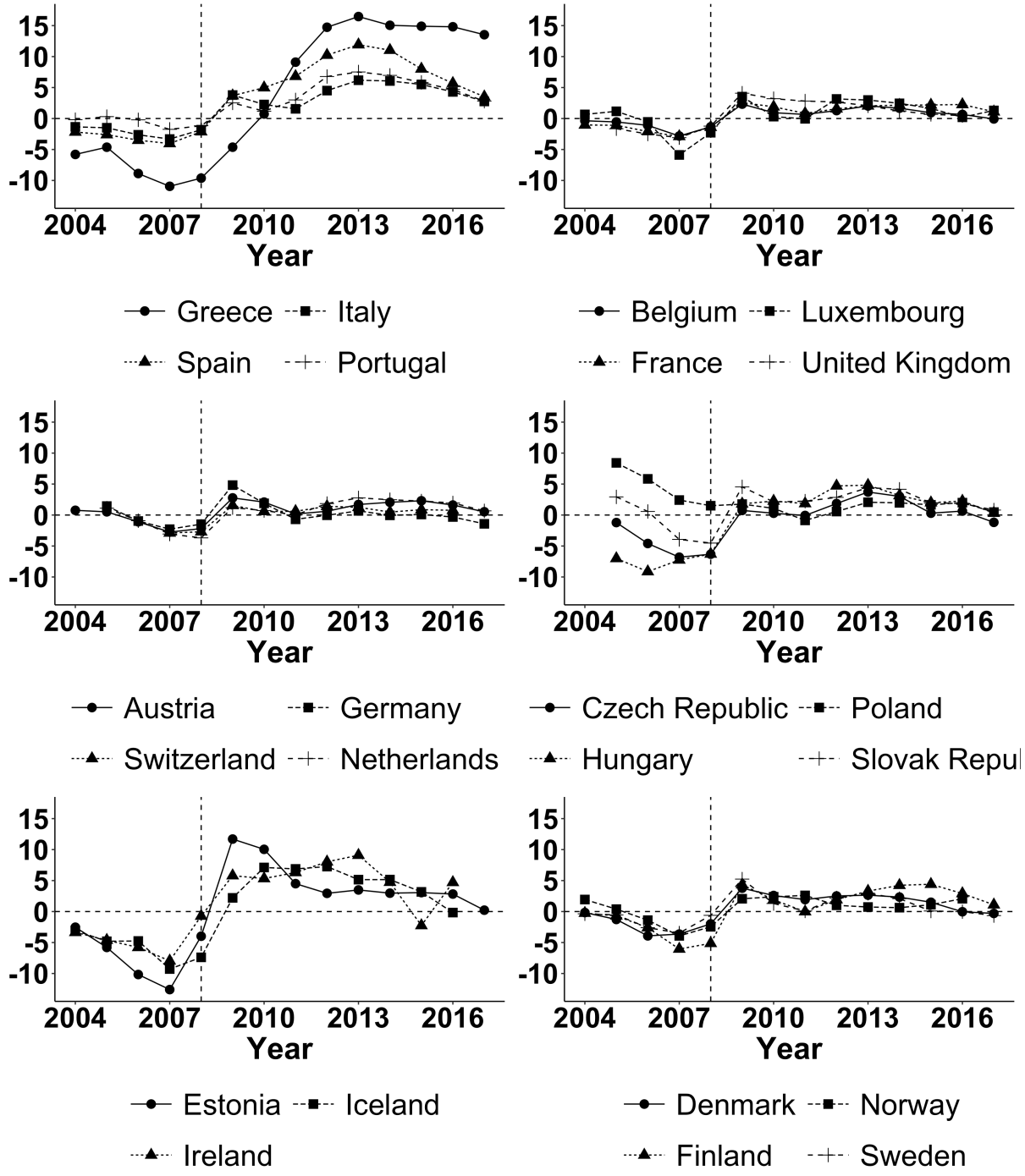
Continued: Detailed listing of the class variable.

ISCO-88	Label	ISCO-08	Label	Class
51	Personal and protective services workers	51	Personal service workers	Working class
52	Models, salespersons and demonstrators	52	Sales workers	Working class
		53	Personal care workers	Working class
		54	Protective services workers	Working class
61	Skilled agricultural and fishery workers	61	Market-oriented skilled agricultural workers	Working class
		62	Market-oriented skilled forestry, fishery, hunting workers	Working class
		63	"Subsistence farmers, fishers, hunters and gatherers "	Working class
71	Extraction and building trades workers	71	Building and related trades workers, excluding electricians	Working class
72	Metal, machinery and related trades workers	72	Metal, machinery and trades workers	Working class
73	Precision, handicraft, printing etc trades workers	73	Handicraft and printing workers	Working class
74	Other craft and related trades workers	74	Electrical and electronic trades workers	Working class
		75	Food processing, wood working, textile and other craft and related trades workers	Working class
81	Stationary-plant and related operators	81	Stationary plant and machine operators	Working class
82	Machine operators and assemblers	82	Assemblers	Working class
83	Drivers and mobile-plant operators	83	Drivers and mobile plant operators	Working class
91	Sales and services elementary occupations	91	Cleaners and helpers	Working class
92	Agricultural, fishery and related labourers	92	Agricultural, forestry and fishery labourers	Working class
93	Labourers in mining, construction, manufacturing and transport	93	Labourers mining, construction, manufacturer and transport	Working class
		94	Food preparation assistants	Working class
		95	Street and related sales and service workers	Working class
		96	Refuse workers and other elementary workers	Working class

Table C.2: Descriptive statistics of key variables.

	Mean	SD
Age	44.23	10.17
Earnings (log scale)	9.66	1.16
Male	0.53	
Class		
Working class	0.46	
Lower-middle class	0.27	
Upper-middle class	0.27	
Country of Birth		
Resident	0.91	
EU	0.04	
Other countries	0.05	
Macro predictors		
GDP gap	1.18	4.09
Unemployment	7.38	4.32

Figure C.1: GDP gap between 2004 and 2017 (in %). Source: OECD Labour Market Statistics, extracted 2021.



Note: To indicate worsening economic conditions and facilitate comparability, the measure was reversed.

Table C.3: Main effects and interaction effects with social class and macroeconomic shocks on labour income.

Predictors	Model 1	Model 2
(Intercept)	9.680***	9.668***
	(0.155)	(0.151)
Male	0.283***	0.284***
	(0.001)	(0.001)
Age	0.002***	0.002***
	(0.000)	(0.000)
Country of residence (Ref.)		
EU	-0.033***	-0.033***
	(0.003)	(0.003)
Outside EU	-0.090***	-0.090***
	(0.003)	(0.003)
Upper-middle class (Ref.)		
Lower-middle class	0.014	-0.068
	(0.049)	(0.045)
Working class	-0.435***	-0.558***
	(0.040)	(0.036)
Unemployment	0.006	
	(0.003)	
Lower-middle class * Unemployment	-0.013***	
	(0.001)	
Working class * Unemployment	-0.020***	
	(0.001)	
GDP gap		-0.003
		(0.002)
Lower-middle class * GDP gap		-0.011***
		(0.000)
Working class * GDP gap		-0.014***
		(0.000)
Random slope - country level	Yes	Yes
Year dummies	Yes	Yes
N	2,234,878	2,234,878
*<p 0.05 **p<0.01 ***p<0.001	23	23

Note: Coefficients from multilevel linear models. Standard errors are in brackets. Dependent variable: log income. Models control for (1) age, gender, country of birth and social class; (2) macrolevel: unemployment rate (Model 1), GDP gap (Model 2).

Figure C.2: Predicted values of labour income by social class and macroeconomic shocks.

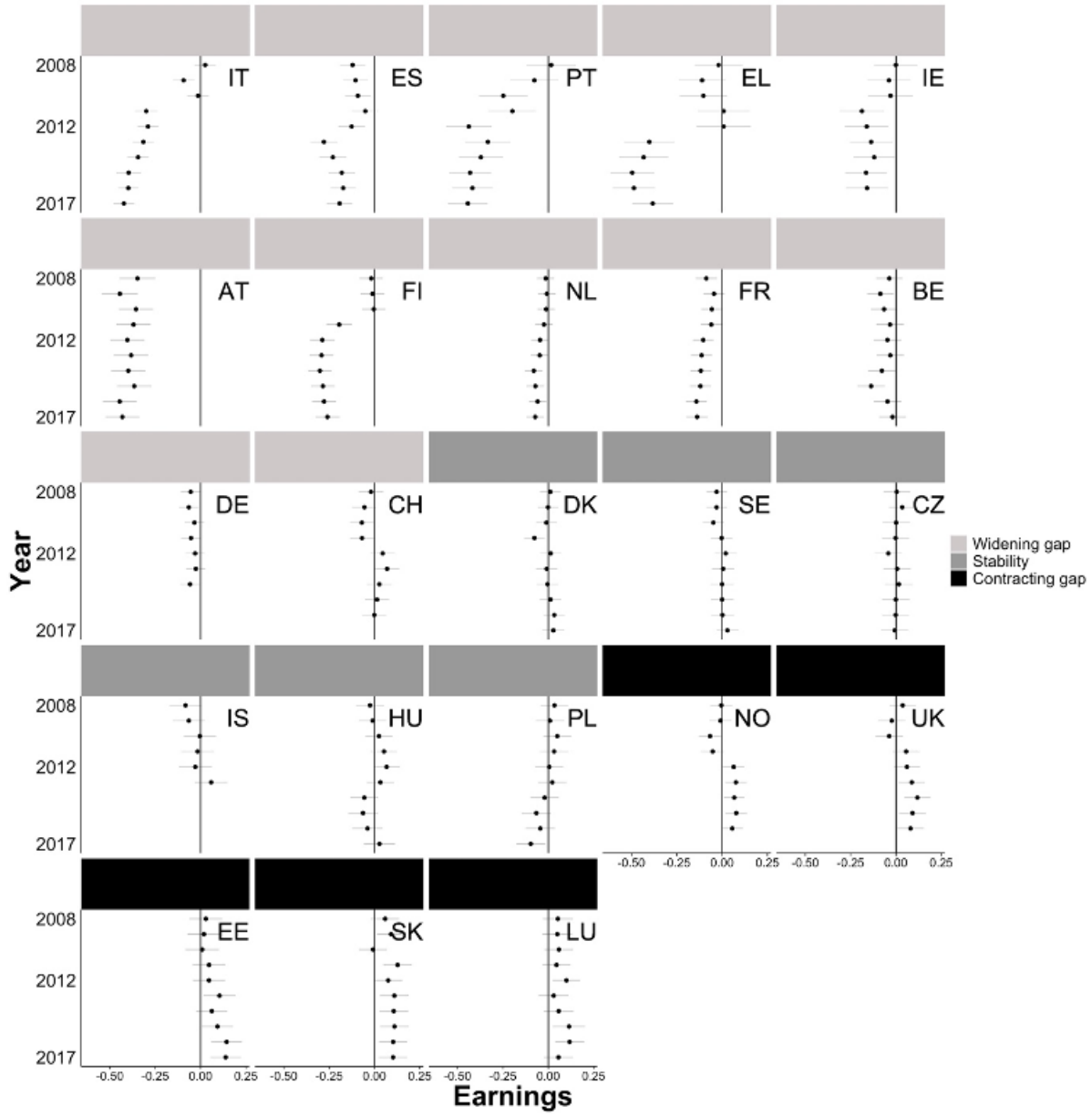
Note: Left panel corresponds to Model 1 and right panel corresponds to Model 2 in Table 3.1 and Table C.3. Vertical bars represent 95% confidence intervals. Dependent variable: log income. Models control for (1) age, gender, country of birth and social class; (2) macrolevel: unemployment rate (Model 1), GDP gap (Model 2). Source: EU-SILC, 2004-2017.

Table C.4: Main effects and interaction effects with social class and macroeconomic shocks on labour income.

Predictors	Model 1	Model 2
(Intercept)	24736.296***	23475.108***
	(4439.165)	(4377.386)
Male	9796.214***	9798.832***
	(37.943)	(37.947)
Age	179.431***	179.542***
	(1.854)	(1.854)
Country of residence (Ref.)		
EU	-65.771	-66.448
	(102.869)	(102.869)
Outside EU	-2411.973***	-2412.374***
	(87.764)	(87.764)
Lower-middle class	-6978.863***	-8171.821***
	(1503.488)	(1437.784)
Working class	-17647.058***	-19213.633***
	(2286.814)	(2216.627)
Unemployment	77.857	
	(114.108)	
Upper-middle class (Ref.)		
Lower-middle class * unemployment	-185.731***	
	(24.068)	
Working class * unemployment	-243.583***	
	(20.416)	
gap		-304.128***
		(84.514)
Lower-middle class * GDP gap		-109.565***
		(14.769)
Working class * GDP gap		-143.096***
		(12.454)
Random slope - country level	Yes	Yes
Year dummies	Yes	Yes
N	2,234,878	2,234,878
	23	23
*<p 0.05 **p<0.01 ***p<0.001		

Note: Coefficients from multilevel linear models. Standard errors are in brackets. Dependent variable: log income. Models control for (1) age, gender, country of birth and social class; (2) macrolevel: unemployment rate (Model 1), GDP gap (Model 2).

Figure C.3: Change in labour income 2004-2017 of lower-middle class adults relative to upper-middle class adults.



Note: Coefficients from linear models. Horizontal bars represent 95% confidence intervals. Dependent variable: log income. Models control for age, gender, country of birth, social class and year of interview. Reference category of y-axis is year 2007*lower-middle class. Countries displayed are IT: Italy, ES: Spain, PT: Portugal, EL: Greece, IE: Ireland, AT: Austria, FI: Finland, NL: Netherlands, FR: France, BE: Belgium, DE: Germany, CH: Switzerland, DK: Denmark, SE: Sweden, CZ: Czech Republic, IS: Iceland, HU: Hungary, PL: Poland, NO: Norway, UK: United Kingdom, EE: Estonia, SK: Slovak Republic, LU: Luxembourg. Source: EU-SILC, 2004-2017.

Table C.5: Main effects and interaction effects with social class and macroeconomic shocks on labour income country fixed effects models.

Predictors	Model 1	Model 2
Male	0.287***	0.287***
	(0.001)	(0.001)
Age	0.001***	0.001***
	(0.000)	(0.000)
Country of residence (Ref.)		
EU	-0.036***	-0.034***
	(0.003)	(0.003)
Outside EU	-0.081***	-0.083***
	(0.003)	(0.003)
Upper-middle class (Ref.)		
Lower-middle class	-0.226***	-0.099***
	(0.003)	(0.002)
Working class	-0.585***	-0.582***
	(0.003)	(0.002)
Unemployment	-0.011***	
	(0.000)	
Lower-middle class * Unemployment	0.019***	
	(0.000)	
Working class * Unemployment	-0.001 †	
	(0.000)	
GDP gap		-0.009***
		(0.000)
Lower-middle class * GDP gap		0.008***
		(0.000)
Working class * GDP gap		-0.007***
		(0.000)
Country FE	Yes	Yes
Year FE	Yes	Yes
N	2,234,878	2,234,878
†<p 0.1 *<p 0.05 **p<0.01 ***p<0.001		

Note: Coefficients from country fixed effects models. Standard errors are in brackets. Dependent variable: log income. Models control for (1) age, gender, country of birth and social class; (2) macrolevel: unemployment rate (Model 1), GDP gap (Model 2).

Table C.6: Main effects and interaction effects with social class and unemployment rate on labour income - excluding key countries from the sample.

	DE	**FR**	**UK**	**IT**
(Intercept)	9.681***	9.678***	9.639***	9.735***
	(0.161)	(0.161)	(0.159)	(0.157)
Male	0.266***	0.282***	0.281***	0.301***
	(0.001)	(0.001)	(0.001)	(0.001)
Age	0.002***	0.002***	0.002***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Country of residence (Ref.)				
EU	-0.034***	-0.036***	-0.037***	-0.033***
	(0.003)	(0.003)	(0.003)	(0.003)
Outside EU	-0.090***	-0.090***	-0.092***	-0.089***
	(0.003)	(0.003)	(0.003)	(0.003)
Upper-middle class (Ref.)				
Lower-middle class	0.021	0.017	0.025	-0.037
	(0.051)	(0.051)	(0.050)	(0.042)
Working class	-0.423***	-0.433***	-0.421***	-0.489***
	(0.043)	(0.042)	(0.040)	(0.032)
Unemployment	0.006	0.006	0.005	0.003
	(0.003)	(0.003)	(0.003)	(0.003)
Lower-middle class * unemployment	-0.014***	-0.013***	-0.013***	-0.009***
	(0.001)	(0.001)	(0.001)	(0.001)
Working class * unemployment	-0.021***	-0.019***	-0.020***	-0.016***
	(0.001)	(0.001)	(0.001)	(0.001)
N (individuals)	2,123,899	2,103,361	2,139,407	2,050,485
N (country-years)	280	276	278	279
N (country)	22	22	22	22
Random slope - country level	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
†<0.1 *<p 0.05 **p<0.01 ***p<0.001				

Note: Coefficients from multilevel linear models. Standard errors are in brackets. Dependent variable: log income. Models control for (1) age, gender, country of birth and social class; (2) macrolevel: unemployment rate. Source: EU-SILC, 2004-2017.

Continued: Main effects and interaction effects with social class and unemployment rate on labour income - excluding key countries from the sample.

	ES	**PL**	**NL**	**BE**
(Intercept)	9.709***	9.699***	9.671***	9.669***
	(0.160)	(0.155)	(0.160)	(0.161)
Male	0.284***	0.285***	0.267***	0.285***
	(0.001)	(0.001)	(0.001)	(0.001)
Age	0.001***	0.002***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
Country of residence (Ref.)				
EU	-0.026***	-0.032***	-0.032***	-0.033***
	(0.003)	(0.003)	(0.003)	(0.003)
Outside EU	-0.083***	-0.090***	-0.091***	-0.086***
	(0.003)	(0.003)	(0.003)	(0.003)
Upper-middle class (Ref.)				
Lower-middle class	0.013	0.031	0.020	0.009
	(0.051)	(0.053)	(0.051)	(0.051)
Working class	-0.434***	-0.412***	-0.433***	-0.442***
	(0.042)	(0.040)	(0.042)	(0.042)
Unemployment rate	0.005	0.009*	0.006	0.006
	(0.004)	(0.003)	(0.003)	(0.003)
Lower-middle class * unemployment	-0.014***	-0.015***	-0.013***	-0.013***
	(0.001)	(0.001)	(0.001)	(0.001)
Working class * unemployment	-0.021***	-0.021***	-0.019***	-0.020***
	(0.001)	(0.001)	(0.001)	(0.001)
N (individuals)	2,093,482	2,074,887	2,097,705	2,164,014
N (country-years)	278	277	277	276
N (country)	22	22	22	22
Random slope - country level	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
†<0.1 *<p 0.05 **p<0.01 ***p<0.001				

Table C.7: Main effects and interaction effects with social class and GDP gap on labour income - excluding key countries from the sample.

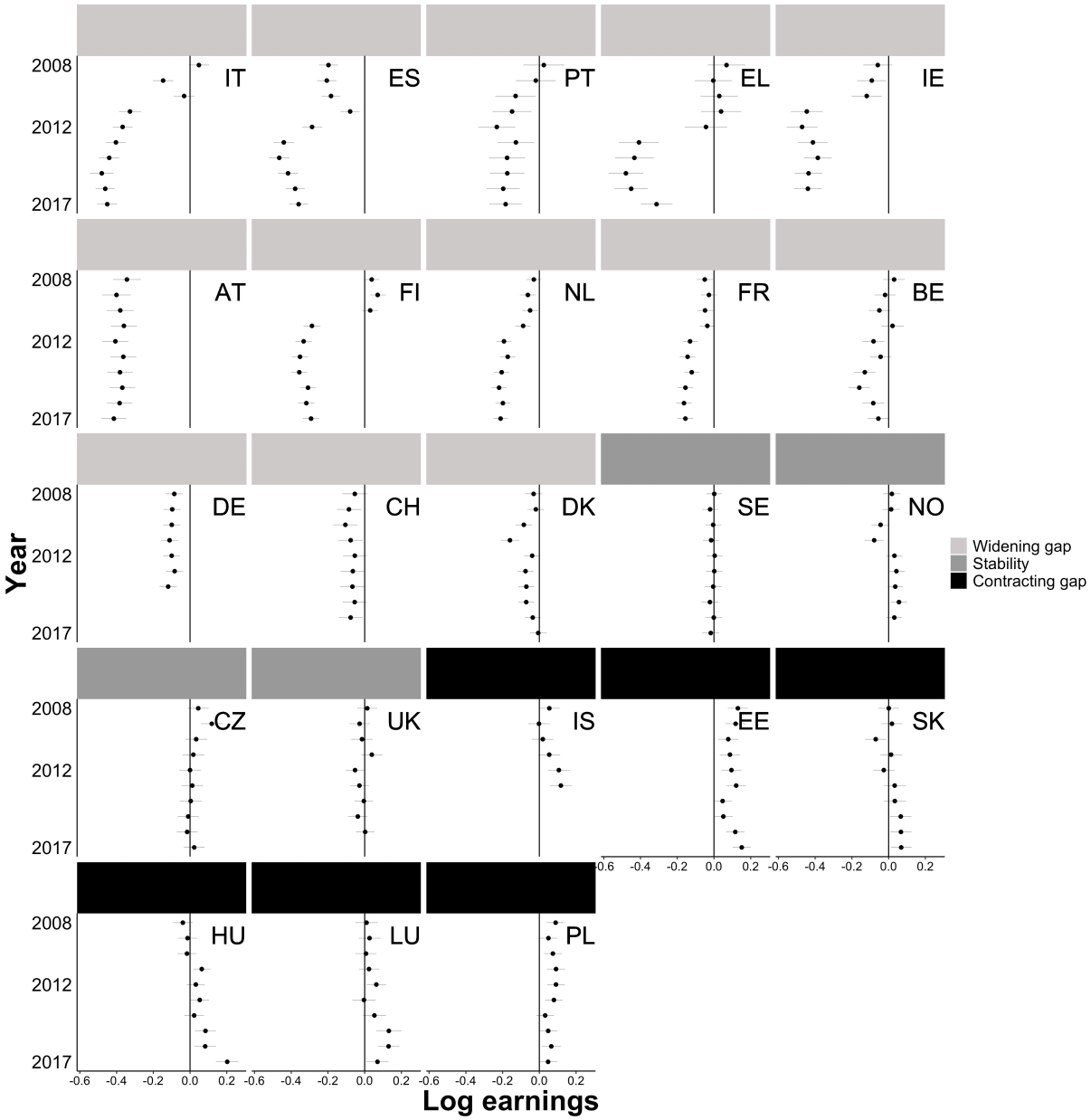
	DE	**FR**	**UK**	**IT**
(Intercept)	9.666***	9.662***	9.618***	9.702***
	(0.157)	(0.157)	(0.158)	(0.156)
Male	0.267***	0.282***	0.281***	0.302***
	(0.001)	(0.001)	(0.001)	(0.001)
Age	0.002***	0.002***	0.002***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Country of residence (Ref.)				
EU	-0.034***	-0.035***	-0.037***	-0.033***
	(0.003)	(0.003)	(0.003)	(0.003)
Outside EU	-0.090***	-0.090***	-0.092***	-0.089***
	(0.003)	(0.003)	(0.003)	(0.003)
Upper-middle class (Ref.)				
Lower-middle class	-0.064	-0.062	-0.057	-0.092*
	(0.047)	(0.046)	(0.046)	(0.039)
Working class	-0.554***	-0.552***	-0.546***	-0.586***
	(0.038)	(0.038)	(0.037)	(0.029)
GDP gap	-0.003	-0.003	-0.003	-0.004
	(0.002)	(0.002)	(0.002)	(0.002)
Lower-middle class * GDP gap	-0.011***	-0.011***	-0.011***	-0.009***
	(0.000)	(0.000)	(0.000)	(0.000)
Working class * GDP gap	-0.015***	-0.014***	-0.015***	-0.013***
	(0.000)	(0.000)	(0.000)	(0.000)
N (individuals)	2,123,899	2,103,361	2,139,407	2,050,485
N (country-years)	280	276	278	279
N (country)	22	22	22	22
Random slope - country level	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
†<0.1 *<p 0.05 **p<0.01 ***p<0.001				

Note: Coefficients from multilevel linear models. Standard errors are in brackets. Dependent variable: log income. Models control for (1) age, gender, country of birth and social class; (2) macrolevel: GDP gap. Source: EU-SILC, 2004-2017.

Continued: Main effects and interaction effects with social class and GDP gap on labour income - excluding key countries from the sample.

	ES	**PL**	**NL**	**BE**
(Intercept)	9.688***	9.701***	9.658***	9.653***
	(0.158)	(0.150)	(0.157)	(0.157)
Male	0.285***	0.286***	0.267***	0.285***
	(0.001)	(0.001)	(0.001)	(0.001)
Age	0.001***	0.002***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)
Country of residence (Ref.)				
EU	-0.026***	-0.032***	-0.032***	-0.033***
	(0.003)	(0.003)	(0.003)	(0.003)
Outside EU	-0.083***	-0.090***	-0.091***	-0.086***
	(0.003)	(0.003)	(0.003)	(0.003)
Upper-middle class (Ref.)				
Lower-middle class	-0.072	-0.065	-0.063	-0.073
	(0.047)	(0.047)	(0.047)	(0.047)
Working class	-0.559***	-0.544***	-0.555***	-0.564***
	(0.038)	(0.035)	(0.038)	(0.038)
GDP gap	-0.003	-0.002	-0.003	-0.003
	(0.002)	(0.003)	(0.002)	(0.002)
Lower-middle class * GDP gap	-0.011***	-0.011***	-0.011***	-0.011***
	(0.000)	(0.000)	(0.000)	(0.000)
Working class * GDP gap	-0.013***	-0.015***	-0.014***	-0.014***
	(0.000)	(0.000)	(0.000)	(0.000)
N (individuals)	2,093,482	2,074,887	2,097,705	2,164,014
N (country-years)	280	277	277	276
N (country)	22	22	22	22
Random slope - country level	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
†<0.1 *<p 0.05 **p<0.01 ***p<0.001				

Figure C.4: Change in labour income 2004-2017 of working class adults relative to upper-middle class adults - reference category 2004-07.



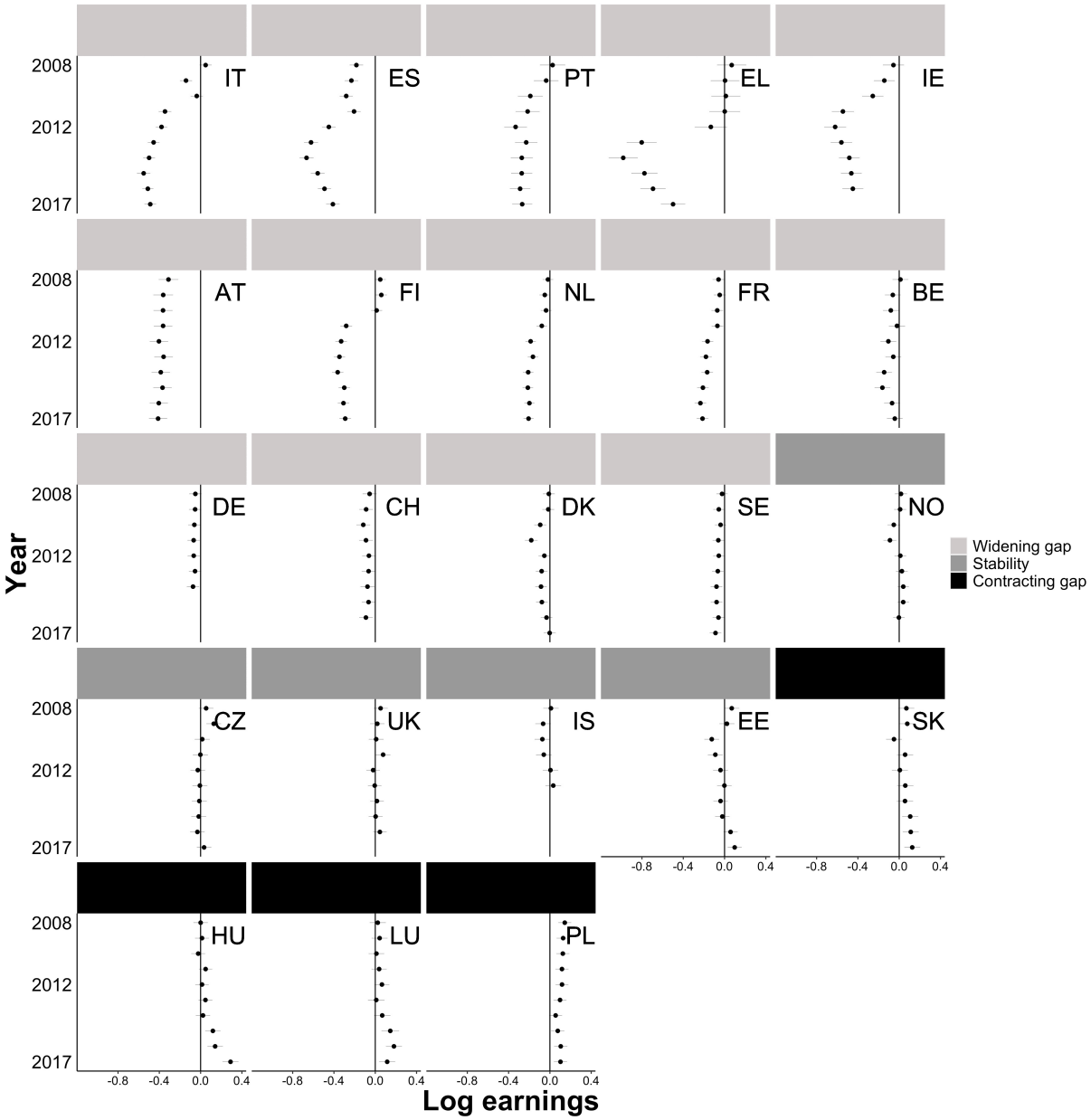
Note: Coefficients from linear models. Horizontal bars represent 95% confidence intervals. Dependent variable: log income. Models control for age, gender, country of birth, social class and year of interview. Reference category of y-axis is year 2007*working class. Countries displayed are IT: Italy, ES: Spain, PT: Portugal, EL: Greece, IE: Ireland, AT: Austria, FI: Finland, NL: Netherlands, FR: France, BE: Belgium, DE: Germany, CH: Switzerland, DK: Denmark, SE: Sweden, NO: Norway, CZ: Czech Republic, UK: United Kingdom, IS: Iceland, EE: Estonia, SK: Slovak Republic, HU: Hungary, LU: Luxembourg, PL: Poland. Source: EU-SILC, 2004-2017.

Table C.8: Main effects and interaction effects with social class and macroeconomic shocks on labour income including the unemployed.

	Model 1	**Model 2**
(Intercept)	9.784***	9.597***
	(0.156)	(0.159)
Male	0.288***	0.288***
	(0.001)	(0.001)
Age	0.000***	0.001***
	(0.000)	(0.000)
Country of residence (Ref.)		
EU	-0.039***	-0.039***
	(0.003)	(0.003)
Outside EU	-0.129***	-0.129***
Upper-middle class (Ref.)		
	(0.003)	(0.003)
Lower-middle class	0.022	-0.097*
	(0.049)	(0.043)
Working class	-0.427***	-0.626***
	(0.041)	(0.037)
Unemployment	-0.012**	
	(0.004)	
Lower-middle class * unemployment	-0.019***	
	(0.001)	
Working class * unemployment	-0.032***	
	(0.001)	
GDP gap		-0.017***
		(0.003)
Lower-middle class * GDP gap		-0.014***
		(0.000)
Working class * GDP gap		-0.023***
		(0.000)
N (individuals)	2,440,739	2,440,739
Random slope - country level	Yes	Yes
Year dummies	Yes	Yes
†<0.1 *<p 0.05 **p<0.01 ***p<0.001		

Note: Coefficients from multilevel linear models. Standard errors are in brackets. Dependent variable: log income. Models control for (1) age, gender, country of birth and social class; (2) macrolevel: unemployment rate (Model 1), GDP gap (Model 2). Source: EU-SILC, 2004-2017.

Figure C.5: Change in labour income 2004-2017 of working class adults relative to upper-middle class adults - including the unemployed.



Note: Coefficients from linear models. Confidence intervals 95%. Dependent variable: log income. Models control for age, gender, country of birth, social class and year of interview. Reference category of y-axis is year 2007*working class. Countries displayed are IT: Italy, ES: Spain, PT: Portugal, EL: Greece, IE: Ireland, AT: Austria, FI: Finland, NL: Netherlands, FR: France, BE: Belgium, DE: Germany, CH: Switzerland, DK: Denmark, SE: Sweden, NO: Norway, CZ: Czech Republic, UK: United Kingdom, IS: Iceland, EE: Estonia, SK: Slovak Republic, HU: Hungary, LU: Luxembourg, PL: Poland. Source: EU-SILC, 2004-2017.

Appendix D

Labour market prospects of young adults in Europe: differential effects of social origin during the Great Recession

Table D1: Distribution of individual-level variables by country, year and data source - EU-SILC (top) and ESS (bottom).

		France (N=4751)		Germany (N=3944)		Italy (N=11059)		Poland (N=8863)		Spain (N=7827)		United Kingdom (N=3457)	
		Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Income (log)		8.3	3.5	7.3	4.2	6.0	4.5	5.5	3.9	6.9	3.9	7.4	4.5
		N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
Gender	Female	2463	51.8	2167	54.9	5634	50.9	4568	51.5	3955	50.5	1904	55.1
	Male	2288	48.2	1777	45.1	5425	49.1	4295	48.5	3872	49.5	1553	44.9
Parental education	Low social origin	2401	50.5	258	6.5	7180	64.9	1833	20.7	5581	71.3	1750	50.6
	Middle social origin	1322	27.8	1954	49.5	3091	28.0	6045	68.2	1038	13.3	742	21.5
	High social origin	1028	21.6	1732	43.9	788	7.1	985	11.1	1208	15.4	965	27.9
Main activity	Non-employed	948	20.0	1292	32.8	3537	32.0	2484	28.0	2305	29.4	759	22.0
	Employed	3803	80.0	2652	67.2	7522	68.0	6379	72.0	5522	70.6	2698	78.0
Education	Lower secondary and below	552	11.6	235	6.0	3041	27.5	633	7.1	2663	34.0	262	7.6
	Upper secondary	2055	43.3	1639	41.6	5009	45.3	5153	58.1	1903	24.3	1386	40.1
	Post-secondary and tertiary	2144	45.1	2070	52.5	3009	27.2	3077	34.7	3261	41.7	1809	52.3
Crisis	2005-06	2349	49.4	1826	46.3	6843	61.9	5211	58.8	4363	55.7	2128	61.6
	2011-12	2402	50.6	2118	53.7	4216	38.1	3652	41.2	3464	44.3	1329	38.4

		France (N=1750)		Germany (N=2336)		Italy (N=337)		Poland (N=1845)		Spain (N=1990)		United Kingdom (N=1913)	
		N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.	N	Pct.
Gender	Female	985	56.3	1169	50.0	168	49.9	921	49.9	1009	50.7	1112	58.1
	Male	765	43.7	1167	50.0	169	50.1	924	50.1	981	49.3	801	41.9
Parental education	Low social origin	625	35.7	172	7.4	205	60.8	481	26.1	1420	71.4	875	45.7
	Middle social origin	711	40.6	1317	56.4	92	27.3	1109	60.1	275	13.8	284	14.8
	High social origin	414	23.7	847	36.3	40	11.9	255	13.8	295	14.8	754	39.4
Main activity	Non-employed	428	24.5	817	35.0	115	34.1	478	25.9	531	26.7	544	28.4
	Employed	1322	75.5	1519	65.0	222	65.9	1367	74.1	1459	73.3	1369	71.6
Education	Lower secondary and below	162	9.3	203	8.7	94	27.9	226	12.2	704	35.4	564	29.5
	Upper secondary	703	40.2	1112	47.6	165	49.0	902	48.9	380	19.1	405	21.2
	Post-secondary and tertiary	885	50.6	1021	43.7	78	23.1	717	38.9	906	45.5	944	49.3
Crisis	2002-07	793	45.3	1023	43.8	206	61.1	917	49.7	940	47.2	912	47.7
	2008-14	957	54.7	1313	56.2	131	38.9	928	50.3	1050	52.8	1001	52.3

Table D2: Change in the direct effect of social origin on employment comparing low-origin adults relative to high-origin adults aged 25-34, origin measured with parental education.

	France	Germany	Italy	Poland	Spain	United Kingdom
Intercept	0.472***	−0.039	0.007	0.238***	0.234***	0.651***
	(0.058)	(0.066)	(0.057)	(0.050)	(0.053)	(0.061)
Sex	0.145***	0.169***	0.196***	0.219***	0.152***	0.192***
	(0.010)	(0.011)	(0.009)	(0.008)	(0.009)	(0.011)
Parental education						
Parental - Below upper-secondary	0.003	0.112*	0.015	0.023	0.055**	−0.026
	(0.024)	(0.057)	(0.029)	(0.032)	(0.020)	(0.021)
Parental - Upper-secondary	0.028	0.018	0.004	0.015	0.036	0.003
	(0.023)	(0.022)	(0.030)	(0.021)	(0.027)	(0.026)
Respondent education						
Below upper-secondary	−0.229***	−0.285***	−0.096	−0.376**	−0.045	−0.209***
	(0.060)	(0.059)	(0.084)	(0.125)	(0.047)	(0.042)
Upper-secondary	−0.048	−0.162***	−0.167***	−0.159***	−0.167***	−0.057*
	(0.030)	(0.023)	(0.035)	(0.030)	(0.031)	(0.028)
Age	0.010***	0.021***	0.021***	0.016***	0.015***	0.003†
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Crisis (1 = 2008-14)	0.023	0.089***	−0.032	0.018	−0.089***	−0.033
	(0.021)	(0.020)	(0.032)	(0.024)	(0.023)	(0.021)
Data (1 = ESS)	−0.048***	−0.015	0.001	0.022*	0.038***	−0.007
	(0.011)	(0.012)	(0.025)	(0.011)	(0.011)	(0.012)
Parental education x respondent education						
Low social origin x lower secondary and below	−0.065	0.016	−0.040	−0.015	−0.118*	−0.069
	(0.060)	(0.081)	(0.085)	(0.127)	(0.047)	(0.044)
Middle social origin x lower secondary and below	0.030	0.048	0.032	−0.121	−0.017	−0.110†
	(0.066)	(0.063)	(0.088)	(0.125)	(0.057)	(0.060)
Low social origin x upper secondary	−0.030	−0.016	0.129***	−0.033	0.106***	0.003
	(0.032)	(0.060)	(0.037)	(0.039)	(0.032)	(0.030)
Middle social origin x upper secondary	−0.001	0.126***	0.098**	−0.026	0.105**	−0.014
	(0.033)	(0.026)	(0.038)	(0.030)	(0.040)	(0.036)
Respondent education x crisis						
Below upper-secondary x crisis	−0.071*	0.016	0.000	0.112**	−0.059**	−0.036
	(0.035)	(0.050)	(0.026)	(0.034)	(0.022)	(0.035)
Upper-secondary x crisis	−0.050*	0.014	0.034	0.034†	−0.064**	−0.029
	(0.022)	(0.025)	(0.022)	(0.019)	(0.023)	(0.026)
Parental education x crisis						
Parental - Below upper-secondary x crisis	0.041	−0.090†	−0.015	0.005	0.043	0.038
	(0.027)	(0.050)	(0.035)	(0.033)	(0.026)	(0.027)
Parental - Upper-secondary x crisis	0.015	−0.010	0.021	0.001	0.023	0.082*
	(0.028)	(0.025)	(0.036)	(0.027)	(0.033)	(0.032)
Num.Obs.	6501	6280	11 396	10 708	9817	5370

†p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Note: The dummy period variable prior to the Great Recession includes the EU-SILC survey year in 2005 and the ESS rounds in 2002, 2004 and 2006 (coded=0). Following the Great Recession the dummy period variable includes the EU-SILC survey year in 2011 and the ESS rounds in 2008, 2010, 2012 and 2014 (coded=1).

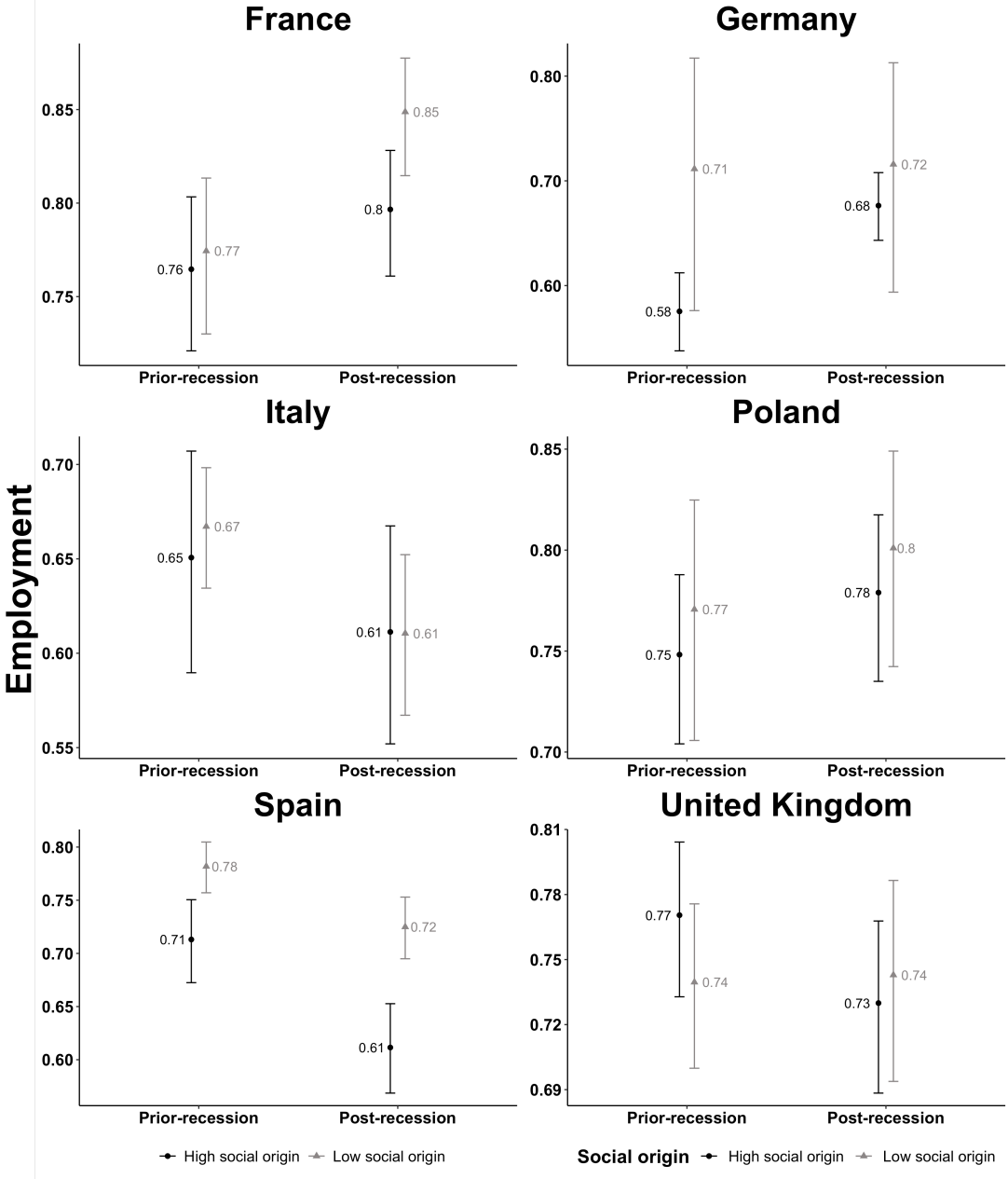
Table D3: Change in the direct effect of social origin on log earnings comparing low-origin adults relative to high-origin adults aged 25-34, origin measured with parental education.

	France	Germany	Italy	Poland	Spain	United Kingdom
Intercept	9.528***	8.520***	8.568***	7.668***	9.018***	9.672***
	(0.447)	(0.645)	(0.601)	(0.488)	(0.498)	(0.600)
Sex	0.366***	0.455***	−0.437***	0.415***	0.075	0.080
	(0.073)	(0.106)	(0.090)	(0.080)	(0.082)	(0.110)
Parental education						
Parental - Below upper-secondary	0.008	0.156	0.510†	−0.760**	0.212	−0.431*
	(0.175)	(0.465)	(0.296)	(0.292)	(0.176)	(0.193)
Parental - Upper-secondary	−0.115	0.599**	0.289	−0.015	0.451†	−0.078
	(0.169)	(0.196)	(0.305)	(0.188)	(0.233)	(0.229)
Respondent education						
Below upper-secondary	−0.725	−1.130†	2.685**	−4.226**	−0.437	−2.864***
	(0.491)	(0.637)	(0.922)	(1.557)	(0.448)	(0.807)
Upper-secondary	−0.646**	0.083	0.675†	−1.198***	−0.681*	−0.638*
	(0.224)	(0.226)	(0.390)	(0.281)	(0.292)	(0.265)
Age	−0.005	0.005	−0.046**	−0.002	−0.028†	0.000
	(0.014)	(0.021)	(0.018)	(0.015)	(0.016)	(0.020)
Crisis (1 = 2008-14)	−0.057	0.363*	−0.641†	0.081	0.626**	−0.204
	(0.159)	(0.174)	(0.341)	(0.225)	(0.213)	(0.213)
Parental education x respondent education						
Low social origin x lower secondary and below	−0.309	0.261	−2.345*	1.427	−0.400	1.886*
	(0.496)	(0.816)	(0.929)	(1.588)	(0.450)	(0.857)
Middle social origin x lower secondary and below	−0.040	0.402	−2.213*	2.015	−0.412	2.322*
	(0.555)	(0.702)	(0.959)	(1.583)	(0.542)	(1.062)
Low social origin x upper secondary	0.118	−0.458	−0.447	−0.531	0.201	0.476
	(0.230)	(0.529)	(0.403)	(0.364)	(0.304)	(0.292)
Middle social origin x upper secondary	0.377	−0.292	−0.216	−0.049	0.412	0.696*
	(0.248)	(0.243)	(0.411)	(0.284)	(0.373)	(0.338)
Respondent education x crisis						
Below upper-secondary x crisis	0.598*	−0.334	−0.106	1.453***	0.265	−1.072†
	(0.293)	(0.553)	(0.274)	(0.407)	(0.201)	(0.615)
Upper-secondary x crisis	0.141	−0.318	0.284	0.474**	0.071	−0.453†
	(0.167)	(0.231)	(0.223)	(0.172)	(0.210)	(0.241)
Parental education x crisis						
Parental education low x crisis	−0.013	−0.057	0.366	0.425	−0.426†	0.288
	(0.203)	(0.474)	(0.371)	(0.308)	(0.241)	(0.275)
Parental education medium x crisis	0.062	−0.395†	0.353	−0.141	−0.676*	−0.076
	(0.215)	(0.230)	(0.377)	(0.249)	(0.305)	(0.314)
Num.Obs.	3803	2652	7522	6379	5522	2698

†p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

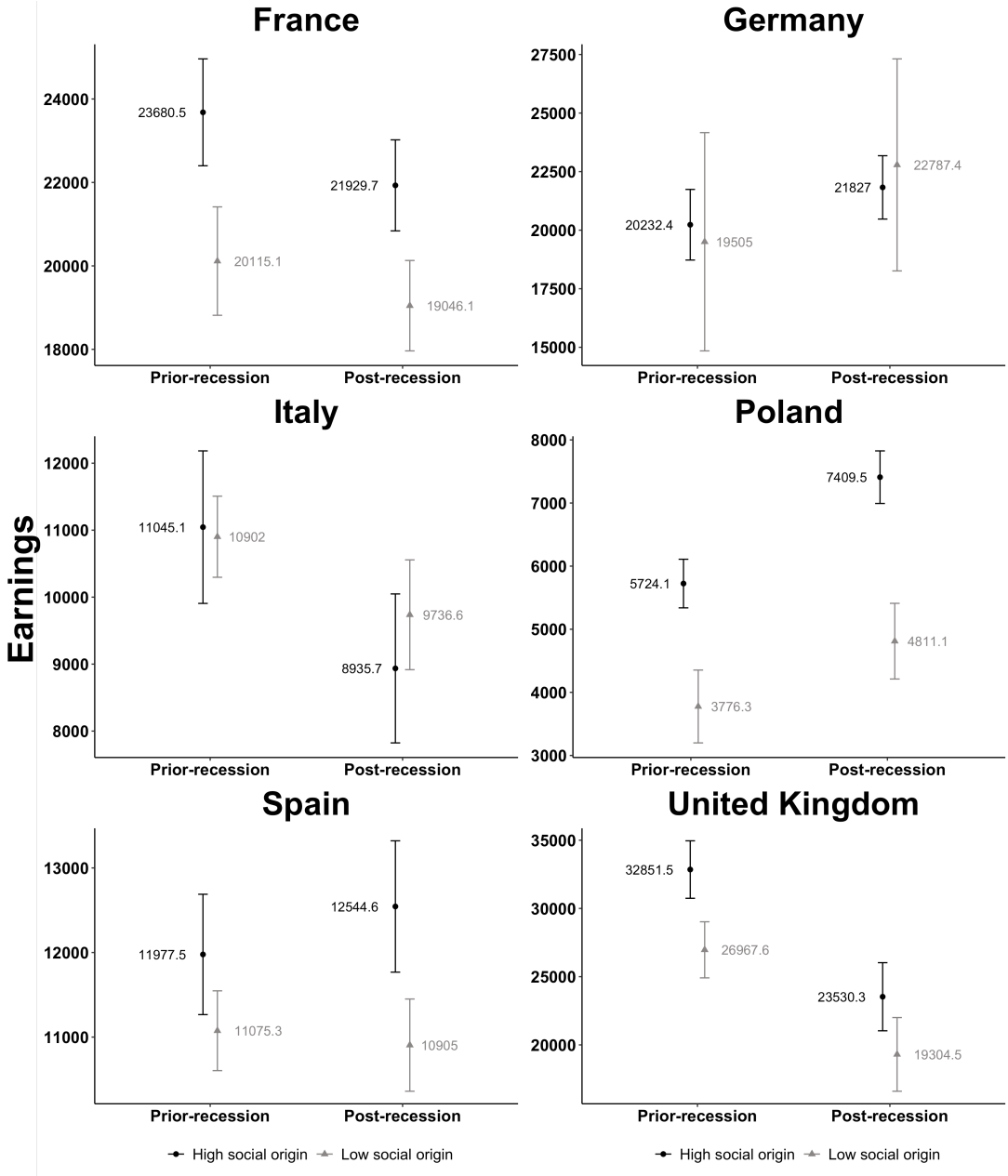
Note: The dummy period variable prior to the Great Recession includes the EU-SILC survey year in 2005 (coded=0). Following the Great Recession the dummy period variable includes the EU-SILC survey year in 2011 (coded=1).

Figure D1: Predictive probabilities of employment by social origin and period.



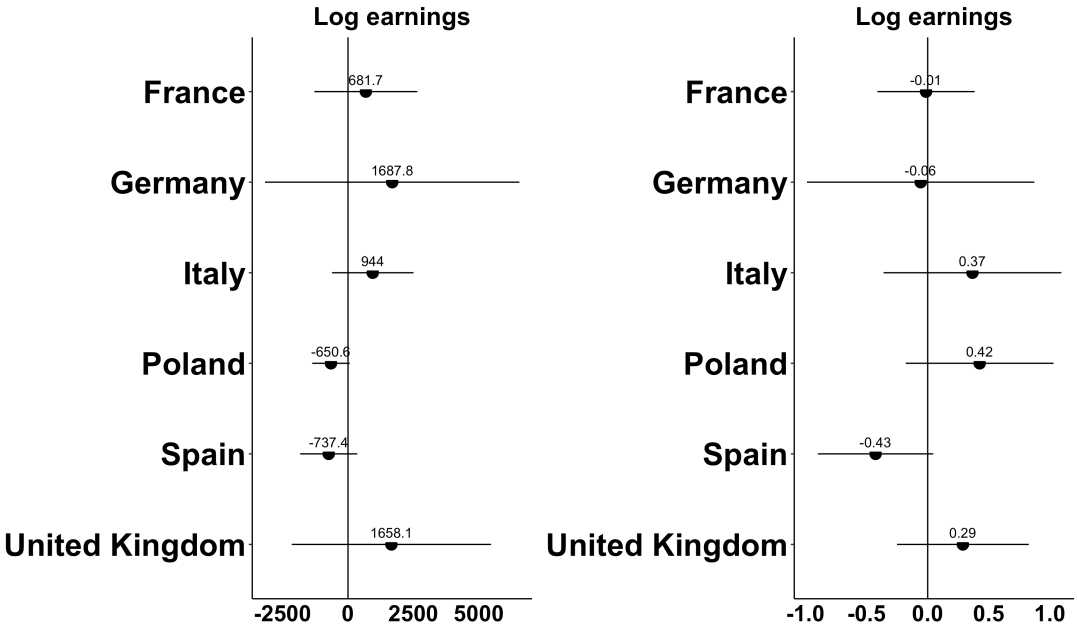
Note: Predictive probabilities from logistic regression models. 95 percent confidence intervals are plotted vertically. Dependent variable: employment. Models control for age, sex, respondent education, parental education, period, parental education* respondent education, respondent education*period and data source. The dummy period variable prior to the Great Recession includes the EU-SILC survey year in 2005 and the ESS rounds in 2002, 2004 and 2006 (coded=0). Following the Great Recession the dummy period variable includes the EU-SILC survey year in 2011 and the ESS rounds in 2008, 2010, 2012 and 2014 (coded=1). Sample size: France: 6501; Germany: 6280; Italy: 11396; Poland= 10708; Spain= 9817; United Kingdom= 5370.

Figure D2: Predictive probabilities of earnings (in euro) by social origin and period.



Note: Predictive probabilities from linear regression models. 95 percent confidence intervals are plotted vertically. Dependent variable: earnings. Models control for age, sex, respondent education, parental education, period, parental education*respondent education and respondent education*period. The dummy period variable prior to the Great Recession includes the EU-SILC survey year in 2005 (coded=0). Following the Great Recession the dummy period variable includes the EU-SILC survey year in 2011 (coded=1). Sample size: France: 3803; Germany: 2652; Italy: 7522; Poland= 6379; Spain= 5522; United Kingdom= 2698.

Figure D3: Change in the direct effect of social origin on earnings (left panel) and log earnings (right panel) comparing low-origin adults relative to high-origin adults aged 25-34.



Note: Dependent variables: earnings (left panel), log earnings (right panel). The models in both panels control for age, sex, respondent education, parental education, period, parental education*respondent education and respondent education*period. The dummy period variable prior to the Great Recession includes the EU-SILC survey year in 2005 (coded=0). Following the Great Recession the dummy period variable includes the EU-SILC survey year in 2011 (coded=1). Sample size in both panels: France: 3803; Germany: 2652; Italy: 7522; Poland= 6379; Spain= 5522; United Kingdom= 2698.

Figure D4: The density distribution of earnings and log earnings.

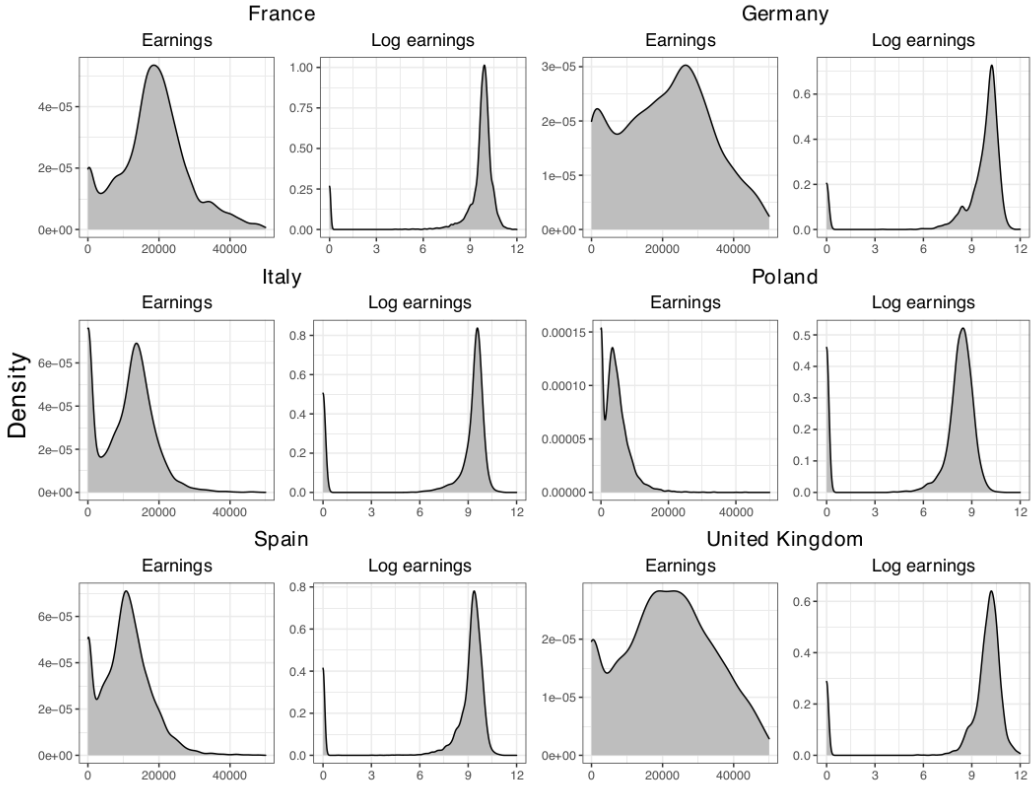


Figure D5: Change in the direct effect of social origin on employment (left) and log earnings (right) comparing low-origin adults relative to high-origin adults aged 25-34 - **working above 10 hours**.

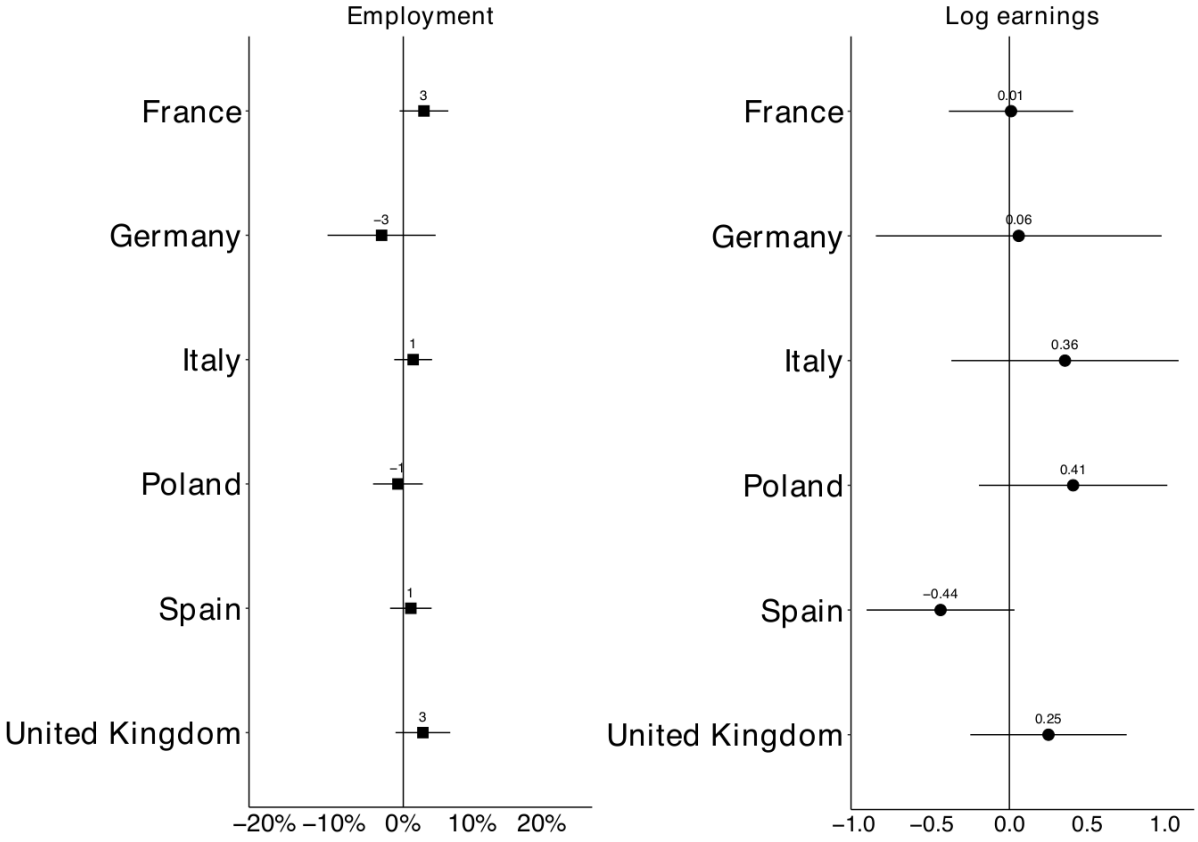


Figure D6: Change in the direct effect of social origin on employment (left) and log earnings (right) comparing low-origin adults relative to high-origin adults aged 25-34 - **origin measured with parental social class**.

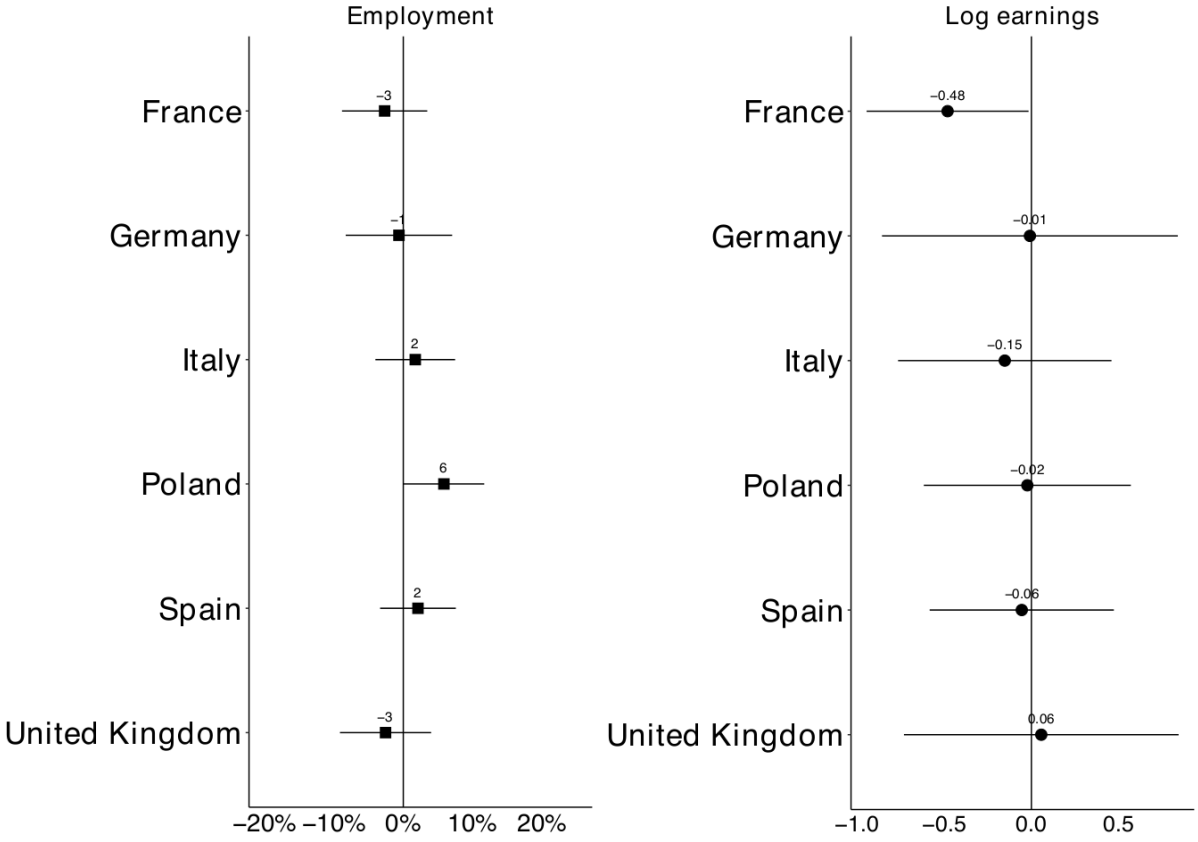
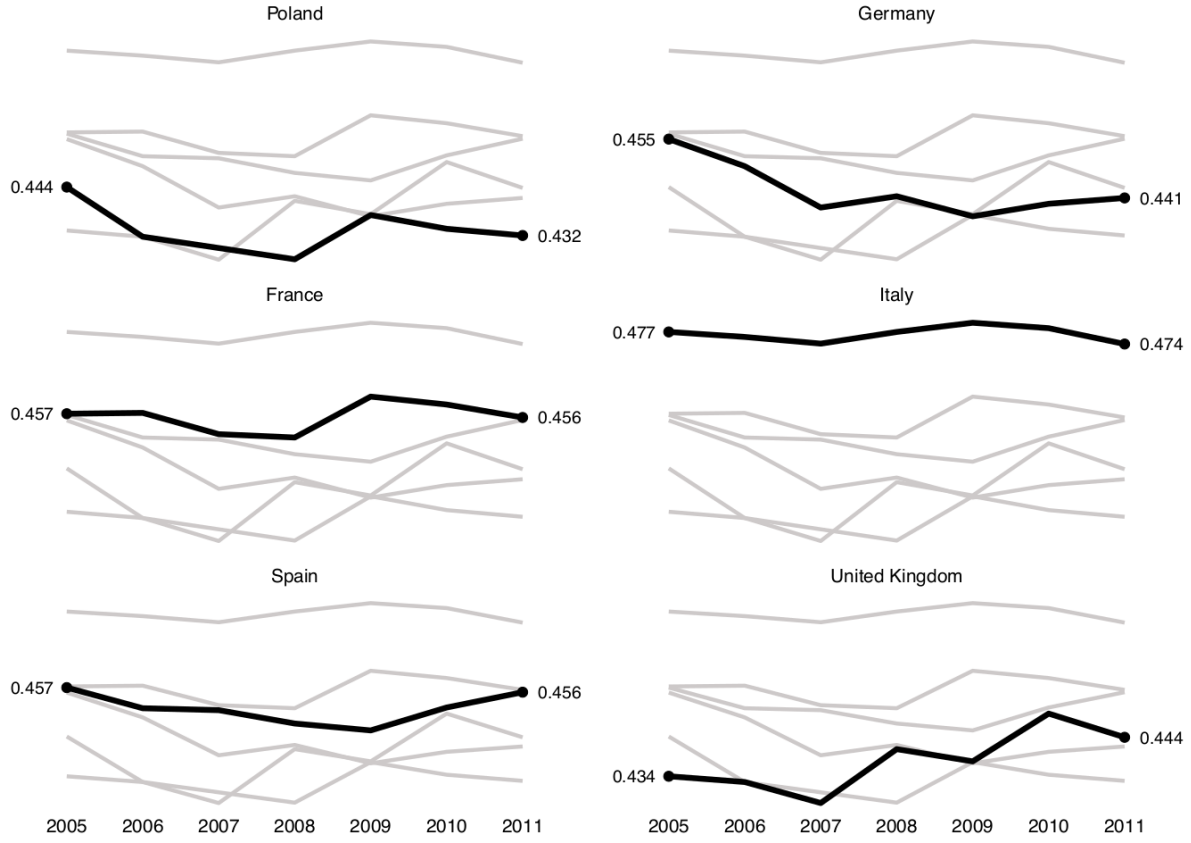


Figure D7: Change in income inequality (Bottom 50% share; percentile: p50/p90). Source: World Inequality Database.



Source: World Inequality Database.

Appendix E

The Impact of the Great Recession on Health Inequalities in Europe: Evidence from 26 Countries

Table E1: Descriptive statistics of key variables.

	AT	BE	BG	CY	CZ	DK	EE	EL	ES	FI	FR	HU	IE
Chronic illness	0.26	0.20	0.16	0.23	0.23	0.23	0.32	0.13	0.23	0.35	0.29	0.29	0.24
Working class	0.49	0.38	0.69	0.53	0.55	0.36	0.59	0.57	0.57	0.48	0.48	0.59	0.42
Lower-middle class	0.36	0.33	0.15	0.29	0.30	0.38	0.16	0.19	0.22	0.20	0.32	0.22	0.19
Upper-middle	0.15	0.29	0.16	0.18	0.14	0.26	0.25	0.24	0.22	0.31	0.21	0.19	0.39
18-34	0.31	0.33	0.37	0.31	0.37	0.42	0.28	0.33	0.31	0.40	0.33	0.36	0.38
35-49	0.40	0.35	0.31	0.33	0.31	0.37	0.35	0.36	0.37	0.32	0.36	0.31	0.35
50-65	0.29	0.31	0.32	0.36	0.33	0.22	0.37	0.32	0.33	0.28	0.31	0.33	0.27
Male	0.48	0.48	0.50	0.48	0.48	0.48	0.48	0.49	0.49	0.51	0.48	0.47	0.48
Unemployment	4.80	7.69	7.61	4.85	5.97	5.53	10.40	9.73	15.07	7.61	8.50	9.31	9.89

	IS	IT	LT	LV	NL	NO	PL	PT	RO	SE	SK	SI	UK
Chronic illness	0.23	0.15	0.22	0.27	0.28	0.29	0.26	0.22	0.14	0.28	0.21	0.28	0.30
Working class	0.41	0.47	0.57	0.57	0.29	0.40	0.63	0.66	0.71	0.46	0.51	0.52	0.43
Lower-middle class	0.20	0.34	0.15	0.21	0.35	0.30	0.17	0.20	0.15	0.28	0.41	0.30	0.28
Upper-middle	0.39	0.19	0.28	0.22	0.36	0.29	0.19	0.14	0.13	0.26	0.18	0.18	0.29
18-34	0.31	0.32	0.37	0.34	0.36	0.32	0.36	0.27	0.36	0.34	0.29	0.31	0.38
35-49	0.34	0.38	0.34	0.33	0.39	0.38	0.31	0.27	0.33	0.36	0.30	0.32	0.38
50-65	0.35	0.30	0.30	0.34	0.24	0.30	0.34	0.46	0.31	0.30	0.41	0.37	0.25
Male	0.51	0.49	0.48	0.46	0.49	0.50	0.48	0.50	0.49	0.49	0.48	0.50	0.46
Unemployment	5.42	7.30	11.34	13.93	4.33	3.00	8.48	9.11	6.26	7.41	11.92	5.66	6.76

Note: AT: Austria, BE: Belgium, BG: Bulgaria, CY: Cyprus, CZ: Czech Republic, DK: Denmark, EE: Estonia, EL: Greece, ES: Spain, FI: Finland, FR: France, HU: Hungary, IE: Ireland, IS: Iceland, IT: Italy, LT: Lithuania , LV: Latvia, NL: the Netherlands, NO: Norway, PL: Poland, PT: Portugal, RO: Romania, SE: Sweden, SI: Slovenia, UK: United Kingdom.

Table E2: Main effects and interaction effects with social class, age groups and macroeconomic shocks **on self-perceived health**.

Outcome transition	Fair to Bad/Very Bad	Good/Very Good to Fair	Bad/Very Bad to Good/Very Good
(Intercept)	0.116***	0.117***	0.021***
	(0.023)	(0.019)	(0.004)
Upper-middle class (Ref.)			
Lower-middle class	0.031	0.009	0.007
	(0.029)	(0.009)	(0.004)
Working class	0.014	0.034***	0.018**
	(0.025)	(0.010)	(0.006)
18-34 (Ref.)			
35-49	-0.025	0.047***	0.006
	(0.025)	(0.008)	(0.004)
50-64	0.027	0.127***	0.036***
	(0.024)	(0.008)	(0.004)
Unemployment rate	-0.002	-0.005***	-0.001
	(0.002)	(0.001)	(0.000)
Transition from employed to unemployed	0.048***	0.029***	0.015***
	(0.006)	(0.003)	(0.001)
Transition from employed/unemployed to inactive	0.137***	0.041***	0.053***
	(0.005)	(0.003)	(0.001)
Transition from inactive to employed	0.066***	0.009**	0.014***
	(0.007)	(0.003)	(0.002)
Male	-0.003	-0.030***	-0.011***
	(0.003)	(0.001)	(0.001)
Lower-middle class * 35-49	-0.010	0.011	0.004
	(0.032)	(0.010)	(0.005)
Working class * 35-49	0.043	0.048***	0.029***
	(0.028)	(0.009)	(0.004)
Lower-middle class * 50-64	-0.043	0.036**	0.004
	(0.032)	(0.011)	(0.006)
Working class * 50-64	0.029	0.115***	0.061***
	(0.027)	(0.010)	(0.005)
Lower-middle class * unemployment rate	-0.001	-0.000	-0.000
	(0.003)	(0.001)	(0.000)
Working class * unemployment rate	0.001	-0.000	-0.001
	(0.003)	(0.001)	(0.000)
35-49 * unemployment rate	0.003	0.002*	0.001
	(0.003)	(0.001)	(0.000)
50-64 * unemployment rate	0.001	0.004***	0.001
	(0.002)	(0.001)	(0.000)
Lower-middle class * 35-49 * unemployment rate	0.000	0.001	0.000
	(0.003)	(0.001)	(0.001)
Working class * 35-49 * unemployment rate	-0.003	0.001	-0.000
	(0.003)	(0.001)	(0.000)
Lower-middle class * 50-64 * unemployment rate	0.002	-0.000	0.000
	(0.003)	(0.001)	(0.001)
Working class * 50-64 * unemployment rate	0.000	0.000	0.001*
	(0.003)	(0.001)	(0.001)
N (observations)	105,875	404,311	475,676
N (individuals)	59,358	172,701	185984
N (country-year)	104	104	104
N (country)	26	26	26
Random slope - country level	Yes	Yes	Yes
*<p 0.05 **p<0.01 ***p<0.001			

Note: Coefficients from cross-classified multilevel linear probability models. Standard errors are in brackets. Dependent variable based on three transitions in self-perceived health. These transitions are coded as: (i) fair (0) to bad/very bad (1); (ii) good/very good (0) to fair (1); (iii) good/very good (0) to bad/very bad (1). Models control for gender, transition from employed to unemployed, transition from employed/unemployed to inactive, transition from inactive to employed; macrolevel: unemployment rate. Source: EU-SILC, 2007-2010.

Table E3: Main effects and interaction effects with social class, age groups and macroeconomic shocks on long-standing illness t**wo-way fixed effects on individuals and countries**.

	M4
18-34 (Ref.)	
35-49	0.019
	(0.010)
50-65	0.028*
	(0.014)
Unemployment rate	0.001
	(0.001)
Unemployed	0.015***
	(0.004)
Inactive	0.039***
	(0.004)
Active	0.025**
	(0.009)
Lower-middle class * 35-49	-0.033*
	(0.014)
Working class * 35-49	-0.011
	(0.013)
Lower-middle class * 50-65	-0.012
	(0.020)
Working class * 50-65	-0.032
	(0.017)
Lower-middle class * unemployment rate	-0.001
	(0.001)
Working class * unemployment rate	-0.001
	(0.001)
35-49 * unemployment rate	-0.001
	(0.001)
50-65 * unemployment rate	-0.000
	(0.001)
Lower-middle class * 35-49 * unemployment rate	0.003*
	(0.001)
Working class * 35-49 * unemployment rate	0.001
	(0.001)
Lower-middle class * 50-65 * unemployment rate	0.001
	(0.002)
Working class * 50-65 * unemployment rate	0.004**
	(0.001)
FE (id)	Yes
FE (country)	Yes

Note: Coefficients from linear probability models. Standard errors are in brackets. Dependent variable: long-standing illness. Models control for (1) transition from employed to unemployed, transition from employed/unemployed to inactive, transition from inactive to employed; (2) macrolevel: unemployment rate. Time invariant variables such as social class and gender are omitted by the model. Source: EU-SILC, 2007-2010.

Table E4: Main effects and interaction effects with social class, age groups and macroeconomic shocks on long-standing illness - **exclusion of eight largest countries**.

	FR	UK	IT	ES	PL	RO	NL	BE
(Intercept)	0.117***	0.119***	0.119***	0.121***	0.119***	0.123***	0.118***	0.120***
	(0.013)	(0.013)	(0.014)	(0.014)	(0.014)	(0.013)	(0.014)	(0.013)
Upper-middle class (Ref.)								
Lower-middle class	0.021*	0.019*	0.020*	0.027**	0.025**	0.021*	0.020*	0.022**
	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)
Working class	0.021*	0.020*	0.019*	0.029**	0.024**	0.018	0.021*	0.021*
	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)
18-34 (Ref.)								
35-49	0.056***	0.054***	0.056***	0.060***	0.053***	0.056***	0.054***	0.055***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)
50-64	0.135***	0.131***	0.145***	0.133***	0.134***	0.138***	0.137***	0.138***
	(0.008)	(0.008)	(0.009)	(0.009)	(0.008)	(0.008)	(0.009)	(0.008)
Unemployment rate (UR)	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Unemployed	0.026***	0.024***	0.023***	0.029***	0.023***	0.023***	0.023***	0.022***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Inactive	0.069***	0.068***	0.072***	0.065***	0.065***	0.064***	0.066***	0.066***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Active	0.030***	0.028***	0.031***	0.027***	0.022***	0.027***	0.027***	0.027***
	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)	(0.003)	(0.003)
Male	-0.020***	-0.021***	-0.020***	-0.021***	-0.021***	-0.020***	-0.020***	-0.021***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Lower-middle class* 35-49	-0.004	-0.003	-0.002	-0.012	-0.004	-0.002	-0.002	-0.004
	(0.010)	(0.010)	(0.011)	(0.011)	(0.010)	(0.010)	(0.011)	(0.010)
Working class* 35-49	0.016	0.018*	0.022*	0.012	0.019*	0.024**	0.020*	0.019*
	(0.009)	(0.009)	(0.009)	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)
Lower-middle class* 50-64	0.002	0.005	0.008	0.001	0.000	0.003	0.002	0.001
	(0.011)	(0.011)	(0.012)	(0.013)	(0.011)	(0.012)	(0.012)	(0.011)
Working class* 50-64	0.028**	0.030**	0.035***	0.029**	0.028**	0.037***	0.030**	0.030**
	(0.010)	(0.010)	(0.010)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)
Lower-middle class * UR	-0.001	-0.001	-0.001	-0.002*	-0.002	-0.001	-0.001	-0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Working class * UR	-0.000	-0.000	-0.000	-0.002	-0.001	-0.000	-0.000	-0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
35-49 * UR	-0.000	-0.000	-0.000	-0.001	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
50-64 * UR	0.002	0.002*	0.001	0.002*	0.002	0.001	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Lower-middle class* 35-49 * UR	0.002	0.002	0.002	0.003*	0.002	0.002	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Working class* 35-49 * UR	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Lower-middle class* 50-64 * UR	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Working class* 50-64 * UR	0.002*	0.002*	0.002	0.003*	0.002*	0.002	0.002*	0.002*
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
N (observations)	457,286	474,373	442,873	456,563	456,279	474,930	480,212	480,256
N (individuals)	175171	180682	169066	174264	174172	181899	183540	183412
N (country-year)	100	100	100	100	100	100	100	100
N (country)	25	25	25	25	25	25	25	25
Random slope - country level	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
*<p 0.05 **p<0.01 ***p<0.001								

Note: Coefficients from cross-classified multilevel linear probability models. Standard errors are in brackets. Dependent variable: long-standing illness. Models control for (1) gender, transition from employed to unemployed, transition from employed/unemployed to inactive, transition from inactive to employed; (2) macrolevel: unemployment rate. Source: EU-SILC, 2007-2010.

Table E5: Main effects and interaction effects with social class, age groups and **output gap in GDP** on long-standing illness.

(Intercept)	0.120***
	(0.011)
Lower-middle class	0.010
	(0.005)
Working class	0.015*
	(0.006)
35-49	0.054***
	(0.004)
50-65	0.150***
	(0.004)
gap	0.000
	(0.001)
Unemployed	0.021***
	(0.004)
Inactive	0.063***
	(0.003)
Active	0.028***
	(0.004)
Male	-0.021***
	(0.002)
Lower-middle class * 35-49	0.012*
	(0.005)
Working class * 35-49	0.029***
	(0.005)
Lower-middle class * 50-64	0.011
	(0.006)
Working class * 50-64	0.052***
	(0.005)
Lower-middle class * output gap	-0.001
	(0.001)
Working class * output gap	-0.001
	(0.001)
35-49 * output gap	-0.001
	(0.001)
50-65 * output gap	0.001
	(0.001)
Lower-middle class * 35-49 * output gap	0.002*
	(0.001)
Working class * 35-49 * output gap	0.002*
	(0.001)
Lower-middle class * 50-64 * output gap	0.000
	(0.001)
Working class * 50-64 * output gap	0.002*
	(0.001)
N (observations)	447181
N (individuals)	171020
N (country-year)	92
N (country)	23
Random slope - country level	Yes
*<p 0.05 **p<0.01 ***p<0.001	

Note: Coefficients from cross-classified multilevel linear probability models. Standard errors are in brackets. Dependent variable: long-standing illness. Models control for (1) gender, transition from employed to unemployed, transition from employed/unemployed to inactive, transition from inactive to employed; (2) macrolevel: Output gap in GDP. The data for output gap in GDP is not available for: Bulgaria, Cyprus and Romania. Source: EU-SILC, 2007-2010.

Table E6: Main effects and interaction effects with social class, age groups and period on long-standing illness.

(Intercept)	0.116***
	(0.012)
Lower-middle class	0.016*
	(0.007)
Working class	0.019**
	(0.007)
35-49	0.056***
	(0.006)
50-65	0.137***
	(0.007)
Period	-0.004
	(0.006)
Unemployed	0.023***
	(0.003)
Inactive	0.066***
	(0.003)
Active	0.027***
	(0.003)
Male	-0.020***
	(0.002)
Lower-middle class * 35-49	-0.000
	(0.008)
Working class * 35-49	0.017*
	(0.007)
Lower-middle class * 50-64	0.008
	(0.009)
Working class * 50-64	0.036***
	(0.008)
Lower-middle class * period	-0.009
	(0.006)
Working class * period	-0.004
	(0.006)
35-49 * period	-0.004
	(0.006)
50-65 * period	0.015*
	(0.007)
Lower-middle class * 35-49 * period	0.014
	(0.008)
Working class * 35-49 * period	0.012
	(0.007)
Lower-middle class * 50-64 * period	0.005
	(0.009)
Working class * 50-64 * period	0.016*
	(0.008)
N (observations)	496,532
N (individuals)	189582
N (country-year)	104
N (country)	26
Random slope - country level	Yes
*<p 0.05 **p<0.01 ***p<0.001	

Note: Coefficients from cross-classified multilevel linear probability models. Standard errors are in brackets. Dependent variable: long-standing illness. Models control for (1) gender, transition from employed to unemployed, transition from employed/unemployed to inactive, transition from inactive to employed. Source: EU-SILC, 2007-2010.