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**Wealth Inequality and Stratification by Social Classes in 21$^{st}$-Century Europe**

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# Wealth Inequality and Stratification
# by Social Classes in 21st-Century Europe

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**Abstract**

Wealth is a central determinant of life chances and intergenerational status persistence in modern societies. Yet, sociologists traditionally overlooked its role in class measurement and inequality, while most economists focused on the elites. This article reconciles sociological and economic perspectives on class analysis by examining the relationship between classes and wealth inequality versus income. Drawing from the *Luxembourg Wealth Study* (2002-2018) in five European countries, we test whether occupational classes, based on the entire division of labour, keep up with rising economic inequality trends. In contrast to bold claims on class *death* or *decomposition*, inequality of outcomes in wealth accumulation is firmly rooted across occupational classes in contemporary capitalism, potentially harming future equal opportunity and social mobility. Still, occupational classes better capture between-group income inequality and stratification than wealth, emphasising the importance of economic resources beyond labour market attachment that spark advances in social class theory and measurement.

**Keywords:** Wealth; Income; Social Class; Inequality; Stratification.

# Contents

# 1   Introduction

Over the past few decades, most Western economies have witnessed a notable twin surge in income and wealth inequality (Piketty, 2014a). Rising economic inequality was driven by several macroeconomic and institutional factors (Pfeffer and Waitkus, 2021a; 2021b) like the decline in progressive taxation (Zucman, 2019) and unionisation (Farber et al., 2021) and the joint rise of skill premiums (Liu and Grusky, 2013), financialisation (van der Zwan, 2014) and *Patrimonial capitalism* (Milanovic, 2014)—an elite system of *rentiers* and wealth inheritance over generations, where the returns on capital outpace the mean economy growth rate (Piketty and Zucman, 2014).

These increasing wealth and income inequalities have fostered academic discussion on the links between distributive inequality and class measurement (Oesch, 2023; Fana and Villani, 2022). Income has recently replaced occupational class as the preferred indicator of socio-economic position for social stratification scholars (Barone, Hertel and Smallenbroek, 2022), paralleling bold claims on big occupational class *death* (Pakulski, 2005) or *decomposition* (Weeden and Grusky, 2012). Ample evidence shows instead that class schemes based on employment relations consistently explain a substantial portion of income inequality cross-sectionally and over time (Albertini, Ballarino and De Luca, 2020; Zhou and Wodtke, 2019; Wodtke, 2016). Still, wealth is considerably more unequally distributed than income, with different institutional factors explaining its level, composition, and trends (Pfeffer and Waitkus, 2021a). Thus, a classical occupational-class approach based on the division of labour alone (Oesch, 2023; Goldthorpe, 2007; Wright, 2005) overlooks economic resources (i.e., rents, financial income and inheritances) that do not originate in the labour market but are critical to wealth accumulation and its intergenerational transmission (Toft and Hansen, 2022).

Wealth has become one of the "Big Four" social stratification dimensions for studying inequality in life chances and social mobility (Pfeffer and Killewald, 2018), on top of the classic socio-economic status (SES) triad of education, occupational class, and income (Hälsten and Thaning, 2021). Wealth can act as insurance against shocks while independently boosting status attainment across generations. Recent studies documenting a substantial class wealth gap over time (Hansen and Toft, 2021) and cross-nationally (Duvoux and Papuchon, 2022) illustrate its increasingly central role in contemporary capitalism. Intergenerationally, a non-meritocratic feature like inheritances explains a substantial share of SES persistency over generations (Nolan et al., 2021; Albertini and Radl, 2012).

Despite increasing interest and contributions (Beckert, 2023; Duvoux and Papuchon, 2022; Killewald et al., 2017), sociologists have not paid enough attention to wealth in class analysis due to its traditional focus on stratification by occupations or ascribed circumstances (Savage, 2014; DiPrete, 2007), like ethnicity and gender. At the same time, some economists reduced the class structure to the capitalists-labourers divide (Fana and Villani, 2022), while others either applied an attributional view to the overall income distribution or wealth accumulation by the elites (Piketty, 2014a).

This article aims to reconcile sociological and economic approaches to class and inequality analysis, departing from three central claims. First, wealth matters for understanding not just the accumulation of resources, status, and power by a small elite (Wright, 2015) but also for depicting stratification and inequality in life chances across the entire class structure (Duvoux and Papuchon, 2022:324; Wolff and Zacharias 2013), which is better understood in relational than attributional terms (Goldthorpe, 2012). Second, mainstream occupational classes based on employment relations miss the theoretical and empirical links with one of the foremost contemporary drivers of economic inequality and the intergenerational transmission of (dis)advantages, wealth accumulation and inheritance. Third, inequality and stratification are distinct analytical concepts with different implications for class analysis to be disentangled (Molinder, Syk and Thaning, 2023; Zhou and Wodtke, 2019). While inequality denotes the extent to which (economic) resources are distributed across occupational classes, stratification indicates to what extent individuals can be ranked over an income or wealth hierarchy into non-overlapping or segmented social groups (Zhou, 2012; Clark and Lipset, 1991).

Specifically, we address the following research questions: (1) How are wealth and income—and their composition—distributed and stratified by occupational social classes over time and cross-nationally? (2) To what extent are big occupational social classes keeping up with aggregate income and wealth inequality trends?

Using the second wave of the *Household Finance and Consumption Survey* in 2014, Duvoux and Papuchon (2022) provided the only comprehensive cross-country analysis to date on how wealth is (reasonably well) distributed by big occupational classes using the *European Socio-economic Groups* (ESeG) scheme (Meron et al., 2014). We build on this groundbreaking work to address Piketty's *challenge to sociology* (Piketty, 2014b)—concerning his conception of social classes and privilege as accumulation and inheritance (Savage, 2014:592)—and contribute to the literature on three main fronts. First, we explore whether occupational classes are keeping up with overall wealth and income inequality trends and, not least importantly, whether economic inequalities are crystallising over these groups by applying the stratification index developed by Zhou (2012). Second, we exploit data barely used in this context, the *Luxembourg Wealth Study* (LWS), which allows us to study class inequality trends cross-nationally over a long-term period spanning from 2002 to 2018. Third, our occupational class definition adapts and extends the Moawad and Oesch (2023) scheme tailored to the LWS, building five classes differentiating an upper class mostly made of managers and employers, the chief capital accumulators and top wage earners (Giangregorio and Villani, 2023).

To answer our research questions, we focus on five countries that broadly represent different institutional settings (Esping-Andersen, 1999): Finland (2009-2016), Germany (2002-2017), Greece (2009-2018), Spain (2002-2017) and Slovakia (2010-2017), with total n=100,902.[1] To assess household market income and wealth inequality by social classes, we estimate several indicators: the Gini index, the mean log deviation (MLD)—and their between-within-classes decomposition, the wealth-to-income ratio (WIR), and the stratification index.

The article is organised as follows. First, we review the main theoretical and empirical approaches to class analysis from economics and sociology. Second, we describe the data, variables, and methods to answer our research questions. Third, we sketch the empirical findings. Fourth, against the backdrop of previous research, we discuss the implications of our findings for class measurement in future research to keep up with the increasingly important role of wealth inequality.

## 2 Theoretical Background and Previous Findings

### 2.1 Wealth and Social Classes

We must first introduce the historical evolution of contemporary wealth accumulation to address the relationship between wealth and social class. In landed aristocracies, agricultural land constituted the primary source of household wealth until the 19th century. Then, other forms of wealth, such as housing and industrial and financial assets, started gaining prominence after the industrial revolution (Piketty 2014a:120). The shift from agrarian to industrial-related assets associated with factories, machinery, and technology drove industrial production and marked the transition to modern capitalism. Industrial capitalists, whose power and influence were now anchored in the ownership and investment of industrial enterprises, emerged as the leading economic elites (Milanovic, 2023). At the same time, a new industrial labour market emerged, widening the division of labour and social hierarchies through the diversification of production systems.

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[1] Data availability, such as occupational coding, incompleteness in the wealth or income variables, and limited sample size, prevent us from expanding the sample of selected countries.

This way, industrial capitalism fostered growing wealth inequalities until the Great Depression in the 1930s. A period of inequality reduction and overall prosperity followed in most Western societies from World War II to the mid-1970s (Piketty and Saez, 2013), led by strong redistributive states. From the late 1970s, wealth inequality got back on the rise, hand in hand with income inequality growth, economic financialisation, and intergenerational persistence. Below, we explore the role of these three factors on wealth accumulation dynamics.

Wealth accumulation may stem from rising income inequalities (Berman, Ben-Jacob and Shapira, 2016). Since consumption is a concave function of income, higher income levels lead to higher saving rates. Affluent social classes tend to earn and save more (in absolute and relative terms), thus accumulating more assets compared to relatively poorer classes. Accordingly, wealth disparities across social classes should be higher than those found for income. This process is further affected by several other factors: interest rate fluctuations, exogenous changes in asset prices, investment skills, debt accumulation, or risk aversion towards specific investments can further contribute to wealth disparities (Godechot et al., 2023; De Nardi and Fella, 2017; Lusardi et al., 2017). These factors may impact social classes differently. For example, interest rate spikes might disproportionately benefit those with significant capital income (and harm those more indebted), while redistributive policies could provide a relative advantage to lower-income classes through progressive wealth taxation (Zucman, 2019).

Financialisation (van der Zwan, 2014) expanded the array of financial products available to firms and households, endorsing practices once prohibited, such as introducing money market funds. These changes catalysed the rise of shareholder values, where firms prioritised strategies to boost stock prices and shareholder profits (Godechot et al., 2023; Lazonick and O'Sullivan, 2000). The phenomenon expanded to other realms, like housing, education investment, and retirement planning, paralleling the diminishing state's role as a redistributive agent (Hacker and Pierson, 2010).

The financialisation of the economy highlights the importance of decomposing wealth into its two main components, financial and nonfinancial, and their implications for class inequality. Financial wealth, such as stocks, bonds, or other marketable securities, is extremely unequally distributed, tends to yield high returns, and can be quickly sold, offering leverage against economic shocks. In contrast, nonfinancial wealth, such as physical assets (i.e., real estate), does not allow for the same flexibility (Cowell et al., 2017), particularly regarding primary residences (Boertien and López-Gay, 2023). Therefore, differences in asset composition within a household's portfolio are noteworthy for class analysis (Beckert, 2023), as classes filled with individuals with a more diversified portfolio may be less vulnerable to income shocks and thus maintain their status during the life course. By contrast, those in lower classes may have a larger proportion tied up to nonfinancial assets, constrained by less liquidity and more economic downturns.

Although the evolving forms of wealth accumulation are diverse, some enduring aspects of wealth persist over time. Intergenerational wealth transfers enable the persistence of social class across generations (Hansen and Wilborg, 2019) and the establishment of dynastic elites, limiting social mobility (Pfeffer and Killewald, 2018; Hansen, 2014).[2] This intergenerational persistence of wealth reproduces a cycle where the affluent can get increasing returns on their wealth and investments that further solidify their status (Piketty, 2014a). Therefore, social class is not merely marked by current wealth but also by the potential for wealth accumulation and preservation over time and generations, often independently of an individual's immediate efforts, talents, or labour market position (i.e., education, occupation, or income) (Hällsten and Thaning, 2021; Killewald, Pfeffer and Schachner,

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[2] The interplay between wealth and social class becomes even more complex when considering factors such as race, gender, and geographic location, which can all intersect to either hinder or facilitate the accumulation of wealth and the social mobility it affords. See, for instance, Pfeffer and Killewald (2018).

2017). Thus, wealth introduces a long-lasting element to economic inequality, serving as "a proxy for the capacity of maintaining a certain social status over time (Duvoux and Papuchon 2022:330)." In other words, wealth represents the weight of the past on the present and the future.

## 2.2 Social Class Approaches

This section dives into the main approaches to social class measurement from Economics and Sociology, whether and how they incorporate wealth, and our operationalisation through a simplified occupational scheme to further map the class-wealth links.

### 2.2.1 Social Class in Economics

Social classes were central analytical categories to classical political economists (Milanovic, 2023). However, with the advent of the marginalist revolution at the end of the 19th century, the analysis unit shifted from social classes to the individual. Still, the concept of social classes has not disappeared from Economics, and it has recently been conceptualised and applied in two main analysis strands (Muñoz de Bustillo Llorente and Esteve Mora, 2022).

The first approach categorises social classes employing percentile thresholds and ratios. Central to this method is the emphasis on income and wealth accumulation by affluent elites, such as the top 0.1 or 1 percentiles (Piketty and Saez, 2006), and the disparities between the super-rich and the broader population. Other studies develop the "middle class" concept as a designated population segment—the central 60% (Oesch, 2023; Estache and Leipziger, 2009)—or define relative income brackets ranging, for instance, between 75 and 125% of the median (Ravallion, 2010). Piketty (2014b), the most known author of this approach, generally considers social class multidimensional—like Bourdieu's cultural, economic, and social capitals (Savage et al., 2013; Bourdieu, 1986). However, it applies a data-driven operationalisation to draw comparable class frontiers over different historical periods. Nevertheless, despite its practicality, the boundary definition is somewhat theoretically arbitrary (Moawad and Oesch, 2023; Wright et al., 1995) and may lead to contradictory results (Atkinson and Brandolini, 2011).

The second approach to social classes, grounded in classical political economy (e.g. Smith, Ricardo and Marx) (Milanovic, 2023), implicitly addresses these shortcomings. From this perspective, the class structure splits into two main categories based on primary income sources: labourers earning wages and capitalists receiving income from profits and rents. Although this analysis waned during the late 20th century, it resurged (Atkinson, 2009), with researchers delving into factors affecting the income labour share (Dao et al., 2019). Even though this classical approach enables a clear demarcation between social classes, recent changes in the labour market make it less clear-cut today. Individuals increasingly earn multiple sources of income (Milanovic, 2017). That is particularly relevant at the top of the income distribution, where managers in large firms, although employees, can set a significant share of their incomes from capital returns (i.e., stock options, bonuses). Similarly, the categorisation of income for the self-employed, a diverse group combining wages and profits, is a subject of contention (Gollin, 2002).

Other studies consider the role of wealth (Rehm et al., 2016; Wolff and Zacharias, 2009) and managers (Fana and Villani, 2022; Mohun, 2006; Krueger, 1999) in shaping the labourers/capitalists divide. In particular, the latter group of authors argue that managers are a blurred category with a contradictory class location (Wright, 2005). Even though wages primarily represent their income, their roles and interests are more aligned with those of traditional capitalists and, therefore, should not be considered labourers.

### 2.2.2 Social Class in Sociology

The two approaches from Economics we have just introduced do not generally identify different class locations within the workforce by skills or occupations. These dimensions are more relevant in the sociological literature, where the concept of social class is more common than among economists.

Over and above the aforementioned attributional view of class and inequality of some economists as individual features, sociological class approaches fundamentally view market inequalities as a result of social and power relations, the foundation stones of class positions in capitalist societies (Goldthorpe, 2012).

Based on the neo-Weberian pillars of market positions and life chances, mainstream social class schemes generally rely on the socio-technical division of labour—productive assets (i.e., skills) and occupations—and the ownership of the means of production as the backbone (Oesch, 2023; Barone, Hertel and Smallenbrok, 2022). In the most widespread schemes (i.e., the *European Socio-economic Classification*, ESeC), occupations aggregate into broad social classes based on employment relations—*human asset specificity* and *monitoring difficulty*—within production units (Rose and Harrison, 2010; Goldthorpe, 2007).

Occupational classes (still) hold appeal among social stratification scholars (Smallenbroek, Hertel and Barone, 2022) due to their general satisfactory validity in accounting for theorised foundational mechanisms and predicting (unequal) life chances over careers, like unemployment and poverty risk (Gioachin et al., 2023; Requena, 2023), lifetime income (Shahbazian and Bihagen, 2021; Goldthorpe and McKnight, 2006), and financial prospects (i.e., saving capacity; credit access; homeownership; receiving inter-vivos transfers and inheritances) (Duvoux and Papuchon, 2022).[3]

Indeed, class schemes consistently explain a substantial portion of income inequality (between-class inequality) both cross-sectionally and over time (Albertini, Ballarino and De Luca, 2020; Wodtke, 2016), at a similar or greater extent than detailed occupations or micro classes (Zhou and Wodtke, 2019). By contrast, micro- or Neo-Durkheimian class scholars (Weeden and Grusky, 2012) generally argue that wage variation within classes better captures inequality trends.

However, the standard large-class approach based on employment relations tends to overlook other sources of economic resources, such as rental and financial incomes, that do not directly originate from labour market attachment (Fana and Villani, 2022) but can increasingly convey advantaged life chances both cross-sectionally—as insurance or buffer against temporary shocks—and inter-generationally—through inheritances and gifts. Still, one can expect that social classes with advantaged employment relations and contracts, such as managers and professionals in a *service* relationship with capitalists, might also have more chances to accumulate wealth over the life course (Duvoux and Papuchon, 2022) than employees with a labour contract (Goldthorpe, 2007) due to their more diffuse reward types (i.e., company stocks, bonuses) and longer time horizons (i.e., job stability, rising career prospects).

Neo-Marxist class theorists explicitly incorporate capital as a central axis structuring the class hierarchy regarding exploitative relations—economic oppression and surplus appropriation—between owners of capital assets and wage labourers (Sørensen, 2000; Roemer, 1982). Building on the second economic approach reviewed above and in addition to the capitalists/labourers divide, Wright's revised class scheme (2005) further considers employee surplus asymmetries regarding skills/credentials (i.e., horizontal differences in productive assets) and organisational/management assets. The latter refers to vertical inequalities in power, authority, and control (managers and supervisors vs. subordinates) in the production process. Still, few studies applied this hybrid approach between Economics and Sociology to analyse wealth or capital accumulation (Wodtke, 2016), given

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[3] Some critics argue against employing occupational social classes as proxies for permanent income rather than directly assessing short-term income (Kim, Tamborini and Sakamoto, 2018). For instance, Brady et al. (2018) showed that a randomly selected year from long-term panel data elucidates about 46-50% of the permanent income variation in the U.S. and Germany, while the EGP class scheme or detailed occupations only account for about 14-25%.

its cumbersome operationalisation (Barone, Smallenbroek and Hertel, 2021) and broad working-class conceptualisation (Oesch, 2006).

In practical terms, there is a significant conceptual and empirical overlap between neo-Weberian and neo-Marxist social class schemes (Hertel, Barone and Smallenbroek, 2023; Lambert and Bihagen, 2014), as both draw from educational credentials, social or power relations, and broad occupational titles aggregations. Furthermore, while none of these class schemes explicitly incorporated wealth as a core theoretical mechanism or outcome for testing their validity, both operationalise big employers, top managers, and higher-grade professionals—identified as the main capital accumulators and top wage earners by Giangregorio and Villani (2023)—within the upper classes. Thus, although based on occupational aggregations, neo-Weberian and neo-Marxist class schemes might broadly depict the wealth inequality hierarchy (Duvoux and Papuchon, 2022).

Recently, advocates of meso-level class approaches argue that large employers, managers and professionals are pooled together in big class schemes despite their marked horizontal differences in life chances (Smallenbroek et al., 2022), work logics (Oesch, 2023; 2006), economic or cultural resources (Hansen and Toft, 2021; Toft, 2018). Drawing from Bourdieu's (1986) multidimensional mapping of the social space into the composition and volume of capital—social, cultural, and economic, scholars have developed new detailed class schemes emphasising the salient role of economic assets and sources of income to fully depict the social hierarchy (Savage et al., 2013; Hansen et al., 2009; Savage, Warde, and Devine, 2005) and its intergenerational persistency (Hansen and Wiborg, 2019). Unfortunately, data constraints in most current national and cross-country household surveys, including this article, limit its application.[4]

This literature review grounded our class scheme operationalisation in this article (see section 3) to answer the above research questions. We rely on a neo-Weberian 5-class classification based on the Moawad and Oesch (2023) scheme tailored to the LWS. This scheme covers not just the elites (Piketty and Saez, 2013) but the entire class structure, building upon three axes: the property of the means of production (employers/employees), skills, and aggregate occupational titles. We further distinguish an upper-class category mainly composed of managers and employers to better account for wealth accumulation dynamics in contemporary capitalism.

Finally, to study to what extent occupational classes can account for economic inequality trends over time and cross-nationally, it is crucial to stress that (between-group) inequality and stratification are related but distinct conceptual and analytical categories (Zhou, 2012). Between-group inequality refers to the uneven distribution of a valuable outcome, such as income, wealth, or social status, across population groups defined by ascriptive (i.e., gender, ethnic or class origin) or labour market characteristics (i.e., social class). In turn, stratification refers to the hierarchical segmentation of groups in the outcome distribution. That implies that low levels of between-group income inequality can coexist with high stratification if their mean incomes are close but hardly overlap, thus crystalising into layers according to their relative positional rank. Hence, in this article, we study between-class inequality and stratification in income and wealth as complementary instruments.

## 3    Data and Methods

The data used in this study comes from the LWS Database, homogenised and published by the Luxembourg Income Study (LIS) cross-national data center. We focus on five countries: Finland (2013, 2016; n=17,230), Germany (2002, 2007, 2012, 2017; n=46,930), Greece (2009, 2014, 2018; n=6,585), Spain (2002, 2005, 2008, 2011, 2014, 2017; n=24,522) and Slovakia (2010, 2014, 2017; n=5,635). This

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[4] Extensive data—including detailed occupational codes and very large sample size—are necessary to apply this class scheme (i.e., The Oslo Register Data Class Scheme [ORDC] by Hansen et al., 2009).

selection mainly responds to data availability, but these countries also broadly represent different varieties of capitalism, welfare state regimes, or institutional settings (Esping-Andersen, 1999). See Appendix Table A5 for sample size by survey wave and country.

The unit of analysis is the household, although, due to differences in the sampling and questionnaire strategy across the surveys, to facilitate comparability, we proceed with a *dominance* approach and take variables such as age (bounded between 25 and 75 years to better capture wealth inequality in the selected countries), gender, occupation, or education from the household head (we use the LWS variable *relation* = 1000). Households might receive labour and capital income (i.e., returns on investments). Aggregating both sources yields total household factor income, which we denote as "income" for simplicity.[5]

Households accumulate financial and nonfinancial assets. After deducting the associated debts, we obtain measures of net financial and nonfinancial wealth, with their summation yielding net wealth. All incomes and wealth measures are equivalized with the squared root of the household size and presented in thousands of PPP-adjusted 2017 US dollars. Table A1 in the Appendix defines the six main dependent variables considered. Table A2 in the Appendix shows the main descriptive statistics that align with well-established stylised facts, with capital income and financial wealth being more unequally distributed than labour income and nonfinancial wealth, respectively. Because capital income in Slovakia is severely underreported and concentrated at the very top of the distribution, we decided to include it but not comment on it, focusing the analysis on labour income.

We have prioritised cross-country comparisons when selecting covariates and variables to define the class scheme and made the appropriate adjustments and recodes when necessary. Table A3 in the Appendix describes the main variables we use to create the social classes, showing the correspondence with LWS variables. We also show some variables that help depict the socio-demographic composition of the analytical sample. Table A4 in the Appendix displays the descriptive statistics of the main variables, which are reassuringly stable across waves.[6]

As mentioned, due to data limitations, our occupational class definition adopts the Moawad and Oesch (2023) scheme with minor modifications to suit the LWS. It builds on three key harmonised variables across countries and survey waves on the household head's 1-digit ISCO-88 (or ISCO-08, depending on the wave), employment status (1=employer; 2=self-employed; 3=employee), and educational attainment (1=low: no post-compulsory or < upper secondary education [ISCED-2011 0-2]; 2=medium: upper secondary or post-secondary non-tertiary [ISCED 3-4]; 3 = high: tertiary [ISCED 5-8]) to operationalise five big classes and the unemployed as a separate category (Requena 2023). Table 1 illustrates the three-fold criteria followed to define each class. A detailed explanation of the class scheme and its comparison with more refined and standard schemes like the ESeC, showing a considerable overlap, can be found in the Technical Appendix 1 and Moawad and Oesch (2023). We also include statistics and robustness checks excluding the unemployed and simultaneously including the retired and the unemployed as single categories. Table A5 in the Appendix shows the analytical

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[5] To facilitate cross-country comparisons and overcome data limitations, our analysis concentrates on factor income and disregards other transfers and the role of the public sector. For the same reason, financial assets are evaluated without considering pensions assets (variable haf in the LWS). The results section comments on robustness checks run with alternative income (Total Household Income, as the sum of all incomes perceived by the household, and Disposable Income, after subtracting taxes and contributions from Total Household Income) and wealth measures (Assets, that is, net wealth plus debts).

[6] All outcome statistics and variables by classes are available upon request. The occupation and industry statistics are not shown in Table A5 in the Appendix because their unordered nature impedes an appropriate interpretation of the mean. For completeness, we have also included a dummy variable that takes one if the household head is married or lives with her/his couple, and zero otherwise.

sample sizes and the summary statistics on the share of classes, the unemployed and retired households.

The analysis of inequality is based on the Gini index and the Mean Logarithmic Deviation (MLD), with our main analysis relying on the former, reserving the latter for robustness checks and underscoring specific trends and findings. These measures are employed to study the evolution of income and wealth inequality and their share explained between social classes. Between-group inequality measures describe, for instance, to what extent socio-demographic groups can account for economic inequality. However, they cannot fully disentangle (mean-group) inequality from stratification (see Section 2). Decomposition methods depend on the variation measure and the extent of within-group variation. Changes in within- and between-class inequality are not mechanically related to stratification levels, as they rely on the class-specific distributional shapes. Thus, we employ the stratification index Zhou (2012) developed to address these limitations. The index ranges from 0 to 1, where 0 denotes no stratification or between-group rank differences across the outcome distribution, and 1 indicates complete stratification with no income or wealth ranges overlapping across groups. Details about the formalisation and interpretation of the Gini index, the MLD, and the stratification index can be found in the Technical Appendix 2 and 3, respectively.

*Table 1. The social class scheme by occupational, employment status, and educational* criteria

| Social Class | Occupation (1-digit ISCO) | Employment Status | Educational Attainment |
|---|---|---|---|
| Upper Class | Managers (ISCO 1) | — | ≥ Upper-secondary |
| Upper-Middle Class | Professionals (ISCO 2) | — | Tertiary |
| Middle Class | Managers (ISCO 1) | — | < Upper-secondary |
| | Professionals (ISCO 2) | — | < Tertiary |
| | Technicians and associate professionals (ISCO 3) | — | — |
| | Clerical support workers (ISCO 4) | — | Tertiary |
| | ISCO 4-9 | Employer or self-employed | — |
| Skilled Working Class | Clerical support workers (ISCO 4) | Employee | Upper-secondary |
| | Service and sales workers (ISCO 5) | | ≥ Upper-secondary |
| | Skilled agricultural, forestry and fishery workers (ISCO 6) | | |
| | Craft and related trades workers (ISCO 7) | | |
| | Plant and machine operators, and assemblers (ISCO 8) | | |
| Low-Skilled Working Class | ISCO 4-8 | Employee | < Upper-secondary |
| | Elementary Occupations (ISCO 9) | | — |

Source: Own elaboration; Notes: — no criteria applied; all categories included. Blank squares correspond to the educational or employment status category above.

Besides inequality, the wealth-to-income ratio (WIR) metric has garnered attention for its ability to capture wealth accumulation dynamics, addressing how wealth compares with income levels (Piketty and Zucman, 2014). If the upper classes have higher WIR values, it may indicate that they are earning and saving more. In contrast, lower WIR values among the lower classes may point to a tighter financial situation with savings, suggesting greater exposure to economic downturns. Examining WIR trends across classes, we discern wealth accumulation patterns and identify at-risk groups to understand better economic inequality and the resilience of different social classes.

## 4   Results

The exposition of our findings is as follows. First, we benchmark our results by cross-nationally exploring overall income and wealth inequality trends. Then, we focus on how income and wealth are distributed by classes, analysing their composition and relative shares over time and highlighting the uneven wealth accumulation dynamics through wealth-to-income ratios. Finally, we address to what extent mean differences between big occupational classes account for income and wealth inequalities and scrutinise their class stratification levels.

Figure 1 illustrates the time trajectories of wealth and income Gini inequality. Unsurprisingly, wealth values are always above income inequality levels. The "Overall" metric averages the results from all five countries and shows that wealth and income estimates increase by approximately equal magnitudes (about 3 Gini points), though the confidence intervals partially overlap. The specific country trajectories are dissimilar, with some countries experiencing a rising wealth inequality, especially after the Great Recession. Notably, Greece recorded a 5.5 Gini point increase between 2009 and 2018, with Slovakia (between 2010 and 2017) and Spain (between 2008 and 2017) showing a rise of 7.9 and 9.4, respectively. Finland's estimates remained relatively constant (rose 2 Gini points from 2013 to 2016), while Germany, which displays the highest wealth inequality, declined 3.4 Gini points between 2012 and 2017. Income inequality remained relatively stable in Greece, Germany and Finland but rose considerably in Slovakia and Spain (2 and 7.5 Gini points, respectively).

*Figure 1. Wealth and income inequality*
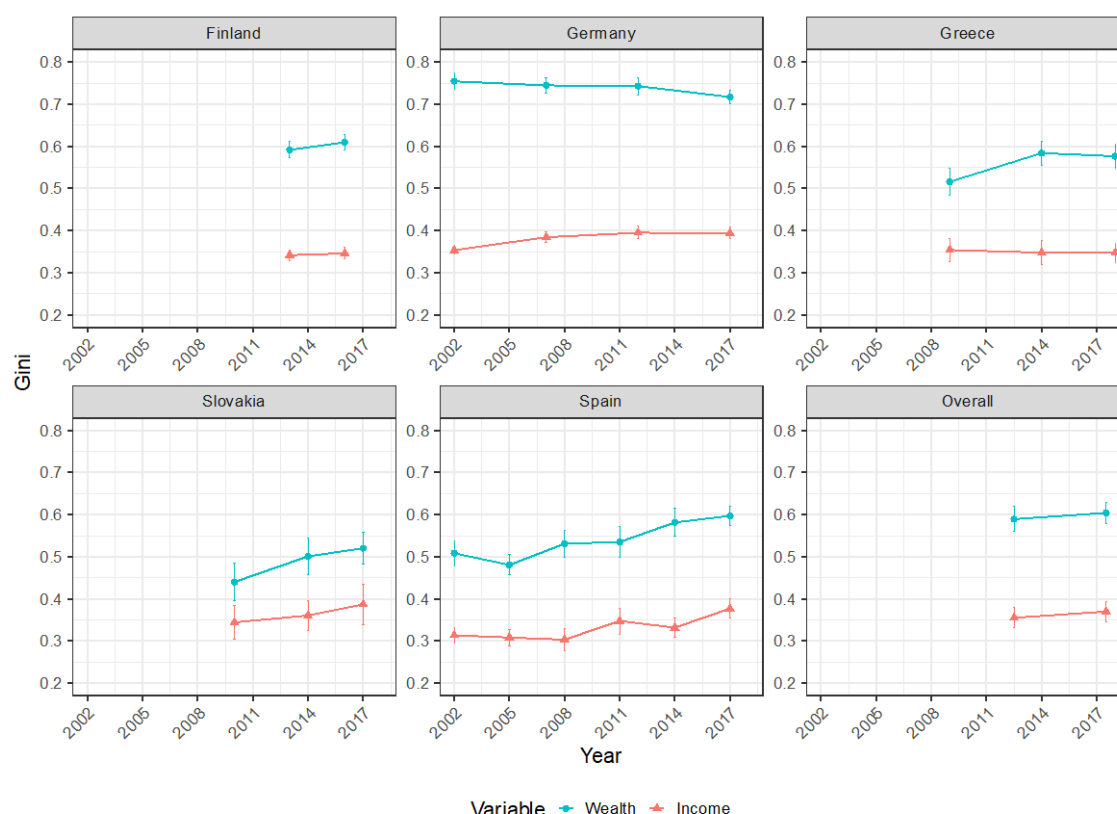


Note: Own elaboration with LWS data. "Overall" represents the average of all five countries in 2010-2015 and 2015-2020. If a country has more than one observation within a period, it is averaged out before taking the total average.

Figure A1 in the Appendix further delves into these patterns. For example, the decrease in wealth inequality in Germany in 2017 can be attributed to falling nonfinancial wealth inequality, while financial wealth inequality remained stable. In contrast, Spain saw a mild reduction in financial wealth inequality and an increase in nonfinancial wealth inequality during the period. There is a similar divergence in income inequality trends between these two countries. In Spain, the increase seems driven by labour income with stable or even declining capital income, whereas, in Germany, the mild rise is due to escalating capital income inequality while labour income remains stable.[7]

## 4.1   Income and wealth by social classes

This section analyses the composition and evolution of wealth and income by social class. Figure A2 in the Appendix shows median values for each class for income and wealth, indicating a clear divide across class lines. Notably, the results reveal that wealth, more than income, hierarchically orders social classes. To elucidate this trend, Figure 2 maps our five social classes and the unemployed over time, displaying the difference between the population share of each group and their respective wealth (Panel A) and income (Panel B) shares. In white, we depart from a baseline scenario where all groups receive the income or wealth shares that match their population relative sizes, thus reflecting an even distribution of resources across these groups. Deviations from this scenario are represented

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[7] Inequality levels can be affected by composition effects. For instance, the destruction of low-skilled employment during the Great Recession might result in lower levels of labour income inequality.

in red when a group holds a smaller share of income or wealth relative to its size, with the magnitude specified in percentage points (p.p.) in each square. Conversely, a blue hue expresses a larger outcome share than its population share.

The pronounced distinction in wealth shares between the upper and lower groups is quite apparent.[8] Slovakia, Greece and Spain, the three countries with the steepest observed increase in wealth inequality in Figure 1, also present rising wealth divergences across classes. Spain is outstanding, with the upper class owning 14.1 p.p. more wealth than it would correspond in the equality scenario, while the low-skilled class continuously show p.p. ranging between -12.2 (2002) and -14 (2008 and 2014).[9] Similarly, in Slovakia, the upper class rose their relative share from 4.8 (2010) to 11 (2017) p.p., while the skilled-working class diminished it from -5.4 to -10.8 p.p. Germany shows instead a mild convergence in wealth distribution. Specifically, the upper class decreased its relative shares from 7.3 to 6.4 p.p. between 2002 and 2017 and the skilled-working class gained from -12.1 in 2002 to 9.7 in 2017.

The overall box shows that the upper, upper-middle and middle classes have increased their relative wealth shares, with the skilled working and low-skilled classes and the unemployed losing participation, which aligns with the abovementioned trend of a mild increase in wealth inequality. Table A6 complements this analysis in the Appendix, which shows the ratios between wealth levels between the upper and remaining classes. The ratios reflect sizeable gaps between classes, with noteworthy extreme cases (e.g., in Germany, the median value of wealth for the low-skilled class is less than 1% of the upper class in some years; in Greece, it was 8% in 2018). Interestingly, except in Germany, this indicator tends to decrease in time for the lower classes (low-skilled and skilled working), indicating growing gaps between classes.

Figure 2 shows how income shares express a clear class divide, with the upper, upper-middle and middle classes persistently obtaining higher relative shares, especially in Finland (upper-middle class relative share ranging between 10.8 and 10.4 p.p.) and Germany (with the upper-middle class shares between 9.2 and 10.8 p.p.). Unsurprisingly, the low-skilled and unemployed tend to show negative relative shares, although the differences between the upper and bottom classes are less pronounced than wealth.

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[8] In Finland, Greece and Slovakia, time trends are influenced by the base year, which encompasses the final period of the Great Recession, after the asset prices peaked. Therefore, the evolution depicted in our analyses is more indicative in Germany and Spain, where we have extended time coverage.

[9] Data from Spain comes from the Encuesta Financiera de las Familias, which emphasises oversampling and reweighting the sample so that wealthy households are accurately represented. Surveys that do not correct for item and unit non-responses in the top tail of income and wealth distributions lead to downward biased inequality estimates (Meriküll and Room, 2022).

Figure 2. Relative wealth and income shares
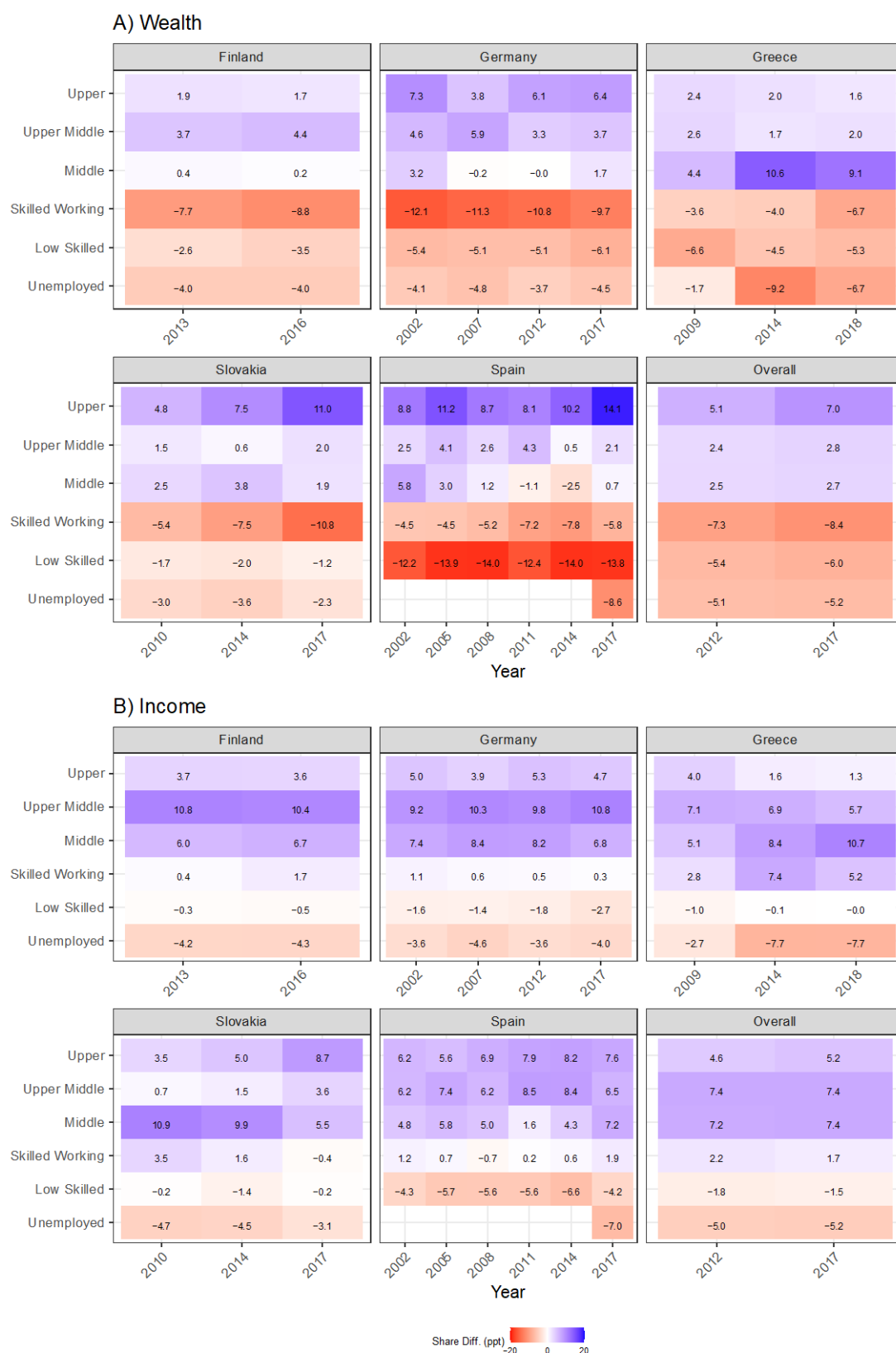
Note: Own elaboration with LWS data. The data represents the difference in percentage points between the population and wealth/income shares. If red(blue), the share of income is lower(higher) than the group's population share. "Overall" represents the average of all five countries in 2010-2015 and 2015-2020. If a country has more than one observation within a period, it is averaged out before taking the total average.

Turning to the composition of wealth by social class, Figure 3 illustrates how various types of wealth are distributed among the different social classes. This figure categorises wealth into distinct types: financial assets (including stocks and bonds), cash and deposits, business holdings, secondary residences (that also include other real estate), and primary residences.[10] Results in this plot focus on the last wave available, and exclude Germany due to the impossibility of distinguishing among some wealth definitions. A key observation from this figure is the pronounced disparity in the composition of wealth across social classes. Financial wealth, encompassing more liquid assets such as stocks and bonds, appears predominantly held by the upper and upper-middle classes. This concentration suggests that these classes have greater access to assets with potentially higher returns and possess the financial insight to manage such investments effectively.

*Figure 3. Wealth composition by social classes and countries*
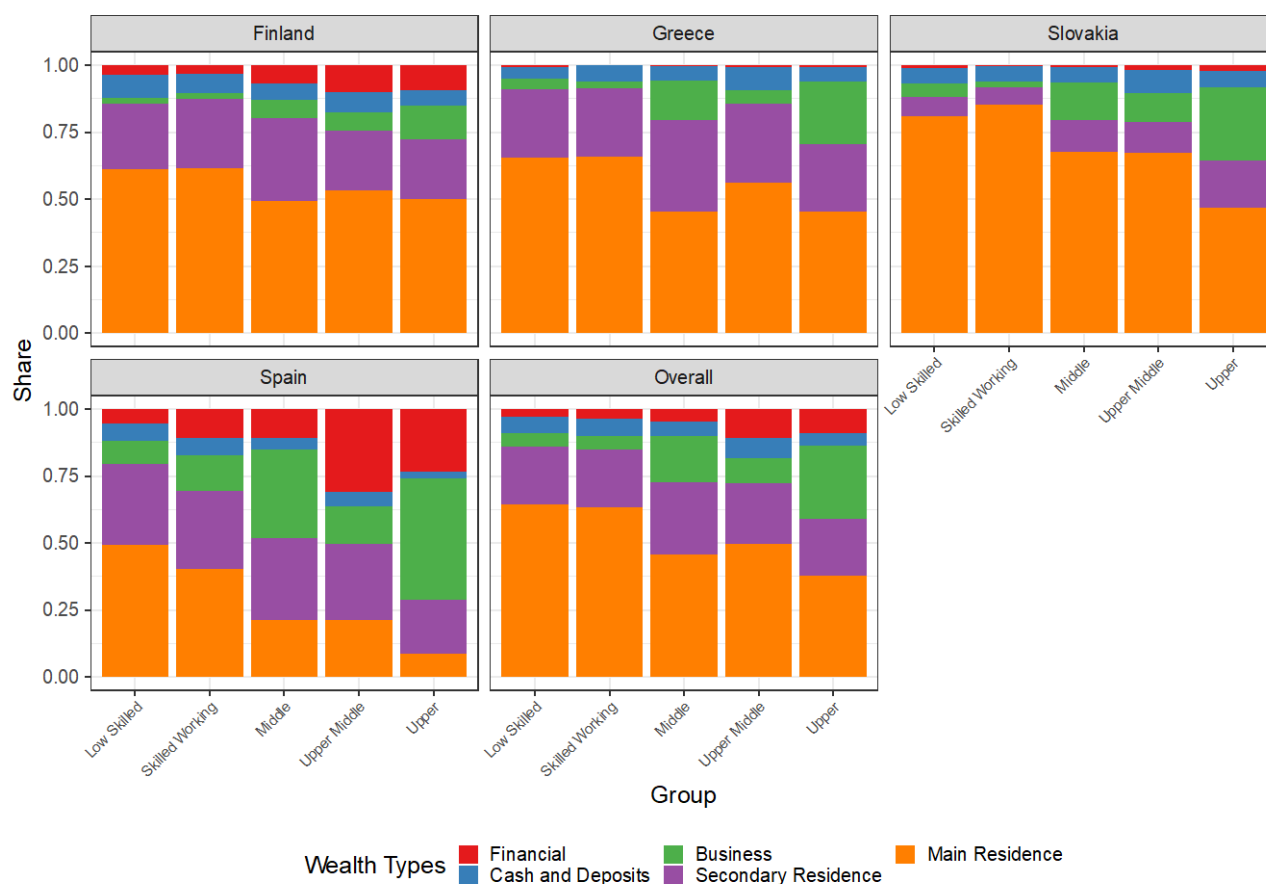


Note: Own elaboration with LWS data.

On the contrary, the wealth composition of the lower social classes, particularly the low-skilled and skilled working classes, is heavily skewed towards primary residences. This trend indicates that a significant portion of their wealth is invested in less liquid assets. The reliance on primary residences as a primary wealth component may reflect a limited capacity for these classes to engage in diverse investment strategies, potentially impacting their financial flexibility and response to economic

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[10] Financial wealth and capital income are traditionally underreported, especially by wealthy households (Merikull and Room, 2022). Thus, wealth and income shares may not capture the full distributional dynamics of the different income and wealth items.

opportunities. By contrast, the upper classes can accommodate their wealth portfolio through asset and debt reshuffling, using housing busts and financial cycles to direct their savings towards more profitable investments (Martínez-Toledano, 2020).

In sum, Figures 2 and 3 illustrate a sharp wealth and income divide between the higher (middle and upper) and lower classes (skilled working, low-skilled, and unemployed) in the absolute amount, relative shares and composition. This divide is not merely about the amount of wealth and income but also about its nature—with higher classes holding more liquid, high-return assets and lower classes possessing less liquid assets like primary residences. Interestingly, differences in the relative shares are more pronounced in wealth than income, particularly in Spain and Slovakia, highlighting the uneven distribution of wealth compared to income. These findings underscore the value of a class-based approach in understanding wealth and income inequalities.

## 4.2    Wealth-to-income ratios

We now turn to the analyses of WIRs to provide a more nuanced picture of wealth accumulation dynamics. As explained in the data and methods section, WIR expresses how many times more wealth than income is owned by the different groups. As shown in Figure 4, WIR values increase as we move up the class ladder from the low-skilled to the upper class. In line with Figure 2, this pattern suggests a higher capacity for wealth accumulation among more affluent social groups, who attain higher levels of wealth in absolute and relative terms (see Figure A2 in the Appendix). WIR disparities between classes follow a common pattern across countries, where the most evident difference is the absolute WIR level and the distance between top and bottom classes. Greece, Spain, and Slovakia (in 2010) are the countries that record the highest levels of WIR, which reflects the relatively high levels of wealth in these countries and their more even distribution.

This hierarchical ordering reflects the different abilities of social classes to face adverse income shocks stemming from economic crises. On the one hand, the high WIR levels achieved for the higher classes (9.5 in Spain in 2005 or approximately 7 in Slovakia in 2010) reveal their capacity to crystallise their incomes into asset accumulation. On the other hand, low WIR levels indicate that wealth accumulation concerning income is limited. In this regard, the low levels recorded by the lower classes highlight their vulnerability to negative income shocks, such as falling into unemployment and deepening into negative welfare consequences (Azpitarte, 2012).

Regarding time trends, WIRs in the lower classes decrease in Finland (-0.6 p.p. for the low-skilled and -0.4 p.p. for the skilled working class), Greece (-2.0 p.p. for the low-skilled and -0.3 p.p. for the skilled working class) and Spain (-1.9 p.p. for the low-skilled and -0.5 p.p. for the skilled working class). Spain depicts an interesting case, as the real estate bubble (2002-2008) relates to narrower WIR gaps across classes. However, this trend stalled after the crisis, with a sharp decline in the bottom classes, unable to accumulate wealth, and the upper class diverging upward. In contrast, the upper classes fell in Slovakia (-2.1 p.p. for the upper and -3.5 p.p. for the upper-middle), while in Germany, one can find some stability until 2012, with a generalised mild increase in 2017.

*Figure 4. Wealth-to-income ratio by social class*
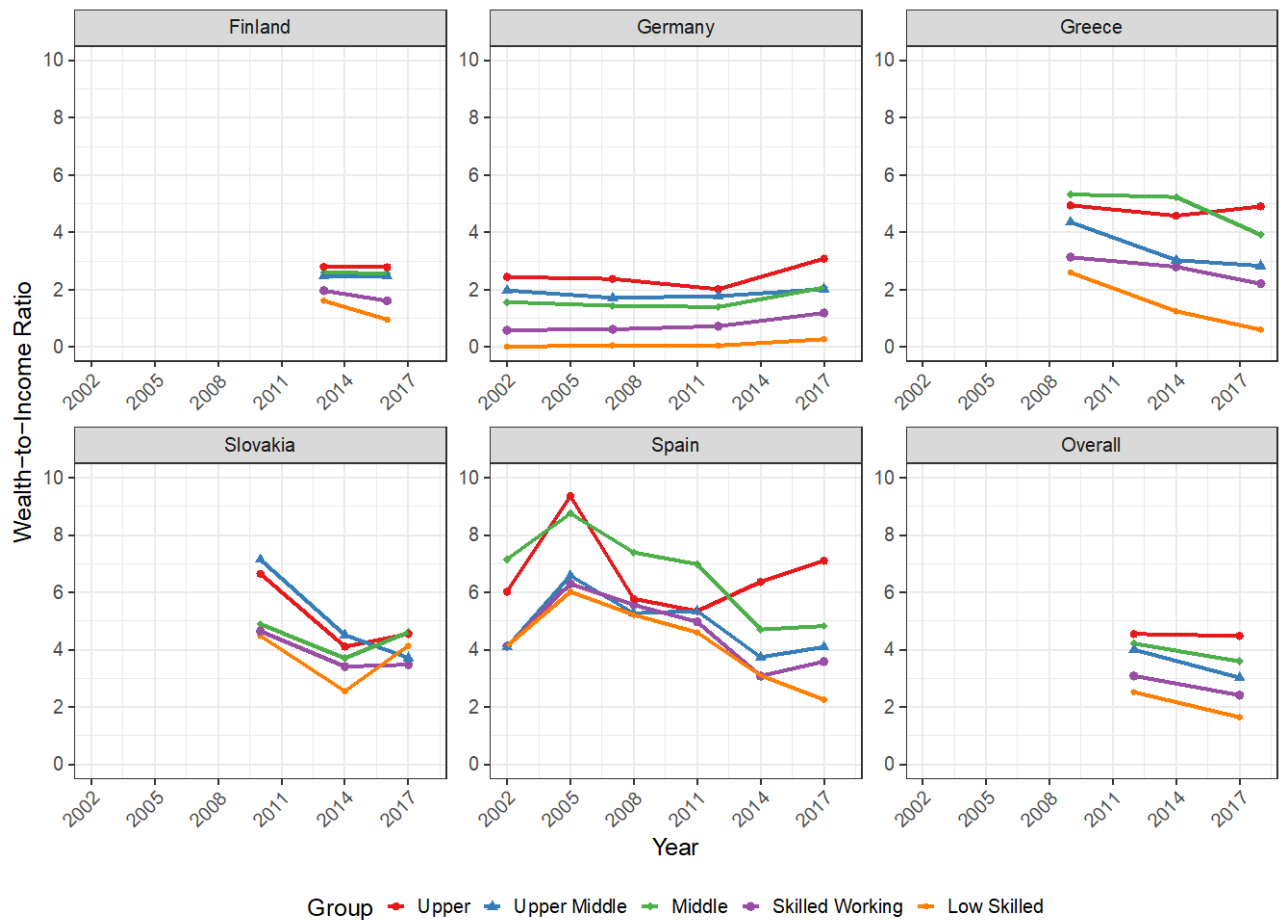


Note: Own elaboration with LWS data. "Overall" represents the average of all five countries in 2010-2015 and 2015-2020. If a country has more than one observation within a period, it is averaged out before taking the total average.

## 4.3   Between-class inequality and stratification analysis

The former analyses highlighted how affluent classes accumulate more income and, especially wealth, in absolute and relative terms. We conclude the empirical analysis by studying the dispersion of income and wealth across social classes.

Figure 5 shows the between-class Gini inequality levels for income and wealth. In particular, we show the share of overall Gini inequality (shown in Figure 1) that can be accounted for between-class inequality. Two groups of countries are found. First, those where income values are consistently above wealth values suggest that the class scheme is more appropriate for identifying class inequalities rooted in labour market relations than explaining inequalities associated with wealth accumulation processes. More specifically, Finland and Germany show that between-group income inequality values are relatively stable, at around 0.52 in both cases. However, the between-group wealth trend levels are different, with a slight increase in Finland and a U-shaped evolution in Germany, escalating from 0.4 to 0.45 between 2012 and 2017. Greece experienced a sharp increase, reaching a value of 0.49 in the case of income and 0.4 in the case of wealth in 2014.

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*Figure 5: Between-class inequality*



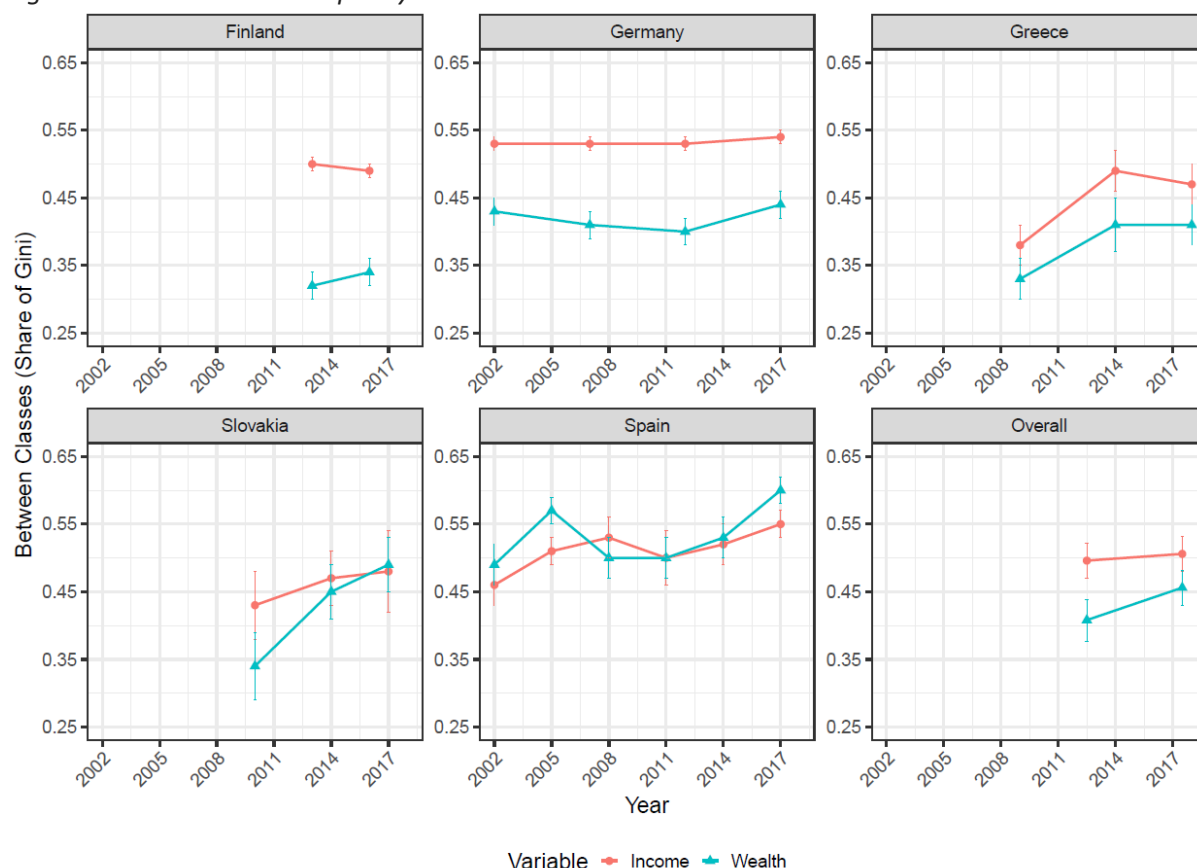Note: Own elaboration using LWS data. Standard errors are estimated with 200 bootstrapped repetitions. "Overall" represents the average of all five countries in 2010-2015 and 2015-2020. If a country has more than one observation within a period, it is averaged out before taking the total average.

The Slovakian and Spanish cases are different, as wealth and income values overlap across the period. This could be interpreted as the wealth accumulation process is more related to disparities in the labour market collected by the class scheme. Between-class wealth inequality in Slovakia rises from a 0.35 share of the overall Gini to almost 0.5, while income values range at around 0.44. The case of Spain is even more striking, with between-class wealth inequality values consistently above 0.49 and peaking in 2017 (0.6 of the overall Gini). Most notably, the rise of the between-group inequality component goes hand in hand with the escalation of the upper class seen in WIRs (Figure 4), with both countries experiencing a more significant divide in relative wealth shares by classes, as seen in Figure 2, Panel A.

Class divides seem to compile a remarkable share of income inequalities, with the Overall measure reaching around 50% of income Gini. They also account for more than two-fifths of wealth inequalities, showing a remarkable increase in the aggregate Overall measure. Exploring the potential causes leading to higher or lower wealth shares is beyond the scope of this paper, although disparities in factors not related to the labour market, like homeownership ratios, financial frictions, and redistributive policies, are likely to play a role.

Several additional analyses are shown in the Figure Appendix to validate our findings further. First, we examine the between-class inequality by dissecting wealth and income components (Figure A3) and other income measures (Figure A4). Results are reassuringly stable and align with the common rationale for income inequality analyses. Figure A5 replicates the inequality decomposition analysis

with the MLD.[11] Notably, between-group MLD values are always smaller than those in the Gini, with the highest point in Germany for total income (0.3). Lastly, Figures A6 and A7 incorporate the retired in the between-class analysis and exclude the unemployed. These adjustments uphold the main conclusions, demonstrating the robustness of our findings to varying analytical choices.

*Figure 6: Class Stratification*



Note: Own elaboration using LWS data. Standard errors estimated with 200 bootstrapped repetitions. "Overall" represents the average of all five countries in 2010-2015 and 2015-2020. If a country has more than one observation within a period, it is averaged out before taking the total average.
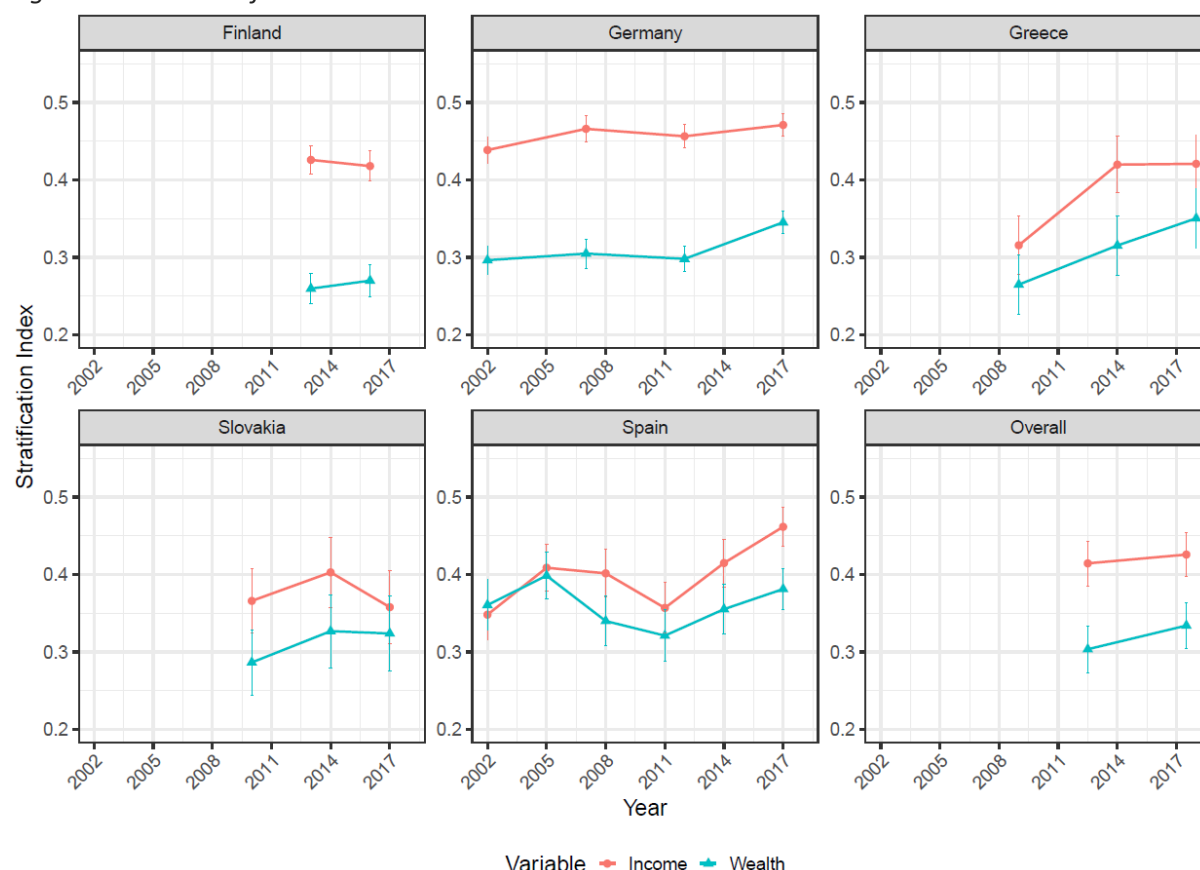
Although the decomposition of between-class inequality shows the explanatory power of big social class schemes to capture wealth and income, the limitations mentioned above (see Section 2) emphasise the need for a complementary stratification analysis. Thus, Figure 6 presents the income and wealth stratification index (see Technical Appendix 3) by country and survey wave.

In line with the patterns observed in Figure 5, income is generally more stratified by social class than wealth in most countries over the period analysed, especially in Finland and Germany. Income stratification goes from 0.32 (Greece) to 0.47 (Germany), while wealth stratification ranges between 0.26 (Finland) and 0.40 (Spain). Overall, the average stratification index stands at 0.41 for income and

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[11] Albertini, Ballarino and De Luca (2020), using the EU-SILC data (2005-2014) covering 24 European countries, found that, on average, between-class inequality in individual gross labour income (including unemployment benefits) by a 5-classes ESeC scheme accounted for about 17 % of the MLD, following a U-shaped trend over the period. For household market income, we found, on average, the same share of MLD accounted for by social classes at 17 %, while for wealth it stands at 12 % (only assets).

0.32 for wealth, meaning a 71% probability of a higher-class member earning more than a lower-class individual or a 66% probability of owning more wealth. For income and wealth, the stratification index remained constant over the period covered in Slovakia, Finland and Germany (except for a slight increase in wealth stratification between 2012 and 2017) and sharply increased after 2011 in Spain and Greece.

Figure A8 in the Appendix disaggregates stratification in income and wealth components, confirming the overall robustness of our results. Figures A10 and A11 repeat the analysis, including the retired and excluding the unemployed, respectively, while Figure A9 considers the redistributive role of the welfare state with other income measures. The overall results are maintained, although excluding the unemployed leads to lower overall income stratification, losing relative weight compared to wealth. Including the retired leads to a marked increase in mean income stratification, while wealth stratification slightly declines.

To set a substantive yardstick with other well-known variables for being vital in shaping labour market inequality, we replicated the former analyses by educational attainment groups (Zhou and Wodtke, 2019; Zhou, 2012), measured in the three broad available categories described above in section 3. The average between-group inequality measured with Gini accounted for broad educational groups is considerably smaller than the class scheme for income (37%) and wealth (28%). Similarly, the mean stratification index by education (S=0.39 for income; S=0.26 for wealth) is lower than by social classes. Thus, aggregate occupational classes have a higher or similar explanatory power to account for inequality and stratification dynamics in market income and wealth than education.

## 5    Discussion and Conclusion

Wealth is a central indicator of SES attainment and its transmission over generations in contemporary capitalism, receiving increasing attention in socio-economic research. Nevertheless, its role in class measurement and class-based inequality has been generally underexplored. This article is one of the few contributions merging sociological and economic visions on class analysis to assess the links between occupational classes and economic inequality in wealth and income cross-nationally (Finland, Germany, Greece, Slovakia and Spain) and over time. Utilising data from the Luxembourg Wealth Study (LWS) covering the first two decades of the 21st century, we test whether big occupational classes, based on the division of labour, can account for increasing economic inequalities by analysing relative wealth and income class shares, wealth-to-income ratios, between-class inequality share and stratification. We relate incomes perceived and wealth accumulated to an occupational class scheme similar to that presented in Moawad and Oesch (2023), accounting for a remarkable share of inequalities and highlighting explicit findings we summarise next.

The wealth and income distribution analysis across social classes underscores the substantial and multifaceted nature of economic disparities. Examining median values for income and wealth reveals a clear divide along class lines, with wealth emerging as more hierarchically ordered than income, possibly reflecting the elevated saving capacity of higher-income classes and the higher aggregate levels of wealth inequality. Regarding relative wealth and income shares by classes, in most countries, the upper classes have an entrenched and increasing advantage, owning about 6% more wealth than their relative population share, while the working classes dwindled their portion. Class-based inequalities in income shares are milder but also apparent. Furthermore, the exploration of wealth composition by financial and nonfinancial assets highlights significant class-based disparities, with the upper classes holding assets with more liquidity and returns while the working classes heavily rely on primary residences.

The WIR analysis reveals marked class differences across countries. While notable variations exist in absolute WIR values between countries, class differences are pervasive cross-nationally. Moreover, we find indications of an exacerbation of these disparities among different socio-economic strata. These results underscore substantial discrepancies in the ability of social classes to accumulate wealth,

accompanied by a general deterioration of conditions among lower classes. Consequently, these socio-economic groups contend with lower income and cope with diminished stock to weather unforeseen emergencies.

The magnitude of the between-classes income inequality share closely aligns with former research (Albertini, Ballarino and De Luca, 2020). Likewise, income class stratification largely overlaps with previous estimates from Sweden (Molinder, Syk and Thaning, 2023) and the US (Zhou and Wodtke, 2019). As far as we know, our study provides the first estimation of between-group wealth inequality and stratification by occupational classes. Overall, big social classes can account for a considerable share of economic inequalities, at least as weighty as educational attainment, one of the main individual-level drivers of market income inequality.

In contrast to the predictions on the *death* or *decomposition* of social classes as a fine-tuned instrument to adequately capture contemporary inequalities, big social classes preserve considerable explanatory power to account for income and wealth inequality and stratification. Even when accounting for different dimensions, mean between-class inequality vs segmentation, both measures evolved hand in hand, and kept constant (income) or even increased (wealth) from 2002 to 2018, although they vary cross-nationally. Germany and Finland show more stable values, with income consistently above wealth levels, while Spain and Slovakia have overlapped increasing values. However, from our results, it is also clear that occupational classes better capture between-group income inequalities and stratification than wealth, in line with concerns about the importance of economic resources unrelated to labour market attachment or employment relations that spark advances in social class theory and measurement.

This study has several limitations that also pave the way for future research. First, due to data collection issues and underreporting, a recurrent problem in this research strand, capital income and financial wealth (i.e., pensions) are generally underestimated and noisy compared to national accounts, implying potential lower-bound inequality estimates driven by the wealthiest and self-employed (Bavaro and Paradowski, 2023). Second, we do not shed light on institutional factors potentially accounting for observed cross-country differences, but this is duly justified for (1) data not being perfectly comparable regarding coverage of the rich, different wealth and income components and survey waves (i.e., Great Recession), and (2) being beyond the scope of this article. Future studies might further explore different wealth accumulation regimes and the redistributive role of the welfare state across countries.

Third, relatedly, we disregard the redistributive role of the welfare state by focusing on market income and wealth before taxes and transfers to facilitate cross-country comparisons and overcome data limitations. We run additional analyses using alternative measures of income (disposable income), wealth (assets) and sample selection (including the retired or excluding the unemployed) to replicate the main findings of the article successfully. Fourth, the Gini index is not fully decomposable due to its residual overlapping within and between class inequality. Still, findings are robust to other fully decomposable inequality indicators, such as the MLD, which only covers positive values. Fifth, due to data limitations, our big social class scheme lacks detailed information on occupational titles and supervisory roles (i.e., large/small employers) to depict a more fine-grained picture of the class structure. However, our 5-category scheme based on Moawad and Oesch (2023) adequately captures a steep wealth and income class hierarchy in absolute and relative terms while closely matching the ESeC, the most widespread and standardised class scheme. Besides, we reassuringly identified between-class inequality and stratification estimates virtually identical to previous research using more detailed occupational information to apply more established class schemes (Albertini, Ballarino and De Luca, 2020; Zhou and Wodtke, 2018).

Still, against the backdrop of previous research and our article's findings and limitations, there is ample room for improving class measurement to keep up with the increasingly important role of wealth in shaping cross-sectional inequality and its intergenerational transmission. As an increasingly

large body of research shows, wealth has assumed a pivotal role in shaping contemporary social dynamics. So far, the limited data availability has posed a significant challenge in addressing this issue. Looking ahead, improved data collection and cross-country harmonisation can expand the research horizons in this field, especially considering capital income and financial wealth. Combining tax administrative data with detailed occupational titles and large sample sizes might ease the depiction of the entire social hierarchy, including the very top elites, and the mechanisms explaining its reproduction over generations (Hansen et al., 2009).[12] Besides, primary sources of wealth and income might improve class measurement as additional definition criteria to the division of labour (Fana and Villani, 2022).

All in all, any attempt to fully understand class inequality in life chances, be it cross-sectionally or intergenerationally, must take wealth seriously, as it shapes present and future class divisions as an independent and central dimension of social stratification (Killewald, Pfeffer and Schachner 2017). Not least importantly, we should also consider how different types of wealth might impact its intricate relationship with class (Beckert, 2023), as not all types of assets produce the same returns and financial security. This study has shown that (increasing) inequality of outcomes in wealth accumulation and income, critical indicators of life chances as economic resources, are still firmly stratified by social and power relations between occupational classes in contemporary capitalism, potentially harming equal opportunity and social mobility in future generations.

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[12] The LWS provides data to explore inheritances received in Spain in 2017 by social classes. We find that the upper class has received, on average, 93.5 thousand euros, while the middle has merely received 13 thousand euros and the low-skilled 5.4 thousand euros.

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# 7 Annexes

## 7.1 Tables Appendix

*Table A1. Description of dependent variables.*

| Dependent | LWS/LIS variable | Definition |
|---|---|---|
| Labor Income | Hilabour | Sum of incomes steaming from working activities: wages and self-employment income. |
| Capital Income | Hicapital | Sum of interests, business, profits, dividends and rental incomes. |
| Total Household Factor Income (Income) | - | Sum of Labor Income and Capital Income |
| Financial Wealth | Haf minus Hln | Sum of all financial assets (deposits accounts and cash, financial investments and other non-pension and long term savings) minus non-housing liabilities. Assets are measured according to the market value at the moment of the interview. |
| Non-Financial Wealth | Han minus Hlr | Sum of all non-financial assets (real estate and non-housing assets, such as business equities) minus all liabilities related to real estates. Assets are measured according to the market value at the moment of the interview. |
| Total Household Wealth (Wealth) | - | Sum of Financial Wealth and Non-Financial Wealth |

*Source: Own elaboration. Names from LWS.*

*Table A2. Outcome Statistics*

| Country | Year | Variable | Minimum | Median | Mean | Maximum | Gini | MLD |
|---------|------|----------|---------|--------|------|---------|------|-----|
| Germany | 2002 | Income | 0 | 31.08 | 35.76 | 963.63 | 0.47 | 0.73 |
| Germany | 2007 | Income | 0 | 30.22 | 34.95 | 1,029.62 | 0.49 | 0.8 |
| Germany | 2012 | Income | 0 | 31.36 | 36.27 | 1,378.8 | 0.48 | 0.76 |
| Germany | 2017 | Income | 0 | 34.87 | 40.08 | 1,309.19 | 0.47 | 0.73 |
| Spain | 2002 | Income | 0 | 19.55 | 23.99 | 2,021.55 | 0.43 | 0.35 |
| Spain | 2005 | Income | 0 | 22.76 | 26.74 | 4,956.73 | 0.44 | 0.43 |
| Spain | 2008 | Income | 0 | 24 | 29.09 | 4,872.79 | 0.42 | 0.35 |
| Spain | 2011 | Income | 0 | 22.25 | 27.51 | 5,004.62 | 0.47 | 0.46 |
| Spain | 2014 | Income | 0 | 20.75 | 26.1 | 1,233.77 | 0.49 | 0.45 |
| Spain | 2017 | Income | 0 | 17.93 | 23.82 | 5,089.98 | 0.5 | 0.5 |
| Finland | 2013 | Income | 0 | 30.66 | 33.92 | 1,227.59 | 0.46 | 0.86 |
| Finland | 2016 | Income | 0 | 30.52 | 33.6 | 509.09 | 0.47 | 0.91 |
| Greece | 2009 | Income | 0 | 21.79 | 26.35 | 1,405.81 | 0.45 | 0.3 |
| Greece | 2014 | Income | 0 | 13.51 | 15.73 | 171.14 | 0.49 | 0.31 |
| Greece | 2018 | Income | 0 | 14.42 | 16.65 | 209.05 | 0.48 | 0.25 |
| Slovakia | 2010 | Income | 0 | 10.99 | 12.19 | 198.39 | 0.42 | 0.21 |
| Slovakia | 2014 | Income | 0 | 11.76 | 13.07 | 267.86 | 0.43 | 0.32 |
| Slovakia | 2017 | Income | 0 | 14.41 | 17.36 | 489.79 | 0.44 | 0.3 |
| Germany | 2002 | Capital | 0 | 0.19 | 1.87 | 906.62 | 0.87 | 1.83 |
| Germany | 2007 | Capital | 0 | 0.17 | 1.87 | 803.79 | 0.87 | 1.91 |
| Germany | 2012 | Capital | 0 | 0.13 | 1.59 | 810.15 | 0.88 | 1.99 |
| Germany | 2017 | Capital | 0 | 0.08 | 1.96 | 903.47 | 0.92 | 2.66 |
| Spain | 2002 | Capital | 0 | 0 | 0.61 | 972.16 | 0.96 | 2.59 |
| Spain | 2005 | Capital | 0 | 0 | 0.77 | 4,786.03 | 0.95 | 2.87 |
| Spain | 2008 | Capital | 0 | 0 | 1.18 | 4,568.77 | 0.92 | 2 |
| Spain | 2011 | Capital | 0 | 0 | 1.46 | 4,855.5 | 0.92 | 2.01 |
| Spain | 2014 | Capital | 0 | 0 | 1.33 | 1,063.96 | 0.93 | 1.87 |
| Spain | 2017 | Capital | 0 | 0 | 1.15 | 4,142.26 | 0.93 | 2.15 |
| Finland | 2013 | Capital | 0 | 0.02 | 2.03 | 1,152.52 | 0.93 | 3.56 |
| Finland | 2016 | Capital | 0 | 0.01 | 2.12 | 372.38 | 0.93 | 3.53 |
| Greece | 2009 | Capital | 0 | 0 | 0.91 | 753.18 | 0.94 | 1.24 |
| Greece | 2014 | Capital | 0 | 0 | 0.16 | 26.81 | 0.96 | 1.12 |
| Greece | 2018 | Capital | 0 | 0 | 0.36 | 31.61 | 0.96 | 0.89 |
| Slovakia | 2010 | Capital | 0 | 0 | 0.05 | 19.72 | 0.99 | 1.38 |
| Slovakia | 2014 | Capital | 0 | 0 | 0.4 | 123.03 | 0.98 | 2.58 |
| Slovakia | 2017 | Capital | 0 | 0 | 1.2 | 456.17 | 0.98 | 2.66 |
| Germany | 2002 | Labour | 0 | 30.26 | 33.89 | 732.54 | 0.47 | 0.27 |
| Germany | 2007 | Labour | 0 | 29.54 | 33.08 | 583.83 | 0.49 | 0.32 |
| Germany | 2012 | Labour | 0 | 30.55 | 34.68 | 807.12 | 0.49 | 0.33 |
| Germany | 2017 | Labour | 0 | 34.12 | 38.12 | 1,090.22 | 0.47 | 0.33 |
| Spain | 2002 | Labour | 0 | 19.27 | 23.38 | 1,674.98 | 0.43 | 0.24 |
| Spain | 2005 | Labour | 0 | 22.34 | 25.97 | 922.48 | 0.44 | 0.25 |
| Spain | 2008 | Labour | 0 | 23.34 | 27.91 | 1,679.54 | 0.42 | 0.23 |
| Spain | 2011 | Labour | 0 | 21.52 | 26.05 | 2,815.07 | 0.47 | 0.3 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Spain | 2014 | Labour | 0 | 19.97 | 24.77 | 912.54 | 0.49 | 0.3 |
| Spain | 2017 | Labour | 0 | 17.24 | 22.67 | 3,038.59 | 0.5 | 0.35 |
| Finland | 2013 | Labour | 0 | 29.71 | 31.89 | 417.73 | 0.45 | 0.35 |
| Finland | 2016 | Labour | 0 | 29.66 | 31.48 | 485.85 | 0.47 | 0.39 |
| Greece | 2009 | Labour | 0 | 21.35 | 25.43 | 672.24 | 0.46 | 0.24 |
| Greece | 2014 | Labour | 0 | 13.31 | 15.57 | 171.14 | 0.5 | 0.21 |
| Greece | 2018 | Labour | 0 | 14.06 | 16.3 | 198.88 | 0.48 | 0.2 |
| Slovakia | 2010 | Labour | 0 | 10.97 | 12.13 | 198.32 | 0.42 | 0.19 |
| Slovakia | 2014 | Labour | 0 | 11.56 | 12.67 | 158.62 | 0.43 | 0.23 |
| Slovakia | 2017 | Labour | 0 | 14.3 | 16.16 | 130.93 | 0.41 | 0.2 |
| Germany | 2002 | Wealth | -2,313.17 | 45.35 | 147.77 | 50,510.4 | 0.74 | 0.98 |
| Germany | 2007 | Wealth | -1,032.13 | 42.52 | 140.49 | 27,831.87 | 0.74 | 1.08 |
| Germany | 2012 | Wealth | -2,736.3 | 50.99 | 136.63 | 27,387.13 | 0.72 | 0.99 |
| Germany | 2017 | Wealth | -1,249.15 | 70.29 | 173.6 | 46,323.53 | 0.7 | 1.16 |
| Spain | 2002 | Wealth | -152.56 | 117.71 | 183.67 | 239,151.49 | 0.55 | 0.72 |
| Spain | 2005 | Wealth | -219.57 | 192.74 | 284.2 | 207,703.46 | 0.54 | 0.69 |
| Spain | 2008 | Wealth | -677.66 | 180.83 | 290.51 | 132,834.75 | 0.57 | 0.74 |
| Spain | 2011 | Wealth | -37,111.82 | 155.53 | 256.36 | 98,484.4 | 0.59 | 0.75 |
| Spain | 2014 | Wealth | -131.35 | 118.5 | 235.77 | 232,206.54 | 0.65 | 0.92 |
| Spain | 2017 | Wealth | -175.22 | 103.43 | 206.23 | 220,274.93 | 0.66 | 1.03 |
| Finland | 2013 | Wealth | -470.35 | 99.75 | 161.16 | 28,598.18 | 0.6 | 0.87 |
| Finland | 2016 | Wealth | -394.93 | 93.79 | 162.31 | 8,474.51 | 0.62 | 0.94 |
| Greece | 2009 | Wealth | -88.44 | 112.17 | 154.77 | 7,883.53 | 0.52 | 0.67 |
| Greece | 2014 | Wealth | -126.74 | 64.43 | 102.39 | 1,697.72 | 0.59 | 0.87 |
| Greece | 2018 | Wealth | -599.65 | 60.88 | 90.45 | 1,523.47 | 0.58 | 0.92 |
| Slovakia | 2010 | Wealth | -30.68 | 61.41 | 83.81 | 1,238.28 | 0.44 | 0.45 |
| Slovakia | 2014 | Wealth | -28.03 | 50.87 | 63.24 | 7,892 | 0.49 | 0.57 |
| Slovakia | 2017 | Wealth | -50.7 | 69.26 | 99.79 | 3,433.81 | 0.52 | 0.56 |
| Germany | 2002 | Financial | -2,879.97 | 0.2 | 13.06 | 5,300.79 | 0.85 | 0.84 |
| Germany | 2007 | Financial | -1,017.59 | 5.35 | 22.34 | 7,039.3 | 0.8 | 0.95 |
| Germany | 2012 | Financial | -2,745.32 | 4.23 | 21.24 | 4,866.59 | 0.82 | 1.02 |
| Germany | 2017 | Financial | -1,459.53 | 4.46 | 23.94 | 6,823.66 | 0.82 | 1.01 |
| Spain | 2002 | Financial | -1,583.21 | 2.39 | 17.75 | 65,407.68 | 0.85 | 1.73 |
| Spain | 2005 | Financial | -729.31 | 3.18 | 21.53 | 112,497.09 | 0.85 | 1.61 |
| Spain | 2008 | Financial | -3,649.35 | 3.2 | 23.42 | 26,636.46 | 0.85 | 1.57 |
| Spain | 2011 | Financial | -52,044.78 | 4.99 | 33.92 | 57,899.11 | 0.85 | 1.76 |
| Spain | 2014 | Financial | -6,554.56 | 4.78 | 41.91 | 194,703.41 | 0.86 | 1.93 |
| Spain | 2017 | Financial | -2,100.3 | 3.75 | 31.32 | 183,180.14 | 0.86 | 1.83 |
| Finland | 2013 | Financial | -1,181.12 | 3.11 | 19.86 | 26,447.79 | 0.85 | 1.49 |
| Finland | 2016 | Financial | -1437.3 | 2.92 | 25.21 | 5,777.92 | 0.86 | 1.67 |
| Greece | 2009 | Financial | -131.79 | 1.18 | 8.25 | 1,005.48 | 0.83 | 1.24 |
| Greece | 2014 | Financial | -133.46 | 0.34 | 5.3 | 583.32 | 0.89 | 1.94 |
| Greece | 2018 | Financial | -683.15 | 0.55 | 4.33 | 903.74 | 0.87 | 2.55 |
| Slovakia | 2010 | Financial | -53.8 | 1.73 | 6.28 | 372.84 | 0.74 | 1.18 |
| Slovakia | 2014 | Financial | -56.4 | 1.26 | 3.61 | 155.68 | 0.77 | 1.1 |
| Slovakia | 2017 | Financial | -67.71 | 1.58 | 6.29 | 445.94 | 0.77 | 1.34 |

| Country | Year | Type | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Germany | 2002 | Non-Financial | -196.58 | 30.15 | 134.72 | 50,208.45 | 0.76 | 0.78 |
| Germany | 2007 | Non-Financial | -430.09 | 18.8 | 118.16 | 26,841.8 | 0.77 | 0.78 |
| Germany | 2012 | Non-Financial | -1193.14 | 34.02 | 115.39 | 26,172.61 | 0.74 | 0.73 |
| Germany | 2017 | Non-Financial | -137.97 | 53.52 | 149.66 | 45,316.1 | 0.72 | 1.32 |
| Spain | 2002 | Non-Financial | -13.71 | 111.83 | 165.92 | 176,816.06 | 0.53 | 0.63 |
| Spain | 2005 | Non-Financial | -143.59 | 184.81 | 262.67 | 102,117.09 | 0.52 | 0.67 |
| Spain | 2008 | Non-Financial | -313.82 | 172.67 | 267.09 | 126,130.17 | 0.56 | 0.72 |
| Spain | 2011 | Non-Financial | -114.09 | 144.14 | 222.44 | 95,254.2 | 0.57 | 0.72 |
| Spain | 2014 | Non-Financial | -177.78 | 107.53 | 193.87 | 139,760.52 | 0.63 | 0.89 |
| Spain | 2017 | Non-Financial | -91.08 | 91.19 | 174.91 | 107,949.34 | 0.65 | 0.98 |
| Finland | 2013 | Non-Financial | -81.63 | 93.4 | 141.3 | 6,563.72 | 0.58 | 0.8 |
| Finland | 2016 | Non-Financial | -119.82 | 86.32 | 137.1 | 4,888.29 | 0.6 | 0.85 |
| Greece | 2009 | Non-Financial | -74.86 | 106.26 | 146.51 | 7,057.14 | 0.52 | 0.64 |
| Greece | 2014 | Non-Financial | -72.74 | 62.23 | 97.08 | 1,291.01 | 0.59 | 0.78 |
| Greece | 2018 | Non-Financial | -223.04 | 58.8 | 86.12 | 1,483.74 | 0.57 | 0.75 |
| Slovakia | 2010 | Non-Financial | -29.4 | 57.87 | 77.53 | 1,221.06 | 0.45 | 0.44 |
| Slovakia | 2014 | Non-Financial | -12.95 | 47.69 | 59.63 | 7,797.83 | 0.49 | 0.51 |
| Slovakia | 2017 | Non-Financial | -52.24 | 65.14 | 93.5 | 3,347.54 | 0.53 | 0.56 |

*Source: Own elaboration, data from LWS. All monetary values are in thousands of 2017 USD. MLD stands for Mean Logarithmic Deviation.*

*Table A3. Description of covariates and other variables used in the analysis.*

| Variable | LWS/LIS variable | Definition |
|---|---|---|
| Age | Age | Age measured in years |
| Household size | Nhhmem | Number of individuals in the household. |
| Gender | Sex | Gender (1 = male, 0 = female) |
| Civil Status | Marital | Married (1 = married or living with couple, 0 = no couple) |
| Education | Educ | Highest education achieved (1 = low, primary, none; 2 = upper and lower secondar; 3 = tertiary) |
| Weights | hpopwgt | Weights provided by LIS normalized to represent population. |
| Occupation | Occb1 | Occupation of main job |
| Labor Market status | Status1 and LFS | Employment status |
| Industry | Indd1 | Industry of main job |
| Part-time Status | Ptime1 | Part-time employment of main job |

*Source: Own elaboration. Names from LWS.*

*Table A4. Description of covariates by countries*

| Country | Year | Variable | Minimum | Mean | Standard Deviation | Maximum |
|---|---|---|---|---|---|---|
| Germany | 2002 | Education | 1 | 2.2 | 0.59 | 3 |
| Germany | 2002 | Married | 0 | 0.69 | 0.46 | 1 |
| Germany | 2002 | Household Size | 1 | 2.85 | 1.33 | 12 |
| Germany | 2002 | Gender | 0 | 0.7 | 0.46 | 1 |
| Germany | 2002 | Age | 24 | 47.85 | 13.17 | 75 |
| Germany | 2007 | Education | 1 | 2.22 | 0.6 | 3 |
| Germany | 2007 | Married | 0 | 0.65 | 0.48 | 1 |
| Germany | 2007 | Household Size | 1 | 2.77 | 1.32 | 13 |
| Germany | 2007 | Gender | 0 | 0.64 | 0.48 | 1 |
| Germany | 2007 | Age | 24 | 49.31 | 12.91 | 75 |
| Germany | 2012 | Education | 1 | 2.24 | 0.6 | 3 |
| Germany | 2012 | Married | 0 | 0.64 | 0.48 | 1 |
| Germany | 2012 | Household Size | 1 | 2.72 | 1.31 | 12 |
| Germany | 2012 | Gender | 0 | 0.61 | 0.49 | 1 |
| Germany | 2012 | Age | 24 | 51.03 | 12.82 | 75 |
| Germany | 2017 | Education | 1 | 2.23 | 0.63 | 3 |
| Germany | 2017 | Married | 0 | 0.61 | 0.49 | 1 |
| Germany | 2017 | Household Size | 1 | 2.73 | 1.36 | 13 |
| Germany | 2017 | Gender | 0 | 0.55 | 0.5 | 1 |
| Germany | 2017 | Age | 24 | 50.47 | 12.76 | 75 |
| Spain | 2002 | Education | 1 | 1.65 | 0.77 | 3 |
| Spain | 2002 | Married | 0 | 0.85 | 0.35 | 1 |
| Spain | 2002 | Household Size | 1 | 3.67 | 1.46 | 9 |
| Spain | 2002 | Gender | 0 | 0.83 | 0.37 | 1 |
| Spain | 2002 | Age | 24 | 48.89 | 12.48 | 75 |
| Spain | 2005 | Education | 1 | 1.74 | 0.8 | 3 |
| Spain | 2005 | Married | 0 | 0.82 | 0.39 | 1 |
| Spain | 2005 | Household Size | 1 | 3.51 | 1.37 | 9 |
| Spain | 2005 | Gender | 0 | 0.72 | 0.45 | 1 |
| Spain | 2005 | Age | 24 | 48.19 | 12.44 | 75 |
| Spain | 2008 | Education | 1 | 1.78 | 0.8 | 3 |
| Spain | 2008 | Married | 0 | 0.8 | 0.4 | 1 |
| Spain | 2008 | Household Size | 1 | 3.34 | 1.2 | 9 |
| Spain | 2008 | Gender | 0 | 0.63 | 0.48 | 1 |
| Spain | 2008 | Age | 24 | 48.47 | 12.37 | 75 |
| Spain | 2011 | Education | 1 | 1.83 | 0.82 | 3 |
| Spain | 2011 | Married | 0 | 0.76 | 0.43 | 1 |
| Spain | 2011 | Household Size | 1 | 3.23 | 1.22 | 9 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Spain | 2011 | Gender | 0 | 0.65 | 0.48 | 1 |
| Spain | 2011 | Age | 24 | 48.86 | 12.45 | 75 |
| Spain | 2014 | Education | 1 | 1.91 | 0.84 | 3 |
| Spain | 2014 | Married | 0 | 0.75 | 0.43 | 1 |
| Spain | 2014 | Household Size | 1 | 3.16 | 1.22 | 9 |
| Spain | 2014 | Gender | 0 | 0.65 | 0.48 | 1 |
| Spain | 2014 | Age | 24 | 49.54 | 12.06 | 75 |
| Spain | 2017 | Education | 1 | 1.8 | 0.82 | 3 |
| Spain | 2017 | Married | 0 | 0.69 | 0.46 | 1 |
| Spain | 2017 | Household Size | 1 | 3.25 | 1.34 | 9 |
| Spain | 2017 | Gender | 0 | 0.59 | 0.49 | 1 |
| Spain | 2017 | Age | 24 | 49.64 | 11.74 | 75 |
| Finland | 2013 | Education | 1 | 2.25 | 0.71 | 3 |
| Finland | 2013 | Married | 0 | 0.57 | 0.49 | 1 |
| Finland | 2013 | Household Size | 1 | 2.9 | 1.61 | 13 |
| Finland | 2013 | Gender | 0 | 0.54 | 0.5 | 1 |
| Finland | 2013 | Age | 24 | 48.38 | 13.27 | 75 |
| Finland | 2016 | Education | 1 | 2.22 | 0.73 | 3 |
| Finland | 2016 | Married | 0 | 0.56 | 0.5 | 1 |
| Finland | 2016 | Household Size | 1 | 2.78 | 1.56 | 14 |
| Finland | 2016 | Gender | 0 | 0.52 | 0.5 | 1 |
| Finland | 2016 | Age | 24 | 48.4 | 13.97 | 75 |
| Greece | 2009 | Education | 1 | 1.92 | 0.78 | 3 |
| Greece | 2009 | Married | 0 | 0.75 | 0.43 | 1 |
| Greece | 2009 | Household Size | 1 | 3.21 | 1.11 | 11 |
| Greece | 2009 | Gender | 0 | 0.49 | 0.5 | 1 |
| Greece | 2009 | Age | 24 | 47.37 | 13.29 | 75 |
| Greece | 2014 | Education | 1 | 1.93 | 0.7 | 3 |
| Greece | 2014 | Married | 0 | 0.74 | 0.44 | 1 |
| Greece | 2014 | Household Size | 1 | 3.2 | 1.27 | 7 |
| Greece | 2014 | Gender | 0 | 0.51 | 0.5 | 1 |
| Greece | 2014 | Age | 24 | 48.2 | 12.64 | 75 |
| Greece | 2018 | Education | 1 | 1.98 | 0.74 | 3 |
| Greece | 2018 | Married | 0 | 0.74 | 0.44 | 1 |
| Greece | 2018 | Household Size | 1 | 3.25 | 1.29 | 12 |
| Greece | 2018 | Gender | 0 | 0.55 | 0.5 | 1 |
| Greece | 2018 | Age | 24 | 49.61 | 12.61 | 75 |
| Slovakia | 2010 | Education | 1 | 2.1 | 0.47 | 3 |
| Slovakia | 2010 | Married | 0 | 0.72 | 0.45 | 1 |
| Slovakia | 2010 | Household Size | 1 | 3.7 | 1.65 | 7 |
| Slovakia | 2010 | Gender | 0 | 0.46 | 0.5 | 1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Slovakia | 2010 | Age | 24 | 46.38 | 12.68 | 75 |
| Slovakia | 2014 | Education | 1 | 2.07 | 0.54 | 3 |
| Slovakia | 2014 | Married | 0 | 0.76 | 0.42 | 1 |
| Slovakia | 2014 | Household Size | 1 | 3.77 | 1.63 | 11 |
| Slovakia | 2014 | Gender | 0 | 0.8 | 0.4 | 1 |
| Slovakia | 2014 | Age | 24 | 50.12 | 11.95 | 75 |
| Slovakia | 2017 | Education | 1 | 2.14 | 0.53 | 3 |
| Slovakia | 2017 | Married | 0 | 0.76 | 0.43 | 1 |
| Slovakia | 2017 | Household Size | 1 | 3.61 | 1.55 | 12 |
| Slovakia | 2017 | Gender | 0 | 0.75 | 0.44 | 1 |
| Slovakia | 2017 | Age | 24 | 50.31 | 12.1 | 75 |

*Source: Own elaboration, data from LWS.*

*Table A5. Sample size and share of occupational classes and other demographic groups*

| Country | Year | Sample size | Low Skilled | Skilled Working | Middle | Upper / middle | Upper | Unemployed | Retired |
|---------|------|-------------|-------------|-----------------|--------|----------------|-------|------------|---------|
| Germany | 2002 | 10,314 | 5.99 | 22.10 | 20.14 | 13.29 | 6.16 | 5.79 | 26.54 |
| Germany | 2007 | 9,481 | 5.26 | 21.45 | 20.84 | 12.61 | 5.12 | 5.81 | 28.90 |
| Germany | 2012 | 13,377 | 6.85 | 22.23 | 23.33 | 12.62 | 4.85 | 6.53 | 23.59 |
| Germany | 2017 | 13,758 | 9.66 | 20.81 | 22.54 | 12.78 | 4.64 | 9.78 | 19.79 |
| Spain | 2002 | 3,582 | 15.30 | 10.36 | 19.43 | 8.68 | 8.43 | 0.00 | 37.80 |
| Spain | 2005 | 4,061 | 17.06 | 10.12 | 17.61 | 8.08 | 10.54 | 0.00 | 36.59 |
| Spain | 2008 | 4,019 | 15.45 | 9.95 | 18.21 | 7.96 | 9.83 | 0.00 | 38.59 |
| Spain | 2011 | 3,974 | 12.68 | 9.36 | 16.46 | 8.86 | 10.29 | 0.00 | 42.35 |
| Spain | 2014 | 3,978 | 12.19 | 9.15 | 14.78 | 10.26 | 11.34 | 0.00 | 42.28 |
| Spain | 2017 | 4,908 | 12.29 | 9.92 | 12.41 | 7.95 | 10.86 | 11.06 | 35.51 |
| Finland | 2013 | 9,211 | 5.03 | 15.51 | 26.49 | 14.74 | 3.06 | 6.72 | 28.44 |
| Finland | 2016 | 8,019 | 4.20 | 15.53 | 25.04 | 14.88 | 2.77 | 7.38 | 30.20 |
| Greece | 2009 | 2,137 | 12.45 | 19.70 | 24.47 | 8.38 | 4.07 | 5.24 | 25.69 |
| Greece | 2014 | 2,228 | 7.68 | 17.41 | 18.36 | 6.60 | 2.83 | 17.15 | 29.98 |
| Greece | 2018 | 2,220 | 7.75 | 17.93 | 19.01 | 6.40 | 2.43 | 15.32 | 31.17 |
| Slovakia | 2010 | 1,873 | 4.59 | 38.92 | 23.76 | 3.20 | 6.03 | 4.81 | 18.69 |
| Slovakia | 2014 | 1,887 | 3.23 | 19.71 | 18.07 | 4.98 | 5.03 | 9.43 | 39.53 |
| Slovakia | 2017 | 1,875 | 2.93 | 20.21 | 17.71 | 5.33 | 4.85 | 6.13 | 42.83 |

*Source: Own elaboration, data from LWS. Sample size shows the number of observations available in each dataset. The values corresponding to the different social classes and socioeconomic groups are percentages (%) of the Sample size.*

*Table A6. Ratio of the median of net total wealth between social classes.*

| Country | Year | Low skilled / Upper | Skilled working/ Upper | Middle / Upper | Upper middle / Upper |
|---------|------|---------------------|------------------------|----------------|----------------------|
| Finland | 2013 | 0.24 | 0.33 | 0.52 | 0.65 |
| Finland | 2016 | 0.13 | 0.26 | 0.47 | 0.58 |
| Germany | 2002 | 0.002 | 0.13 | 0.44 | 0.78 |
| Germany | 2007 | 0.01 | 0.16 | 0.47 | 0.79 |
| Germany | 2012 | 0.01 | 0.21 | 0.52 | 0.87 |
| Germany | 2017 | 0.04 | 0.23 | 0.49 | 0.63 |
| Greece | 2009 | 0.32 | 0.53 | 0.76 | 0.99 |
| Greece | 2014 | 0.19 | 0.62 | 1.12 | 0.99 |
| Greece | 2018 | 0.08 | 0.41 | 0.77 | 0.73 |
| Slovakia | 2010 | 0.46 | 0.53 | 0.64 | 0.95 |
| Slovakia | 2014 | 0.20 | 0.49 | 0.62 | 0.68 |
| Slovakia | 2017 | 0.43 | 0.43 | 0.67 | 0.63 |
| Spain | 2002 | 0.31 | 0.41 | 0.71 | 0.71 |
| Spain | 2005 | 0.31 | 0.43 | 0.69 | 0.87 |
| Spain | 2008 | 0.38 | 0.51 | 0.79 | 0.92 |
| Spain | 2011 | 0.40 | 0.55 | 0.84 | 1.14 |
| Spain | 2014 | 0.19 | 0.32 | 0.49 | 0.60 |
| Spain | 2017 | 0.15 | 0.35 | 0.56 | 0.68 |

*Source: Own elaboration, data from LWS.*

## 7.2  Figures Appendix

*Figure A1. Wealth and income inequality by components*
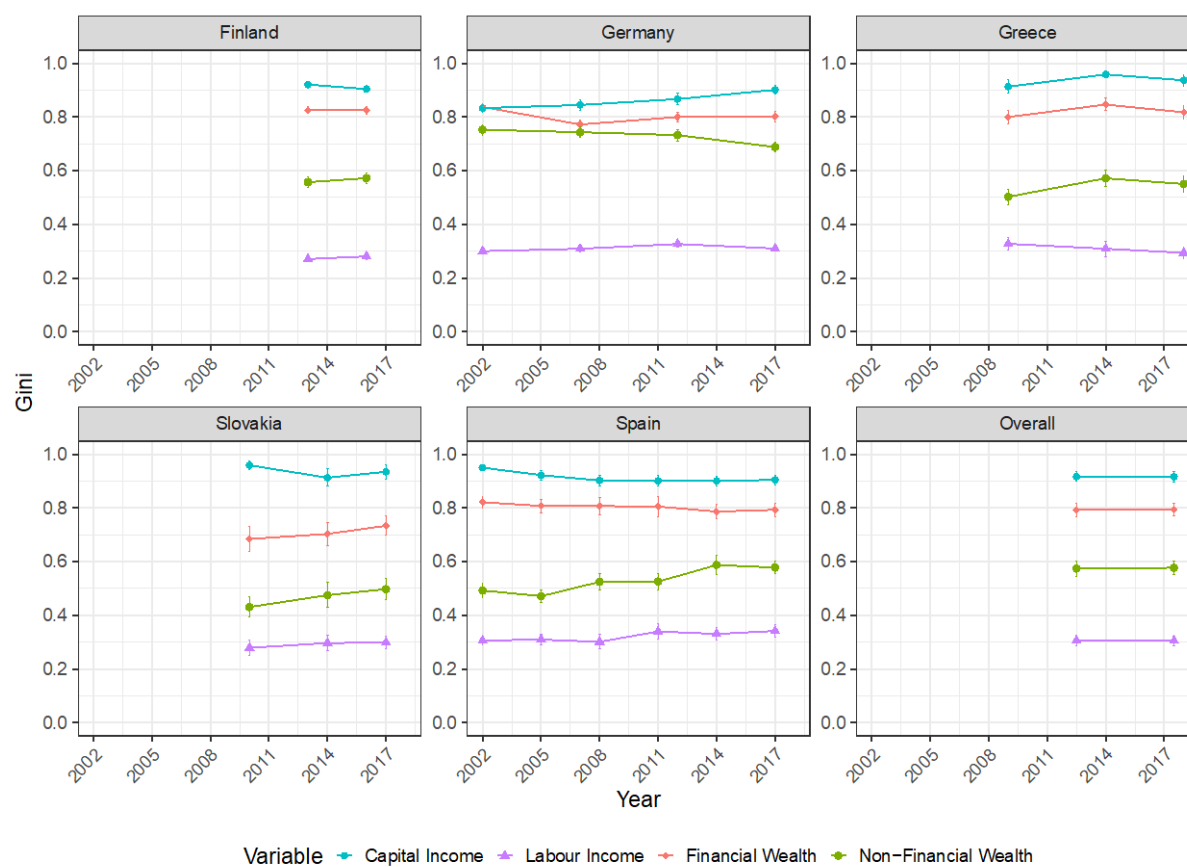


*Source: Own elaboration with LWS data. "Overall" represents the average of all five countries in 2010-2015 and 2015-2020. If a country has more than one observation within a period, it is averaged out before taking the total average.*

*Figure A2. Median of wealth and income by social class*

Wealth Distribution by Group



Income Distribution by Group
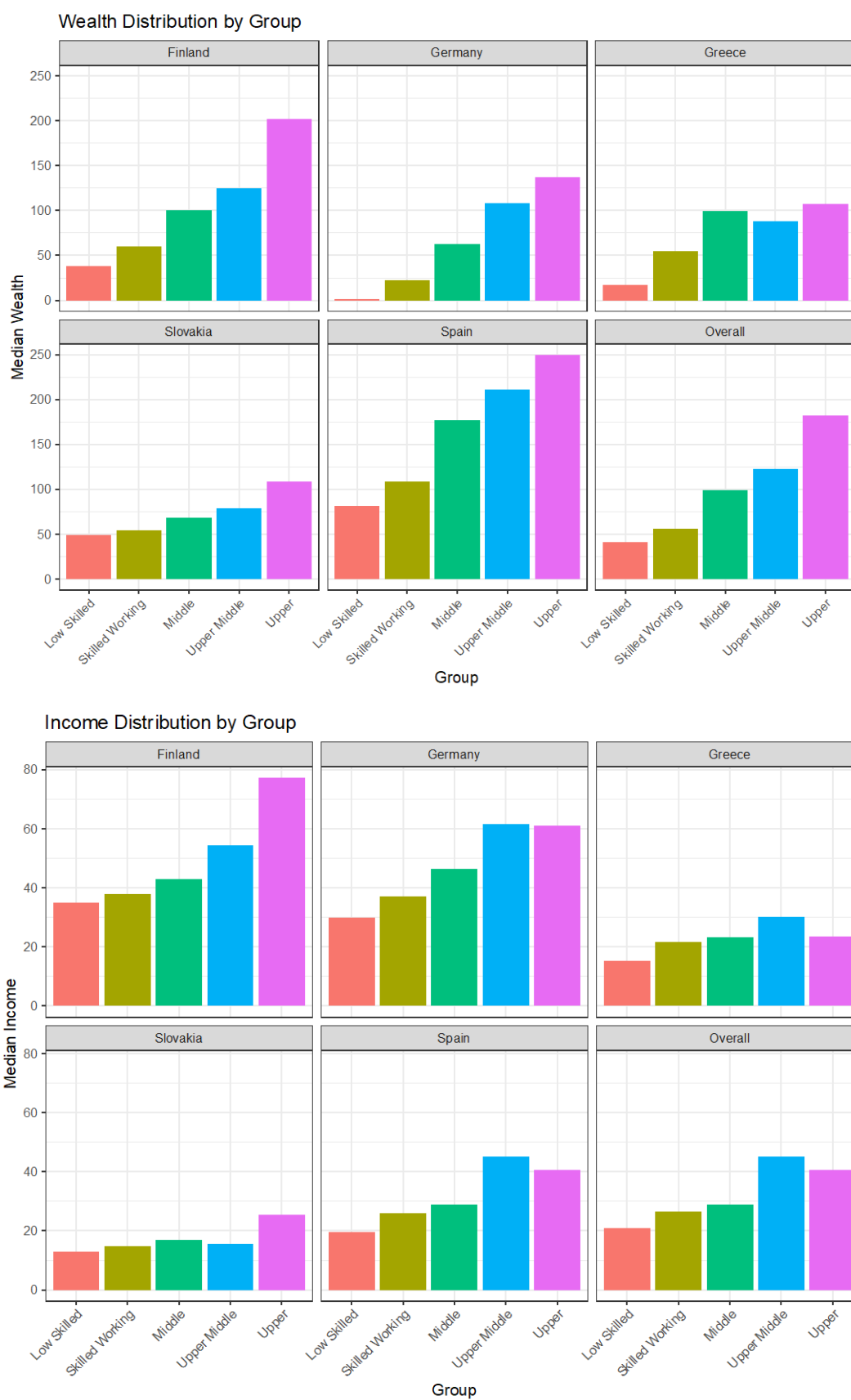


*Source: Own elaboration using LWS data. Monetary values in thousands of 2017 USD.*

*Figure A3: Between-class inequality by wealth and income component*
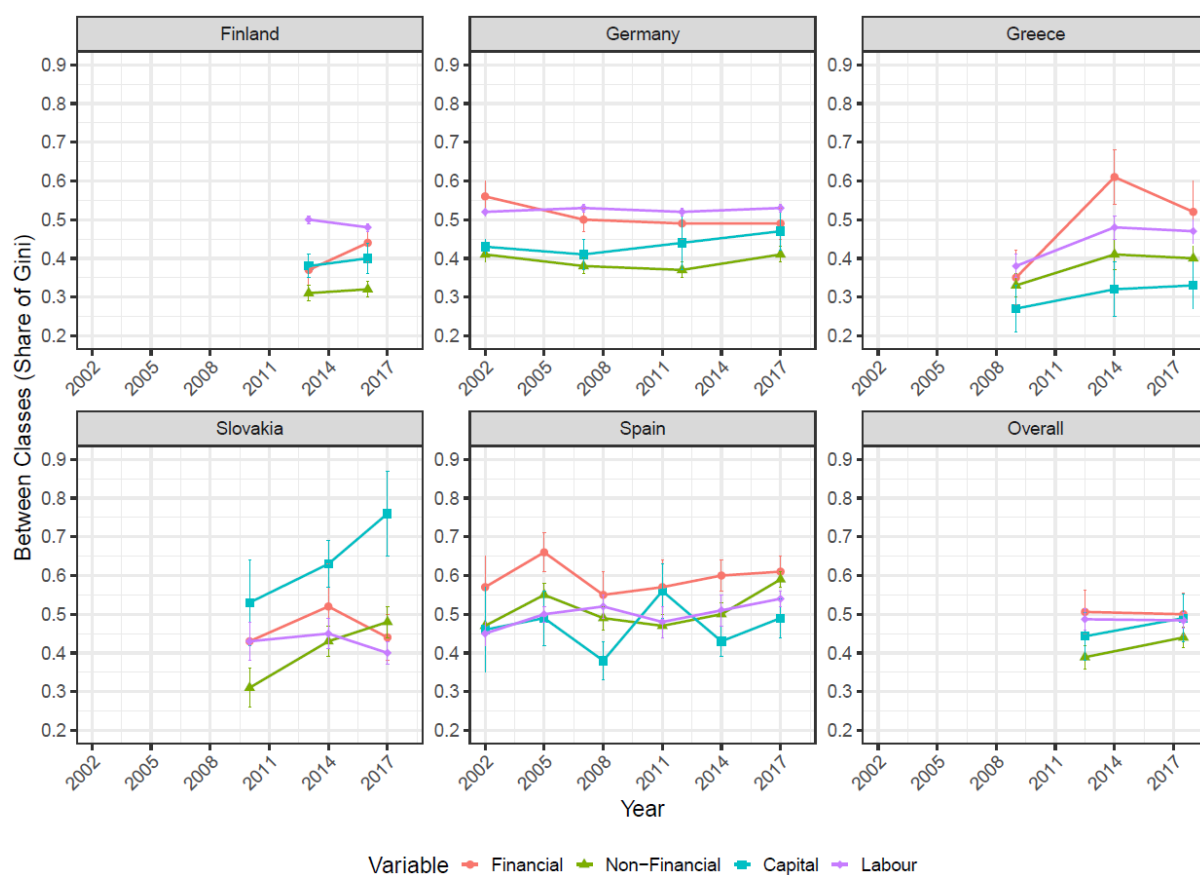


*Source: Own elaboration using data from LWS. Standard errors estimated with 200 bootstrapped repetitions. "Overall" represents the average of all five countries in 2010-2015 and 2015-2020. If a country has more than one observation within a period, it is averaged out before taking the total average.*

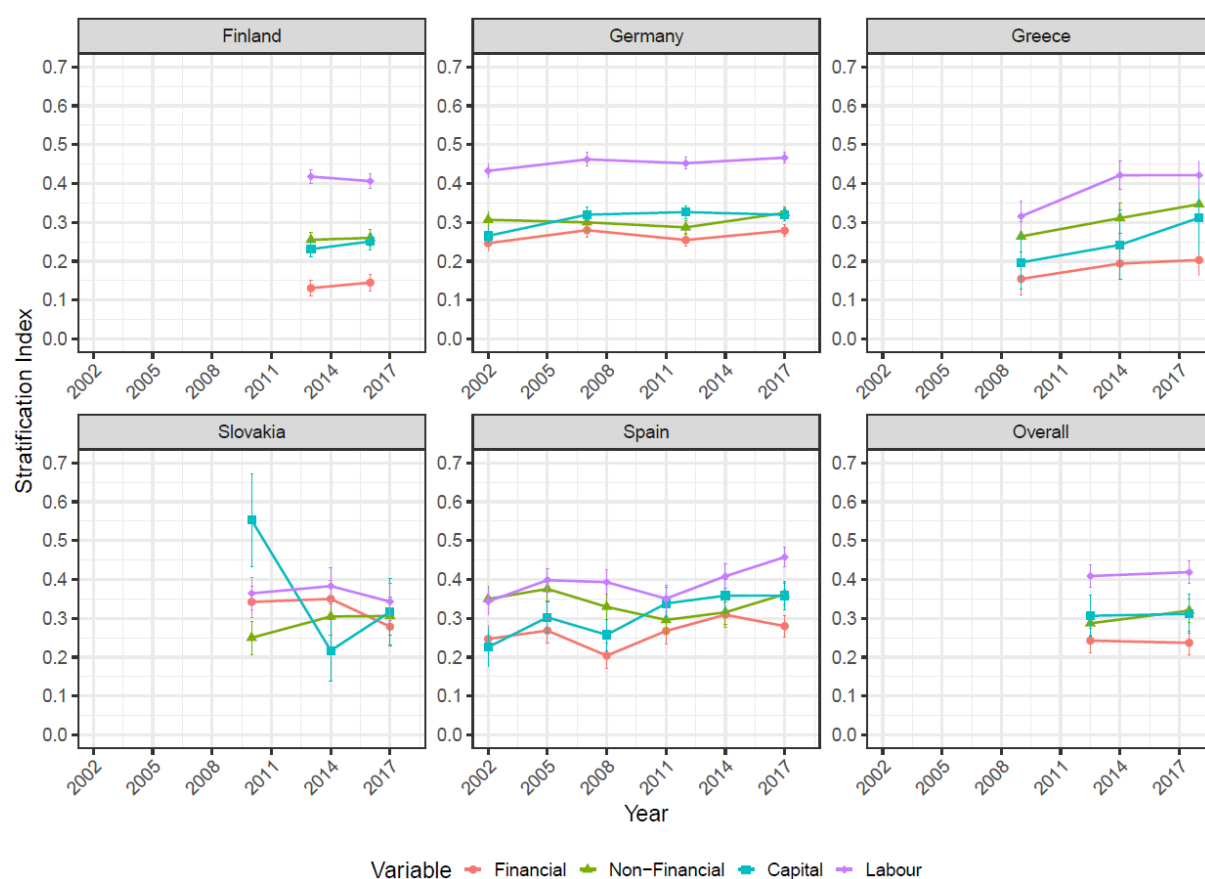*Figure A4: Between-class inequality by assets and other income measures*
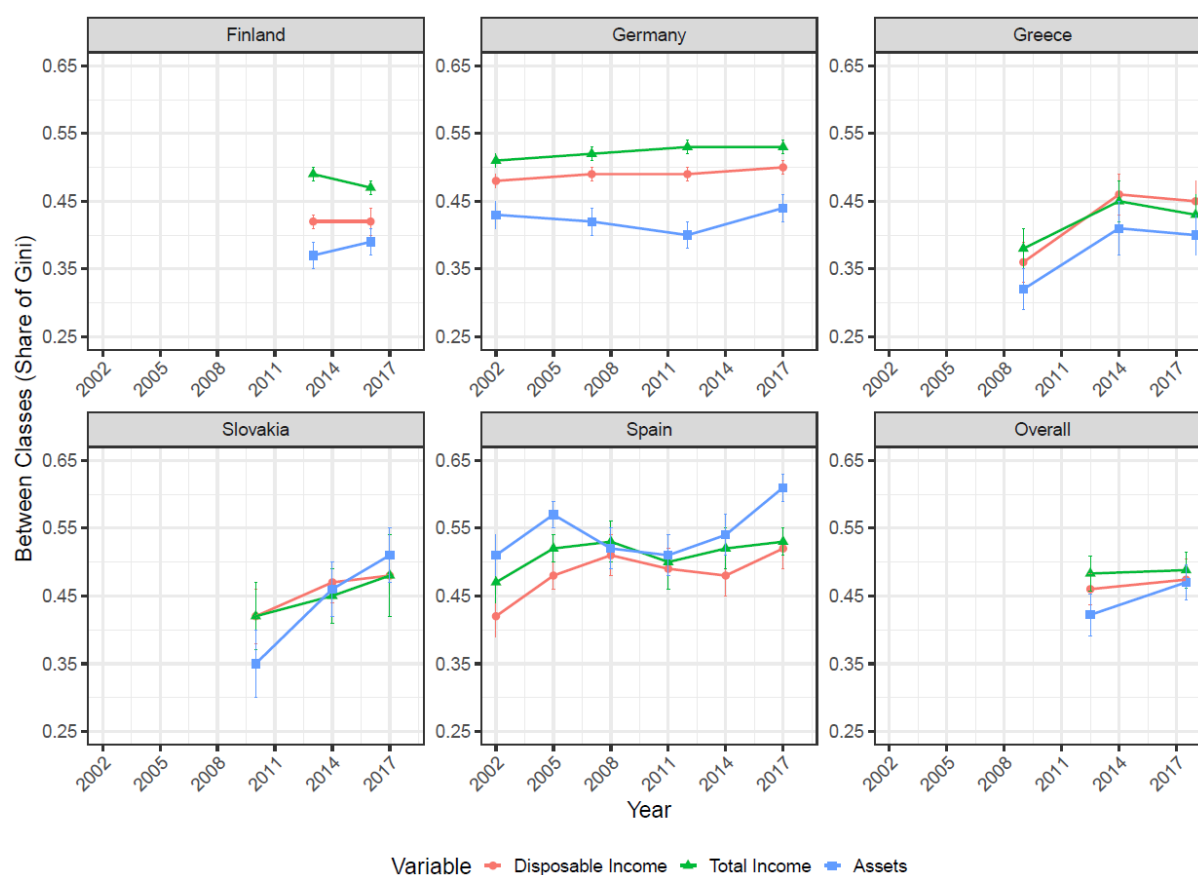


*Source: Own elaboration using data from LWS. Standard errors estimated with 200 bootstrapped repetitions. "Overall" represents the average of all five countries in 2010-2015 and 2015-2020. If a country has more than one observation within a period, it is averaged out before taking the total average. Total income includes all incomes perceived by the household. Disposable income includes all incomes minus taxes and other transfers. Assets includes the sum of all financial and non-financial assets.*

*Figure A5: Between-class inequality by assets and incomes (MLD)*
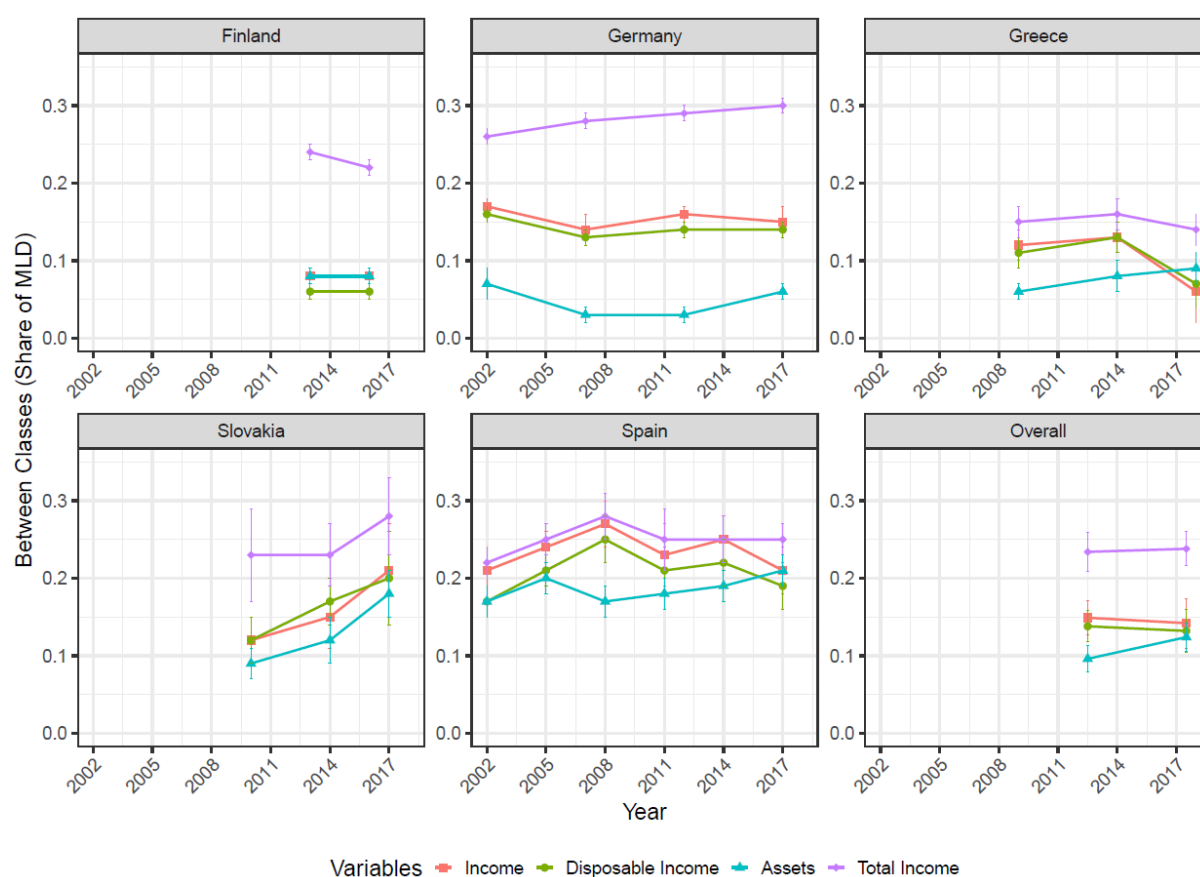


*Source: Own elaboration using data from LWS. Standard errors estimated with 200 bootstrapped repetitions. MLD stands for Mean Logarithmic Deviation. Income is our main income definition, the sum of labour and capital income. "Overall" represents the average of all five countries in 2010-2015 and 2015-2020. If a country has more than one observation within a period, it is averaged out before taking the total average. Total income includes all incomes perceived by the household. Disposable income includes all incomes minus taxes and other transfers. Assets includes the sum of all financial and non-financial assets.*

Figure A6: Between-group inequality (wealth and income) including the retired
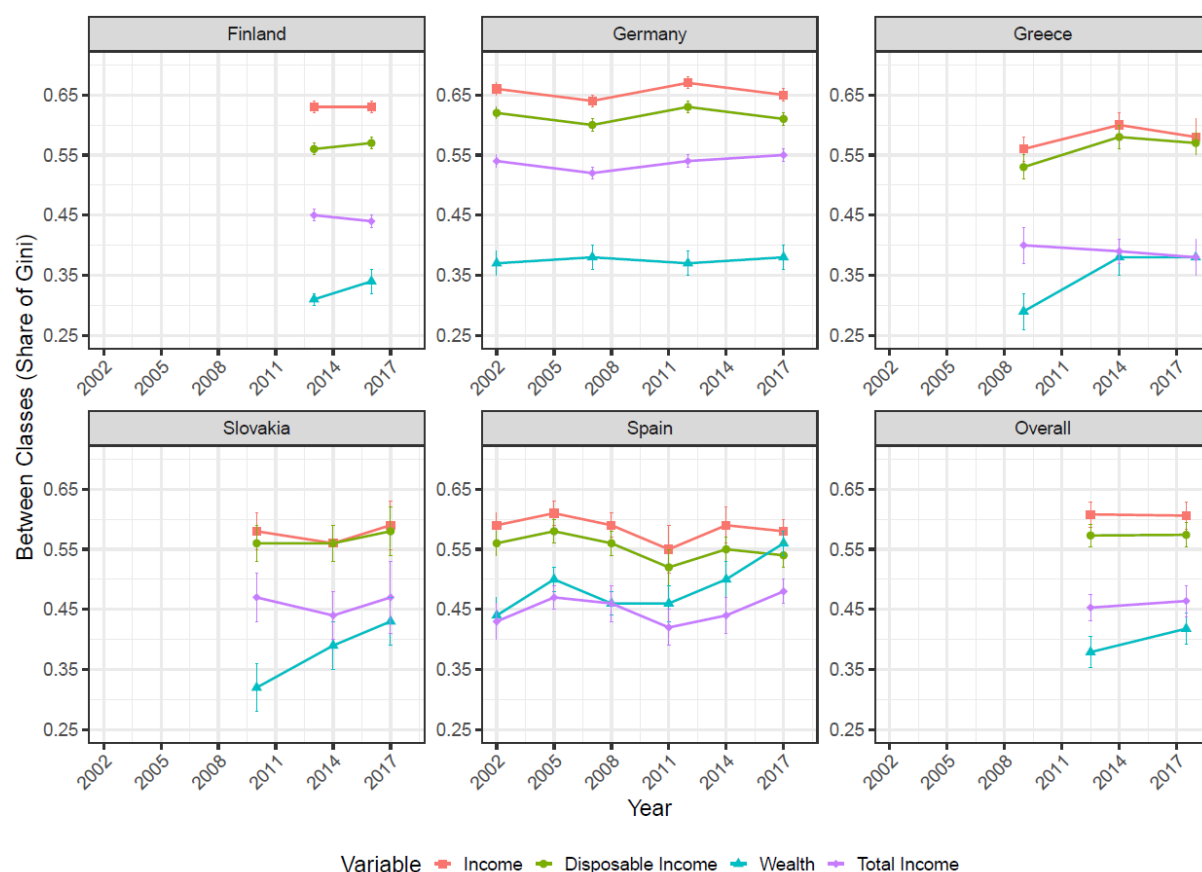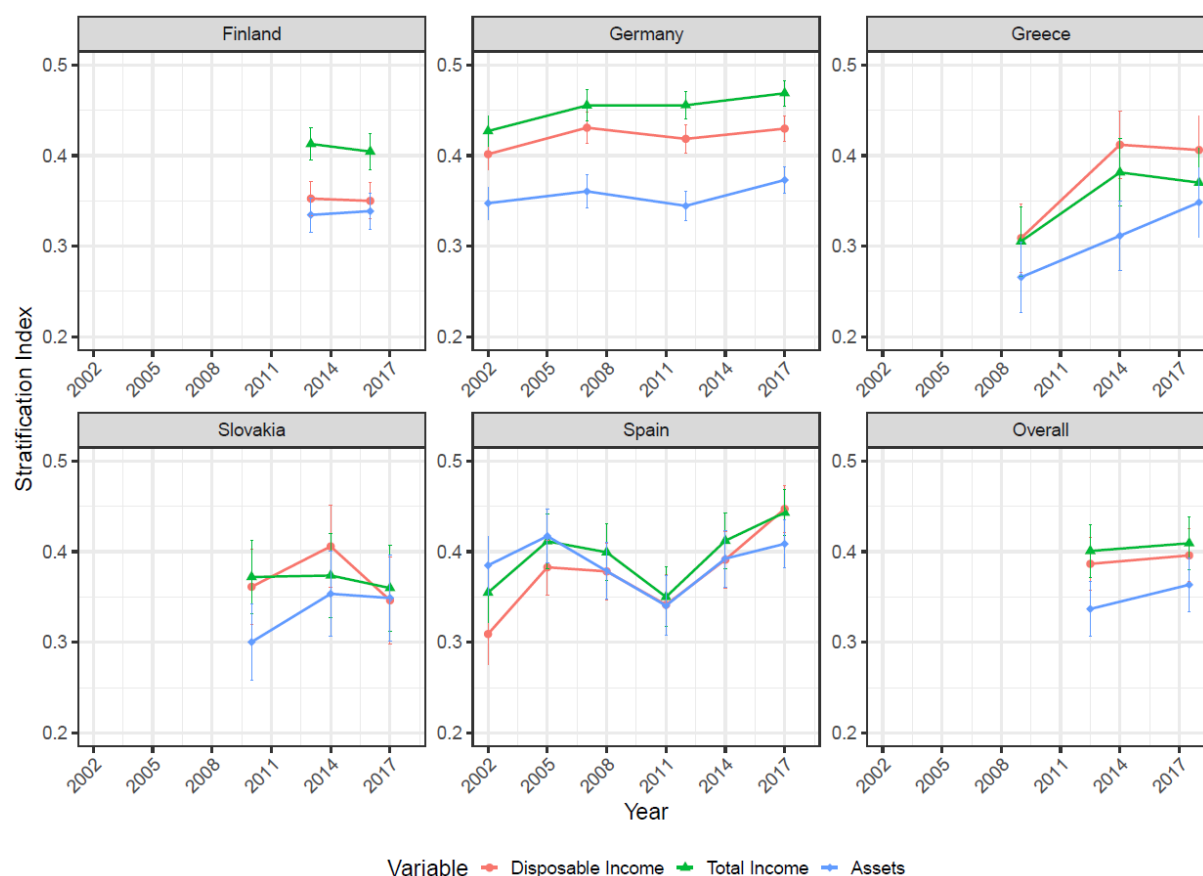
Source: Own elaboration using data from LWS. Standard errors estimated with 200 bootstrapped repetitions. "Overall" represents the average of all five countries in 2010-2015 and 2015-2020. If a country has more than one observation within a period, it is averaged out before taking the total average. Income is our main income definition, the sum of labour and capital income. Total income includes all incomes perceived by the household. Disposable income includes all incomes minus taxes and other transfers. Assets includes the sum of all financial and non-financial assets.

*Figure A7: Between-group inequality (wealth and income) by classes excluding the unemployed*
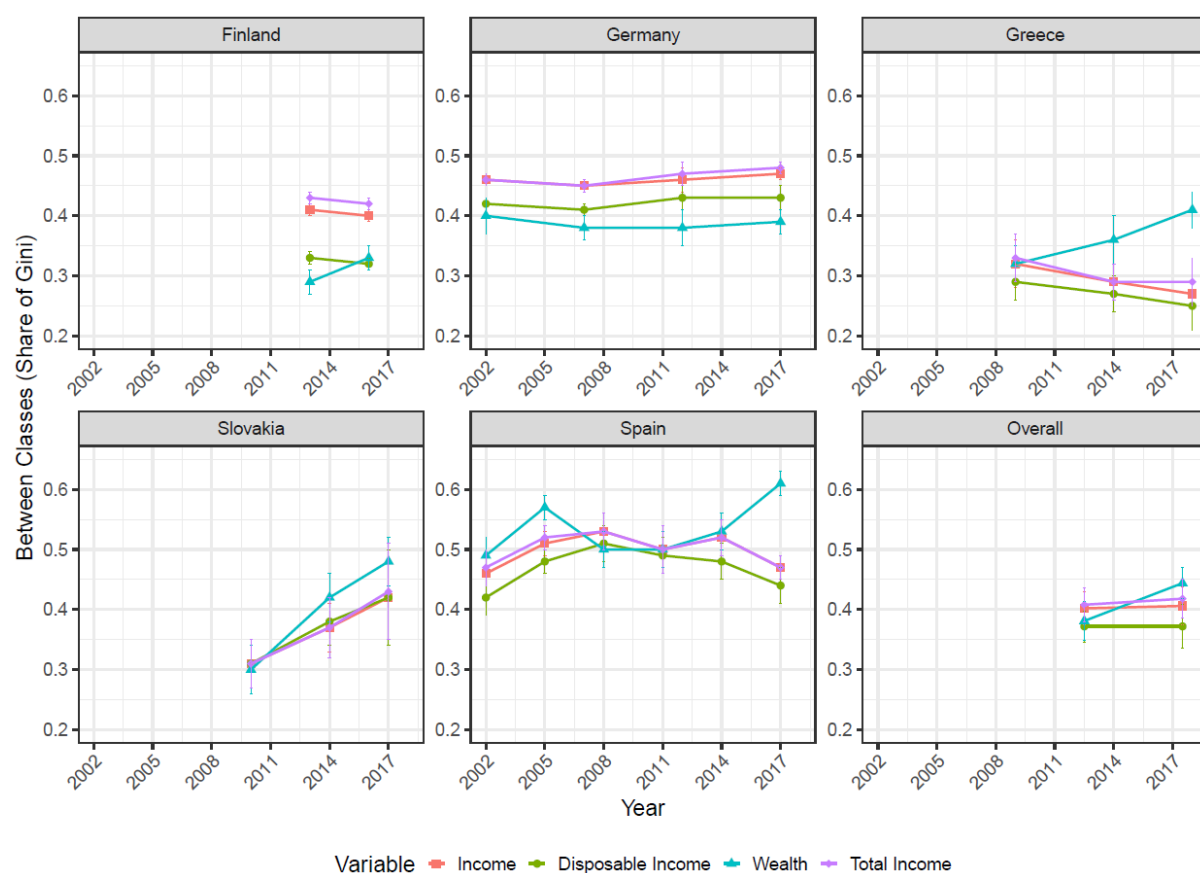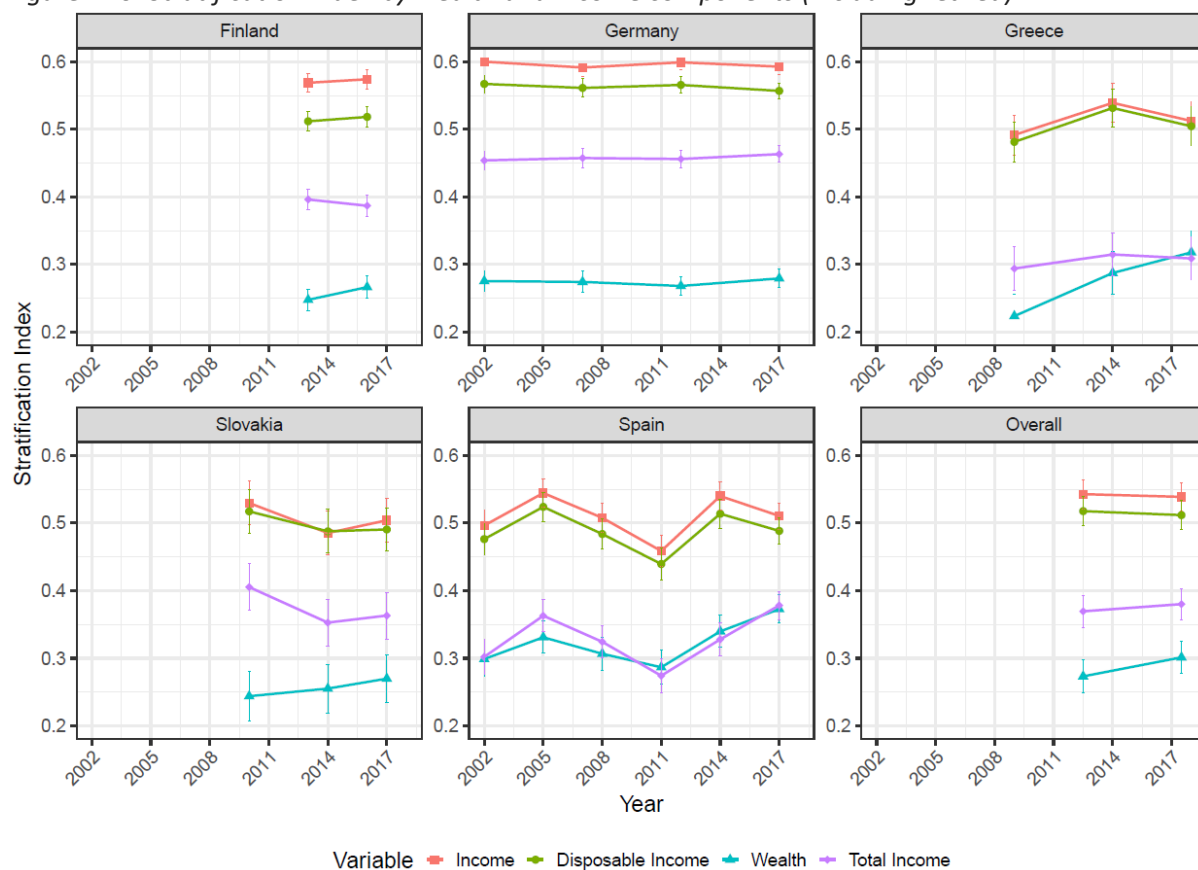


*Source: Own elaboration using data from LWS. Standard errors estimated with 200 bootstrapped repetitions. "Overall" represents the average of all five countries in 2010-2015 and 2015-2020. If a country has more than one observation within a period, it is averaged out before taking the total average. Income is our main income definition, the sum of labour and capital income. Total income includes all incomes perceived by the household. Disposable income includes all incomes minus taxes and other transfers. Assets includes the sum of all financial and non-financial assets.*

*Figure A8: Stratification Index by wealth and income components*
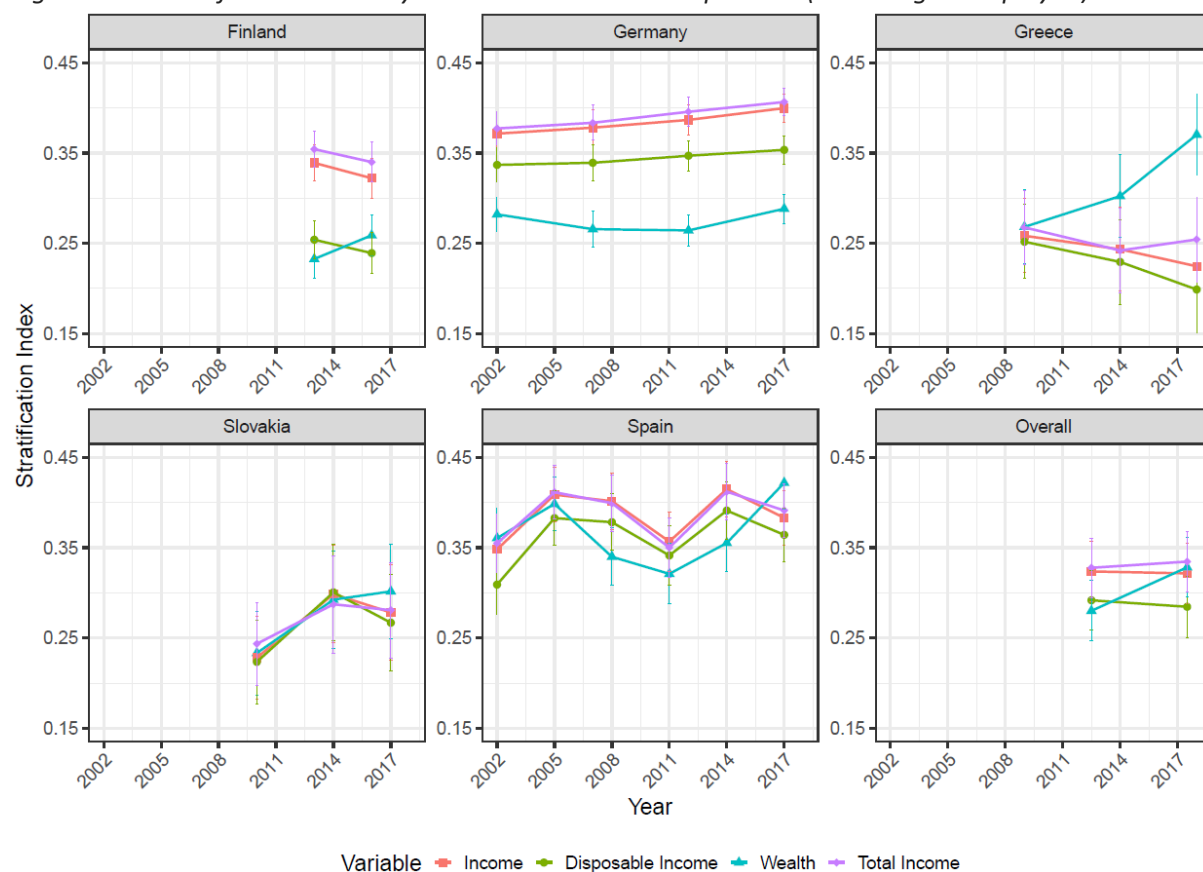


*Source: Own elaboration using data from LWS. Standard errors estimated with 200 bootstrapped repetitions. "Overall" represents the average of all five countries in 2010-2015 and 2015-2020. If a country has more than one observation within a period, it is averaged out before taking the total average.*

*Figure A9: Stratification Index by assets and other income measures*



*Source: Own elaboration using data from LWS. Standard errors estimated with 200 bootstrapped repetitions. "Overall" represents the average of all five countries in 2010-2015 and 2015-2020. If a country has more than one observation within a period, it is averaged out before taking the total average. Total income includes all incomes perceived by the household. Disposable income includes all incomes minus taxes and other transfers. Assets includes the sum of all financial and non-financial assets.*

*Figure A10: Stratification Index by wealth and income components (including retired)*



Source: Own elaboration using data from LWS. Standard errors estimated with 200 bootstrapped repetitions. "Overall" represents the average of all five countries in 2010-2015 and 2015-2020. If a country has more than one observation within a period, it is averaged out before taking the total average. Income is our main income definition, the sum of labour and capital income. Total income includes all incomes perceived by the household. Disposable income includes all incomes minus taxes and other transfers. Assets includes the sum of all financial and non-financial assets.

Figure A11: Stratification Index by wealth and income components (excluding unemployed)

Source: Own elaboration using data from LWS. Standard errors estimated with 200 bootstrapped repetitions. "Overall" represents the average of all five countries in 2010-2015 and 2015-2020. If a country has more than one observation within a period, it is averaged out before taking the total average. Income is our main income definition, the sum of labour and capital income. Total income includes all incomes perceived by the household. Disposable income includes all incomes minus taxes and other transfers. Assets includes the sum of all financial and non-financial assets.

### 7.3 Technical Appendices

#### 7.3.1 Technical Appendix 1: The social class scheme

Our 5-category social class scheme based on Moawad and Oesch (MO, 2023) and 1-digit ISCO codes closely matches (i.e., polychoric correlation at Rho = 0.86 with the 9-category ESeC) the ESeC (Rose and Harrison, 2010), which is the most widespread and standardized scheme to date (Barone, Hertel and Smallenbroek, 2022).

In our scheme, the upper- and upper-middle classes broadly correspond to the ESeC salariat, the middle class to the ESeC intermediate class, and the skilled- and low-skilled working classes to the ESeC working class. The polychoric correlation between the hierarchical 3-category ESeC and our 5-category class schema reaches Rho = 0.91.

Figures TA1-TA2 show the correspondence between our scheme and the 9-category ESeC drawing from the European Working Conditions Survey (EWCS, 2010-2015) (Eurofound, 2015), covering 26 European countries and comprising all minimum necessary information to build the ESeC that was not available in the LWS dataset (i.e., supervisory role, 4-digit ISCO-08 and number of employees in the firm to differentiate between small and large employers).

*Figure TA1: Alluvial plot between ESeC and MO class schemes*
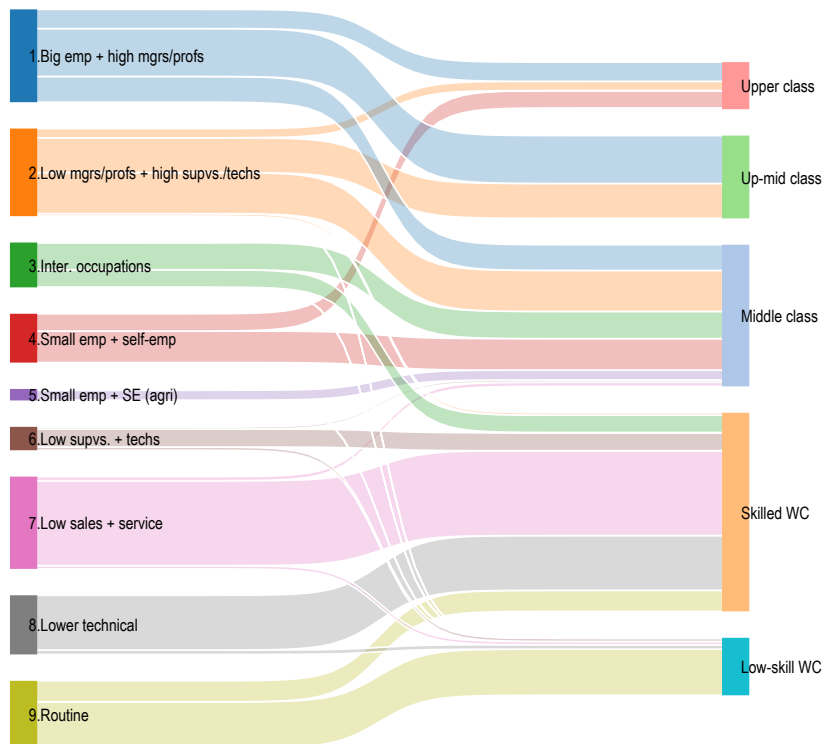


*Source: Own elaboration using data from EWCS (2010-2015). Weighted figures. n=55,603*
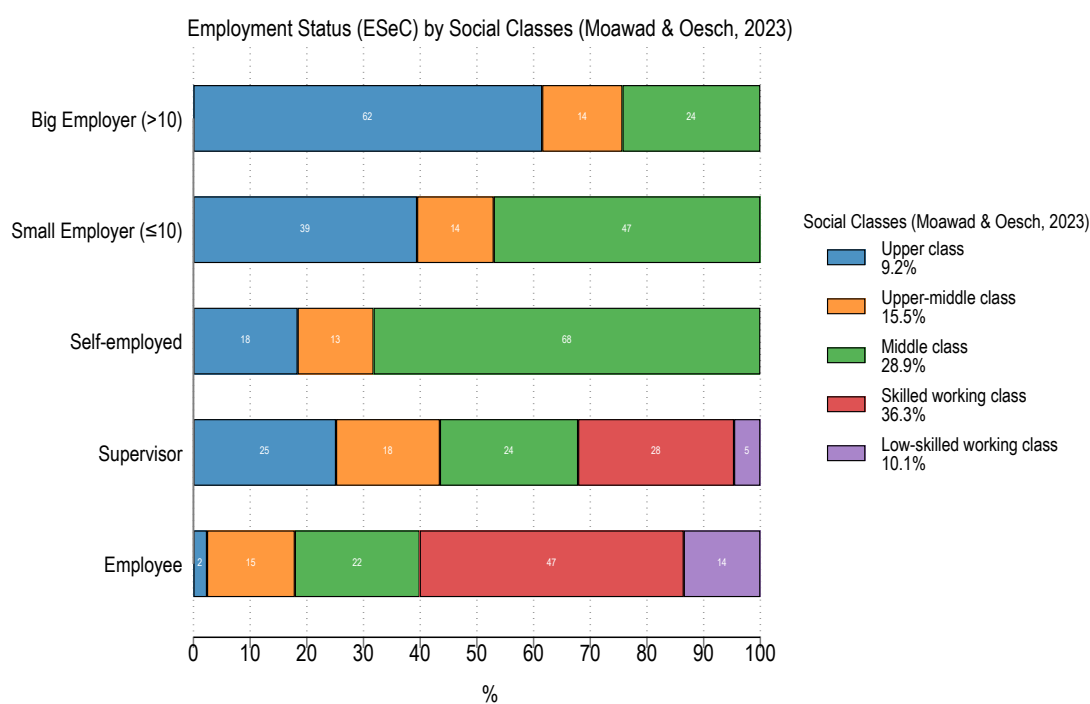
*Figure TA2: Alluvial plot between MO and ESeC class schemes*
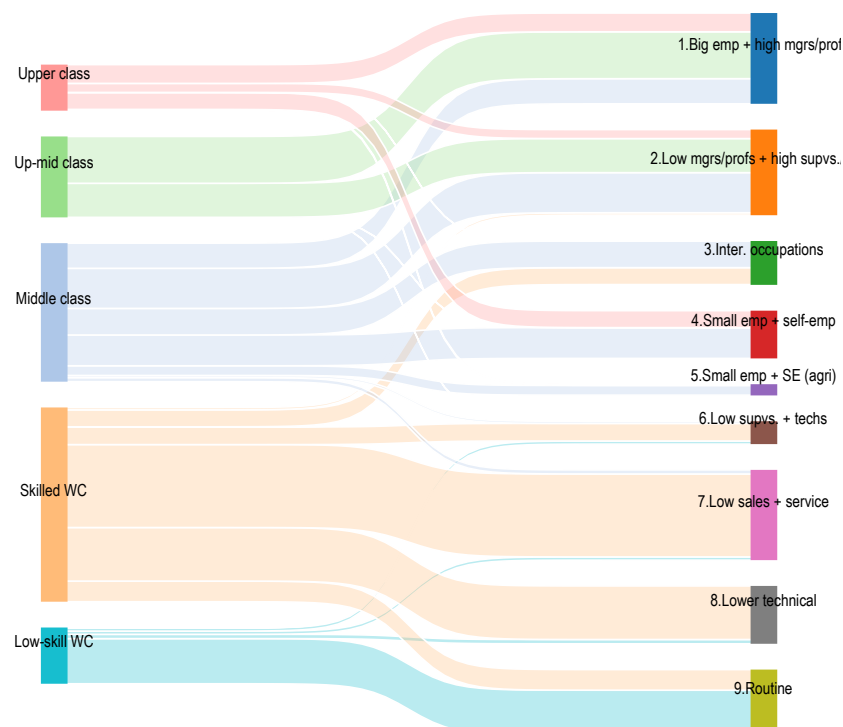


Source: Own elaboration using data from EWCS (2010-2015). Weighted figures. n=55,603

Figures TA3-TA4 display the distribution of our social classes by the employment status definitions of the ESeC scheme. In our scheme, the upper-class broadly corresponds to ESeC higher- and lower-grade managerial occupations (mostly employers and supervisors) in classes 1, 2, and 4 (1. Big employers and higher-grade managers; 2. Lower-grade managers; 4. Small employers); our upper-middle class largely overlaps with ESeC classes 1 and 2 (1. Higher-grade professional occupations; 2. Lower-grade professional and administrative occupations); our middle class mostly corresponds to ESeC classes 2, 3, and 4 (2. Lower-grade professional occupations; 3. Intermediate occupations; 4. Self-employed); our skilled working class mostly includes ESeC classes 7 and 8 (7. Lower services, sales and clerical occupations; 8. Lower technical occupations), and our low-skilled working class is mainly composed of class 9 (9. routine occupations). Finally, most small employers and self-employed in ESeC (classes 4 and 5) are allocated to the middle class in our schema.

*Figure TA3: Distribution of social classes by employment status (ESeC)*

Employment Status (ESeC) by Social Classes (Moawad & Oesch, 2023)



Source: Own elaboration using data from EWCS (2010-2015). Weighted figures. n=55,603

*Figure TA4: Distribution of employment status (ESeC) by MO social classes*

Social Classes (Moawad & Oesch, 2023) by Employment Status (ESec)
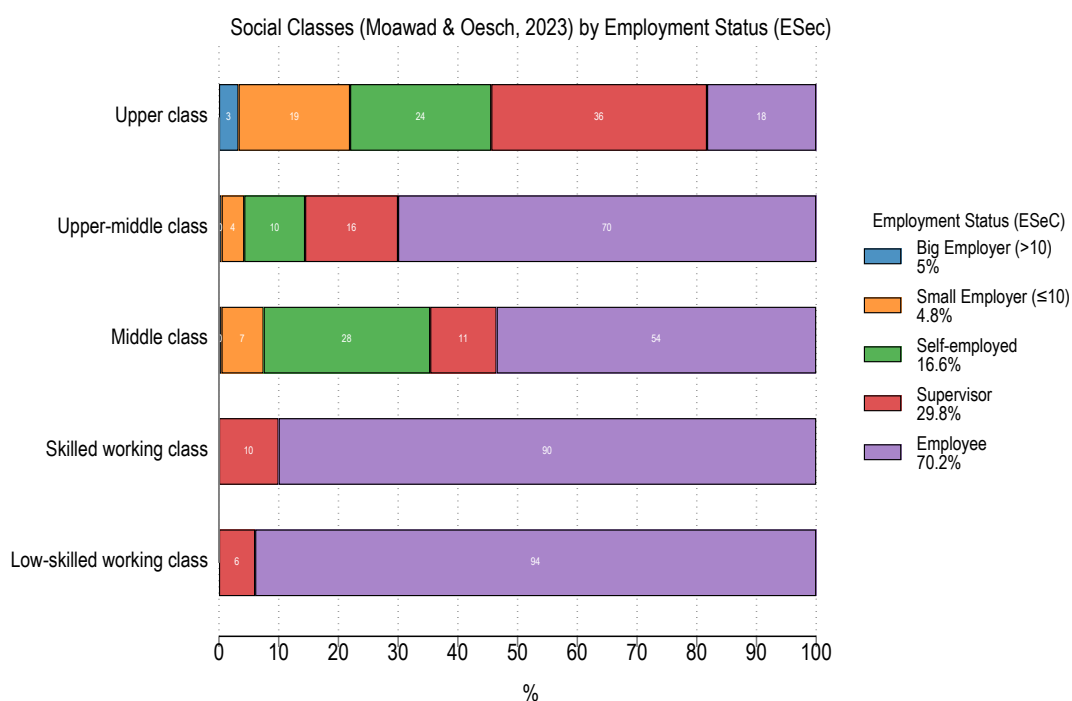


Source: Own elaboration using data from EWCS (2010-2015). Weighted figures. n=55,603

### 7.3.2 Technical Appendix 2: Gini Index and MLD

The Gini index, when applied to non-negative values, is defined between 0 and 1, where 0 represents perfect equality and 1 denotes total inequality. However, for variables encompassing negative values, like net wealth, the standard Gini coefficient may exceed 1. This boundary asymmetry hampers a direct comparison of Gini estimates for incomes and wealth, so we employ the normalization of the Gini index proposed by Raffinetti et al (2014), facilitating the direct comparison of variables spanning both positive and negative values.

The modified Gini index proposed by Raffinetti et al (2014) is defined as:

$$Gini\ (y) = \frac{1}{2N^2 \mu_{RSV}} \sum_{i=1}^{N} \sum_{j=1}^{N} |y_i - y_j| w_i w_j \qquad (1)$$

$$\mu_{RSV} = \frac{(N-1)(T^+ + T^-)}{N^2} \qquad (2)$$

Where N is the total sample size, y is the outcome of interest, w represents the weights associated to observations i and j, and T+ and T- are, respectively, the total positive and total negative outcomes.

The Gini index has an intrinsic property, as it can be decomposed into three terms: a between-group component, that accounts for differences across group-specific means, a within-group component, that reflects inequalities inside pre-defined groups, and a residual term that collects the overlapping between both, the within and between components. We analyze incomes and wealth inequalities across classes. Those between-group Gini inequality results are estimated by substituting every $y_i$ and $y_j$ in equation 1 by the weighted average outcome in the groups or classes the observation belongs to.

Between-group inequality measures the dispersion across group-specific averages. Thus, it does not consider differences in higher moments of the group-specific income or wealth distributions, although it may be influenced by outliers within each group. The Gini index cannot be fully decomposable into between and within inequalities, as it includes a residual that collects the overlapping between these factors. Despite these limitations, the Gini index is widely used as a reasonable approximation for measuring between-group inequality.

The second inequality measure we use is the MLD, is defined as:

$$MLD\ (y) = \frac{1}{N} \sum_{i=1}^{N} ln \frac{\bar{y}}{y_i} \qquad (3)$$

The MLD has an intrinsic limitation, as it is only defined for strictly positive values due to the logarithm in its formulation. This implies that it cannot be directly applied to capital incomes (which have many zeros and can theoretically achieve negative values) and wealth, which often have several negative values due to debts. Thus, the MLD results are obtained from total incomes and assets without subtracting debts. Being the logarithmic transformation non-linear, the MLD is more sensitive to inequalities in the tails than the Gini, which weighs more those observations around the median of the distribution.

### 7.3.3 Technical Appendix 3: Stratification Index

The stratification index is nonparametric, invariant to rank-preserving transformations, and independent of the absolute inequality level and distribution shape of income or wealth (Zhou, 2012). The index assesses the degree of rank segmentation between g mutually exclusive population subgroups (six in our case: five occupational social classes and the unemployed) in a quantitative ordered outcome (income or wealth). Let $y_{si}$ be the outcome of the ith member in the sth group (1 ≤ s ≤ g). Then, (1) all individuals are ranked in increasing order by the value y, thus building relative ranks

(r) of n individual observations; (2) the average ranks (R) of the g subgroups to which individuals belong are estimated. Then, we have $r_{si}$ for the ith member in the sth group, and $R_s$ for the average rank of the sth subgroup, with $n_s$ and $n_t$ denoting the number of individuals in group s and t, respectively. The stratification index (S) can be defined as the following concordance score between individuals' and subgroups' sets of ranks:

$$S = \frac{\sum_{s=1}^{g} \sum_{t=1}^{g} \sum_{i=1}^{n_s} \sum_{j=1}^{n_t} [1\left(r_{si} > r_{tj}\right) - 1\left(r_{si} < r_{tj}\right)] 1(R_s > R_t)}{\sum_{s=1}^{g} \sum_{t=1}^{g} \sum_{i=1}^{n_s} \sum_{j=1}^{n_t} 1(R_s > R_t)} \qquad (4)$$

Based on the following transformation of the above relation (Zhou, 2012), $P_{agree} = \frac{1}{2}(1 + S)$, the S index can also be expressed as the probability that the rank in the outcome of two individuals from different groups $r_{si}$ and $r_{tj}$ matches the rank of the groups they belong $R_s$ $and$ $R_t$ (i.e., the probability that a randomly selected upper-class individual is wealthier than a randomly selected working-class incumbent). This way, the index indicates the level of certainty with which one can predict the relative position or order of two individuals from different groups based on the relative position of their corresponding groups.