UNIVERSITÀ DEGLI STUDI DI TRENTO
Dipartimento di Sociologia
e Ricerca Sociale

Life chances and Life courses:
Institutional transformations and the social stratification of contemporary life course inequalities

PhD Candidate: Filippo Gioachin
Supervisor: Prof. Dr. Paolo Barbieri

Members of the evaluation committee:
Prof. Dr. Herman van de Werfhorst,
Prof. Dr. Michael Grätz,
Prof. Dr. Vitorocco Peragine

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Preamble

Choose your parents wisely: a narrative preamble

At the turn of the 1960s, in the heart of a rural village, two cousins, Daniel and Jim, were born a decade apart. Growing up in a family of farmers, Daniel, inherited the toil of the land. He attended compulsory school but the path to further educational steps remained an expensive dream. He started working early because money was tight. Swiftly transitioning from childhood to adulthood, Daniel found his chances in the growing industrial sector, wearing his blue-collar proudly. Marriage and fatherhood promptly followed, marking the milestones of traditional life. Ten years later, Jim charted a different course starting from the same rural village. After school, he had the opportunity to move to a bigger city for university. The first in their extended family to ascend this ladder of opportunity, Jim experienced upward mobility. Thanks to his *efforts*, he secured a white-collar job in a local bank, planting roots with a home and family. Jim's life journey was a testimony to the transformation of education and aspirations.

The 1980s brought forth other two cousins, Jack and Gordon, from distinct backgrounds. Cousins separated by *circumstances*. Jack, raised in a lower-class family, felt the weight of limited resources. With only his single mother's support, he navigated through education, even excelling at the university. He embarked on the fast-growing tech industry. An environment known for fierce competition. Alone and stranger to corporate dynamics, it was a challenging path. Stabilization took years, eventually culminating only in a middle-level position, delayed homeownership, and complex family dynamics. Gordon's life trajectory unfolded differently. Born into an upper middle-class family, privileges cushioned and boosted his path. With similar excellent academic achievements, he also embarked on the technological industry. Less worried about competition, Gordon showcased different resilience. With parental support ensuring housing, financial safety, and the right friendships in the industry, he navigated career uncertainties with a sense of security, bragging about his *earned* quick promotions at the Sunday golf match.

These stories, not real but relatable, echo the arc of society's transformation and how societal conditions affect individuals' destinies. From a time when social origins entirely forged life paths to a period of growing mobility fueled by educational expansion, to the modern complexity dictated by globalization, technological progress, flexibilization, and precarization of work lives. While some things get better, new forms of social inequalities still need to be thoroughly evaluated.

These fictitious lives are helpful in framing the central themes of this dissertation. These stories underline the far-reaching hand of the *circumstances* that individuals do not choose. Social origins and parental background influence life opportunities even overcoming personal efforts and abilities, also adapting to the transforming societal contexts. Not only, these short stories already pointed out that inequality and inequality of opportunity are the result of complex mechanisms operating throughout the unfolding of individuals' life courses, and this should exactly be the standpoint to effectively study the 'long veil' of social origin in our transforming society.

Introduction

Life chances in a transforming society: framing the research contribution

The study of individuals' life chances and their social stratification dates to the foundation of the sociological discipline, and only more recently became central to the economic debate. Life chances, according to Max Weber (1922), refer to an underlying social structure of opportunities, outside of individuals' control, generated by ascribed factors – or circumstances – such as sex, ethnicity, and family background. Relatedly, *inequality of opportunity* indicates that some people are more likely than others to obtain valuable and rewarding socioeconomic positions and resources, regardless of whether they are more skilled or work harder, but rather due to the interference of ascribed factors (Breen and Jonsson 2005; Roemer 1998).

From a conflict theory perspective, the reproduction of (dis)advantages is the result of the competing interests of contrasting groups, namely those with privileges to be preserved across generations and those without (Mills 1956). It is not surprising that the inequalities generated by ascribed factors are perceived as unfair and to be tackled. If life attainments were instead determined uniquely by individuals' efforts, then differences between individuals would be more acceptable, if not desirable, to functionally incentivize individuals' efforts (Davis and Moore 1945). The moral conception of just or unjust inequalities is tightly connected to the concept of *meritocratic society*: the allocation of socioeconomic positions based on merit, effort, and skills (Miller 1996).[1] This concept has been for long and is still today glorified in Western societies by liberal views and upper classes to justify existing inequality (see Markovits 2019; Friedman et al. 2023). Already in 1915 Weber stated that "*The fortunate man is seldom satisfied with the fact of being fortunate. Beyond this, he needs to know that he has a right to his good fortune. He wants to be convinced he deserves it and above all that he deserves it in comparison with others.* […] *Good fortune thus wants to be legitimate fortune"* (Weber 1992[1915]:122).

As a long series of empirical studies have demonstrated, reality is far from a meritocratic society. Numerous indicators of intergenerational socioeconomic mobility evaluate the degree of equality of opportunity measuring the strength of the association between the valuable resources of one generation (such as education, occupation, income, wealth, and overall social standing) and the valuable resources of the subsequent one (Bjorklund and Jantti 2020; Torche 2015). The most well-known picture of such condition is the "Great Gatsby curve", reporting an aggregate positive association between Gini index (indicative of distributional inequalities) and intergenerational earnings immobility (Corak 2013; Krueger 2012). An association that persists also when more

[1] The most prevalent concept of meritocracy centers on the *liberal* idea that individuals, possessing similar innate abilities and displaying equal effort, should have comparable opportunities for success in education, employment, income, and wealth attainment (Rawls 1971). This vision of a just society has been challenged by a more *radical* vision of equal opportunity (Sandel 2020), which questions the justice of rewarding innate talents over which individuals have little control. Instead, justice should reside in outcomes that uniquely reflect choices made by individuals. The debate is still ongoing, transcending its more philosophical aspects and landing on empirical reflections on the most correct measurement of equality of opportunity (Grätz 2023). The *liberal* approach – the one primarily pursued in empirical research – may inadvertently minimize the impact of systemic inequalities.

elaborate and comprehensive measures of inequality of opportunity are examined (Checchi and Peragine 2010; Filauro et al. 2023).

Social stratification in the resource allocation is a rather stable phenomenon (Erikson and Goldthorpe 1992; Featherman et al. 1975), however with noticeable resource-specific contextual differences and gradual changes over time (Chetty et al. 2014; Corak 2013; DiPrete 2020; Stuhler 2018). Already classical theoretical contributions have conceptualized individuals' social dynamics as embedded in the structural and institutional environment in a mutual relationship of influence (Coleman 1990; Davis and Moore 1945; Sorokin 1957). Intergenerational inequalities are thus shaped by the social and institutional context responsible for a different role of individuals' circumstances and family background across countries, regions, and time (Breen and Buchmann 2002). The classic example is the education system: the main channel through which socioeconomic background determines life chances (Blau and Duncam 1967; Goldthorpe 2003), which is responsible for contextual differences in the equality of opportunity (Breen and Luijkx 2004; Pfeffer 2008) and which has undergone an expansion since the 1970s that has substantially (but not entirely) reduced origin-related inequalities in educational opportunities (Breen and Jonsson 2005; Breen et al. 2009; Schofer and Meyer 2005; Triventi 2013).

Together with the educational expansion, several other major societal transformations characterized the recent decades, influencing the unfolding of individuals' work life trajectories and the processes of social stratification. De-industrialization, technological advancement, global competition, and labor market institutional restructuring misaligned individual trajectories from traditional patterns, today featuring greater variability, (Brückner and Mayer 2005; Mills and Blossfeld 2013). Life and work histories appear thus more uncertain, less predictable, and more exposed to life-course risks and volatility (Whelan and Maître 2008; Western et al. 2012), even within institutional contexts generally serving as idealtypes of security (Breen 1997; Barbieri 2009; Buchholz et al. 2009; Kalleberg 2011). At a more aggregate level, this is confirmed by the dramatic growth of the transitory component of income inequality (Gangl 2005; Moffit and Gottschalk 2009), which measures the influence of volatile changes on the total dispersion of valuable resources in a society. While some scholars read these transformations as the beginning of 'post-modernity', in which individualization and generalized exposure to insecurity deteriorate the principal mechanisms of social stratification (Beck 1992; 2008), others theorize persisting, or better evolving, mechanisms of stratification of the increasingly misaligned individuals' work-life trajectories (Brückner and Mayer 2005; Mayer 2004).

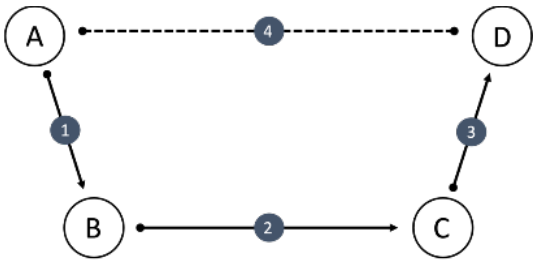
Against this backdrop, the aim of this dissertation is to investigate unequal opportunities and life chances, particularly the role of social origin on individuals' labour market achievements in contemporary societies. Considering the structural and institutional transformations of the last decades impacting not only educational opportunities but also the stability, predictability, and security of individuals' work-life courses, how do structural and institutional conditions and origin-related inequalities interact? Are we witnessing greater equality of opportunity? Is social origin losing the grip of individual life chances, as predicted by post-modern visions? Or does social origin adapt to societal transformation, finding a way to reproduce and consolidate advantaged and disadvantaged life opportunities?

Obviously, this is not a novel question in academic and political debates, and we count numerous prominent research efforts. In this dissertation, this broader research question serves as the starting point for framing the specific empirical contributions. Not only, the aim of this introduction is also to provide a broader framework to read intergenerational inequality in the light of contemporary social changes. Following the Coleman's boat framework, the study of evolving intergenerational inequalities in contemporary society requires a thorough consideration of both the macro-micro links (Coleman 1990) and the underlying micro-level mechanisms, their evolution, and how they operate along the unfolding of individuals' life courses and life junctures. While a large amount of existing knowledge on social origin and social stratification comes from summary snapshots of individuals' lives, we emphasize the necessity of adopting a life course perspective to reach a comprehensive understanding of how life chances are socially differentiated.

1. Social change and intergenerational dynamics: a macro-micro-macro framework

Sociological inquiry is primarily interested in problematizing and explaining the emergence, persistence, and transformation of large-scale social facts and the consequent implications for individuals' everyday lives. Therefore, it is possible to identify macro- and micro-level social dynamics influencing each other. To provide a comprehensive framing of the research problem of this dissertation, which comprises macro level social changes and micro level life course implications, we resort to the Coleman's boat as *a genuine tool of production* (Mills 1959). This tool, as well as this discussion, is not meant to exhaustively address every aspect of a social problem; rather, it aims to illustrate specific explanatory ideas (here functional for the dissertation), articulate assumptions, and principally shed light on the micro foundation of macro-level social problems (Hedstrom and Swedberg 1988).

Figure 1: Graphical representation of Colemans' boat.



The underlying intuition is presented in Figure 1. Nodes A and D indicate macro, supra individual, social facts: an aggregate background (structural, institutional, cultural) condition (*A*), and an aggregate outcome (*D*), related by some sort of association. According to Coleman (1990), to provide a theoretically satisfactory explanation for large-scale associations, a theoretical proposition must be complemented by an account of micro-level dynamics influenced by the macro-level starting point (the "internal analysis of system behavior" in Coleman's terms). To move from A to D, the reasoning should first consider how aggregate exogenous factors influences micro level conditions, or better the micro level pre-conditions of action (*A-B*; *situational mechanisms*); how these conditions predefine the borders within which behavioral outcomes emerge (*B-C*; *action-formation*

mechanisms), via rational or less rational actions (bounded rationality: Simon 1957; 1990; Boudon 2004; Esser 2015; Kronemberg 2014); and how from micro level outcomes, novel aggregate outcomes (*C-D*; *transformational mechanisms*) or even new 'rules of the game' in turn generating new micro level properties, derive. The arrows indicate explanatory relations based (often) on causal dependencies, or more in general, on *difference-making* dynamics that parsimoniously collect all ways in which two nodes can be related (Ylikoski 2013; 2016).[2]

Before addressing the precise question of this dissertation, we start with a simple theoretical framework that not only helps in making the scheme more empirical, but also provides the theoretical baseline to frame intergenerational inequalities in relation to aggregate conditions and transformations. Institutional conditions and power relations of a society, as well as their transformations, define the opportunities and constraints of transmission of family resources and values (macro-micro transition), subsequently influencing individuals' educational and work achievements (micro-micro transition), and then determining socioeconomic inequalities that generate, reproduce, or transform norms and institutions that foster the acceptance of new societal hierarchies and mechanisms of societal placements (micro-macro transition).
As a theoretical exercise for the validity of the schema, one can easily incorporate the role of educational expansion as the starting point (A), intervening in the chances of intergenerational transmission of resources by reducing the costs of education for the lower societal strata (B), resulting in greater educational (and labour market) achievements (C), and on greater equality of opportunity and greater societal motivation to improve one's starting condition at the macro level (D).

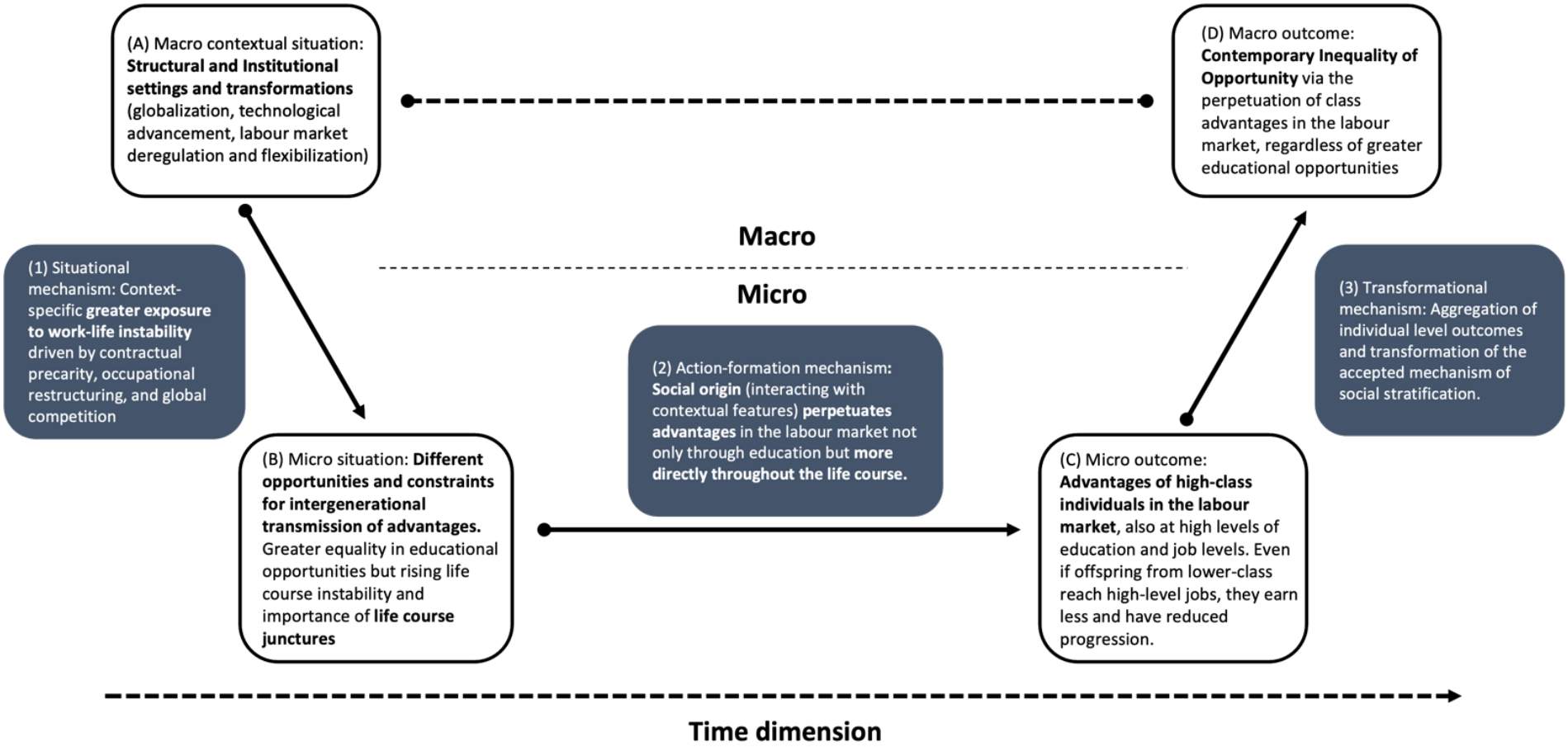
Shifting to the broader research question detailed above, Figure 2 graphically summarizes the underlying theoretical proposition that links, under the Colemans' schema, institutions and social transformations impacting individuals' life courses to the reproduction of intergenerational inequalities of opportunities, necessarily passing through micro-level theories of action (which actions, of course, take over the unfolding of individuals' life courses).
In brief, macro-level institutions and structural transformations affect the stability and security of individuals' work-life trajectories; in turn, influencing the conditions and the strategies through which social origin[3] can positively (or negatively) determine individuals' life chances. If, for instance, access to tertiary education is today easily accessible to the lower societal strata, families of higher origin find alternative and more direct ways to maintain socioeconomic advantages in labour market outcomes across generations (*effectively maintained inequality theory*: Lucas 2001; 2010) – obviously within specific institutional arrangements – thereby perpetuating inequalities of opportunities. The macro-level outcome emerges not only from an aggregation of micro-level outcomes, but also from a transformation of the accepted and legitimate mechanism of social stratification. Borrowing Weber's words, the *legitimate fortune* of advanced society has become a culture that encapsulates socioeconomic success as individual thriving in the flexible (and precarious)

[2] Therefore, there is no need to include multiple arrows indicating existing heterogeneous relations dependent on the heterogeneity of micro-level agents (i.e. the effect of macro conditions affects young, old, rich, poor individuals differently).
[3] We refer to social origin (in the action formation mechanism) as a single micro-level grouping element of different actors and dynamics that, as we will later address, can involve individuals embedded in their family of origin, but also employers, firms, and occupational cultures that perpetuate class advantage.

labor market, in which the deserving and meritorious are the few wealthy enough to sustain (or elude) the required hard work in today's competition (Markovits 2019). As such, the new de-standardized and precarious forms of work life become (and persist as) the new accepted and legitimized ‘rules of the game’, often with the same winners and losers, and so inequality of opportunity persists.

From this conceptual tool, we now unpack each node and arrow in greater detail, as each of them refers to specific debates and related literature. In the following, each *black box* will thus be opened to provide an up-to-date – surely not exhaustive – consideration of existing theories and empirical evidence to enrich the explanatory framework. Finally, from this framework stems (and will later be presented) the four empirical contributions of this dissertation, from which we conveniently borrow some theoretical reflections for this introduction.

Figure 2: Colemans' boat summarizing the overall theoretical and explanatory framework.



2. Structure, institutions, and inequality of opportunity

We begin by considering the macro-level relationship between structural and institutional conditions, their transformations, and our macro-level outcomes, such as the inequality of opportunity expressed through intergenerational disparities.

Stratification research has long focused on how socioeconomic mobility takes place and evolves across time and different societies. Some perspectives suggest a 'common social fluidity'. Also known as the Feathermann, Jones, Houser (FJH, Feathermann et al. 1975) hypothesis, this perspective predicts that society featuring a nuclear family system also share common patterns in mobility chances. More recent approaches have tested and challenged the common social fluidity hypothesis, emphasizing the role of macro-level settings and their variations for micro-level life chances and aggregate degrees of educational, occupational and income mobility (Breen and Luijkx 2004; Bukodi et al. 2020; Chauvel and Barhaim 2016; Corak 2013; Emmenegger et al. 2012; Erikson and Goldthorpe 1992; Grusky and Hauser 1984; Hertel and Groh-Samberg 2019; Lipset and Zetterberg 1959; Ishida et al 1995; Landersø and Heckman 2017; Jerrim and Macmillan 2015; Pfeffer 2008; Wright 2008). Before addressing sources of cross-national variations, we provide a general overview of the major indicators of aggregate intergenerational (im-)mobility, as apparently simple methodological choices have demonstrated important implications on the contextual and temporal variations of socioeconomic mobility.

2.1 Measuring aggregate intergenerational mobility

From an aggregate perspective, several indicators have been proposed to measure the degree of mobility across generations, which are dependent on the resources of interest and their analytical operationalization (for a detailed overview, see Björklund and Jäntti 2020; Torche 2015). Given the interest of this dissertation, and for space reasons, we restrict the focus to the intergenerational reproduction of labour market achievements, such as social class – indicative of occupational-based socioeconomic level – and income measures. Furthermore, we complement this list considering a more comprehensive approach such as the sibling correlation.

Starting from social (class) mobility, scholars refer to social (im-)mobility as the degree of (dis-)similarity in social class position across two generations. Social class groups occupations based on their underlying structural employment relations, which are structural factors determining levels of income and occupational security, stability, and prospects (Bukodi and Goldthorpe 2018; Erikson and Goldthorpe 1992; Goldthorpe and Mcknight 2006; Rose and Harrison 2007). Absolute mobility indicates the overall changes in the marginal distribution of classes across generations. Its degree is in part determined by structural mobility driven by structural processes such as deindustrialization, urbanization, globalization, and technological advancement (Breen 2004), and relative mobility, which measures differential chances (or odds) of reaching certain social classes given a specific class of origin, net of the structural change. A high degree of occupational relative mobility is indicative of equality of opportunity, whereas low relative mobility indicates the perpetuation of occupational (dis-)advantages across generations.

Economic or income mobility measures the association between parental earnings or income and offspring's monetary attainment. The income of the two generations is generally measured around occupational maturity or using measures of lifetime/permanent income to reduce measurement and attenuation (or life cycle) biases. Specifically, income elasticity – the workhorse of income mobility measures – considers the regression coefficient of parental (log-transformed) income on children's income, expressing the expected percentage increase in offspring's income given one percent increase in parental income. Alternative measures of economic mobility are derived from the correlation between the two generations incomes or the regression coefficient between the rank-transformed (percentile) income position of the two generations. Nevertheless, attempts to improve existing measures have not yet stopped (Mitnick 2020; Mitnick and Grusky 2020). Finally, also occupational mobility can be measured using metric variables and employing the techniques discussed for income mobility. Existing gradational rankings of occupations are meant to capture occupational (perceived) prestige (see SIOPS - Standard Occupational Prestige Scale; Ganzeboom and Treiman, 1996) or occupational socioeconomic status as the extent to which a certain occupation mediates the association between education and income attainments (see ISEI - International Socio-economic Index of Occupational Status; Ganzeboom et al. 1992).

Parental occupation and parental income do not entirely capture all the channels through which family background influences individuals' life chances and resources attainment. For instance, children's occupation or income is not only the result of parental occupation or income, but also education, wealth, genetic makeup, rearing environment, non-financial investments, and local community factors might be jointly at play. A more comprehensive approach that simultaneously account for the aforementioned factors is the *sibling correlation* approach (Sieben and de Graaf 2001; Solon 1999). This indicator (empirically employed in the dissertation) measures the total (or gross) family background effect as a proportion of the total inequality in each life outcome attributable to family background (and local community) factors common between siblings and not between two randomly picked individuals (Björklund and Jäntti 2020).

Finally, mobility analysis in all disciplines often refers to the *influence* or *effect* of social origin and seeks to correct potential confounders in the intergenerational relationship, suggesting intrinsic causality. However, these measures have clear descriptive goal, which should not be undervalued. The main issue with causal estimation lies in the inherent difficulty of construction of valid and testable counterfactual treatment exposures that can be generalized to the whole population, not like existing attempts that exploit exogenous policy or geographic variations that, albeit informative, limit the generalizability of the result (for instance, Acciari et al 2019). Noteworthy are the initial attempts by Lundberg, Molitor and Brand (2024) to discuss causality assumptions and construct robust estimates of causal mobility that can not only correct more classical descriptive estimates but also open up complementary research avenues. [4]

[4] Of course, the list presented here is not exhaustive. From an aggregate mobility point of view, we do not consider, for example, the aggregate ex ante and ex post (IEO) measures of inequality of opportunities, which are widespread almost exclusively in economic studies. In addition, given the focus of this section, the techniques and approaches used at the micro level, which underlie the evidence discussed in section 4, are not discussed. In micro-level perspective, common practice is to compare individual achievements in terms of education, employment, income, and wealth (both sectional and developmental trajectories) between individuals coming from different family backgrounds, such as highly vs. low educated; service class or working class and so on. Also in this case, social stratification scholars tend to refer to the

2.2 Economic inequalities and intergenerational mobility

The first source of cross-national differences in intergenerational mobility is the level of distributional inequalities. Already presented, the Gatsby curve captures the inverse relationship between inequality and income elasticity (Solon 2004). Accordingly, Scandinavian countries feature the lowest levels of distributional inequalities and the highest levels of intergenerational mobility, whereas highly unequal countries such as United States, the United Kingdom, and Italy have also stronger intergenerational income association (Björklund and Jäntti 2009; Blanden 2013; Chetty 2020; Corak 2013; Jäntti et al. 2006). To give an idea of the differences, Corak estimated in his seminal work (2013), an elasticity of about .2 (2% higher earnings per 10% increase in parental income) among Scandinavian countries, between .3 and .4 for Germany and France respectively, and finally about .5 in Italy, the United States, and the United Kingdom. The negative influence of distributional inequalities on relative mobility chances is also found *within* countries (Chetty et al. 2014; Havari et al., 2021), as well as (to a lower extent) when using sibling correlation as mobility measure for income attainment and educational achievements (Grätz et al. 2021; Mazumder 2008; Präg et al. 2022; Schnitzlein 2014). Studies indicate that almost half of income and educational inequality can explained by shared family background factors in most of the Western countries but the more mobile Scandinavian ones. According to DiPrete (2020), distributional inequality affects intergenerational mobility because it *(i)* unequally determines the distribution of resources across families and the local environment, *(ii)* unequally sorts individuals within local environments, and *(iii)* determines the strength of the effect of family and local communities on children's life course outcomes.

However, such inverse relationship does not always hold true. Income elasticity, as for absolute occupational mobility, is affected by changes in inequality across generations, and if mobility is measured using income correlation or rank coefficients, the Gatsby curve appears more modest (Chauvel and Hartung 2016). For instance, Acciari and colleagues (2019) estimated a rank-rank slope of parent-child income in Italy of 0.22, which is much closer to the 0.18 in Denmark than the 0.34 of the United States.
Also sociologists have investigated the association between distributional inequality and occupational mobility for decades, with mixed results (DiPrete & McManus 1996; Hout 2004). While some substantial variations are visible for absolute mobility, no (Erikson and Goldthorpe 1992) to little (Breen 2004; Breen and Luijkx 2004; Breen and Muller 2020; Bukodi et al. 2020) contextual variation emerge for relative class mobility. At the most, it is possible to distinguish between countries with high and low mobility chances rather than linearly following aggregate economic indicators. A seemingly Gatsby-like relationship emerges only if between-class inequality (summary class-based inequality in education, wages, and income attainments) is taken as measure of distributional inequality (Hertel and Groh-Samberg 2019). Regardless, Scandinavian countries still appear to be the most mobile (Breen and Jonsson 2005; Esping-Andersen and Wagner 2012).

A potential explanation for this different inequality-mobility association may rest on (potentially unobservable) factors not directly associated with social class that generate within-class income dispersion (Blanden et al. 2013). If such factors are also correlated across generations, the result is

"effect" of social origin; yet intergenerational mobility dynamics are by their own nature an "association," because circumstances at birth are not chosen and individuals cannot be randomly assigned.

greater class mobility than earnings mobility (Bjorklund and Jantti 2000). This may be true for some paradoxical cases, such as the United States, which shows high class mobility (comparable to the Danish one) paired with one of the strongest intergenerational income rigidities. In this vein, recent evidence indicates that mechanisms determining occupational and income attainment largely (around 70%) but do not fully overlap, yet traditional measures of family background explain only marginally both the overlapping and residual components (Karlson and Birkelund 2023). From this evidence, two relevant micro-level reflections arise. First, the influence of social origin is not uniquely a matter of parental education, occupation, income, and wealth, but inequalities can thus be expected also at comparable levels of parental resources, and potentially arising from stratified everyday activities (i.e., parenting, networks). Second, considering the growing within-classes inequalities (Janietz and Bol 2020; Kim and Sakamoto 2008; Song et al. 2019), one may expect even greater detachment between the influence of social origin on individuals' class and income attainments in the future.

2.3 Institutions and variations in intergenerational mobility

Distributional income inequality and other countries' economic performance should not be considered as exogenous factors. Rather, they originate under specific institutional conditions (DiPrete 2006). Institutions indeed define the *rules of the game* (Thelen 2012) that express conditions, norms, laws, and practices. Scholars point to educational policies, labour market regulation, and the redistributive role of welfare state as the major determinants of cross-national differences in intergenerational inequality, as they affect individuals' life chances as well as the role of social origin since childhood (Esping-Andersen 2004; Heckman 2006; Kailaheimo & Erola 2016), during specific life course transitions such as educational transitions or school-to-work transitions (Macmillan 2005; Müller and Gangl 2003), and critical life events such as job shifts and unemployment (Ballarino et al. 2021). Hence, we consider the influence of institutions and their transformations in light of the processes that shaped today's labour market structure.

Since the end of World War II, Western economies experienced first a rapid industrialization, modernization, and urbanization processes, which have been followed in recent decades by rising post-industrial, knowledge (and technology) oriented production systems. From an absolute mobility perspective, these transformations vitally impacted upward mobility chances, as new middle- and upper-class jobs largely replaced the agricultural sector (Erikson and Goldthorpe 1992; Van de Werfhorst 2007). Parallel to these transformations, the educational expansion increased length of compulsory education and promoted equal and open access to postsecondary education, thereby positively impacting mobility chances (Beller and Hout 2006; Breen 2010; Breen and Jonsson 2007; Breen and Luijkx 2004; Pfeffer and Hertel 2015). The educational system is among the first institutions that individuals encounter in their life courses acting as a sorting machine for future stratified labour market trajectories. There are important contextual differences in the intergenerational mobility associated with different educational settings. One example is the trade-off between labour market efficiency and intergenerational inequality found in countries with high degrees of educational differentiation (i.e., tracking) (Bol and Van de Werfhorst 2013; Van de Werfhorst and Mijs 2010).

Moreover, in line with modernization theory (Blau and Duncan 1967; Hout 1998; Parsons 1960; Treiman 1970), structural transformations and educational expansion were expected to place greater emphasis on educational credentials, foster meritocratic selection, skill-based recruitment practices, ultimately resulting in lower intergenerational reproduction (Brunello and Checchi 2007; Pfeffer 2008). However, a countervailing argument postulates that educational expansion and subsequent educational inflation have weakened the signal of educational credentials and strengthen intergenerational inequality, or at least counterweight the positive effect of the expansion (Breen 1997; 2004; Bukodi et al. 2020; Erikson and Goldthorpe 1992; Grusky and DiPrete 1990; Goldthorpe and Mills 2008; Hout 2018; Knigge et al. 2014). When the demand for highly qualified employees is lower the actual supply, the occupational advantage provided by additional schooling decline, leaving ample room for ascribed features (Breen and Goldthorpe 2001; Goldthorpe and Jackson 2008) in stratified individuals into correct skill match or overeducated and less rewarded jobs.

Moreover, welfare state redistributive efforts are an additional reason for contextual differences in intergenerational inequality. Chances of intergenerational mobility are generally higher in social democratic welfare states; the corporatist regimes of Continental Europe follow, and liberal (United States and United Kingdom) and southern-familialistic (Southern Europe) countries are the tailback (Beller and Hout 2006; Breen and Luijkx 2004; Esping-Andersen 1990; Esping-Andersen & Wagner 2012; Jäntti et al. 2006). The main argument for greater mobility in Scandinavian countries – and the gradually lower mobility in the other regimes – is based not only on more equal educational opportunities but also on the comprehensive and universal provision of social protection that equalizes life conditions and shelter from (child) poverty and deprivation, concurrently reducing dependence on the market (*decommodification* – which instead is the case of the strongly commodified liberal regimes) and families (common in Southern European familialistic countries) (Beller and Hout 2006; Esping-Andersen 2015; Sorensen 2006). An explicative example comes from the Italian familialistic society. The lack of adequate support for mothers reduces the career orientation of upper-class early mothers that – thanks to their parental background – select themselves into less demanding (and rewarding) occupations, thereby experiencing intergenerational downward mobility and mistakenly inflating social mobility trends of Southern European women (Gioachin and Zamberlan *forthcoming*).

Finally, the legislation shaping labour market competition and recruitment-firing processes – the employment protection legislation (EPL) – has also an influence on individuals' intragenerational trajectories and on the strength of social origin (DiPrete et al. 1997; DiPrete 2002). Highly regulated labour markets with high degrees of unionization and internal labour markets appear to be detrimental for young workers compared to those already inside the labour market (Barbieri 2009; Barbieri et al. 2016; Breen 2005; Gebel 2010; Wolbers 2007). The greater the existing barriers, the greater the potential role of ascribed characteristics in favoring labour market stabilization, but aggregate results are somewhat inconclusive (see, for instance, Checchi and Peragine 2016). Moreover, in the last decades, Western economies have undertaken a process of flexibilization of employment relations. The aim was to optimize labour market turnover, tackle rising unemployment, and address firms' need for quick size- and skill adjustments to cope with market fluctuations driven by rampant global competition and technological change (Breen 1997; Esping-Andersen and Regini 2000; Eyck 2003). While in Liberal contexts, where job protection was already low, labour market adjustments have leveraged wage flexibility, in other European contexts, institutional adjustments have leveraged job

security with the introduction of fixed-term and other atypical employment contracts (DiPrete et al. 2006). In Scandinavian countries, a relatively high level of labor market flexibility was paired with generous benefits and re-employment programs (*flexicurity),* whereas Mediterranean and Continental contexts experienced a labour market deregulation that was *partial* (focus on labour market access and ignoring dismissals) and *targeted* (younger workers and unskilled occupations), without altering the high level of job protection of labour market insiders (Barbieri 2009; Kahn 2010; 2012; Bentolila et al. 2019; Goñalons-Pons and Gangl 2020). Therefore, in these contexts, institutional transformation has led to the dualization of a safe and secure core workforce and precarious outsiders who serve as cushions during market fluctuations and experience lower employment and welfare security (Barbieri et al. 2016; Barbieri and Cutuli 2018; Blossfeld 2008; Gebel and Giesecke 2011; Palier 2010).

Overall, structural and institutional conditions emerge as the primary factors influencing the patterns of intergenerational mobility. As reviewed, transformations in the labour market structure and educational system led to significant changes in mobility dynamics. However, more recent social changes responsible for the insecurity and unpredictability of individuals' work-life trajectories – as those just described – can still be widely explored in connection with research on social stratification.

3. Social change and (unstable) individuals' life courses

We now consider how aggregate transformations determine the microlevel unfolding of individuals' trajectories, to understand how contemporary structural and institutional conditions influence intergenerational mobility dynamics. A greater comprehension of today's **situational mechanisms** will enable us to define the contemporary boundaries (*pre-conditions*) in which social origin can operate to reproduce advantages and disadvantages.

As a starting point, the implications of de-industrialization, global competition, and labor market restructuring on socioeconomic inequality can be observed in the increasing labour market segmentation and employment precarity, resulting in increasing mismatch between employment paths and conventional employment models (Brückner and Mayer 2005).
With the advent of large-scale industrialization and the so called "Fordist equilibrium", work-life trajectories conformed and standardized, with precise life phases, reduced heterogeneity, stable lifetime employment ensuring income security, and a primary role of the nations' welfare state in cushioning the rare negative life events (Mayer and Müller 1986; Brückner and Mayer 2005; Levy 2013). Thus, institutional and structural settings were the principal reasons for different life course trajectories (Mayer 2004; Möhring 2016). The stability of these trajectories began to crumble concurrently with the discussed macro level transformations. On the one hand, growing global competition, offshoring, technological displacement, and the decline of labor unions have undermined the likelihood of long-life stable careers. Meanwhile, rising flexibility and contractual instability also threaten the stability of individuals' careers (Breen 1997; Barbieri 2009; Buchholz et al. 2009; Kalleberg 2011; Oesch 2013; Barbieri et al. 2019a). Indeed, short job tenures and rapid job shifts, career breaks and unemployment spells, repeated episodes of contractual precarity and entrapment in peripheral job positions represent the labour market risks, more frequent nowadays, that are held responsible for work, life, and income unpredictability (Barbieri and Cutuli 2018; Fauser 2020; Gangl 2006; Manzoni and Mooi-Reci 2020; Manzoni et al. 2014; Mauw and Kalleberg 2010; Westhoff 2022; Western et al. 2012).

Against this backdrop, sociological inquiry has questioned the extent to which individual paths became de-standardized, across contexts, cohorts, and social groups. Past works have primarily focused on the age standardization of "classic" life events or phases like school-to-work transition and family formation; on the exposure to single dimensions of life-course instability, as well as on specific triggering events (see Barbieri and Bozzon 2016; Brückner and Mayer 2005; DiPrete 2002; Mayer and Hillmert 2003; Mayer 2004; Whelan and Maître 2008; Vandecasteele 2011). Recently, more comprehensive approaches summarizing the degree of dispersion and instability of individuals' careers have highlighted greater variability and instability in employment and family trajectories for young adults of more recent cohorts, depending on the influence of nation-specific institutional arrangements, and following lines of stratification based on individual sex and socioeconomic position (Heglum 2023; Hollister 2011; Lersch 2020; Jarvis and Song 2017; Ramos 2019; Riekhoff 2022; Riekhoff et al 2021; Struffolino and Raitano 2020; Westerman et al. 2023; Widmer and Ritchards 2009; Zimmermann and Konietzka 2018; Mayer et al. 2023). Building on this recent research, **Chapter one** of this dissertation focuses not only on investigating the process of de standardization in different institutional contexts (Germany and the United Kingdom), but also on understanding the economic implications of job uncertainty by examining whether those with higher

levels of job instability are also more economically disadvantaged, whether the penalty has changed due to labor market transformations, over the life course, and whether it is offset by family and state interventions.

Similar conclusions can be drawn from the vast economic literature on income volatility. Volatility, defined as year-to-year income fluctuations, affects present and future standards of living by shortening economic time horizons, negatively impacting consumption patterns, eroding savings (insurance against future risks), and compromising future and intergenerational investments (Hardy 2014; Western et al. 2012). Often taken as an objective indicator of economic unpredictability, volatility is the intragenerational byproduct of unstable work-life trajectories. Concurrently with increasing work-life instability, income volatility has risen since the 1980s in Western societies, largely contributing to the contextual increase in income inequalities (Bartels and Bönke 2013; Cappellari 2004; Cappellari and Jenkins 2014; Gottschalk and Moffitt 2009; Hällsten et al. 2011; Neckerman and Torche 2007; Shin and Solon 2011). Moreover, volatility is increasingly concentrated in specific life course phases such as the beginning and the end of a working career (U-shape) and the family formation phase for women (Blundell et al. 2023; Mazumder 2005). Income volatility tends to be found among the less educated, working-class occupations, and the bottom-end of income distribution (Delaney and Devereux 2019; Gioachin and Barbieri, *forthcoming*; Hällsten et al. 2010; Jensen and Shore 2015; Ziliak et al. 2011), and is strongly dependent on shocks to individual welfare, such as job losses, health issues, and downward mobility (Latner 2018). Interestingly, only few studies have analyzed the intergenerational reproduction of income volatility, confined to the United States, showing the presence of a small but positive direct correlation between parental and offspring volatility (Shore 2011; Cheng and Song 2019). Against this backdrop, **Chapter two** provides a comprehensive assessment of the role of family background in determining exposure to life-cycle volatility, and whether it differs across institutional contexts such as Denmark, Germany, and the United States.

The presented evidence, however, does not imply that, over the last decades, stable, secure, predictable, and well rewarding work-life trajectories have entirely shrunk, leaving room for generalized insecurity. Therefore, these changes apparently support visions of *individualization* (Beck 1992; Beck and Beck-Gernsheim 2002; Bauman 2013; Savage 2015) that predicted increasingly atomized biographies "democratically" exposed to socioeconomic risk and detached from 'historically prescribed social forms and commitments' (Beck 1992: 128) as social classes. Empirical evidence, however, disconfirms the premature *death of social class* (see, for instance, Gioachin et al. 2023; Vandecasteele 2011). In stark contrast, contemporary life courses, from the transition from school-to-work to the experience of precarity, to an increasing number of job shifts, are leaving larger room for individuals' circumstances among which social origin to condition life chances indirectly or directly. It is no longer just a matter of entering the labour market on the right track, but rather a succession of life course junctures in which individuals' efforts and skills can be easily outplayed by ascribed advantages. Accordingly, we now consider the micro-level foundation of the effect of social origin and how advantages are reproduced throughout individuals' trajectories regardless of greater educational opportunities

4. Micro determinants of intergenerational inequalities

Parental resources impact crucial life events and achievements, including childhood, education, work, occupation, income, social network, health, family formation, and wealth accumulation. More formally, the prominent status attainment model (OED triangle) formalized by Blau and Duncan (1967) explains intergenerational associations building on the processes underlying the association between parents' and children's socioeconomic attainment. Parental background is associated with individuals' attainment via two paths. An indirect path in which parental resources influence attainments by affecting educational achievements, and a direct path in which parental resources directly influence attainment regardless of educational attainment, and it is claimed to be responsible for the reproduction of (dis-)advantages throughout working careers (Bukodi and Goldthorpe 2011; Hällsten 2013; Hout and DiPrete 2006; Torche 2011).

4.1 Why are inequalities intergenerationally reproduced? Rational and Cultural approaches

Two broad theories of action attempt to explain the mechanisms of intergenerational transmission of resources: the *rational action/choice* theory and the *cultural reproduction* theory.

Under the assumption that individuals share similar rational goals, rational theory implies that parents maximize their children's well-being by optimally investing in their human capital development (Becker and Tomes 1979; 1986; Lucas 2001) and maximizing their expected utility to prevent offspring from the risk of intergenerational downward mobility and social demotion (Breen and Goldthorpe 1997; Goldthorpe 1998; 2007; Holm and Jæger 2008). This rational approach is also referred to as relative risk aversion or status maintenance model, as it holds for every family background level. As less advantaged families have less to lose, they adopt strategies "from below" (Goldthorpe 2007) to improve their socioeconomic standing. Yet, in line with the conflictual vision, these strategies are often undermined by lacking parental resources and by more advantaged families enacting strategies "from above" to retain their privileges.

Cultural reproduction theory, instead, starts from the assumption that individuals' goals are differently shaped by reasons and motivations depending on their backgrounds (Bourdieu 1977). According to Bourdieu, parental resources that define the structure of childhood and are later inherited can be divided into economic capital (monetary resources), cultural capital (education, skill, knowledge, and culture) and social capital (valuable connections). Economic capital is easily transferable across generations, parental social capital can be advantageous for the offspring's opportunities, and finally cultural capital is reflected in the socialization of children, which results in the transmission of a *habitus* – a set of dispositions responsible for individuals' understanding of social reality. Habitus can manifest through individuals' behaviors (accent, inflation, gesture, posture, lifestyle, dress style, tastes, and manners) and is socially recognized and legitimate. This cultural capital is then converted into educational attainments, which are often not evaluated objectively but rather in line with criteria determined by higher classes with the aim of perpetuating social stratification (Bourdieu 1984; Collins 1971).

4.2 How are inequalities reproduced across generations?

Class of origin related inequalities manifest from early childhood (Skopek and Passaretta 2021), as early circumstances such as genetic endowments, rearing environment, parenting style, and educational investments shape cognitive abilities, school performances and achievements (Björklund et al. 2005; Breen and Goldthorpe 1997; Calarco 2018; Gioachin and Zamberlan 2022; Karlson and Birkelund 2019). In temporal order, genetic inheritance emerges as a major factor in the intergenerational transmission of education and occupational predisposition (Nielsen and Roos 2015). Further, early class differentials emerge in the parenting styles. While higher classes invest and promote successful and planned upbringing, lower class parents practice *the accomplishment of natural growth* (Lareau 2011), not only for constrained resources but also for shared visions about child-rearing that focus more on children's independence. In addition, recent studies focus on the so-called *Scarr-Rowe hypothesis*, which postulates an interactive relationship between nature and nurture, and thus between genetic predisposition and parental social standing, assuming that advantageous environment, like a high class of origin, can maximize the genetic predisposition (i.e., Ghirardi and Bernardi 2023; Papageorge and Thom 2020).
Against this backdrop, early childcare education is the first institutional way to tackle intergenerational inequalities, often managing to compensate initial disadvantage for children from lower classes (Ghirardi et al. 2023; Ghirardi and Gioachin 2023). In contrast, the absence of adequate countermeasures lead initial disparities to increase disproportionally, in line with a cumulative (dis-)advantage approach (DiPrete and Eirich 2006). Since *skill begets skill*, those who start advantaged will, over time, increase their distance from the rest, whereas those who experience a poor start will fall ever more behind (Heckman 2006), without effective chances for later remedial (Heckman and Lochner 2000). Even when effective (institutional) measures are implemented, well-off parents secure advantages for their children also circumventing meritocracy standards. To assure successful educational transitions when failures occur (i.e., abilities are lower), higher classes enact *compensatory* mechanisms (Bernardi 2014; Bernardi and Grätz 2015; Grätz 2015), for instance, by depleting resources for private tutoring or programs often not accessible to lower classes.

A substantial component of class-related inequality flows beyond educational attainment and emerge at the entrance into the labour market persisting throughout the working career (Bernardi and Ballarino 2016; Friedman and Laurison 2020), albeit with relevant gender differences (Gioachin and Zamberlan *forthcoming*). The direct effect of social origin incorporates advantages related to individuals' productivity and not. Besides the human capital traits described above, higher class parents transmit higher levels of self-esteem (Kraus & Park 2014), greater motivation and aspirations (Goldthorpe 2007; Bernardi 2012), and greater productivity-related non-cognitive skills (Gil-Hernández 2019; Gugushvili et al. 2017). Moreover, (greater) monetary assets and profitable networks can be depleted to smooth children's transition to adulthood, sustain more fruitful job search periods (Friedman and Laurison 2020; Rivera 2016), and compensate for negative life course risks such as the experience of unemployment after a job loss (Ballarino et al. 2021; Conley 2004). It is therefore natural to expect smoother and less volatile work-life trajectories for higher class children, even in the case of today's rising exposure to precarity, instability, and insecurity. In this vein, **Chapter three** examines the interactive implications of institutionally driven labor market inequalities, such as the occupational penalty determined by initial employment flexibility, and intergenerational social inequalities. By comparing Italian and German contexts, which have

undergone comparable flexibilization processes, we consider compensatory dynamics and the cumulation of disadvantages for labor market entrants from different social backgrounds.

Moreover, it is no coincidence that the class composition of better rewarding jobs in highly specialized areas such as medicine, law, and finance is dominated by high class members. Even when the few coming from the lower class manage to get these positions, they earn less than their high-class colleagues. Whether it is for the labor market entry or to climb companies' social ladders, high class individuals have significant advantages also due to the active role of employers and firm dynamics (Engzell and Wilmers 2021; Friedman and Laurison 2020). For long left out of mainstream research, employers and firms are increasingly central actors in the intergenerational reproduction of inequalities, especially in time of growing between-firm inequalities (Tomaskovic-Devey et al. 2020) and of greater correlation between workers' characteristics and employment in high-paying firms (Criscuolo et al. 2020; Wilmers and Aeppli 2021). The hiring process is not only a process of skill sorting but also of cultural matching between candidates, recruiters, and the firm (Rivera 2012). Recruiters often make use of individuals' status-based tastes, cultural consumption, lifestyle markers, hobbies, and activities (Jæger & Breen 2016; Meuleman & Jæger 2023) to infer future productivity or to find candidates that *fit* the formal and informal dynamics of social closure, homophily, and in-group favoritism characterizing each firm, especially the high-paying ones (Bernardi and Gil-Hernández 2020; Laurison and Friedman 2016; Jackson 2009; Ridgeway and Fiske 2012; Rivera 2012; 2015; Rivera and Tilcsik 2016). Finally, the **Chapter four** is devoted to evaluating the discriminatory tendencies of such employers during the hiring process in the British context. Social status signals are experimentally manipulated in fictitious job offers with different degrees of specialization and in interaction with other major sources of discrimination such as gender and parenthood.

The numerous direct and indirect, rational, and cultural mechanisms presented here, however, are not isolated facts. Rather, they must be understood in the context of structural and institutional features and their transformations, which, in the specific case of our interest, are expressed in the growing instability of the labor market. A valid example is the context-specific but persisting (and even rising) relevance of the direct effect of social origin in determining inequality of opportunities in the recent work of Bussolo, Peragine, and Checchi (2023). Therefore, the expectation is that the influence of social origin manages to adapt to macro-level institutional and environmental conditions, as it has been shown for educational attainments. Theories of maximally maintained inequality (Raftery and Hout 1993), effectively maintained inequality (Lucas 2001), effectively expanding inequality (Alon 2009), and negotiated advantage (Calarco 2018) provide explanations for persisting (dis-)advantages and examples of strategies "from above". In particular, the theory of effectively maintained inequality (Lucas 2001; 2017) states that when quantitative differences between classes reduce (i.e., educational expansion reduces class gaps in achieving higher educational levels), qualitative differences become more important in retaining advantages, for instance investing in prestigious institutions, additional master's degrees, or generally preferring more rewarding fields of study (Erikson and Jonsson 1998; Van de Werfhorst and Luijkx 2010).

Similar adaptations to societal transformations can thus be expected also with respect to the growing instability of work-histories driven by the structural and institutional transformations of the last decades. In line with rational action and also cultural reproduction theories, advantageous social

origin may initially prevent disadvantageous and precarious labor market transitions through better educational choices and exploitable networks. Similarly, even in the case of a steady increase in the prevalence of flexibility forms not only at the lower occupational levels but also as necessary steps to access higher-paying and more rewarding occupations, social origin is expected to enact direct mechanisms to perpetuate benefits across generations. As addressed above, it may involve offsetting the potential negative effects of job instability through financial support, greater ease in engaging geographic mobility to the most productive centers, through the exploitation of social and cultural capital to fit within business contexts and speed up the process of occupational climbing. Even with the major labor market transformations, access to the most prestigious positions remains thus restricted through structural and cultural barriers (social closure or class ceiling - Friedman and Laurison 2020).

5. The empirical contributions

In conclusion, this section expands and summarizes the original empirical contributions of this dissertation previously introduced. These contributions build upon the broader macro-micro-macro framework presented in these pages, and each work will further develop in more detail the theoretical reflections here sketched.

The first empirical chapter (*Work-life instability and the life-course income penalty: An age-cohort analysis of work trajectories in Germany and the UK*) addresses the implications of the described major macro-level institutional transformations on individuals' work-life trajectories. Side by a detailed description of how work trajectories have evolved and if they became more unstable over birth cohorts – a commonly adopted proxy to study social change – this study also investigates the extent to which the income penalty associated with unstable work careers has evolved across life courses and birth cohorts. We do so in Germany's coordinated, segmented market economy and the United Kingdom's liberal, poorly regulated market economy. For this study, we leveraged national panel data and performed an age-centered income comparison around the prime age (30-50) employing a comprehensive measure of work-life instability (the *precarity index*) that accounts for a rolling average of status, contractual, and occupational volatility in previous years. The results reveal that institutional specificities are relevant not only in shaping differential exposure to unstable careers, but also in determining the economic penalty associated with exposure to instability. The segmented German labor market shows the strongest increase in exposure for younger birth cohorts and the strongest labor income penalty for unstable workers, which increased (although largely compensated when considering disposable income) for younger adults in more recent cohorts, in line with their process of flexibilization. Moreover, this study further reveals that the classical determinants of social stratification – such as sex, class, and education – matter not only in shaping income disparities, but also in stratifying the income penalties associated with work-life instability, with men (in Germany) and the working class showing worsening penalties across birth cohorts.

The second empirical chapter (*Family Background and Life Cycle Income Volatility: Evidence from Sibling Correlations in Denmark, Germany, and the United States*) maintains a broader scope and attempts to link the study of intergenerational inequalities to the intragenerational dynamics of instability. Indeed, while stratification scholars have extensively examined intergenerational associations in lifetime income, they have mostly disregarded how family background affects exposure to income volatility over the life course. As volatility captures year-to-year income fluctuations associated with negative shocks to individuals' welfare and with long-lasting personal and intergenerational consequences, studying the link between family background and volatility is key to fully understanding how family-based inequalities impact lifelong economic prospects. This chapter provides a comprehensive analysis of the role of family background in shaping exposure to income volatility across the lifecycle in Denmark, Germany, and the United States by providing the first available estimates of sibling correlation on income volatility. We compared individuals born between 1955 and 1979 from ages 30 through 50 using administrative registers for Denmark and comparable longitudinal studies for Germany and the United States. Furthermore, we formalized and implemented a methodological strategy to allow the simultaneous measurement of sibling correlation over the life course. Estimates of sibling correlations in exposure to volatility reveal significant family

background effects throughout the lifecycle, even after accounting for the uneven distribution of volatility across income levels. Countries with greater inequality exhibit stronger brother correlations, whereas country differences in sister correlations depend on the income measure considered. While earnings volatility shows substantial cross-national similarity, disposable income volatility reflects country-specific effects of welfare decommodification and stratified assortative mating. Finally, origin-related inequalities in educational attainment, risk of non-employment, and achieved income levels mediate significant, yet country-specific, portions of the relationship between family background and volatility exposure.

The remaining two contributions move to specific life course junctures, namely the school-to-work transition in the third chapter, and the hiring process in the fourth chapter, to discern the role of social origin in shaping individuals' labour market attainments.

The third chapter (*Social Origin and Secondary Labour Market Entry: ascriptive and institutional inequalities over the early career in Italy and Germany*) addresses the interaction between institutionally driven inequalities resulting from the labour market flexibilisation process and the influence of social origin. Specifically, the aim is to investigate whether flexible and precarious starts of working careers strengthen intergenerational inequality. Drawing on upper-class aversion to downward mobility, we discuss the mechanisms through which advantaged social origins are expected to directly compensate for the socioeconomic penalty that arises from initial contractual instability over the career. Conversely, we examine whether a bad start for less socially privileged entrants represents a source of cumulative disadvantage. Italian and German labour markets are compared using national retrospective datasets as optimal cases of labour market duality and rigidity; however, they differ in their educational and labour market institutions and mobility regimes. We performed growth curves under a matching framework to counterfactually compare the career development of service- and working-class entrants in the two countries, who began with similar socioeconomic status. We reveal that social origin contributes to unequal trajectory development in both contexts, especially for the low- and middle-educated. In Italy, where flexible starts are associated with socioeconomic penalties, only those coming from an advantaged compensate for the gap with young workers entering with stable contracts. No significant direct effect of social origin over the career emerges among degree holders in either country. Finally, attending university entirely reduces the flexibility penalty in Italy, whereas for German graduates, initial instability serves as a gateway for more prestigious jobs.

As job applications and job interviews are not only a matter of skill sorting, but also of cultural matching and homophily, inequality of opportunity can easily emerge. Thus, the fourth and last contribution (*Hiring intentions at the intersection of gender, parenthood, and social status. A factorial survey experiment in the UK labour market*) investigates the direct role of employers in the reproduction of intergenerational inequalities. We specifically evaluate their discriminatory intentions based on clues of individuals' social standing and how these clues intersect with other well-known sources of unequal treatment in the labour market, namely gender and parenthood. We implemented an original factorial survey experiment that simulates the hiring process, in which more than 2,500 UK-based recruiters evaluated the profiles of fictitious candidates for different job vacancies that vary in occupational level and gender composition. This is the first available contribution that experimentally study the intersection of these factors in different jobs. Our findings point to

significant and substantial discriminatory intentions in favor of high-status candidates when direct signals of productivity (i.e., education and previous experiences) are comparable across candidates. The premium for high-status candidates holds almost regardless of the occupational level and gender composition of the job vacancy, and it is proportional and sometimes larger than the (negative) discrimination based on gender. Most interestingly, displaying signals of upper social status such as highbrow hobbies and extracurricular activities provides an important offsetting advantage for the negative effect of having a female gender and having children in all occupations except the low-level, male-dominated one. Precisely, mothers displaying signals of upper social status do not suffer from the discrimination penalty that, instead, emerges among women displaying lower social status signals. This novel evidence in the British context sheds additional light on the subtle mechanisms through which intergenerational inequalities are reproduced in the labour market.

The concluding section of each empirical chapter discusses the broader theoretical implications of the empirical results and suggests potential implementations for future research in each of the debates here addressed

Chapter 1

Work-life instability and the life-course income penalty: An age-cohort analysis of work trajectories in Germany and the UK[1]

1. Introduction

Over the past decades, structural and institutional changes that have been made in advanced Western economies have been responsible for both strengthening existing socioeconomic disparities and increasing levels of income inequality (Bol and Weeden 2015; Mills and Blossfeld 2013; OECD 2008). One of the mechanisms through which processes of de-industrialization, global competition, and labor market restructuring have impacted socioeconomic insecurity and inequality is evident in the growing disalignment between employment trajectories and traditional employment patterns (Brückner and Mayer 2005).

Recently, the literature devoted to evaluating the degree of non-standard and unstable trajectories across contexts, cohorts, and social groups has flourished within sociology. However, there is still a mixed consensus around the evidence because different analytical approaches, temporal periods, and institutional contexts have been employed. While recent studies have concluded that there have been few changes over the past generations (Möhring 2016; Van Winkle and Fasang 2017), nation-specific analyses have pointed to greater variability in both employment and family trajectories for young adults of more recent cohorts. These trajectories are socially stratified around sex and socioeconomic position and depend on the influence of nation-specific institutional arrangements (Heglum 2023; Hollister 2011; Ramos 2019; Riekhoff et al. 2021; Riekhoff 2022; Struffolino and Raitano 2020; Westerman et al. 2023; Widmer and Ritchards 2009; Zimmermann and Konietzka 2018). Contextually, this growing interest has fueled a long-lasting debate around the *de-standardization* versus *individualization* of individuals' life courses: Life-course phases, life events, and individuals' social roles are increasingly often expected to intermingle and diversify across social groups, with a reduced influence of institutionally originated formal and informal paths. While post-modern approaches (Bauman 1982; Beck 1992; 2008; Beck and Beck-Gernsheim 2002) tend to present modern life courses as being entirely individualized and unaffected by previous social and structural determinants, other approaches stress the notion that post-industrial life courses – despite being increasingly disaligned – continue to be shaped by structural mechanisms of social inequality (Brückner and Mayer 2005; Mayer 2004a; 2004b; Mayer and Hillmert 2003).

In this debate, a systematic assessment of the impact of employment instability on economic outcomes over individuals' life courses and the stratification of the impact of employment instability

[1] This paper is co-authored with Paolo Barbieri. Access to the SOEP data was granted by the German Institute for Economic Research (DIW), Berlin, 2021. Data from the BHPS and UKHLS were made available through the UK Data Archive (University of Essex, Institute for Social and Economic Research, 2021). The data collectors and the archive bear no responsibility for the analyses and interpretations provided in this paper. The authors wish to thank the participants to ECSR 2021 (University of Amsterdam, online), SISEC 2022 (University of Bologna), Transition in Youth 2022 (TIY, University of Campania, Naples), RC28 Spring Meeting 2023 (Sciences Po, Paris) for their useful comments on previous versions of this paper.

over time are still missing (however, see Riekhoff 2022) even though several economic works have pointed to the rising diffusion of income fluctuations and insecurity (Cheng 2014; Gottschalk and Moffit 2009; Western et al. 2012). Life course wages, in fact, may fluctuate due to unplanned conditions or triggering events: Gangl (2005) found that the "transitory variance in wage" in the United States amounts to one fifth (20.8%) of the total variance of log income. Against this backdrop, the present study contributes to the field by shedding light on the economic implications of the process of work-life de-standardization if and where it has actually taken place. We aimed to clarify whether, where, to what extent, and under what conditions work-life instability[2] is among the sources of socioeconomic disparity across social strata.

While existing stratification research has focused on single dimensions of life-course instability as well as on specific triggering events (see Barbieri and Bozzon 2016; O'Rand 2006; 2011; Vandecasteele 2011; Whelan and Maître 2008),[3] we evaluated the economic penalty associated with the instability of employment trajectories by leveraging a large set of individuals' medium-term work history up to specific ages. We proposed a dynamic approach in which every prime-age step from 30 to 50 served as the grounds for analyzing differences in income levels between individuals who had differed in their career (in)stability over the previous years. To do so, we integrated recent methodological advancements and implemented a synthetic and comprehensive measure of accumulated work instability (*the precarity index)* that captures a rolling average of the degree and direction of fluctuations that had occurred in employment, contracts, and occupations.

We adopted this life-course perspective and compared successive birth cohorts in two different institutional contexts: the UK and Germany. Specifically, we considered individuals born from 1950 to the 1980s who had entered the labor market between 1970 and 2000 – a period characterized by a series of relevant labor market changes. Moreover, institutional settings represented the macro- and contextual milieus that differentiated individuals' life courses and the associated distribution of economic inequality (Kohli 2007; Mayer 2009). In greater detail, we examined the role of labor market regulation / segmentation and the amount of welfare de-commodification. We compared the open, liberal, and barely regulated country of the UK with the corporatist and coordinated context of Germany, which had "recently" deregulated "at the margins" (Brady and Biegert 2017; Gebel 2010). Furthermore, the association between work instability and income insecurity within each country was examined both before and after taxes, social transfers, and additional family buffers.

The present article and its findings make three contributions to the understanding of the social mechanisms that structure the link between individuals' unstable employment histories and their subsequent exposure to life-course income variability: *First*, we updated the sociological discussion of life-course de-standardization by using proper data that allowed for focusing on exactly those cohorts of labor market participants in Europe that had been "institutionally exposed" to the risk of

[2] Bruckner and Mayer (2005) use the term "differentiation of the work-life" of individuals to refer to a "process where the number of distinct states or stages across the lifetime increases." However, we opt for using "work-life instability," which refers to a more general trend of changes in occupational and labor market statuses. In order to avoid repetitions, we also use the terms "work trajectories" and "work-life volatility" as synonyms.

[3] See DiPrete (2002) for a different formulation that focuses on the way in which societal institutions influence household-level life conditions and the extent to which institutions mitigate the consequences of these events. The combination of these institutional processes produces the distinctive characteristics of mobility regimes.

having a non-standard employment career. *Second*, we compared Germany and the United Kingdom, with Germany representing a coordinated, segmented "social market economy" that combines high competitiveness in labor markets with strong social cohesion and low levels of inequality and that has experienced a process of institutionally driven labor market flexibilization, and the United Kingdom representing a strongly liberal, highly unequal and competitive, poorly regulated market-driven economy (Streeck 1995). *Third*, we proposed a framework that exploits appropriate prospective panel data combined with state-of-the-art methods to comprehensively describe the age-cohort specific economic impact of work-life instability, with the latter building on a refined measure of career complexity meant to capture accumulated employment as well as contractual and occupational instability.[4]

Our results indicate that institutional and contextual specificities are of primary importance when it comes to shaping economic penalties and the compensation associated with instability in employment careers, with the segmented German labor market displaying the strongest labor income penalty for unstable workers that even worsens for younger adults across birth cohorts. The classical determinants of social stratification – such as sex, social class, and education – matter not only when it comes to shaping income disparities, but also when it comes to stratifying the life-course income penalties associated with work instability, with men (in Germany) and the working class displaying signs of worsening penalties across birth cohorts. No evidence of a middle-class crisis or penalization was found.

2. Theoretical background

2.1 Are work lives becoming increasingly individualized?

During the decades of the "Fordist equilibrium," individuals' life courses became progressively standardized, and life phases in both the work and family realms smoothly distributed along age (Brückner and Mayer 2005; Levy 2013; Mayer and Müller 1986) thanks to their reduced heterogeneity and the significant welfare effort in buffering negative life events. Stable (lifetime) employment trajectories came to be associated with increasing levels of social rights, income security, and generous family wages, which in turn fostered early (and stable) marriages and higher fertility rates (Billari and Liefbroer 2010). The main differences in life-course trajectories and patterns were thus observable across contexts and depended on the normative and organizational influence of national institutional arrangements (Mayer 2004a; 2004b; Möhring 2016).

In recent decades, however, several macro-factors have undermined the traditional stability of life-course trajectories. Global competition, offshoring and technological unemployment, and de-unionization have reduced the chances of long-life stable careers that are characterized by secured occupational mobility. Meanwhile, the increase in flexibility and contractual precarity that has been

[4] As stressed by Fasang and Mayer (2020), assessing the stability or volatility of inequality outcomes – including income – necessarily requires using longitudinal data and methods. Even if it is possible to establish an "appropriate age" for measuring socially valued goods, cross-sectional measures can only be useful if trajectories predictably stabilize in similar ways for everyone after some point in the life course, but this has not been the case.

boosted by the process of labor market deregulation has threatened previously stable work trajectories, which have come to be increasingly often replaced by more uncertain work histories, including in institutional contexts that had previously served as ideal cases of steady and secure equilibria (Barbieri 2009; Barbieri et al. 2019; Breen 1997; Buchholz et al. 2009; Kalleberg 2011; Oesch 2013). Sociologists began questioning the extent to which individual paths deviate from the predictable, standard, cumulative life courses and become *de-standardized* (Brückner and Mayer 2005). Thus, scholars refer to increasing age dispersion in the occurrence of life transitions and to less interdependence between states, attributes, and events in different realms, with specific trajectories being increasingly often differentiated and experienced by smaller and stratified portions of the population. However, other authors have interpreted these social changes in terms of a post-modern, non-linear process of *individualization* (Bauman 2013; Beck 1992; Beck and Beck-Gernsheim 2002; Savage 2015). Accordingly, the breakdown of consolidated social trajectories and life-course models has resulted in greater freedom of choice for individuals who can choose how to design their careers, their family arrangements, and more broadly, their own individual identities independently from "modern / industrial" structural constraints such as class, gender roles, and social status.

In recent decades, there has been an increase in empirical efforts to evaluate the degree of the de-standardization vs. individualization of individuals' work trajectories and to identify the "losers" of this process. The evidence is somewhat mixed because different focuses, operationalizations, contexts, and sampling criteria have led to different conclusions. Past works have restricted the focus to specific "classic" life events (i.e., educational completion, first job, marriage, first child) and have analyzed the evolution of the age dispersion in a population and the changes in the co-occurrence of these events (see Brückner and Mayer 2005; DiPrete 2002; Mayer 2004b; Mayer and Hillmert 2003). Most of these past studies have limited their focus to current old-aged individuals of older, industrial birth cohorts, which have only been marginally impacted by the discussed societal changes. However, limiting the analysis to the birth cohorts that entered the labor market in a period of growing economic prosperity and employment stability (as in Van Winkle and Fasang 2017; 2021) is somewhat useless if the aim is to explore the consequences of the occupational instability of the processes of continental, EU-wide labor market deregulation following the end of the Fordist "golden age." In their analysis of 1929–1971 birth cohorts in West Germany (which, however, is not exactly the best sample of post-industrial employment trajectories), Mayer, Grunow, and Nitsche (2010) reported evidence of increasing numbers of unwanted career interruptions in younger cohorts, with a related increase in what they label "indirect occupational mobility" – that is, occupational changes that take place after an employment interruption. Upon correctly extending the observed birth cohorts for the same region of West Germany, Lersch, Schulz, and Leckie (2020) found a significant rise in occupational volatility for the youngest labor market entrants. In the US, Jarvis and Song (2017) revealed that rising occupational mobility – mainly related to technological change, precarious work, and de-unionization – has caused individuals' work lives to become more unstable and unpredictable.

Recent studies have indicated that clear differences in work instability can be found not only across cohorts, but also between sexes (with women showing higher levels of instability), educational levels (with tertiary-educated individuals having more complex – but not necessarily more unstable – trajectories), and occupational classes (with lower classes having more instability), and especially across contexts, which reinforces the strong role that national institutions play in shaping work

trajectories (Heglum 2023; Hollister 2011; Ramos 2019; Riekhoff et al. 2021; Riekhoff 2022; Struffolino and Raitano 2020;Westerman et al. 2023; Widmer and Ritchards 2009; Zimmermann and Konietzka 2018).[5] A recent exception comes from Heglum (2023), who documents rising career instability almost uniquely for men from disadvantaged background in Norway.

In conclusion, life-course trajectories appear to be becoming increasingly de-standardized and complex among younger cohorts, particularly where labor market segmentation has hit the hardest. However, non-negligible differences among countries, age steps, and socially stratified social groups can be observed. These differences should thus be accounted for when investigating the relationship between unstable work lives, life-course income insecurity, and social inequality.

2.2 The economic implications of work instability

A work trajectory is considered to be unstable and de-standardized if it does not display (1) smooth transitions from education to work, (2) a standard, progressive course of acquiring and changing jobs, and (3) prolonged firm tenure marked by episodes of upward occupational and earnings mobility. This ideal-typical trajectory is becoming much less common among large segments of the workforce, resulting in the increasing association of mounting occupational mobility with rising economic inequality (Bernhardt et al. 2001) and economic uncertainty in the form of job loss, income volatility, and downward mobility (Gottschalk and Moffitt 2009; Hacker 2006; Hollister 2011; Mouw and Kalleberg 2010a; 2010b; Sandoval et al. 2009; Shin and Solon 2011).

Career breaks, subsequent unemployment spells, repeated episodes of contractual precarity, and downward mobility are not only detrimental to income security, but also stratified according to individual attributes and institutional arrangements (Gangl 2006; Manzoni and Mooi-Reci 2020). Scholars point to less-skilled and lower occupational classes as the ones most exposed to these negative situations (Barbieri 2009; Gebel and Giesecke 2011; 2016; Goldthorpe and Mcknight 2006). Moreover, the reviewed works on the stability of work trajectories from a life-course perspective have thus far failed to provide a detailed account of contractual conditions, and only a few studies have considered the contrast between full-time and part-time employment. Exposure to contractual instability is central to negatively differentiating individual trajectories across birth cohorts (see Barbieri and Gioachin 2022; Fauser 2020; Kalleberg 2011; Witteveen 2017). Fixed-term contracts may represent either steppingstones to primary labor market positions – thereby resulting in a trade-off between job security and economic compensation – on the one hand or traps that lead to less-secure, underpaid occupations on the other hand. Moreover, part-time jobs may represent either work–home flexible arrangements that allow for more women to work on the one hand or gender-segregated, unqualified occupations on the other hand (Barbieri et al. 2019b; Bentolila et al. 2019; Mattijssen et al. 2020; Mooi-Reci and Ganzeboom 2015; Nightingale 2020). Recent evidence is consistent with the picture of earnings penalties for atypical contracts (Barbieri and Cutuli 2018; Westhoff 2022). Finally, shorter job tenures, rapid job shifts, and downward occupational mobility

[5] For a discussion of the link between job shifts, occupational mobility, and intragenerational class mobility, the classical references are Müller and Mayer (1973), Mayer and Müller (1986), Mayer and Carrol (1987), and Fasang and Mayer (2020).

are also associated with work instability, reduced earnings, and greater income inequality (Manzoni et al. 2014; Fauser 2020; Mauw and Kalleberg 2010b; Western et al. 2012).

2.3 The macro-scenario: Institutions and returns to instability

Contextual features and their historical transformations are claimed to diversify the timing and meaning of life transitions, the social stratification of these transitions, and the protection against life-course risks (Becker and Mayer 2019; Mayer 2004a; 2004b; 2009; Kohli 2007). DiPrete (2002) conveniently refers to *mobility regimes* as the institutional compounds responsible for the *rates* and *consequences* of life-course risks.

We specifically contrasted Germany and the United Kingdom as ideal types of opposed institutional features that were expected to moderate levels of work-life instability and the socioeconomic impact of this instability across social groups. More specifically, the "skill-regimes approach" (Estevez-Abe et al. 2001) conveniently links the (in)stability of trajectories to the interaction between the welfare state, labor market regulation, the characteristics of the educational, training, and production systems, and the kind of skills required to sustain employers' productive and market strategies. The presence of a widespread vocational education (VET) system facilitates smooth entry into the labor market by providing specific, "off-the-shelf" skills. These skills are often difficult to transfer between businesses, potentially leading to more severe consequences for those who fail to follow a standard trajectory than for settings that provide more general and transferable skills. Moreover, occupational and job mobility appear to be lower in rigid labor and product markets (Gangl 2003). High levels of strictness in employment protection legislation (EPL) may hamper employers' reactiveness to market fluctuations, thereby increasing adjustment costs and resulting in greater risks and duration of unemployment, especially for workers in the secondary segment of the labor market, which acts as a buffer in times of crisis. Thus, the relationship between EPL and (the characteristics and duration of) atypical careers implies that deviations from standard trajectories in rigid labor markets should be associated with greater earnings penalties. In addition, unemployment benefits (welfare de-commodification) can influence work-mobility dynamics. High wage-replacement rates positively increase the length of unemployment searches and average salaries and thus also affect labor market flows. However, in the case of restricted access to such benefits based on labor market attachment (segmentation), individuals who experience unstable work trajectories also risk greater exposure to income insecurity.

Germany features a rigid and segmented labor market, a well-structured and efficient school-to-work transition thanks to its dual vocational system, and a generous occupational-based welfare state. However, the country underwent a process of flexibilization "at the margins" (Brady and Biegert 2017; DiPrete et al. 2006; Eichhorst and Marx 2019) beginning in the 1990s that was to the detriment of the career stability of less-skilled workers in low-prestige occupations (usually women). In parallel, Germany's insurance-based unemployment benefits – which were designed to temper the negative income implications of increased labor market flexibility – are largely confined to long-tenured, full-time insiders with regular contracts and contributions that are in line with the national industry-specific skill regime (Estevez-Abe et al. 2001). Finally, while Germany featured a traditional male-breadwinner model in older cohorts, women's employment in more recent cohorts has steadily grown

due to the diffusion of various forms of (female-dominated) "flexible jobs" as well as to family policies that foster work–family reconciliation (Daly and Ferragina 2018; Schmitt 2012). Thus, the dominant German family model still views women as partial contributors.

Finally, the liberal United Kingdom has been largely ignored in recent life-course studies. In contrast to Germany, the UK features low EPL and higher levels of labor market turnover, lower labor adjustment costs, and low labor attachment to specific firms due to the country's general skills provided by the educational system and to its highly flexible labor market, which favors high employment rates in a more "polarized" service economy that also relies on routine tasks and general skills.[6] Moreover, the combination of reduced social-protection schemes, the fluid labor market, and stingy welfare benefits forces individuals (of whatever age) to maximize short-term returns in terms of wages at the expense of reduced job security. Thus, this institutional combination involves greater generalized exposure to work instability, life-course risks, and economic insecurity. Moreover, the commodification of family-related services is pushing more women into the UK labor market compared with in Germany.

2.4 The micro-scenario: Individual stratifiers of economic returns

As outlined above, failing to consider the differentiation of life-course trajectories according to individuals' characteristics leads to an only partial understanding of the changes in the stratification of the economic penalties that result from work instability across cohorts. Not only do the economic returns attached to individuals' attributes (e.g., sex, education, occupational class) compose the so-called permanent component of income inequality (Friedman 1957), but we also expected that individual attributes would be found to moderate the influence of instability in work trajectories on income disparities. Since previous work on this issue is extremely scarce, we hypothesized two possible, opposing scenarios: *a)* those who are more at risk of work instability (i.e., the working class, young cohorts, the poorly educated) should also be found to be economically more severely hit due to the well-known mechanism of the cumulation of disadvantages (DiPrete and Eirich 2006; Merton 1968; 1988) and *b)* the social groups less at risk of work instability should be found to have more to lose economically once they find themselves exposed to career instability. Against the backdrop of these two possible scenarios, we considered micro-determinants that moderate the career-income penalty associated with accumulated work instability.[7]

First, birth *cohort* acts as a determinant of unstable and volatile careers, especially in segmented labor markets, where it captures the effects of the process of labor market flexibilization concentrated on top of younger labor market entrants, who are more affected by work career income penalties. In already-flexible labor markets, on the contrary, age / cohort does not represent such a strong stratifier of employment volatility, which is more evenly "distributed" across cohorts and age.

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[6] However, access to tertiary education in order to gain general skills is strongly socially stratified (Bukodi and Goldthorpe 2022; Pugsley 2018).

[7] Theoretically, the considered moderators of the impact of work instability on economic rewards are complementary. Due to the complex interaction that would result from considering all of them, in the two distinct contexts, we proceeded by considering the age-cohort-specific association of work instability with labor- and disposable incomes separately per each moderator.

Second, *sex* differences in income returns are evident upon labor market entry and increase along with the ageing process. Together with greater exposure to flexible forms of employment, women's inflows into and outflows out of the labor market around the age of the transition to motherhood produce subsequent work instability that serves as the basis for earnings penalties along their entire work careers (Fasang and Aisenbrey 2022; Kuitto et al. 2019; Vagni and Breen 2021; Weisshaar 2018;). On the other hand, men reach the peak of their work careers around the middle-age cohort (Manzoni et al. 2014; Schellenberg et al. 2016) and upon family formation (Aisenbrey and Fasang 2017), with greater work stability and income stability.

Third, *occupational class* is a good predicter of exposure to forms of job instability as well as of current and subsequent cumulative earnings differences throughout the career and the ageing process (Goldthorpe and Mcknight 2006; Shahbazian and Bihagen 2022; Westhoff et al. 2022) to the point that scholars account for class as a proxy for the aggregated life-course permanent income (Yaish and Kraus 2020). Along with disadvantages that have traditionally been associated with the employment relations behind social classes, the processes of globalization, technological expansion, and offshoring contribute to enlarging disparities between occupational groups over birth cohorts.[8] Indeed, these changes negatively impact the demand for – and labor costs of – routine intensive and less-skilled occupations while positively affecting economic returns to highly skilled managerial and professional positions (Acemoglu and Autor 2011). Not surprisingly, scholars report a marked stratification of earnings shares and poverty risks between occupational classes in Europe (Gioachin et al. 2023).

Finally, *education* may also stratify the impact of work instability on life-course income attainment. On the one hand, the poorly educated are generally the most frequently exposed to unstable careers and precarious work as well as to repeated unemployment and carousel careers. Additionally, over generations, the poorly educated pay the price of structural and institutional transformations, as do the working-class occupations. On the other hand, higher-educated individuals – as well as members of the service class – might be more heavily penalized by an unstable career than are members of lower strata (floor effect) because the stakes are much higher and the consequences of a fall are more serious and enduring for this latter group. This may be the case in more conservative and rigid institutional arrangements that are characterized by greater rigidity and therefore also by lower chances of recovering from periods of instability.

2.5 Research hypothesis

Our first research hypothesis concerned the general negative impact of an unstable work life on life-course income compared with a standard employment career. We expected that unstable careers should be found to incur economic penalties when labor income is considered (**H1**). This expectation was hypothesized to hold independently of the specific (macro-)national context of labor market

[8] Mayer and Carroll (1987) highlight the fact that job turnover over the life course varies greatly by social class in West Germany: Lower classes – especially unskilled and semi-skilled workers – have greater work instability than do higher classes of non-manual and professional employees.

regulation and welfare de-commodification and the (micro-)individual characteristics of unstable workers. However, institutional differences were hypothesized to be found to play a role both in the extent of the economic penalty derived from work instability and in sheltering individuals from this penalty. Thus, we expected to find stronger penalties associated with work instability on labor income in Germany than in the UK due to the more flexible labor market and more diffused general skills of the UK, which ensures better chances of quickly re-entering a job. However, when considering disposable income, the German arrangement provides for greater welfare compensation, and we thus expected to find that UK market-based welfare would not make a significant difference (**H2**).

However, in order to determine both who is hardest hit by the economic consequences of work instability and when this occurs, contextual determinants throughout each individual's life had to be considered in terms of their interaction with individual characteristics: namely age cohort, sex, class, and education. No "one-size-fits-all" trend or general hypothesis could be expected. Accordingly, we present our expectations for each combination of country / age cohort and relevant micro-determinant. As a last general argument, we posited that contrary to what is postulated by postmodern approaches to life-course research, classical micro-level stratifiers should be found to have different but significant influences in determining the economic outcomes of unstable work lives, always depending on the specific institutional context (**H3**). Table 1 summarizes the main expectations in terms of the income influence of work-life instability and the role of macro- and micro-determinants.

Table 1. Summary of the expected role of work instability on work-life income penalties in Germany and the United Kingdom

	Drivers of work-life income penalties	Expectations of age and cohort	Sex differentials	Class differentials	Educational differentials
Germany	High EPL and PMR with resulting segmentation LM and social-benefit segmentation Flexibilization for women, young people, and the low-skilled: women increasingly over-represented in marginal jobs	Stronger and increasing income penalty for young LM entrants due to LM deregulation at the margins	Income penalty higher for males even though women more at risk of work instability	Greater income penalty for lower classes across cohorts	Higher income penalty in Germany for lower-educated individuals
United Kingdom	Greater generalized flexibility Skill-based influence of technology, globalization, and offshoring particularly permeable in liberal contexts	Work instability produces low income penalty Relatively stable (low) penalty across ages and cohorts	Higher female LM commodification yields no clear sex-based differences in work-life income penalty	Greater penalty for lower classes over cohorts	Slightly lower income penalty in UK for tertiary-educated individuals

3. Data and methods

In order to answer our hypotheses, we drew on the German Socio-Economic Panel (SOEP v36eu) and a combination of the British Household Panel Study (BHPS) and Understanding Society (US) that covered the 1984–2019 period in Germany and 1991–2019 period in the UK. These two prospective panel datasets comparably survey households and individuals repeatedly over the years, with regular inclusion of refreshment samples. In our case, the use of long-run prospective data surely suffered from a "limited" observational window, but in comparison with the widely used retrospective data in life-course research, the prospective setting minimized recalling biases and allowed us to consider young workers of more recent birth cohorts. Moreover, the sociological and economic literature that has focused on the role of micro-attributes and events (and their interaction) in structuring life-course paths and outcomes has focused on the "effects" of *single explanatory factors* and their predictive power on the *explanandum.* In contrast, we opted for an *apparently* – albeit *necessary – descriptive* approach (Firebaugh 2018) that was able to "condense" the trends of the inequality outcomes resulting from a theoretically defined set of micro-mechanisms associated with such a trend.

3. 1 The age-centered design

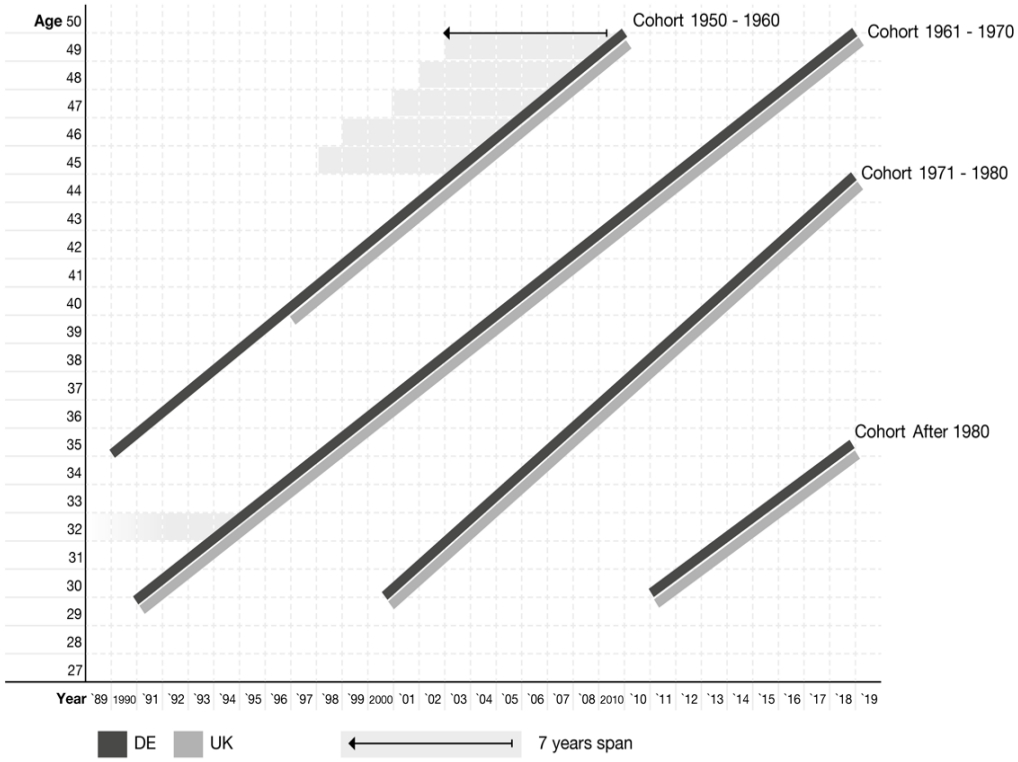
In order to disentangle the income penalty resulting from work instability over cohorts and individuals' life courses, we proposed an age-centered repeated cross-sectional design. We specifically evaluated differences in income levels for specific age-cohort combinations between individuals characterized by different levels of accumulated work instability. This approach exploited the available longitudinal information up to each specific age in order to reconstruct individuals' prospective medium-term work histories.

The comparison of different birth cohorts over the same age steps allowed us to extricate the influence of major societal transformations from ageing / tenure processes, which could also vary across cohorts. Specifically, we focused on the income conditions during the prime adult age – namely 30–50 – because individuals in this age range were expected to already be in the labor market and not close to retirement. Moreover, income disparities in the 30–50 age span often have serious implications for overall permanent income and consumption (Shahbazian and Bihagen 2022). Each step in the 30–50 age span comprised a singular age-centered cross-sectional sample for income comparison and was composed of individuals who could be followed for at least seven consecutive years up to that specific age.[9] Of course, some individuals were present for more than seven years, and the same individuals could thus be part of several age-centered samples. However, this was not much of a problem as these individuals contributed to estimating separate age-specific analyses while their trajectories progressed over time. Figure 1 summarizes our settings and the available

[9] The choice of the seven-year window stemmed from an evaluation of the trade-off between sample numerosity and estimation precision. Several trials ranging from five up to ten repeated observations were performed and led to seemingly identical, substantial results.

comparability across birth cohorts. For reasons of space, we left out from the manuscript the detailed sample-selection process for every age-cohort combination. Tables are available upon request.

Figure 1. The age-centered cross-sectional structure of the data



Notes: Solid lines cover the age-cohort combinations in which we performed an income comparison. For each age-cohort combination, we took 7 years (from t-6 to t: grey squares and arrows) in order to collect information in medium-term work trajectories.

3.2 A comprehensive measure of accumulated work instability

Work instability was our main independent variable. Much of the reviewed literature investigated the (in)stability of individuals' careers by measuring the degree of accumulated work instability using different statistical indicators either by using more data-driven explorative analyses and related measures (e.g., dissimilarity index, sequence clustering) or by implementing comprehensive measures that conveyed aggregated information on the trajectories' stability and heterogeneity (e.g., turbulence, entropy, volatility, complexity, precarity indices) (Gabadinho et al. 2011; Manzoni and Mooi-Reci 2018; Möhring 2016; Ritschard et al. 2018; Studer et al. 2011). We measured accumulated instability in work trajectories by building upon the *precarity index* (Ritschard et al. 2018; Ritschard 2021) but extended the range of working states that individuals could experience simultaneously as we considered employment as well as contractual and occupational volatility. The *precarity index* elaborated on the generally employed *complexity index* (Gabadinho et al. 2011) while overcoming important limitations related to the direction and desirability of the transition throughout a work career. From a social-stratification perspective, we considered it essential to use indicators that did not oversimplify qualitative differences between transitions into or out of the labor market or changes

in contractual conditions and occupational position and to additionally disregard whether mobility was upward or downward, unlike the case with the complexity index.

Equation 1 reveals that the *complexity* (C) of an individual trajectory (x) was calculated as the geometric mean of the normalized number of transitions (q) and the normalized longitudinal entropy (h), which referred to the unpredictability of future states.[10] This index reached its statistical maximum (100) in trajectories with all possible states, all possible transitions, and equal state duration, and it reached its minimum (0) when only one single state occurred.

Equation 1

$$C(x) = 100 \cdot \sqrt{\frac{q(x)}{(l_x - 1)} \cdot \frac{h(x)}{\log(n_a)}}$$
$$where\ 0 \leq C(x) \leq 100$$

From this standpoint, the *precarity index* reweighted the *complexity index* for the (un-)desirability of a working state and a transition. As is made explicit in Equation 2, the *precarity index* included the degree of instability at the first temporal observation $a(x_{t1})$ and a weighting / correction factor $\big(1 + q(x)\big)$ that penalized and rewarded transitions based on their qualitative order of desirability and their transition probability.[11]

Equation 2

$$P(x) = \lambda a(x_{t1}) + (1 - \lambda) * C(x)^{\alpha} * \big(1 + q(x)\big)^{\beta}$$

$$\lambda: trade - off\ between\ initial\ state\ and\ reweighted\ complexity$$
$$\alpha\ and\ \beta: relative\ importance\ of\ complexity\ and\ correction\ factor$$

In practice, for each available individual age point as indicated in Figure 1, the *precarity index* leveraged the antecedent selected longitudinal observation in order to calculate the respective medium-term accumulated work instability. By expanding on existing practices, we defined a wider range of statuses in order to effectively account for employment as well as contractual and occupational instability. First, we divided employment, unemployment, educational spells, parental leave, and inactivity. We then considered whether working individuals were self-employed or employees, and in the latter case, we considered the combination of whether they had a permanent or temporary contract and whether they worked full- or part-time. Finally, for each of these combinations, we further split employed individuals according to their occupational level by using quintiles of the International Socioeconomic Index (ISEI, Ganzeboom 2010), thus aiming to capture sizeable volatility at the occupational level. Table A1 summarizes the categorization employed and

[10] In the complexity index, the normalization was performed in order to make trajectories of different lengths comparable. Specifically, the number of transitions was divided by the length (l) of the trajectory minus one, and the longitudinal entropy was divided by the logarithm of all possible states (a) that an individual could experience.

[11] Alternative approaches to overcoming the discussed limitations have also been elaborated and proposed in order to distinguish and count negative and positive transitions, or voluntary or involuntary changes. For some examples, see Brzinsky-Fay (2007) and Manzoni and Mooi-Reci (2018).

the chosen qualitative ordering of desirability.[12] As changes in contracts were more likely than sudden jumps in occupational quintiles, we deliberately attributed higher weights to changes in contractual conditions. Results were comparable (or even stronger) even when we inverted the order, which gave greater weight to occupational changes than to changes in contractual conditions within each ISEI quintile. Results are available upon request. Moreover, as shown in Figure A1, our measure of work instability based on the *precarity index* better distinguished both the qualitative nature of employment states and the direction of each transition than did the results using the *complexity index*.[13] When internal gaps in individuals' states were present, we handled missing information by filling forward absent episodes, but results remained comparable if states were carried backward or left as missing. For analytical purposes, we standardized the measure of accumulated work instability in order to evaluate the implications of a deviation from more standardized and secure working trajectories. Accordingly, the results obtained by using the standardized measure (which used the average value as the reference) were more conservative than the results we would have obtained if we had set individuals with no instability (value 0 instead of average) as the reference.

3.3 Analyzing the economic implications of work instability

We studied the association between work instability over age and cohorts on income by performing separate OLS regressions for each cross-sectional sample. While a descriptive impact of labor market structures and regulations was deduced by comparing the two country cases,[14] in order to measure differences in the redistributive impact of national welfare states, we contrasted two income-dependent variables: gross labor income (i.e., earnings before taxes and transfers) and disposable income after taxes and work- and family-related social benefits. Specifically, we used a measure of disposable income that represented the individual component of the household disposable income (equalized by applying the modified OECD scale), which could be considered individuals' yearly available resources. Both measures are available from the country-specific Cross National Equivalent File (CNEF) component of the datasets.[15] As the CNEF dataset includes both SOEP and BHPS-US for the period under analysis, using these two measures improved the country comparability in the income measurement. Both variables were adjusted for inflation indexed to 2019 and were log transformed. These two dependent variables necessarily referred to two separate analytical samples. While disposable income after transfers included non-employed individuals with positive income at

[12] The different statuses that measured employment as well as contractual and occupational instability were present differently in the two contexts: FTCs, for example, were much less-widely diffused in the UK than in Germany. Nonetheless, all the possible "cells" that were derived from the intersection of the above-mentioned statuses contained enough cases in each country. Moreover, we wish to stress that we were mainly interested in the variations among different "combinations of statuses" over the considered temporal moving window.

[13] In other words, we were aware of the risk of proposing a(nother) descriptive "black box" that would collapse the impact of the different possible mechanisms at play as well as their interactions. We do not propose our approach as alternative to more usual ones for measuring the "impact" of single determinants on a given dependent variable. Rather, ours is an explorative way of adding empirical evidence to the transforming economic implications of work instability. For similar applications in economics and demography, see Hacker et al. (2010); Bossert and D'Ambrosio (2013), Menta et al. (2019), Asheim et al. (2020), Bossert et al. (2023), and Comolli et al. (2023).

[14] In order to estimate the effect of specific indices as Employment Protection Legislation, Product Market Regulation, and so on, it would have been necessary to compare a larger number of countries over a long period. Unfortunately, international comparative datasets do not allow for long-enough longitudinal comparisons of work lives. This is an insurmountable problem in present social research.

[15] https://www.cnefdata.org/

the reference age, the labor income was inevitably restricted to individuals who were working when income was compared.

Equation 3 defines age-cohort-specific log income ($y_{i,a,c}$) (of individual i at age a in birth cohort c) as the joint function of accumulated work instability (wi) in the last 7 years and a series of vectors of social stratification (x), such as sex, education (primary, secondary, tertiary degree), occupational class (ESeC – Rose and Harrison 2007), regional position, family status, composition, number of children, and period (3-year dummies).

Equation 3

$$\hat{y}_{i,a,c} = \alpha + \hat{\beta} wi + \hat{\beta} x + \varepsilon$$

For each age-cohort combination, we reported the association between accumulated work instability and individual market- and disposable earnings by reporting the coefficient $(\hat{\beta} wi)$ of a *z score* (a deviation of 1 s. d.) of the employed index, net of the mentioned control variables.[16]

The estimations were also performed separately for males and females and then separately for occupational classes and educational achievement.[17] Due to the restricted sample size, we operationalized occupational class following the three-class ESEC (*European Socio-Economic Class*) scheme (Rose and Harrison 2007), which meant that managers and professionals comprised the service class (1), white and blue higher-grade collars – together with small entrepreneurs – comprised the intermediate class (2), and finally, the lower-grade blue- and white-collar jobs and elementary occupations comprised the working class (3).[18] As individuals' occupational position may have changed as a result of the exposure to instability, we dealt with possible selection issues by taking this information from the first available year in the 7-year moving window.

For the final part of our analytical strategy, we provided an aggregate evaluation of the extent to which work instability directly explained the level of income inequalities at different ages between birth cohorts. Specifically, we aimed to compare the contribution of work instability in explaining the levels of income inequality with the contribution of other social stratifiers – such as sex, education, and class – net of the inclusion of the previously mentioned control variables. In this specific analysis, we changed the operationalization of occupational class by taking the modal state over the antecedent seven-year range up to the threshold age, and we adopted the ESEC 6-class scheme, which distinguished (1) managers and professionals (*the salariat*), (2) high-skilled white- / blue-collar jobs

[16] Age-centered econometric approaches have taken hold in economic income simulations and are suggested when the interest is in life-course-related differences in the marginal association with specific vectors (Sabelhaus and Walker 2009). To maximize the estimation precision, each age-specific coefficient should also be estimated by including ages before and after – that are appropriately rescaled – in order to correct for transitory variations. Additional checks (not shown) that consider income as the 5-year *(-2 / +2)* average around each age were performed. This requirement of additional individual observations left the substantive results substantially unchanged but came at the cost of losing several cases and precision.

[17] Base models that compare coefficients with and without adjustment for covariates and that use labor income after taxation are available upon request.

[18] Aggregated class schemes appear to reduce occupational-measurement errors in survey data (Houseworth and Fisher 2020). See:https://www.iser.essex.ac.uk/archives/esec/user-guide/detailed-category-descriptions-and-operational-issues/six-five-and-three-class-models for more details.

(*intermediate employees*), (3) small employers / the self-employed, (4) low-skilled white-collar jobs (*lower sales and service*), (5) low-skilled blue-collar jobs (*lower technical*), and (6) routine occupations.

Upon taking the variance of log-income $\sigma^2(lnY)$ as a measure of income inequality or dispersion, which was jointly defined by observable and unobservable factors, we could derive the direct influence of a given factor (j) from its relative explanatory power (Fields 2003). In this way, we estimated the inequality weight (iw) relative to each income determinant factor net of the other vectors according to Equation 4:

Equation 4

$$iw_j = \frac{\widehat{\beta_J} \cdot cov(X_j, ln\, Y)}{\sigma^2(lnY)}$$

The $\hat{\beta}$ coefficient of a specific factor that had been obtained by the multivariate OLS was multiplied for $cov(X_j, ln\, Y)$ the covariance between each factor and the log-transformed dependent variable lnY and then divided by the variance of the log-earnings $\sigma^2(lnY)$. The relative weight was expressed as the percentage (0–100) of R^2 that was *directly* explained, while the remaining residual, unexplained part $(1 - R^2)$ was regarded as being correlated with unobserved factors. Analyses that have been performed using similar methods as the Shapley value approach (Shorrocks 2013) have led to substantively similar conclusions.

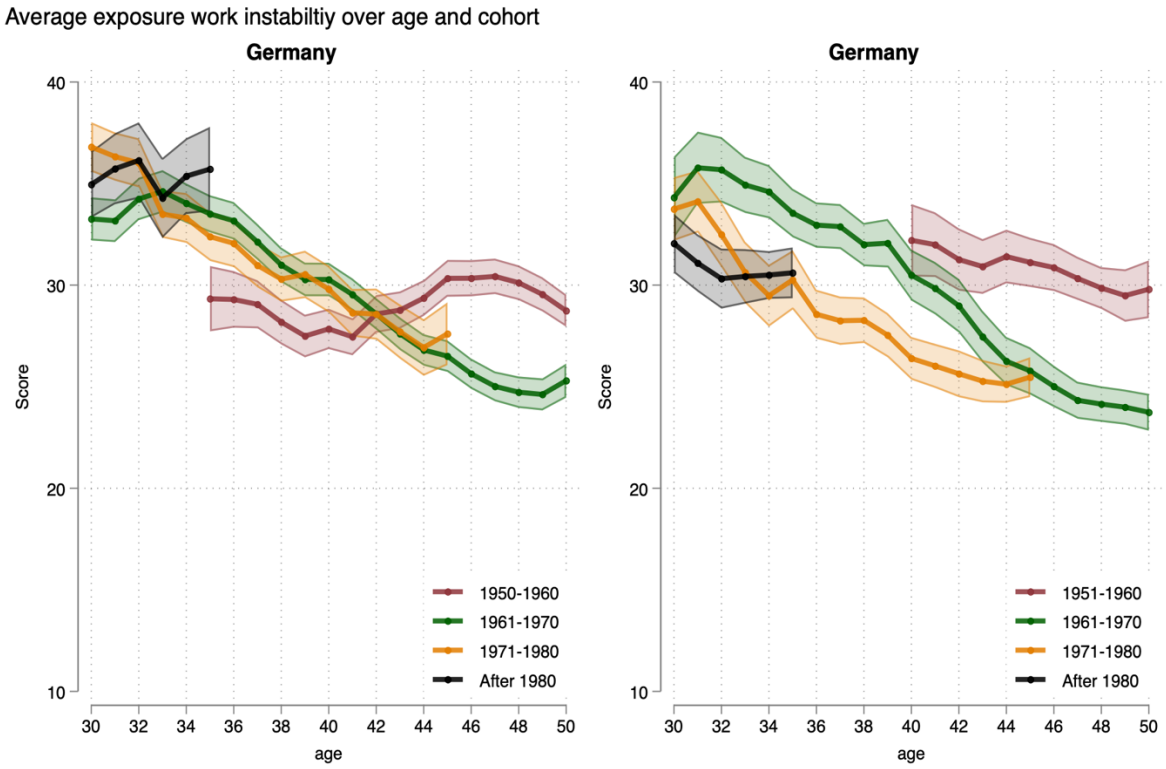
Finally, as our sample selection relied on individuals having at least seven temporal observations for each age step, we addressed potential selection by implementing inverse probability weights (IPW) in all our analyses. For each age step, we predicted the probability of being part of the sample through logistic models that accounted for the covariates mentioned above (i.e., sex, education, occupational class, regional position, family status, composition, number of children, period dummies).

4. Empirical results

4.1 The instability of work trajectories over age cohorts

Figure 2 provides a picture of the age-cohort trends in the index of cumulated work instability measured via the *precarity index* (ranging from 0 to 100) in Germany and the UK. Figure A2 reports age-cohort-specific standard deviations, which can be seen to have fluctuated around 20 points without noticeable cohort differences.

Figure 2. Age-cohort-specific average score of work instability in Germany and the UK



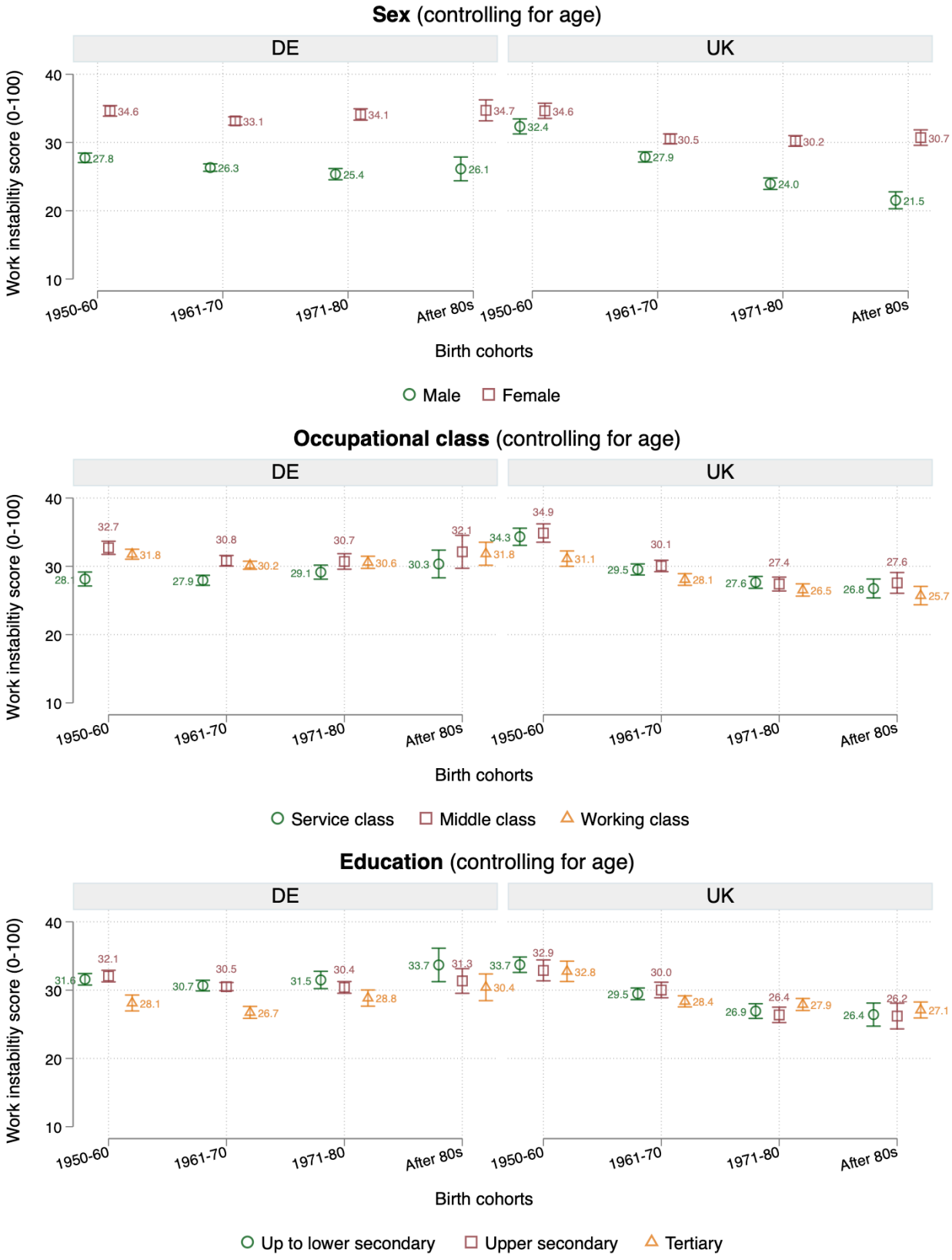
Our measure of work instability can be clearly seen to have grown in Germany over cohorts, with a clear age-based pattern having begun to emerge in the 1960s cohort, which entered reached young adulthood amid the reform process that started in the 80s (Engbom et al. 2015). Younger adults appeared markedly more unstable, following progressive "re-stabilization" only in later age steps. In contrast, the trend seem to slightly decrease across cohorts in the UK, where levels of work instability appeared high beginning in the 1950s cohort, which we could assume to be at similar levels at the beginning of the observational window. However, in both countries, the post-1980s cohort began at quite high levels of work instability and remained high during the (few) years we observed them.

In order to provide a generalized overview of the differences across the social groups of interest, Figure 3 reports the aggregated results separately for men and women between the service, intermediate, and working classes as well as between the lower-, middle-, and tertiary-educated. In both contexts, women can be seen to have been more at risk of work instability. However, while the relative risk exposure remained quite stable across cohorts in Germany for both sexes, the overall

cohort trend in the UK decreased, yet women remained more unstable than men, who instead experienced a greater reduction in their degree of instability.

The opposite trends between Germany and the UK by cohort that were observed in Figure 2 were re-confirmed once accounting for occupational class and educational achievements, although differences are quite smaller than those observed between sexes. In Germany, the distinction by class revealed an interesting trend. Overall, the service class was less work-unstable given the more regulated labor market and the characteristics of a productive system (even if the differences were not always statistically significant, especially for the last cohorts). In general, however, our descriptive findings are significantly in line with previous findings from the literature on work instability and occupational mobility in Germany (Mayer 1987; Mayer et al. 2023). In the UK, exposure to work instability was found to have been significantly reduced among all occupational classes, with the slightly more disadvantage of the middle class never vanishing across birth cohorts. The patterns described for occupational stratification can be largely extended to educational stratification, always with no significant differences between educational levels.

Figure 3. Age-cohort-specific average score of work instability according to sex, occupational class, and educational level

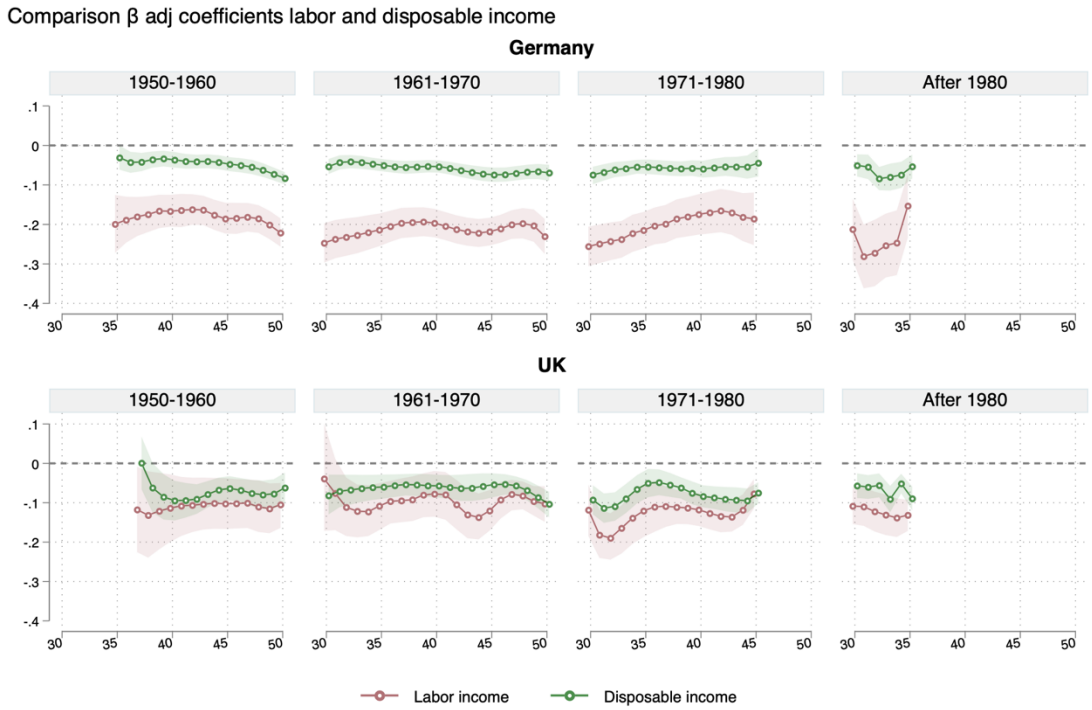


4.2 Work-life instability and economic penalty

Figure 4 considers the aggregated income penalties (both before and after social transfers) associated with accumulated work instability. In order to enhance readability, we smoothed age-specific coefficients by applying the Kernel-weighted local polynomial function (Fan 2018). Upon focusing on the association of work instability with *labor income* (red dots), we found a marked negative impact on earnings in both countries that ranged from –10% to –30% when compared with the average level of trajectory instability, which was in line with Hypothesis 1. In Germany, we observed both a stronger average impact of career instability on labor income and a pattern of relative worsening of the same impact across cohorts. Despite the feeble improvement (less-negative impact) around the mid-age (40–45) for the observable cohorts (which was, however, scarcely significant), work-life instability can be seen to have affected labor income from –15% / –20% for those born in the 1950s to almost –30% for the youngest workers of the last cohorts. Thus, *age* and *birth cohort* in a dual and segmented labor market were found to represent significant stratifiers when considering the impact of labor market instability on labor income. In the UK, on the contrary, we observed an almost stable negative association of about –10% across birth cohorts, which was possibly slightly more negative at a younger stage of adulthood in more recent birth cohorts but was affected by higher errors. In the less-regulated and more flexible context in which exposure to work instability was more diffused and common, the cost of not having a linear, smooth trajectory appeared much lower across ages and cohorts.

Upon examining the impact of welfare de-commodification (via disposable income: green dots), as expected, we found an absence of welfare and household compensation in the UK because the penalty of work instability on labor- and disposable income (or their confidence intervals) *de facto* overlapped almost entirely. In Germany, instead, sizeable differences were found when considering the distance between the impact of work-unstable careers between disposable and labor income: The beta coefficients of work instability on disposable income (green dots) indicated a slightly negative economic penalty that always compensated well for the income loss driven by the market across cohorts and ages. Thus, despite the growing segmentation in access to social benefits, in line with Hypothesis 2, the German state was found to appear to compensate for the income penalty associated with unstable and less-standard work careers at all stages of work life.

Figure 4. Age-cohort-specific association of work instability with log-transformed labor and disposable income – z-score (1 s. d.) adjusted and smoothed coefficients



4.3 The heterogeneous impact of accumulated work instability

We next examined the micro-factors that moderated the impact of work-life instability on labor- and disposable income.[19]

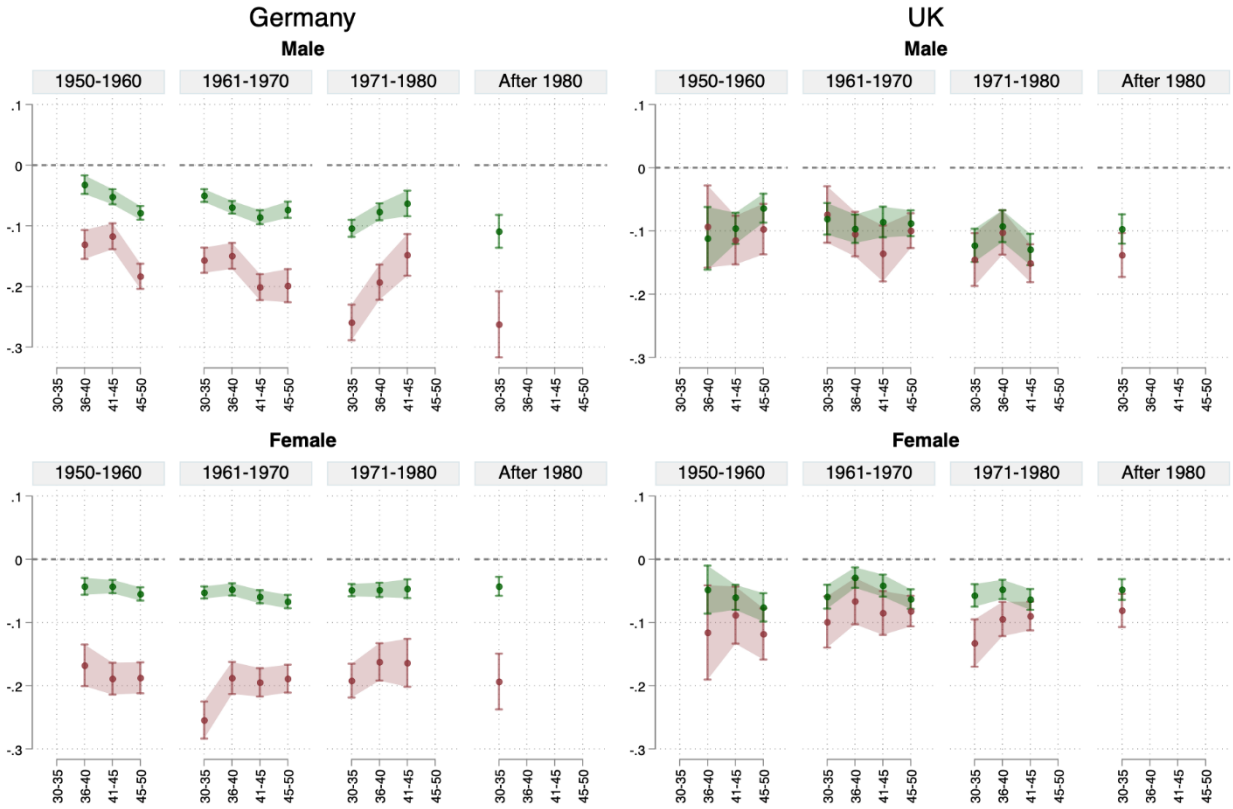
In Germany, the influence of work-life instability on labor income (Figure 5) appears to have worsened among males across cohorts. In the first two older cohorts, work instability can be seen to have affected men's labor incomes more at later ages, when income differences had already cumulated and crystallized. Instead, we found a trend of penalties that affected young German males across cohorts, which reached peaks of about –30% in the last two cohorts. Among women, we found a trend of "stable" penalties across cohorts beginning in the birth cohorts of the 1950s to 1970s and up to the most recent cohort: The penalty averaged around –15%, with peaks of –20% for the post-1980 cohort.

When considering the impact of work instability on disposable income, the small "advantage" of German women with respect to males appears to have been stable across cohorts, with disposable

[19] We present the moderation analyses separately because the subgrouping would produce combinations of age / cohort / sex / class / education, with too few cases to provide precise estimations. For the following analyses, we aggregated the available age-specific estimations for each birth cohort (presented in Figure 4) into representative age groups (30–35, 36–40, 41–45, 46–50). This alternative specification did not alter the substantive results. Moreover, it also reduced statistical fluctuations and enhanced overall readability.

income for males that tended to follow – at lower levels of penalty – the negative age-based trend already observed for labor income.

Figure 5. Age-cohort-specific association of work instability with labor and disposable income – adjusted coefficients by sex

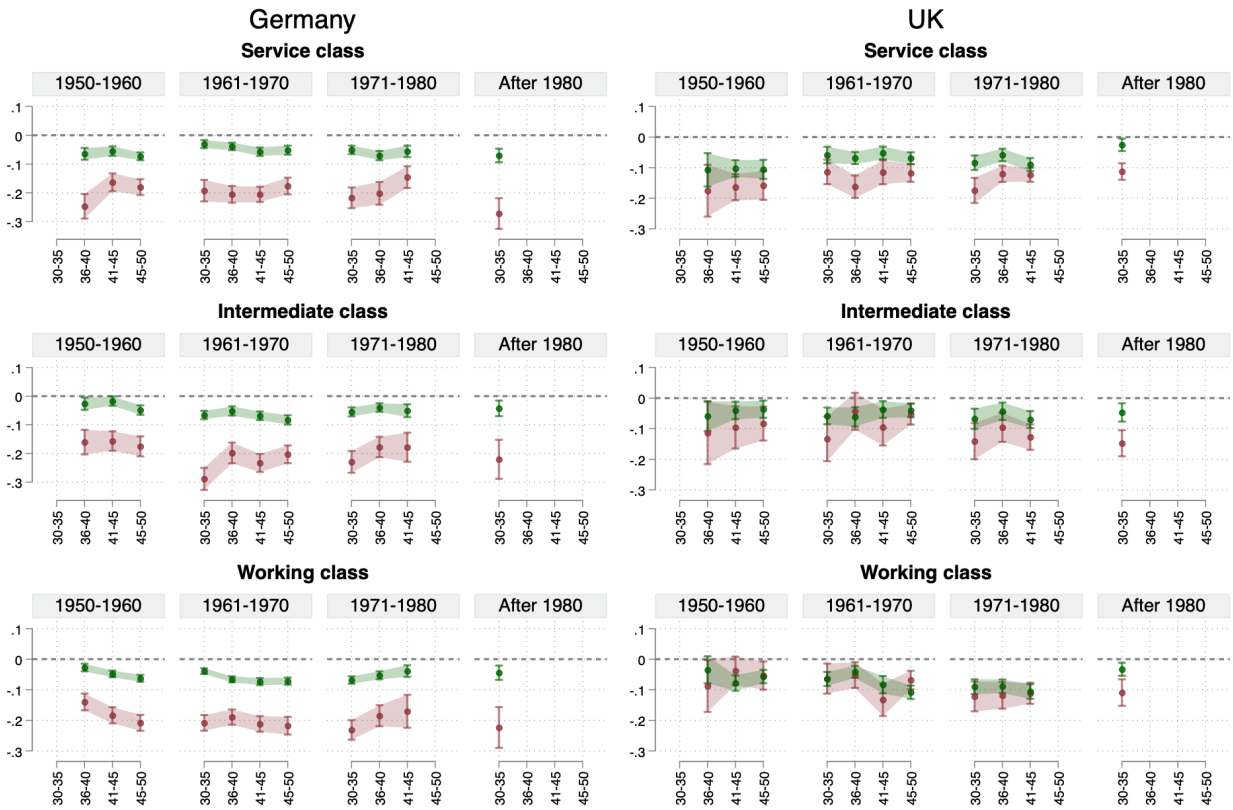


Red dots: labor income; green dots: disposable income

In the liberal context, we also found a slightly increasing economic penalty for males across cohorts, but it amounted to only a few percentage points and was not significant. Conversely, women were found to show decreasing income penalties across cohorts. As already noted, labor- and disposable income penalties from work instability were found to overlap significantly in the UK.

Moving on to the differences between occupational classes (Figure 6), notable country-specific patterns emerged over birth cohorts. Considering age-cohort changes in Germany, we noted that members of the working class tended to be somewhat more severely penalized by accumulated work instability. Across all social classes, younger adults (30–35) – especially in the post-1980 birth cohort – were the most economically penalized and showed a labor income penalty of about –20%. This penalty for younger cohorts tended to decline at later ages and in older birth cohorts, whereas it tended to disappear when considering disposable income. It should be noted, however, that the service class in the post-1980 birth cohort seems to have been the most penalized by precarious work experiences when considering disposable income (even if differences were not significant).

Figure 6. Age-cohort-specific association of work instability with labor and disposable income – adjusted coefficients according to occupational class

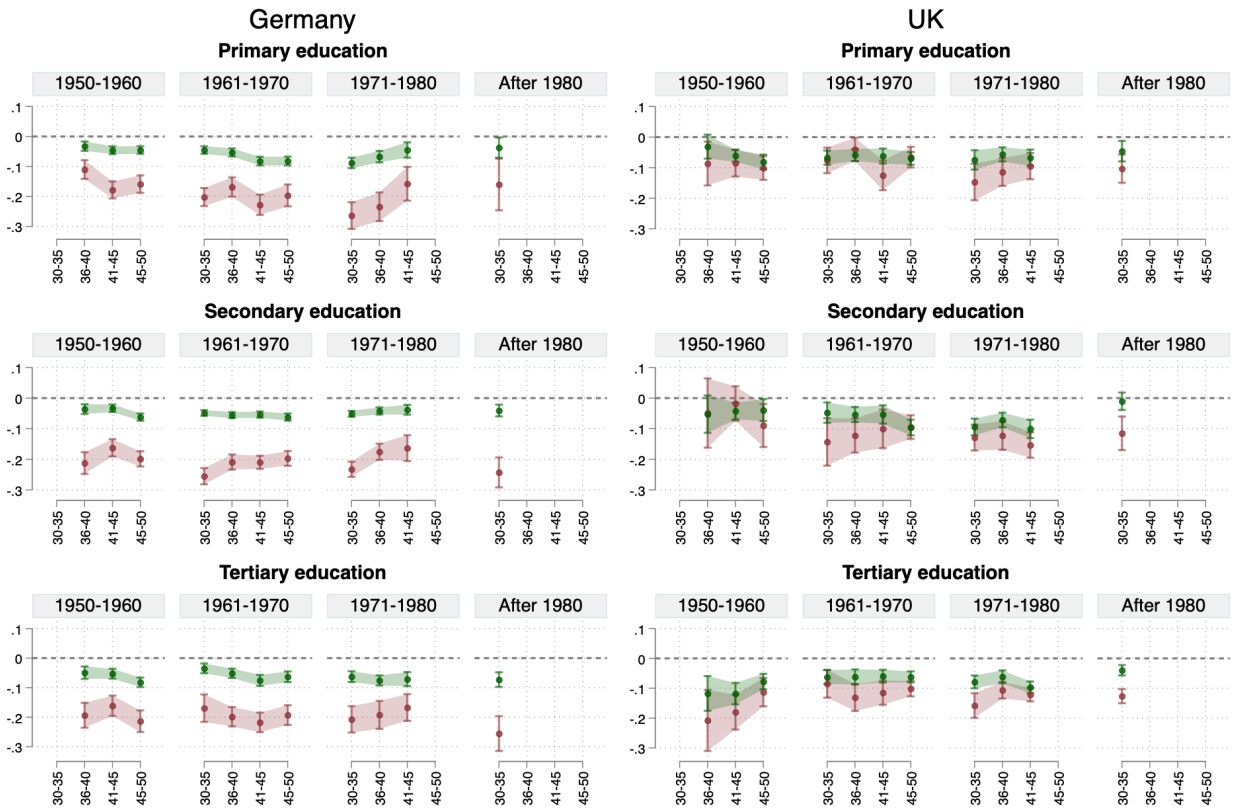


Red dots: labor income; green dots: disposable income

This finding may indicate how a deviation from a standard and stable trajectory in a relatively rigid and protected labor market turns out to also be particularly detrimental at higher occupational levels because it can lead to a permanent income scar and limit access to sufficient benefits that would buffer income disparities. However, the more pronounced (albeit incomplete) recovery in later age groups (i.e., the 71–80 cohort) was indicative of the springboard nature of initial instability for members of the service class. The age gradient that penalized young adults was visible for the middle and working classes as early as in the 1961–70 birth cohort. Thereafter (i.e., in the 71–80 cohort), differences in labor income were still visible, especially in young adulthood, but as expected, these disparities narrowed when disposable income was considered.

In the UK, the service class appears to have been severely hit by the labor income penalty that was attached to work instability, but this penalty appears to have slightly decreased across birth cohorts. Among the 1950–60 and 1961–70 birth cohorts, we observed a proportionally lower level of income penalty when considering lower occupational classes. The situation of the working class, however, substantially worsened over birth cohorts, which is in line with the trend of growing class differences. Finally, the intermediate classes did not show significant income penalties from work instability in almost any age-cohort combination. It is important to highlight the low capacity of the welfare benefit to cushion the income losses brought on by the employment instability that we observed when examining labor income (especially when compared with what happens in Germany). In the UK, the green and red bands almost entirely overlap – a trend that holds for all observed cohorts and is particularly evident for all classes.

Figure 7. Age-cohort-specific association between work instability and labor and disposable income – adjusted coefficients and smoothed according to education



Red dots: labor income; green dots: disposable income

Finally, Figure 7 reports the association of accumulated work instability with labor- and disposable income according to educational levels. Briefly, penalties appear to have been relatively stable across age cohorts and educational levels in the two countries, with a possible small amelioration in old age. Considering labor income, low-educated Germans experienced a sharp increase in economic penalties in the young phase of adulthood, which is in line with targeted flexibilization, at least up to the 1971–80 birth cohorts. Then, the primary-educated became more penalized overall in Germany than in the UK across cohorts – a result that is consistent with the fact that the German skill regime better rewards skills and educational qualifications, whereas in the UK, the flexible labor market also creates enough job opportunities (that additionally appear to be well paid) for routine unstable workers.

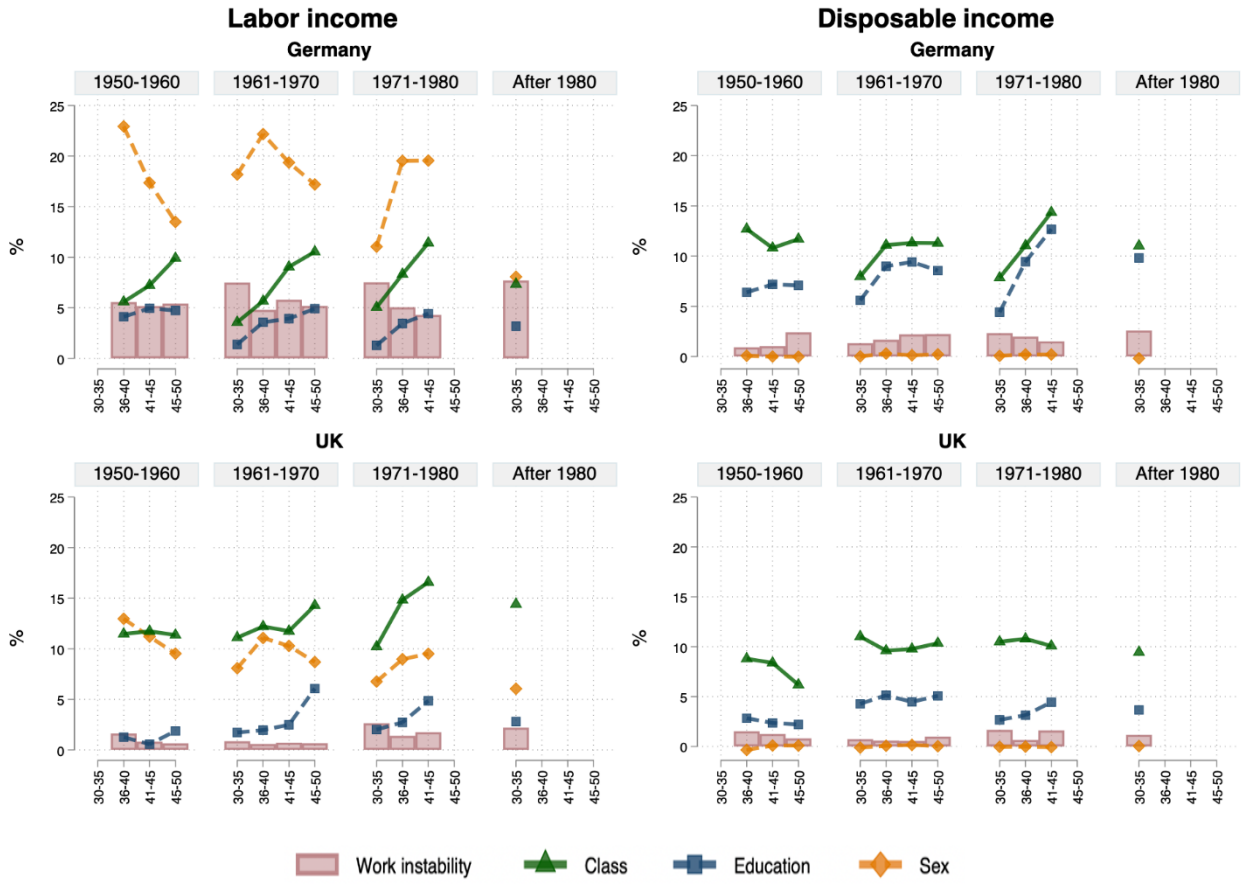
The same pattern could also be verified for labor income among secondary-educated workers, who appear to have been more heavily penalized in Germany than in the UK. The situation was different for high-educated workers who – in an industry-based skill regime like the German one – were extremely heavily penalized by an unstable and wavering work life across both cohorts and age. This finding was found to fit with Hypothesis 3: In order to identify the life-course income penalties of unstable work lives, the joint effect of contextual conditions and of micro-individual stratifiers must be taken into close consideration. A similarly strong penalization for occupationally unstable tertiary-educated individuals did not appear in the UK, where the coefficient of work-life instability was roughly constant – and not too severe – across ages and cohorts. It is again worth mentioning the negative situation of the post-1980 German cohort, whose penalties varied from between –15% (for

the primary-educated) and –25% (for the mid- and high-educated with a volatile work career). Finally, it is also important to stress the different roles played by disposable income across cohorts and educational levels: Buffering the labor income decreased in Germany yet almost overlapped labor income trends in the UK, but less so for those with tertiary education for the same reasons mentioned above for the service class.

5. Decomposing aggregated inequalities

We additionally evaluated the direct role of work-life instability in explaining age-cohort-specific income inequalities by comparing the share of explained variance of labor- and disposable incomes for a series of "stratifiers" – namely work instability, sex, education, and occupational class, always over age groups and birth cohorts – in the two countries (Figure 8).[20]

Figure 8. Age-cohort-specific decomposition of the variance of labor and disposable income



In the left panel, the transforming labor income penalties seen above translated into distinct patterns over age and birth cohorts in the two countries. In Germany, the share of variance explained by our index of accumulated work instability (red bars) was substantial (the highest registered) but remained below 10% (and was even lower when disposable income was considered). While there was relative overall stability across age groups in the first cohort, a clear age gradient was observed for the

[20] Models and reported shares were adjusted for the usual covariates. Similar to the heterogeneity analyses, we condensed the available age-specific estimations within each birth cohort into representative age groups.

subsequent cohorts, with a greater relevance of work instability in explaining income dispersion in the youngest age groups. This finding was again in line with the labor market and income disparities that were confined among the more unstable and more flexible young German workers. In the UK, on the other hand, the overall influence of penalization due to an unstable work career appeared lower and were scarcely different across age groups.

The influence of sex (orange diamond) accounted for the largest share of variance (around 20% / 25% in Germany, but less in the UK, were it accounted for around 10% / 15%), but its relevance progressively decreased in both countries over birth cohorts following a trend in the reduction of sex-based wage differentials, which has been well described in the literature (Blau and Kahn 2008; 2017). This reduction in sex-based wage differentials held especially for young women across countries and cohorts who had entered the labor market with higher levels of education and who had less-interrupted careers. Along with age, sex was a major penalizing factor in Germany more than in the UK (where the penalty was halved): Indeed, being female and 40–45 years old in Germany directly accounted for a similar level of variance (ca. 20%) across all cohorts. Given that disposable income was taken as the equivalized component of household income, partners shared the same income values, and sex thus did not contribute to explaining the overall variance.
Class (green triangle) and *education (blue square)* in Germany followed similar cohorts and age patterns, although class always accounted for a higher share of economic inequality. Specifically, we found that these factors increased their explanatory share at a later age in all cohorts due to the cumulation of disparities between classes (and educational levels) at advanced career stages. Additionally, there was also an overall increase in the levels of these factors over birth cohorts, which pointed to widening income inequalities that were driven by educational achievements and occupational class positions. This held for both market income and disposable income. We did not see similar patterns between education and class in the UK. Instead, many of the educational differences passed through the occupational position, while the share of variance explained by education was remarkably lower. Over cohorts, class moved from explaining around 10% to more than 15% of labor income inequality, with a marked increase when elderly workers were considered.

In the UK, occupational class still played a major role in explaining variations in income (both labor and disposable). In Germany, class was second to sex, but while sex progressively decreased in its impact across cohorts, class increased in relevance, especially within young age cohorts and independent of the kind of income considered. This trend of the growing relevance of occupational class in explaining life-course income inequality in both countries differs from post-modern approaches to class, which view social class as a "zombie concept" that is destined to lose its predictive power when it comes to individuals' social destinies (Beck and Beck-Gernsheim 2002).

6. Discussion and conclusions

The present work aimed to evaluate the economic implications of de-standardized and unstable work lives that have been brought about by the evolving nature and composition of Western capitalism in two ideal-typical European countries. In recent decades, scholars have questioned whether work lives have become more differentiated, increasingly unpredictable, and less secure. However, the

occurrence and effects of such processes – as well as the definition of winners and losers – primarily depend on the institutional contexts in which economic transformations and social changes are embedded and with which individual stratifiers interact.

Although many studies have analyzed work-life transformations, there is still scarce knowledge about the impact of work-life instability on life-course income differences in different institutional contexts. To fill this gap, we proposed a framework that stressed the necessity of integrating a macro-institutional perspective with an analysis of the micro-dynamics of social stratification in order to shed light on how changing work lives across birth cohorts and age groups influence socioeconomic disparities. Our contribution compared post-WWII birth cohorts over moments of individuals' life courses in Germany and the United Kingdom with the aim of comparing a coordinated, corporatist, highly protected yet segmented social market economy (Germany) with an open, liberal, deregulated market economy (the UK). We performed this descriptive comparison by adopting an age-centered, repeated cross-sectional design that confronted income attainments at each prime age step across birth cohorts between individuals differing in accumulated work instability. We leveraged previous longitudinal observations in order to elaborate a comprehensive measure of accumulated work-life instability that aimed to capture employment as well as contractual and occupational instability.
From our empirical analyses, distinct patterns emerged over birth cohorts in the two institutional contexts under scrutiny. First, in both contexts, work instability was found to play a significant role in terms of labor- and disposable incomes. This finding is highly relevant because it stresses how labor has played a consistent role in terms of the costs of the economic and labor market reforms that have been implemented in Europe in recent decades.

Concerning Germany, the documented changes were found to be connected to the country's process of labor market deregulation at the margins. Across birth cohorts, the average exposure to work instability was found to have shifted from lower levels with limited age variation to an increasingly marked age gradient, which has been to the detriment of young workers. Women were found to remain at a "relatively stable" level of penalization linked to work instability across cohorts and age classes, while men were found to experience a sizeable increase in their economic penalty across cohorts. A visible age gradient emerged in income disparities that was found to be driven by work instability, with greater income differences found to be especially prevalent in early adulthood. Overall, income security in the German labor market at all occupational levels was found to remain attached to traditional stable and standard work trajectories, whereas the experience of de-standardized (early) careers was found to entail non-negligible earnings penalties. In discussing these results, it is critical to not overlook the redistributive power of the welfare state. When considering income after social transfers and other family-related buffers, we found that income penalties at an early age appear to be cushioned in Germany in the end.

In the United Kingdom, the picture is different. In a liberal and already-flexible context, no substantial changes were found in the exposure to our measure of work instability, whose differentiation remained similar across cohorts – that is lower than in the German case but more severe when women's careers were considered. Nevertheless, once we had examined the income penalties associated with work instability, we found that the income penalty was lower overall as instability was much more diffused. Moreover, among the working classes, work instability was found to be increasingly often associated with lower economic achievements over birth cohorts. This result

stresses how economic and occupational transformations that have been driven by global changes have enlarged existing differences between classes through the harsher consequences of work instability. Of course, in the winner / loser context of the UK, the relative economic loss for an unstable career may have been stronger for higher-class members; however, while their penalty remained relatively stable across ages and cohorts, it worsened for members of the working class. Finally, we also highlighted how the middle class – especially in the liberal UK – appears to have been increasingly less economically affected by the higher degree of work instability (and subsequent income penalties), even during younger adulthood.

Therefore, concerning the evolving link between de-standardized work careers and economic disparities, we can affirm that major societal changes have differently affected the relationship between individual-level employment and income security according to country-specific institutional dynamics and the interaction of these dynamics with individual characteristics. While younger German cohorts were found to experience initial instability and consequent income disparities more commonly, however buffered by welfare they may be, the lower market-based penalties in the UK were not found to be compensated by the state, and over cohorts, working classes were found to appear to be slightly more disadvantaged because of an unstable and insecure work career.
Moreover, the presented findings contradict the post-modernistic notion that class is becoming less relevant and that the mid-high classes are the most exposed to growing risks of economic vulnerability. In fact, this is not the case (see also Oesch 2022). Class remains among the social stratifiers of post-industrial EU societies, but it affects individuals' life courses differently according to differing national institutional frameworks.

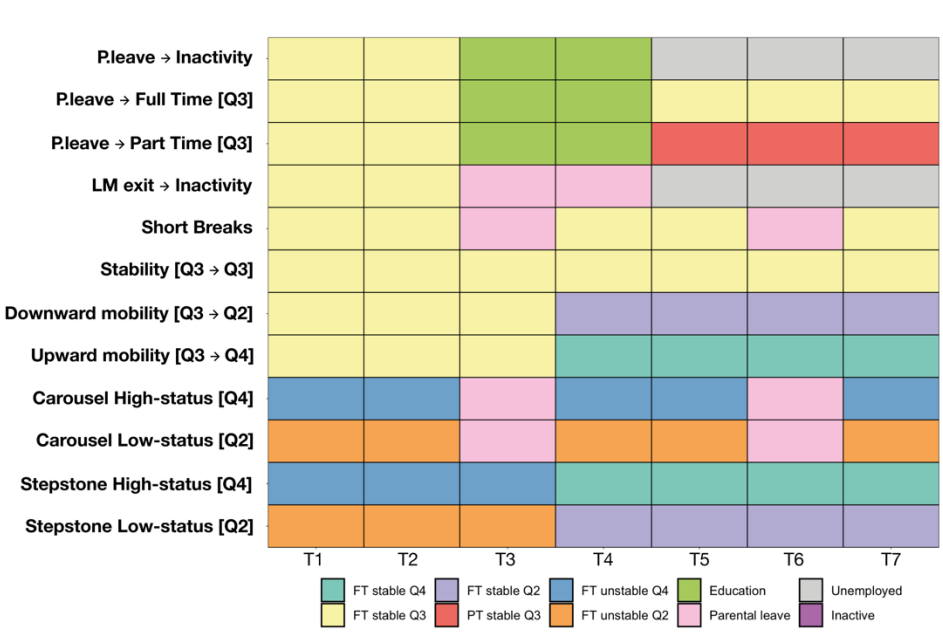
Of course, disposable data present important limitations concerning the number of cases and observable lifespans. Nonetheless, the proposed approach aimed to facilitate cohort and life-course research with prospective data, which benefit from greater measurement precision and younger birth cohorts as compared with retrospective data. Such a limitation could influence future research to increase the number of included countries in order to exhaustively investigate the moderating influence of different institutions. Moreover, this limitation could also lead researchers to make use of data that enable them to exploit entire life trajectories up more dynamically to each aging step.

APPENDIX

Table A1. Vocabulary of employment conditions

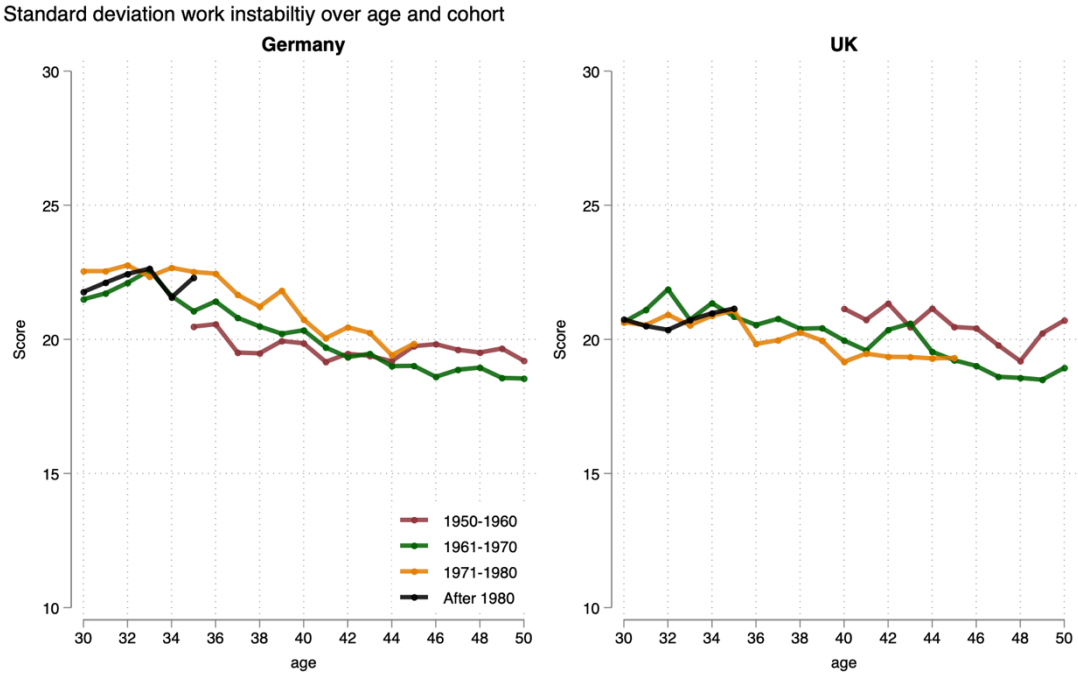
Employment states	Occupational level	Ordering (note: numbers have no numerical value and are only used for ordering)	Note
Full-time permanent contract	ISEI Quintile 5	*11*	
	ISEI Quintile 4	*12*	
	ISEI Quintile 3	*13*	
	ISEI Quintile 2	*14*	
	ISEI Quintile 1	*15*	
Part-time permanent contract	ISEI Quintile 5	*21*	
	ISEI Quintile 4	*22*	
	ISEI Quintile 3	*23*	
	ISEI Quintile 2	*24*	
	ISEI Quintile 1	*25*	
Full-time temporary contract	ISEI Quintile 5	*31*	
	ISEI Quintile 4	*32*	
	ISEI Quintile 3	*33*	
	ISEI Quintile 2	*34*	
	ISEI Quintile 1	*35*	
Part-time temporary contract	ISEI Quintile 5	*41*	
	ISEI Quintile 4	*42*	
	ISEI Quintile 3	*43*	
	ISEI Quintile 2	*44*	
	ISEI Quintile 1	*45*	
Self-employment	ISEI Quintile 5	*51*	equivalent with 11
	ISEI Quintile 4	*52*	equivalent with 12
	ISEI Quintile 3	*53*	equivalent with 13
	ISEI Quintile 2	*54*	equivalent with 14
	ISEI Quintile 1	*55*	equivalent with 15
Education	/	*60*	non-comparable state (no positive / negative evaluation)
Parental leave	/	*70*	non-comparable state (no positive / negative evaluation)
Unemployment	/	*80*	
Inactivity	/	*90*	

Figure A1. Example of trajectory and calculated complexity and precarity indices



	Complexity index	Precarity index
P.leave → Inactivity	32.7	68.5
P.leave → Full Time [Q3]	24.3	27.2
P.leave → Part Time [Q3]	32.7	33.6
LM exit → Inactivity	32.7	68.5
Short Breaks	34.4	33.8
Stability [Q3 → Q3]	00.0	08.5
Downward mobility [Q3 → Q2]	18.4	42.5
Upward mobility [Q3 → Q4]	18.4	08.5
Carousel High-status [Q4]	34.4	26.8
Carousel Low-status [Q2]	34.3	19.9
Stepstone High-status [Q4]	18.4	10.8
Stepstone Low-status [Q2]	18.4	03.9

Figure A2. Age-cohort-specific standard deviation of work instability in Germany and the UK



Chapter 2

Family Background and Life Cycle Income Volatility: Evidence from Sibling Correlations in Denmark, Germany, and the United States[1]

1. Introduction

A prominent tradition of sociological and economic studies on inequality of opportunity evaluates the influence of family background on income attainment (Björklund and Jäntti 2020; Torche 2015). Most of this literature is rooted in the permanent income hypothesis (Friedman 1957), which postulates that short-term changes barely alter individuals' standards of living. Accordingly, studies examine family background-related differentials in the levels of permanent income while treating transitory fluctuations as statistical noise to be averaged out using multiple observations over the lifecycle. While this framework could easily fit the overall static societies characterized by life-long employment and reduced life cycle mobility (DiPrete 2002), this is less true in post-industrial societies. Transitory volatility, understood as year-to-year income fluctuations, has proven to matter substantially for today's inequality and its rise, as it hampers economic security, savings, and investment strategies; alters consumption patterns; and negatively influences intergenerational mobility (Cheng et al. 2020; Gottschalk and Moffitt 2009; Hardy 2014; Salverda 2014; Western et al. 2012). Volatility represents a non-desirable experience associated with shocks to individual welfare, and its accumulation over the lifecycle accounts for enlarging intracohort inequalities in income levels and income trajectories (Cheng 2014; Gangl 2005; Grotti and Passaretta 2023). Thus, volatility holds a standalone substantive significance from a stratificational perspective. The protection from or exposure to sudden income fluctuations, regardless of one's resources, constitutes one of the elements defining individual well-being, and, as such, can be part of the advantages or disadvantages transmitted across generations.

In this paper, we conduct a comprehensive analysis of the total impact of family background on exposure to income volatility across the life course to fully consider how family-based inequalities impact lifelong economic prospects. Despite the rising academic and political centrality of volatility, only few studies examine its intergenerational dynamics (Cheng and Song 2019; Shore 2011). These studies indicate a small but positive correlation between parental and offspring transitory fluctuations, possibly reflecting the intergenerational transmission of risky career tracks. We go beyond these seminal studies and consider the total impact of family background on exposure to volatility by providing the first estimates of sibling correlations in income volatility across the life cycle. We analyze gross labor earnings and equivalized disposable income to compare volatility emerging from the labor market and the compensation (if any) played by both the welfare state and the household.

[1] This paper is co-authored with Kristian Bernt Karlson. Access to the SOEP data was granted by the German Institute for Economic Research (DIW), Berlin, 2022. Access to the PSID data was granted by the Institute for Social Research, University of Michigan, Ann Arbor, MI, 2023. Access to Danish register data was granted by Statistics Denmark, 2023. The data collectors bear no responsibility for the analyses and interpretations provided in this paper. The authors wish to thank the participants to WIM Meeting 2023 (University of Copenhagen) and ECSR 2023 (Charles University, Prague) for their useful comments on previous versions of this paper.

Moreover, we examine the extent to which family background affects offspring volatility via major mitigating or enhancing risk factors associated with educational attainment, non-employment spells, and position in the overall income distribution.

We compare Denmark, Germany, and the United States. These three countries represent a comprehensive redistributive welfare state and a flexicure labor market; a rigid and segmented labor market with dualized access to social benefits; and a highly unequal and poorly regulated context, where inequalities emerging in the market sphere are largely reproduced at the household level and not addressed by the state. As life cycle income dynamics unfold within structural and institutional conditions (DiPrete 2002; Mayer 2009), we expect contextual inequality affecting the distribution of family resources at the 'starting line' to also influence the strength of family background in the exposure to income volatility. In addition, in line with DiPrete's 'mobility regimes' (2002), institutional settings such as employment regulation and welfare redistribution are also relevant as they determine both rates of exposure to and consequences of life-course events.

We find that family background and local community factors shape individuals' exposure to volatility (up to 40% of the total variance) in earnings and disposable income, yet to an extent lesser than for earnings and income levels. For brothers, country differences in family background impacts reflect those in income levels, with more unequal countries also displaying stronger family background effects on volatility. For sisters, there is greater country similarity in the family background impact on earnings volatility. Still, sisters differ with respect to the correlation in disposable income volatility, potentially because of the country-specific relevance of welfare decommodification and stratified assortative mating, which can suppress or amplify volatility at the family level. Moreover, the sibling correlation in volatility displays significantly more fluctuation over the life cycle than in income levels, particularly at the peak of occupational maturity (at ages 38–40). Finally, a significant portion of these correlations is mediated—albeit not for all country-sex combinations—by educational attainment, non-employment, and position in the income distribution. However, they do not fully mediate the correlations, suggesting that unrelated unobserved family factors still are at play. We discuss what these factors might be.

2. Background

2.1 The relevance of income volatility for the economic well being

Income volatility is one component of 'income risk', defined as non-directional year-to-year fluctuations in personal income resulting from idiosyncratic income shocks (Jenkins 2011). As an objective indicator of economic unpredictability and insecurity (Latner 2019), volatility is an undesirable outcome that affects present and future standards of living. It does so by shortening economic time horizons, negatively impacting consumption patterns, eroding savings (the insurance against future risks), and compromising future investments at the individual, family, and intergenerational levels (Hardy 2014; Western et al. 2012). In fact, scholars only recently have begun to document that volatility directly influences offspring's outcomes, such as adolescence behaviors (Gennetian et al. 2015), mental health (Cheng et al. 2020), cognitive skills, educational attainment,

and permanent income (Hardy 2014) by deteriorating childbearing quality, regardless of the level of material resources.

Research on aggregate historical trends in volatility and transitory income fluctuations has flourished over the past few decades.[2] Although evidence from this literature is still debated, studies suggest that income volatility has risen since the 1980s (at least up to the beginning of the new century) in Western economies, playing a pivotal role in the contextual increase in aggregate income inequalities (Neckerman and Torche 2007). Most of these studies are on the US (Dynan, Elmendorf, and Sichel 2012; Gottschalk et al. 1994; Gottschalk and Moffitt 2009; Jensen and Shore 2015; Moffit et al. 2022; Shin and Solon 2011; Ziliak, Hardy, and Bollinger 2011), but volatility has also been studied in Germany (Bartels and Bönke 2013), Sweden (Hällsten, Korpi, and Tåhlin 2010), the United Kingdom (Cappellari and Jenkins 2014), Italy (Cappellari 2004). Gangl (2005) ranked Denmark, Germany, and Ireland as the countries least exposed to transitory income variance, while Italy, the United States, and Spain as those with largest exposure. Much of the documented volatility refers to labor earnings before any compensation by the tax system, welfare state, and other household members. However, research on family income (equivalized disposable income) indicates a similar increase in volatility over the last few decades in the US (Dynan et al. 2012; Gottschalk and Moffitt 2009). In contrast, a more protected context such as Germany shows stability in family income volatility levels (Bartels and Bönke 2013).

At a more micro-level, volatility appears to be U-shaped over the life cycle, with greater volatility at the start, a subsequent decline and stabilization, and a final rise at the end of the working career (Blundell et al. 2023; Mazumder 2005). However, there may be relevant gender-specific life course differences: the transition to motherhood and women's concentration in part-time jobs can contribute to greater income volatility at mid-career stages. Few studies have examined women's lifecycle profiles, and they point to the problems in the common practice of measuring volatility conditional on positive earnings. If spells outside the labor market are left out by design, then volatility and gender differences (but also differences across groups differently exposed to unemployment) will be underestimated. Moreover, volatility is concentrated at the bottom end of the income distribution and thus, all else being equal, concentrated among the low-educated, women, singles, and ethnic minorities (Delaney and Devereux 2019; Hällsten et al. 2010; Jensen and Shore 2015; Latner 2019; Ziliak et al. 2011). Nonetheless, the increase in volatility over the past decades has remained stable among the disadvantaged; increases have been concentrated among the more advantaged groups and more economically secure households (Jensen and Shore 2015; Latner 2019).

In addition to the unequal distribution of volatility, its accumulation over the working life course has also proven central in explaining differentials in income trajectories and related aggregate income inequalities (Cheng 2014). In this vein, recent studies began investigating the relationship between intragenerational mobility episodes and subsequent volatility patterns, denoting stronger and longer

[2] Traditional economic theory assumes regressivity towards zero in volatility over time (Becker and Tomes 1979) or explains it in terms of statistical noise. The Permanent Income Hypothesis (Friedman 1957) holds that individuals rationally orient life standards across the life cycle on the expected income trajectories associated with accumulated human capital and can fully anticipate and adjust consumption patterns to short-term income fluctuations. However, a growing literature challenges these assumptions, given the growing levels of employment and life course instability driven by the structural and institutional transformations in recent decades (DiPrete and McManus 2000; Hacker 2004; Kalleberg 2009).

lasting volatility after episodes of downward mobility. For example, Latner (2018; 2019) has demonstrated that episodes of downward mobility subsequently exhibit greater volatility than upward mobility patterns in the United States. Volatility associated with upward mobility is generally smoother because promotions, raises, and bonuses typically occur at earlier career stages and are followed by subsequent stability. In contrast, volatility associated with downward mobility is primarily driven by shocks to personal welfare (i.e., job loss or health issues), which do not ensure subsequent stabilization. This is also the reason why income volatility is considered an objective measure of economic insecurity.

It is therefore reasonable to assume that people, regardless of their social position, have a rational aversion to excessive volatility unless it results in unexpected bonuses or upward mobility. However, in the stratificationist literature, economic volatility has remained largely on the sidelines (Leicht 2020). It has mostly been incorporated into the economic foundations that define social classes, specifically in the concepts of economic stability and security (Goldthorpe 2000; Goldthorpe and McKnight 2006), and thus implicitly deductible from the occupational level, job security, and income level. However, existing findings on volatility distribution (and changes over time) and its intra- and intergenerational influence over and above income levels point to a standalone substantive relevance of volatility in stratificationist terms. This reflection is particularly relevant from an intergenerational perspective. If there is intergenerational stratification in the exposure to volatility, especially sudden directional (negative) movements, in turn negatively influencing individual, intergenerational, and aggregate outcomes, then we are facing a further mechanism through which inequalities of opportunity are reproduced. Therefore, complementing the study of the link between family background and income achievements with intragenerational dynamics such as volatility is key to fully understanding how family-based inequalities impact lifelong economic prospects and societal economic well-being.

2.2 Family background and exposure to lifecycle income volatility

Although exposure to income volatility is linked to many adverse outcomes, intergenerational inequalities in volatility exposure have received surprisingly little attention. Only few studies examine the intergenerational association of earnings volatility, both of them for the United States. Shore (2011) and Cheng and Song (2019) estimate the correlation between fathers' and sons' joint distribution of volatility from linked hierarchical income growth models and conclude that the sons of high-volatility fathers also experience greater volatility during adulthood, even if the correlations are relatively modest. We extend this work by examining the total or 'gross' impact of family background on exposure to volatility over individuals' lifecycles.

To obtain the most comprehensive measure of the impact of family background, we use sibling correlations, which are regarded as an omnibus measure of the total impact of family background and local community. Compared to two randomly selected individuals, siblings share not only parental education, occupation, income, and wealth but also genetic makeup, a common rearing environment, parental non-financial investments, mutual interactions, and local community (Sieben and de Graaf 2001; Solon 1999). For any given outcome, the sibling correlation indicates, in percentage terms, the proportion of the total variance that can be attributed to common family background (and local

community) factors. Its main advantage is that it captures not only observable background-related characteristics, but also unobserved aspects often missed by conventional mobility measures (Björklund and Jäntti 2020). Certainly, siblings may differ from each other within the same family because of birth order, genetic differences, gender differences, or other unobserved traits and characteristics (Conley, Pfeffer, and Velez 2007). Given these limitations, sibling correlations are considered a lower-bound estimate of family background effects (Björklund & Jäntti 2020).

We provide the first available estimates of the sibling correlation in exposure to income volatility. We do so over individuals' life cycles and distinguish brothers and sisters. Because volatility generally follows a U-shaped pattern over individuals' life courses, we would expect the impact of family background to also change over the life course in a way similar to how family background affects permanent income across the life cycle (Cheng and Song 2019; Bingley and Cappellari 2019; Grätz and Kolk 2022). On the one hand, siblings often share early educational and occupational paths associated with a similar degree of volatility but may later diverge if individual characteristics or individual-specific life events become more important for volatility exposure (Blau and Duncan 1967; Warren, Sheridan, and Hauser 2002). On the other hand, origin-related similarities may accumulate over the life course if the exposure and accumulation of volatility follow background-related patterns and concentrate on specific social groups (Becker 1991; Cheng 2014; Cheng and Song 2019; DiPrete and Eirich 2006). Although these findings suggest a changing impact of family background on exposure to volatility over the life course, given we are the first to report total family background effects, we refrain from forming strict hypotheses about their direction.

2.3 Channels of intergenerational transmission of volatility

Insofar as family background affects exposure to volatility, such effects can appear through several channels. We examine the role of three factors that we characterize as either risk-enhancing and risk-mitigating: educational attainment, movements in/out of employment, and attained income (i.e., levels of income).

First, education is usually considered a risk-mitigating factor that increases individuals' chances of securing well-paying and stable jobs, which is associated with lower income volatility in the long run (Cheng 2021; Hällsten et al. 2010). Education is also correlated with unmeasured characteristics such as cognitive and noncognitive traits that may affect exposure to income volatility (Delaney and Devereux 2019). Because sibling correlation studies show a substantial impact of family background on education (e.g., Präg et al. 2022), and education is correlated with exposure to volatility, we expect education to mediate a significant portion of the total family background effect on volatility exposure.

Second, exposure to negative life course events can be a risk-enhancing factor. Contractual precarity, the risk of displacement, and non-anticipated health and family related problems are associated with greater work and income volatility and insecurity (Barbieri 2009; Cheng 2014; DiPrete 2002; Western et al. 2012). Such events often result in movements in and out of the labor market of varying duration, and therefore also poorer job quality prospects, given the well-documented human capital depreciation and stigmatization (Brand 2015; Gangl 2006; Mouw and Kalleberg 2010). Family background not only contributes to differentiating the protection against these risks via educational

and occupational conditions (see Ekhaugen 2009; Wiborg and Møberg 2010); an advantaged background also ensures compensation of the negative consequences resulting from adverse events through, for example, monetary safety nets and exploitable networks that accelerate the return to stability (Barbieri and Gioachin 2022; Friedman and Laurison 2020). Thus, because family background affects exposure to episodes of non-employment, and non-employment exposure is a core determinant of volatility, we expect non-employment to mediate a significant portion of the total family background effect.

Third, we consider income attainment a risk-mitigating or enhancing factor, since it stands as the endpoint of the intergenerational status attainment process (Blau and Duncan 1967). Although the level of income is not a channel of transmission as such, it proxies both occupational attainment and other unobserved factors (e.g., skills) that contribute to income inequalities, even within the same occupation (Kim and Sakamoto 2008). Greater income levels are indicative of occupations characterized by more contractual security and thus lower income volatility (Jensen and Shore 2015; Latner 2019). Because family background is known to affect both occupational attainment and levels of income (Black and Devereux 2011; Breen and Jonsson 2005; Karlson and Birkelund 2023), we expect income—or more precisely, the income level around which the volatility occurs—to account for a significant portion of the total family background on volatility exposure.

2.3 Comparing Denmark, Germany, and the United States

Sociologists and economists have long debated whether the influence of family background varies across modern societies or whether social background effects operate similarly across contexts. Numerous studies have examined the parent-child associations in education, occupation, and income in different Western economies (Breen 2004; Bukodi, Paskov, and Nolan 2020; Corak 2013; Erikson and Goldthorpe 1992; Hertel and Groh-Samberg 2019; Ishida, Muller, and Ridge 1995; Jerrim and Macmillan 2015). Some scholars point to systematic differences in intergenerational inequality related to educational institutions (Breen et al. 2009; Pfeffer 2008), the redistributive role of the welfare state (Landersø and Heckman 2017), and overall income inequality (Corak 2013; Grätz et al. 2021). The relationship between income inequality and mobility is generally referred to as the "Great Gatsby curve" (Corak 2013) and predicts that greater distributional inequality hampers intergenerational mobility by unequally affecting the distribution of resources of the family of origin and the surrounding environment; unequally sorting individuals within local environments; and finally determining the strength of the effect of family and local communities on offspring's life course outcomes (DiPrete 2020).

Moreover, countries differ in their set of institutions that influence the rates of exposure to and consequences of life course events on living conditions. DiPrete (2002) refers to these institutional compounds as "mobility regimes," suggesting that institutionally-driven intragenerational dynamics also crucially affect intergenerational patterns. To provide an example relevant to our study, countries differ in employment rigidity and overall labor market flexibilization, thereby influencing the risk (or *rate*) of unemployment, and consequently, income volatility. However, when unemployment risk is high, countries may still differ in their chances of *counter-mobility events,* such as the probability of adequate re-employment as well as the mitigation of the economic consequences of the risk exerted

by the welfare tax system and social transfers (DiPrete and McManus 2000; Esping-Andersen 1990; Hardy 2017). An effective way to evaluate the redistributive influence of the welfare state (and other sources of compensation) is to compare results for volatility in pre-tax labor earnings, indicative of disparities emerging from the labor market, and (equivalized) disposable income, which captures individual-specific available resources net of the compensation of the welfare state and of other family members (Landersø and Heckman 2017). The family is indeed the first institution of income and risk pooling and redistribution (Western et al. 2012), in which the degree of social stratification in assortative mating (Breen and Salazar 2011; Schwartz 2013) and related consequences for household members' employment and income conditions contribute to the attenuation, reproduction, or exacerbation of existing inequalities (for partners' similarity in income volatility, also see Shore 2015).

Denmark, Germany, and the United States provide a strong descriptive test for these differences. In line with other Scandinavian countries, Denmark combines a high degree of labor market flexibility with a comprehensive redistributive welfare system (*flexicurity*). Compared to the other two countries, Denmark stands out for its low levels of inequality, income volatility, and high intergenerational income mobility (Black and Devereux 2011). In contrast, Germany presents a rigid labor market that features a strong reliance on educational credentials (also given its dual vocational system), high protection against firing, and a highly centralized wage setting based on collective agreements. These conditions create stable working careers, with reduced mobility and exposure to volatility. This is less true for women, who still largely occupy a position of *partial contributor* in German families (Schmitt 2012). Their greater exposure to part-time contracts suggests greater levels of income volatility. Moreover, access to German social benefits is tightly linked to labor market attachment, and thus less-stable workers, especially in less-skilled jobs targeted by the flexibilization process and vocationally educated workers at later career stages, risk experiencing entrapment in economic volatility and insecurity (Blossfeld and Mayer 1988; Barbieri 2009). Finally, the United States is the most economically unequal and volatile of the three countries (Neckerman and Torche 2007). It features low employment regulations, weak school-to-work linkages, greater diffused flexibility, and a decentralized and discretionary wage setting that explain the overall high levels of volatility. Moreover, the US welfare state exerts only marginal intervention, thereby perpetuating inequalities emerging in the market sphere (Heathcote, Perri, and Violante 2010).

Following the Gatsby curve reasoning, greater distributional inequality translates into a greater stratification of valuable resources at the 'starting line' and consequently more stratified educational, occupational, and income opportunities (DiPrete 2020; Schnitzlein 2014). If these factors are also relevant channels to determine exposure to volatility, then we expect a stronger family background effect on volatility in more economically unequal contexts such as the US, followed by Germany and then Denmark. Given the overall inequality in the US and its residual welfare state, we also expect that the three risk factors (education, non-employment, and income levels) explain a large portion of the family background effect irrespective of whether we consider labor earnings or disposable income. Although we expect an overall lower influence of family background in Denmark, its flexible labor market suggests an equally central role of the three risk factors in shaping labor earnings volatility (and sibling similarity) as in the US. However, the extensive Danish welfare state interventions should substantially decrease the influence of family background when considering volatility in disposable income (as opposed to labor earnings). Germany represents a peculiar case

where men display lower levels of income volatility compared to women, but a stronger influence of social origin in shaping life chances (Schnitzlein 2014). Accordingly, we expect Germany to display greater differences between brothers' and sisters' correlations, with brothers being more similar—and always to a lower extent than in the US—as they are more likely to resemble each other in education, occupation, and income.

3. Data and methods

3.1 Data, sample, and income measures

We analyze the sibling correlation in exposure to income volatility by combining high-quality administrative register yearly data for Denmark and comparable representative household longitudinal surveys for Germany and the United States with information up to 2019. We use the German Socio-Economic Panel (SOEP v36eu), which has followed household members longitudinally since 1984, and the Panel Study of Income Dynamics (PSID) which has followed American family members since 1968. SOEP continues to collect yearly information, while the PSID changed from annual to bi-annual collection after 1997. To achieve greater comparability between the two surveys, we employ harmonized income and employment information derived from the Cross-National Equivalent File (CNEF). We define siblings as individuals sharing a legal mother (either biological or adopted). Moreover, we consider individuals born in 1955–1979 to be able to observe lifecycle income from ages 30 through 50. Appendix Table A1 summarizes available siblings and analytical samples for each country.[3]

Concerning our income measures, annual labor earnings include gross wages, salaries, and bonuses from any kind of employment. Disposable income consists of the sum of household members' labor earnings, asset flows (income from interest, dividends, and rent), and private retirement income, after accounting for private and public transfers, social security measures, and total family taxes. We obtain the individual equalized disposable income using the OECD-Modified scale.[4] We adjust for inflation by converting both measures to 2017 US dollars for Denmark and the United States, and in 2017 Euro for Germany.[5] Finally, as motivated in the theoretical section, we retain individuals with zero earnings and zero disposable income because conditioning the sample to moments with positive incomes would underestimate the degrees of volatility, especially for groups (e.g., women) particularly exposed to movements in and out of the labor market.

[3] We do not exclude singletons remaining as they contribute to achieving more precise estimation of the variance components (Björklund et al., 2009). Nevertheless, they will not contribute to the family variance component.
[4] The OECD-modified scale attributes weight of 1 to the first adult, 0.5 to each remaining adult members (aged 14 or more), and finally a weight of 0.3 for each child under 14.
[5] Income variables provided in SOEP and CNEF-SOEP data are exclusively in Euro also for periods before the implementation of Euro. Given the relative nature of the proposed analyses, no differences are expected by keeping Euro for Germany.

3.2 Measuring individual income volatility

Although several alternative measures of income volatility exist, there is no consensus on which one is the most effective. The first intuition for measuring volatility comes from the permanent income framework. The total level of inequality can be expressed as the sum of a permanent component, representing lasting differences between individuals, and a transitory component that captures individuals' fluctuations around the permanent component (Gottschalk et al. 1994). Therefore, at any given time, a transitory movement around individuals' average income counts as volatile. However, focusing on the deviation around the average income misses the distinction between smooth and directional changes indicative of *intragenerational mobility* and residual changes relative to volatility (for an intuitive graphical representation, see Latner 2018:52). To overcome this shortcoming, Gangl (2005), Nichols and Rehm (2014), and Latner (2018) proposed to measure volatility as the (relative) deviation around individuals' specific directional trends within a given period.

In our empirical analyses, we use an individual-level relative measure of volatility net of directional mobility, building upon classical measures of aggregated transitory variance. We adopt the *windows averaging method* by Gottschalk and Moffitt (2009), which is defined as the standard deviation of income levels in k moments before and after the focal moment (i.e., *t-2, t-1, t, t+1, t+2*). Thus, we measure individual and age-specific exposure to volatility V of a given income variable Y_{ji} as the relative deviation from individuals' trends characterizing the five-year windows around each focal age, as defined in Equation 1. For each individual (i), in every prime-age step (j) from 30 to 50, we constructed age-centered windows of five calendar years (k = from -2 to +2), excluding windows presenting more than two consecutive zeros.[6] Within each age-centered window, we use the distance between Y_{kji} and the k-specific residualized detrended income values $\widehat{Y_{kji}}$ predicted from fixed effect models absorbing individual-specific time linear slopes (see Brüderl and Ludwig 2015). Alternative but closely related approaches to predict these residuals build on random growth curves with random slopes (see Cheng et al. 2020).

The standard deviation is then normalized by dividing it by the average income in each specific window. The resulting volatility measure is equivalent to a coefficient of variation that expresses the degree of volatility as a unitless proportion of individual and age-specific average income. This property is of particular interest as two siblings with different income levels may experience similar relative proportions of income volatility that would be missed by measures that are sensitive to absolute levels.

[6] PSID changed from yearly to biannual data collection in 1997, and accordingly, from that year we constructed age-centred windows of five calendar years using only three observations (*t-2; t; t+2)*. In this case, we exclude windows with two or more consecutive zeros.

Equation 1

$$V(Y)_{ji} = \frac{\sqrt{\sum_{k=-2}^{2} \left(Y_{kji} - \frac{\widehat{Y_{kji}})^2}{k-1} \right)}}{\frac{Y_{ji-2} + Y_{ji-1} + Y_{ji} + Y_{ji+1} Y_{ji+2}}{k}}$$

This measure has desirable properties such as being computable at the individual level, requiring a minimum of three temporal observations, and allowing the incorporation of zero income. Furthermore, research shows that descriptive measures of transitory variance and volatility are closely related to the ones obtained from model-based variance components approaches (Ziliak et al. 2011), whose interpretation however heavily depends on parametric assumptions (Shin and Solon 2011).

We show the siblings' life cycle distribution of volatility in earnings and disposable income in Appendix Figure B1. Because we consider only ages 30–50, we do not observe the mentioned U-shape profile. Still, important gender and contextual dependent differences exist. Earnings volatility is generally higher than disposable income volatility, but we see a decline of earnings volatility over the prime age for all samples but much less among the already less volatile German brothers. Disposable income volatility is not only lower but also shows a monotonic distribution over the life cycle. Contextual differences primarily exist in levels. The US has the highest levels, distancing the other countries by around 0.1 CV points (greater income fluctuations of around 10% of the individual average income). One exception is Danish brothers who experience earnings volatility similar to US levels. In line with our expectations, German sisters share similar high levels of earnings volatility as US sisters, whereas Danish sisters stand at the lowest levels.[7]

3.4 Sibling correlations over the life course

We estimate sibling correlations to evaluate the total influence of family (and local community) background on the exposure to income volatility. We first present a simple formulation of this measure following Solon et al. (1991) and Solon (1999); then, we address the strategy to allow sibling correlation to vary across individuals' life cycles.

Considering a two-level linear model, we denote a given labor market outcome Y_{jg} (volatility) of sibling (i) in family (g) as composed of a global mean μ, the between-family error ω_g, and the individual-specific (or within-family) error term ν_{ig}.

Equation 2

$$Y_{jg} = \mu + \omega_g + \nu_{ig}$$

[7] We also compared volatility exposure and sibling correlations between volatility measures purged or not purged from directional mobility. Estimates are available upon request.

Assuming independent family and individual-specific variance components, we can express the total variance $var(Y_{ig})$ as the sum of these two variance components.

Equation 3

$$var(Y_{ig}) = var(\omega_g) + var(\nu_{ig})$$

The sibling correlation is then given by the intraclass correlation (Equation 4), calculated as the portion of total variance accounted for by systematic differences between families or shared family factors among siblings.

Equation 4

$$ICC = \frac{var(\omega_g)}{var(\omega_g) + var(\nu_{ig})}$$

To allow the variance components to vary across the life cycle, we use a three-level multilevel model that nests individual age-specific observations within individuals who are then nested within families.[8] In Equation 5, Y_{ijg} is volatility at a given age (j) for sibling (i) in family (g), which is a function of linear and quadratic Age (centred at zero), and the time constant vector X_{ig} absorbing birth year fixed effects (and gender differences when pooling all siblings). Age is set as a linear random slope to vary across individuals and across families We estimate an unstructured covariance matrix that separately measures level-specific variance in the intercept $\omega/\nu(\mu)$, level-specific variance in age slopes $\omega/\nu(Age)$, and their covariance $cov\big(\omega/\nu(\mu), \omega/\nu(Age)\big)$. Following Mazumder (2008), we estimate the model by Restricted Maximum Likelihood (REML).

Equation 5

$$\begin{aligned} Y_{ijg} = \; & \mu + Age_{jig} + Age_{jig}^2 + X_{ig} \\ & + \omega_g(\mu) + \omega_g(Age) + cov\left(\omega_g(\mu), \omega_g(Age)\right) \\ & + \nu_{ig}(\mu) + \nu_{ig}(Age) + cov\left(\nu_{ig}(\mu), \nu_{ig}(Age)\right) + \varepsilon_{jig} \end{aligned}$$

Given the estimated variance components, we can calculate age-specific and level-specific variances by following the approach presented in Goldstein et. al. (2002, see also Cheng 2014). For simplicity, we only present the notation for the family variance. As defined in Equation 6, age-specific family (or individual variance) is obtained as the sum of family (individual) variance in the intercept, two times the product of the level-specific covariance multiplied for the j-age centred value, and the product of the level-specific variance of the age slope multiplied for the square of j-age.

Equation 6

[8] Another approach would be to estimate the sibling correlation separately by age intervals (see, e.g., Grätz and Kolk, 2022). We do not pursue this approach here because we are interested in jointly controlling for the autocorrelation in the within-individual errors.

$$\omega_{j(30\rightarrow 50)g} = \omega_g(\mu) + 2 * (cov(\omega_g(\mu), \omega_g(Age) * j) + (\omega_g(Age) * j^2)$$

It is then possible to compute the age-specific sibling correlation as in Equation 7. Standard errors and confidence intervals are obtained using the delta method.

Equation 7

$$ICC_{j(30\rightarrow 50)} = \frac{var(\omega_{jg})}{var(\omega_{jg}) + var(v_{jig})}$$

We additionally provide estimates of sibling correlations in levels of earnings and disposable income over the life cycle. In line with existing work, we define income levels by taking logarithm of earnings and disposable income (excluding zeros) and apply a lower income limit of $500 in 1979 US dollars (Mazumder 2008). In addition to the model specification presented in Equation 5, we follow Bingley and Cappellari (2019) and allow for first-order auto-regressive correlation in idiosyncratic error component ε_{jig}. While some scholars claim little to no influence of this specification on the results (Björklund, Jäntti, and Lindquist 2002; Mazumder 2005; 2008), others point to the risk of partly underestimating the sibling correlation, as neglecting autocorrelation would incorrectly inflate individual-level variance (Solon et al. 1991; Schnitzlein 2014).

3.5 Evaluating the mediating influence of risk factors

We evaluate the influence of mediating risk factors to shed light on the channels through which family background influences exposure to volatility. We measure education with a categorical variable that divides individuals' achieving up to lower secondary, upper secondary, and tertiary education. Periods of unemployment and inactivity are captured with a dummy indicator of whether the individual is working or not. Resource-specific income levels are measured as a metric variable expressed in absolute values (including zeros). For the income levels, we also run models with squared specifications. See Appendix Table B1 for correlations between the risk factors and our dependent variables.

Starting from the empty model presented in Equation 5, we measure the *gross* (upper-bound) contribution of each risk factor of interest (r) as the reduction in the family variance component after the inclusion of each factor separately $\Delta\omega_{g[gross,r]}$. The resulting reduction is divided by the family variance of the empty model and expressed as a percentage of contribution (Mazumder 2008; Hällsten and Thaning 2022).

Equation 8

$$\Delta\omega_{g[gross,r]} = \omega_{g[empty]} - \omega_{g[add,r]}$$

$$Gross\ contribution = 100 * \frac{\Delta\omega_{g[gross,r]}}{\omega_{g[empty]}}$$

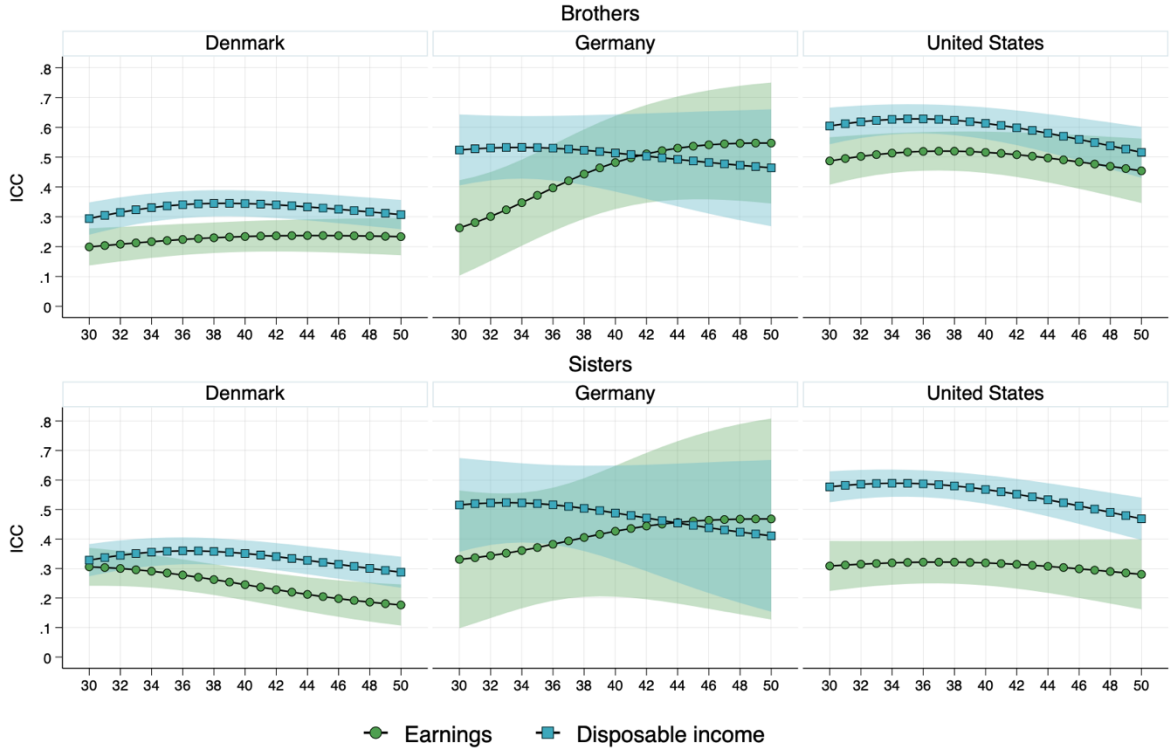
When applied to a three-level design, we estimate age-specific family variances using Equation 6. We average these values across the 30–50 period and then estimate the gross and direct influences of each factor. When factors (r) are included in the estimation, we also specify their interaction with linear and quadratic age. We have also analyzed the direct influence of each risk factors independently from the others (see Hällsten and Thaning 2022). Estimates are available upon request.

4. Results

4.1 Life-cycle sibling correlations in income levels

To contextualize our results for income volatility, we first present how sibling correlations in earnings and income levels vary over the life cycle for brothers and sisters in the three countries (Figure 1). We report three main findings. First, in line with previous research, family background and local community have a larger impact in the United States on average, followed closely by Germany and then Denmark with the greatest and comparatively high levels of intergenerational income mobility. One exception is in sisters' earnings for which the correlation is larger in Germany than in the United States, particularly in the 40s. Second, in almost all cases, we find stronger sibling correlations for disposable income than for labor earnings; a finding that suggests family background matters more for the income directly related to individual consumption and saving opportunities than to that related earnings potential. This discrepancy is particularly pronounced for sisters from the United States for whom the correlation in disposable income is close to twice as large as the correlation in earnings. Third, while all countries show variation over the life cycle, the brother and sister correlations in earnings in Germany stand out as they increase dramatically throughout the life course. In sum, we find substantial differences in total family background effects on earnings and income across countries, gender, and the life cycle.

Figure 1: Sibling correlation in income levels over the life cycle.



4.2 Life-cycle sibling correlations in exposure to income volatility

In Figure 2, we present the estimated sibling correlation in volatility of earnings and disposable income over the life cycle for brothers and sisters. Pooled sample estimates are available upon request. To support the interpretation of this complex set of results, we also draw on Appendix Tables C1 and C2 which report sibling correlations averaged across the life course for each gender-by-country combination.[9] We report four major findings.

First and most prominently, we find significant effects of family background and local community on individual exposure to volatility across the life cycle in all countries, although the effects are overall smaller than for income attainment (cf. Figure 1). Because volatility is concentrated more among low-income individuals, we investigated the extent to which the sibling correlations in volatility persist net of income levels (see Appendix Figure C1, C2, Table C3, C4). We find that the sibling correlations cannot be fully explained away by income levels, i.e., for a given level of income, family background directly affects exposure to volatility. We register the greatest (yet not statistically significant) decrease in sibling correlation when looking at the disposable income volatility among US brothers and sisters.

Second, life-cycle variation in family background effects is significant and for most cases more pronounced than for income. In almost all non-monotonic cases, the correlations tend to show either the highest (or lowest) values or changes in the slopes around the peak of occupational maturity in

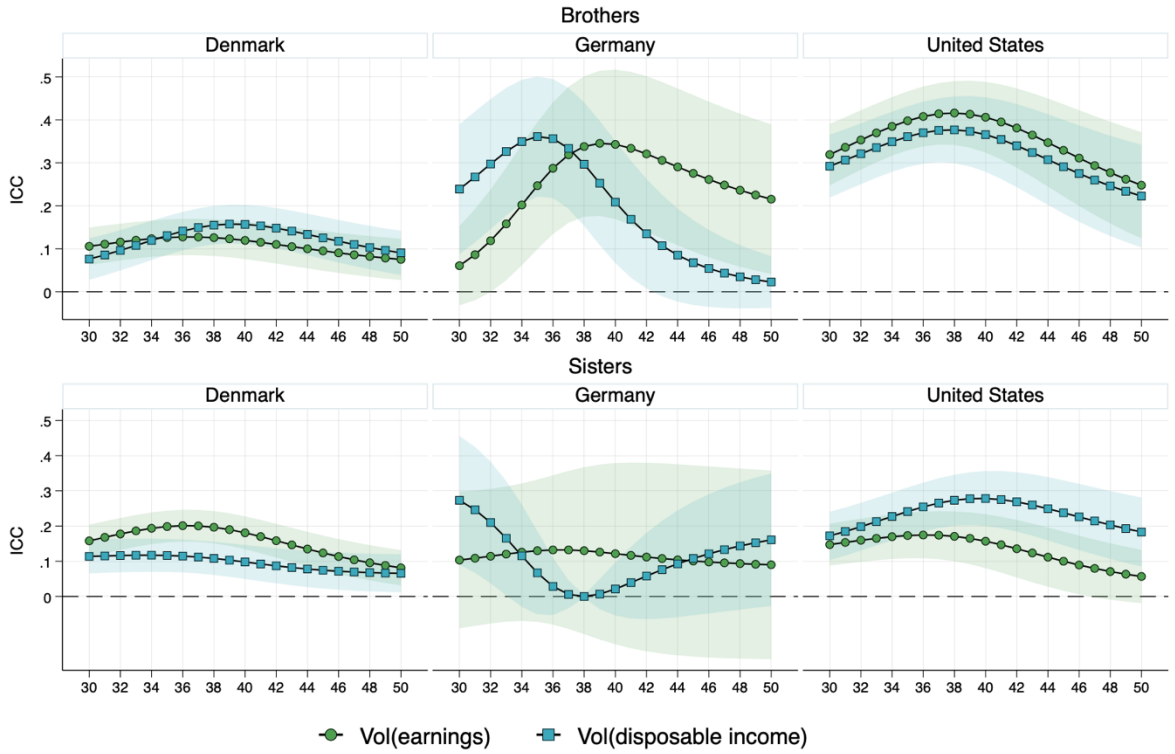
[9] These average sibling correlations are particularly useful because estimates for Germany are uncertain, making it difficult to draw firm conclusions about the life cycle profiles for German men and women.

ages 38–42. In other words, the moment in the life cycle expected to be the most stable is also the one in which family background-related differences are largest. The German sister correlations in disposable income is the exception to this pattern but given the large uncertainty of these estimates, we cannot draw any firm conclusions regarding this outlier. Even net of income levels (Appendix Figure C1, C2), life cycle patterns remain unchanged, except for Danish brothers whose (low) correlation increases after the 40s, and US brothers and sisters displaying a slightly more monotonic correlation in disposable income volatility across the life-cycle.

Third, sister correlations are more similar across countries than are brother correlations. For earnings volatility in particular, the level and profiles are very similar across the three countries, suggesting that family background has an overall similar effect for sisters' exposure to earnings volatility. For disposable income volatility, sisters show more country variation and largely follow the country rankings found for income (although Denmark and Germany are much closer to each other on average for the volatility measure than for the income level measures). For brother correlations, country differences are more pronounced for both income types, and follow the country-inequality rankings for income (United States > Germany >> Denmark). As was the case for income levels, Germany stands out with its significant life cycle variation. Even though the German estimates are characterized by high uncertainty, they suggest that family background exerts little to no influence on exposure to income volatility at age 50 among brothers.

Fourth, magnitudes of sibling correlations in exposure to volatility are higher among brothers than sisters. One exception to this pattern is in earnings volatility in Denmark where the sister correlation is larger than the equivalent brother correlation. Moreover, the discrepancy in sister and brother correlations is larger for exposure to earnings volatility than disposable income volatility.

Figure 2: Sibling correlation in volatility in earnings and disposable income over the life cycle.



4.3 Channels of intergenerational transmission of volatility

To examine the role of mediating risk factors, we report how the family variance component changes after including education, non-employment, and income levels individually and combined. Table 1 presents percent mediated for brothers and sisters, respectively. Educational attainment is a significant mediator in Denmark and the United States but not in Germany. Among Danish brothers, schooling accounts for 11 percent of the family variance in earnings volatility and 19 percent for disposable income volatility. However, for Danish sisters, education is uniquely relevant for earnings volatility, accounting for 13 percent of the family variance. Moreover, for US brothers and sisters, education explains about 25 percent of the family variance for both earnings volatility and disposable income volatility, showing no salient gender difference.

Considering the mediating influence of non-employment, we find reductions in the family variance components similar to those for education, but not for all combinations. In particular, for earnings volatility among brothers, controlling for non-employment leads to larger family variance reductions in Germany and the US at around 22 percent. In contrast, for disposable income, this factor mediates a slightly larger portion in Denmark (22 percent) than in Germany (14 percent) or the US (17 percent).

Given how the level of income, as a proxy for unobservable correlated factors responsible for individuals' positions in the income distribution, mediates the family background effects on income volatility, we find, as expected, that this factor explains a large portion of the family variance in the case of earnings volatility. Among brothers, labor earnings explain from 40% in Germany to 50% in Denmark and the US. Among sisters, the contribution of earnings levels is even higher, reaching more than 60% in Denmark and the US, whereas it does not explain any of the family variance in Germany. However, for disposable income, these percentages are much smaller for brothers or disappear entirely for sisters in Denmark and Germany, whereas they are larger in the US. Including disposable income levels explains 53% of the family variance in exposure to volatility among US brothers and 67% among sisters. This difference between countries suggests the relevance of compensatory welfare factors in Denmark and Germany, not present in the US, that decrease the association between income position and income volatility.

Considering the combined mediating influence of the three risk factors, the percentages are—in line with our expectations—generally higher for earnings volatility and in the US (especially for sisters). For example, more than 60% of the family variance in brothers' earnings volatility in the US (which accounts for up to 40% of the total inequality in the distribution of volatility) can be explained by the sibling similarity in the three risk factors. It is worth noting that for German sisters and volatility in disposable income in Denmark, the three risk factors appear to mediate only a minor portion of the total family background effect. Given the varying degrees to which the three factors combined mediate the family background effect, we estimated the implied sibling correlations from the models including all three factors (see Appendix Tables C3 and C4). These estimates show that once we control for these factors, the sibling correlations decline substantially in the United States for both income volatility types but do not change much in Denmark and Germany (except for earnings volatility among German sisters where we see an increase in the sibling correlation, which comes about because the three variables explain more of the within than between family variance). Although this is not a proper counterfactual analysis, it does suggest, even if the overall country differences

largely remain the same, they are much smaller once we net of the three risk factors. Thus, in the counterfactual situation where these risk factors did not play a role, countries would look much more similar in terms of how family background affects exposure to volatility.

Table 1: Gross contribution of risk factors in reducing family variance component – brothers and sisters.

BROTHERS

		Denmark	Germany	United States
Labor Earnings	*Education*	11,40%	1,94%	22,60%
	Not Working	4,76%	22,55%	21,65%
	Earnings	50,99%	39,82%	49,20%
	Full	51,39%	45,35%	63,21%
Disposable income	*Education*	19,14%	0,57%	25,47%
	Not Working	22,49%	14,11%	18,11%
	Disp. Income	16,64%	13,53%	67,23%
	Full	16,97%	23,86%	69,52%

SISTERS

		Denmark	Germany	United States
Labor Earnings	*Education*	13,39%	3,25%	27,75%
	Not Working	10,21%	-10,49%	34,88%
	Earnings	60,40%	-4,92%	63,29%
	Full	60,93%	-7,99%	75,76%
Disposable income	*Education*	0,14%	-2,02%	27,00%
	Not Working	1,43%	1,98%	17,41%
	Disp. Income	-2,78%	4,29%	53,16%
	Full	0,08%	7,53%	61,88%

5. Discussion

This article addresses the influence of family background on individuals' experience of income volatility throughout their life cycles in Denmark, Germany, and the United States. As contemporary societies grapple with increasing employment and life-course instability, volatility has become a relevant component of income profiles and understanding its contribution to widening inequalities has become essential (Cheng 2014; Gangl 2005). Complementing the few existing studies of intergenerational associations in exposure to volatility (Cheng and Song 2019; Shore 2011), we analyze fraternal resemblance in exposure to volatility to provide the first set of estimates of the total impact of family background and local community on volatility exposure.

Our findings show the significant role of family background and local community factors in determining individuals' exposure to volatility in both earnings and disposable income. Intergenerational factors account for an average of 10 percent of the total inequality in volatility exposure in Denmark and Germany, and more than 30 percent in the United States. These percentages are somewhat lower than those observed for earnings or income, primarily because volatility is significantly more influenced by idiosyncratic individual-specific shocks. Nevertheless, our estimates document the existence of a structural family component that shapes individuals' income fluctuations over and above that shaping income attainment. We also demonstrate that up to 60 percent of the variance between families of origin (with notable country-by-gender variations) are mediated by risk-mitigating or risk-enhancing factors. These factors also partly explain country differences in the total family background effects on exposure (i.e., net of these factors, family background effects show more cross-national similarity).

However, a significant portion of the family background effects remain even after we net out risk factors, suggesting that risk factors other than those we consider mediate the effects. Although we cannot test the role of such additional mediators in this article, potential explanations could be related to the intergenerational transmission of self-employment (Shore 2011), siblings' proclivity for risk propensity (Schnitzlein 2014), or sorting into specific employment sectors (Hällsten et al. 2010). Notably, if volatility effectively signifies a precursor to economic insecurity (Latner 2018; 2019), our novel evidence indicates that the intergenerational reproduction of resource inequalities is also a determining factor in the transmission of volatility exposure, which in turn exacerbates disparities.
Moreover, our analyses reveal gender-specific patterns in volatility-related intergenerational dynamics across societies. We observe that brothers' similarities in volatility exposure are stronger in countries characterized by greater distributional inequalities, greater inequality of opportunities, and reduced institutional protections. Thus, the influence of family background for brothers becomes proportionally more pronounced, moving from Denmark to Germany and the United States. In contrast, sisters exhibit greater similarities across contexts, a lower influence of social origin in determining volatility exposure, but more pronounced differences between income measures. These findings stress the intricate interplay among gender, households, and welfare states.

Because we analyze both gross earnings and equivalized disposable income, we can also get at the role of welfare state compensation and the implications of assortative mating. For example, among sisters, in the comprehensive Scandinavian context, we observe a low intergenerational correlation and virtually no influence of risk factors for disposable income volatility. While Danish sisters display

both greater exposure to earnings volatility and a stronger background effect origin than brothers, they attain greater stability that is less dependent on family background once household conditions are considered. In contrast, for sisters in the US, the correlation for disposable income volatility is significantly higher than that for earnings. This greater background influence can be attributed to marginal welfare intervention and the stratified processes of family formation and mating (Swartz 2013), which enhance women's (and men's) risk of partnering with individuals exposed to similar levels of volatility (Neckerman and Torche 2007; Shore 2015).

Our study aims to provide a framework for integrating income volatility into the scholarship on intergenerational reproduction of inequalities. Apart from being substantively relevant to the study of the relationship between inter- and intergenerational mobility across the life course (as in, e.g., Cheng 2014; Cheng et al. 2020; Hardy 2014), we also provide methodological tools to evaluate total family background effects from a life course perspective. We believe that these tools make possible the unravelling of latent life-cycle dynamics that thus far have remained unexplored.

APPENDIX

Appendix section A – Sample description

Table A1: Summary of sibling samples before and after restrictions. Number of siblings with number of families in parenthesis.

	Before restrictions	After restrictions (analytical sample): Disposable income	After restrictions (analytical sample): Labor earnings
Denmark	Pooled: 15461 (8000) Brothers: 7851 (5564) Sisters: 7271 (5286)	Pooled: 14424 (7627) Brothers: 7415 (5320) Sisters: 7009 (5129)	Pooled: 14222 (7569) Brothers: 7301 (5269) Sisters: 6921 (5073)
Germany	Pooled: 2199 (1393) Brothers: 1236 (949) Sisters: 963 (797)	Pooled: 1783 (1181) Brothers: 975 (761) Sisters: 808 (679)	Pooled: 1715 (1159) Brothers: 959 (749) Sisters: 756 (648)
United States	Pooled: 5647 (2649) Brothers: 2698 (1794) Sisters: 2949 (1884)	Pooled: 5192 (2530) Brothers: 2419 (1646) Sisters: 2773 (1793)	Pooled: 4996 (2475) Brothers: 2356 (1612) Sisters: 2640 (1729)

Note: To reduce computational burden on the vast Danish data, we draw a random sample of 8,000 families from the entire population born 1955–1979, comprises 1,812,808 individuals distributed on 937,278 families.

Appendix section B – Descriptive findings

Figure B1: Average level of volatility in earnings and disposable income over the life cycle.

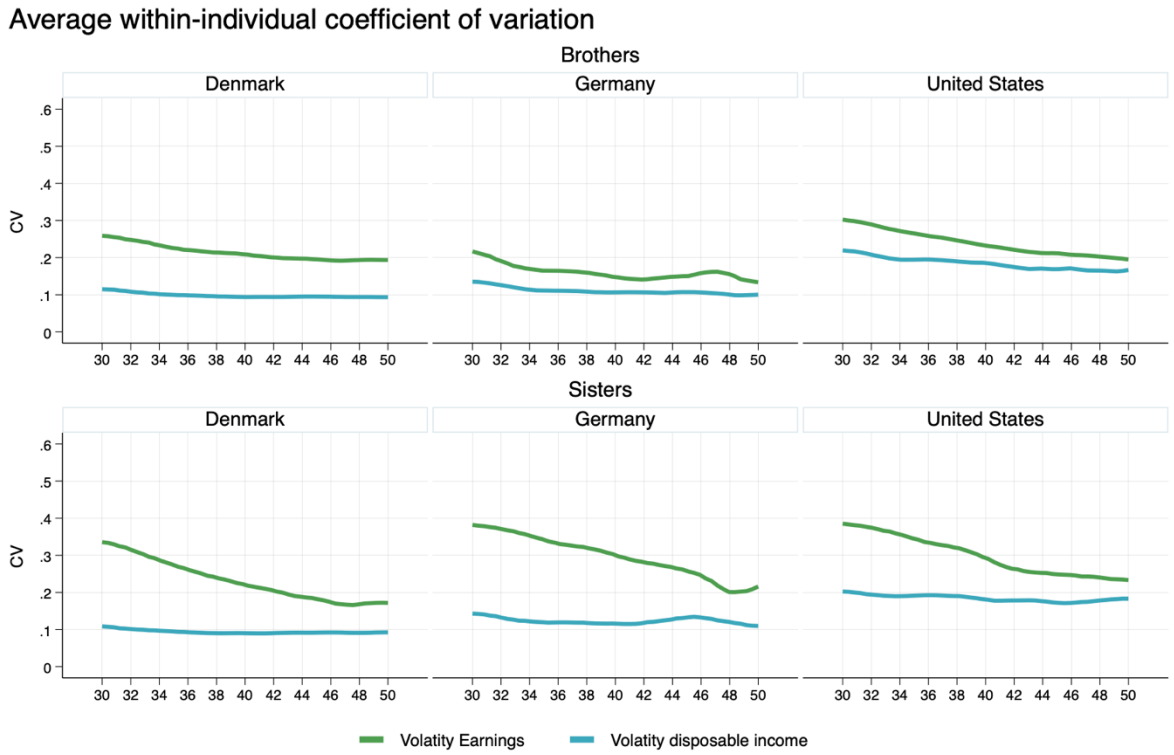


Table B1: Pairwise correlation between income volatility measures and risk factors.

		Brothers							Sisters						
		Vol(E)	Vol(DI)	Earnings	Disp. inc.	Educ.	Not work	Age	Vol(E)	Vol(DI)	Earnings	Disp. inc.	Educ.	Not work.	Age
Denmark	Vol(E)	1							1						
	Vol(DI)	0.4254	1						0.2606	1					
	Earnings	-0.1682	-0.0506	1					-0.0742	0.0151	1				
	Disp. Inc.	-0.4152	-0.1617	0.4879	1				-0.5843	-0.1458	0.2027	1			
	Educ.	-0.1336	-0.0118	0.2610	0.3252	1			-0.1685	-0.0134	0.1162	0.3636	1		
	Not work	0.2828	0.1075	-0.1375	-0.2145	-0.1172	1		0.3474	0.0848	-0.0722	-0.2969	-0.1266	1	
	Age	-0.0636	-0.0578	0.1927	0.1129	0.0154	-0.0993	1	-0.1576	-0.0437	0.1060	0.1738	0.0359	-0.1645	1
Germany	Vol(E)	1							1						
	Vol(DI)	0.5058	1						0.3030	1					
	Earnings	-0.3745	-0.1927	1					-0.4382	-0.1242	1				
	Disp. Inc.	-0.1627	-0.1072	0.6968	1				-0.2142	-0.1536	0.5933	1			
	Educ.	-0.0566	0.0051	0.3193	0.3701	1			-0.0737	-0.0077	0.3286	0.3680	1		
	Not work	0.3165	0.1706	-0.3755	-0.1974	-0.0993	1		0.4192	0.0937	-0.4993	-0.2377	-0.1705	1	
	Age	-0.0939	-0.1012	0.1767	0.0937	-0.0073	-0.0093	1	-0.1376	-0.0539	0.0833	0.0818	-0.0381	-0.0619	1
United States	Vol(E)	1							1						
	Vol(DI)	0.6783	1						0.4689	1					
	Earnings	-0.3251	-0.2404	1					-0.3244	-0.1700	1				
	Disp. Inc.	-0.3037	-0.2755	0.7556	1				-0.2641	-0.2700	0.6072	1			
	Educ.	-0.2031	-0.1892	0.4068	0.4337	1			-0.1648	-0.1711	0.3375	0.4456	1		
	Not work	0.3923	0.2690	-0.3569	-0.2980	-0.2078	1		0.4658	0.2238	-0.4240	-0.2599	-0.1954	1	
	Age	-0.1088	-0.0819	0.1346	0.1489	0.0488	0.0105	1	-0.1352	-0.0418	0.0980	0.1076	0.0244	-0.0597	1

Note: Vol(E): Volatility in earnings; Vol(DI): Volatility in disposable income; Educ: Education in three categories; Not work: Dummy indicator in or out of the labor market

Appendix section C – Supplementary tables and figures to main analysis

Table C1: Sibling correlation in volatility in earnings - average over the life cycle.

Volatility Earnings	Pooled	Brothers	Sisters
Denmark	.12	.09	.14
Germany	.03	.25	.11
United States	.15	.34	.13

Table C2: Sibling correlation in volatility in disposable income - average over the life cycle.

Volatility Disposable income	Pooled	Brothers	Sisters
Denmark	.09	.12	.09
Germany	.09	.13	.12
United States	.21	.31	.23

Table C3: Sibling correlation in volatility in earnings after inclusion of risk factors.

Volatility earnings		Brothers	Sisters
Denmark	Base	0,09	0,14
	Education	0,09	0,13
	Not working	0,09	0,14
	Earnings	0,08	0,15
	Full	0,08	0,15
Germany	Base	0,25	0,11
	Education	0,25	0,10
	Not working	0,21	0,14
	Earnings	0,23	0,18
	Full	0,22	0,19
United States	Base	0,34	0,13
	Education	0,29	0,10
	Not working	0,33	0,11
	Earnings	0,30	0,08
	Full	0,26	0,07

Table C4: Sibling correlation in volatility in disposable income after inclusion of risk factors.

Volatility disposable income		Brothers	Sisters
Denmark	Base	0,12	0,09
	Education	0,07	0,09
	Not working	0,07	0,09
	Income	0,07	0,09
	Full	0,07	0,09
Germany	Base	0,13	0,12
	Education	0,13	0,13
	Not working	0,11	0,12
	Income	0,12	0,13
	Full	0,11	0,13
United States	Base	0,31	0,23
	Education	0,24	0,18
	Not working	0,28	0,20
	Income	0,22	0,11
	Full	0,18	0,11

Figure C1: Sibling correlation in volatility in earnings over the life cycle gross and net of income levels.

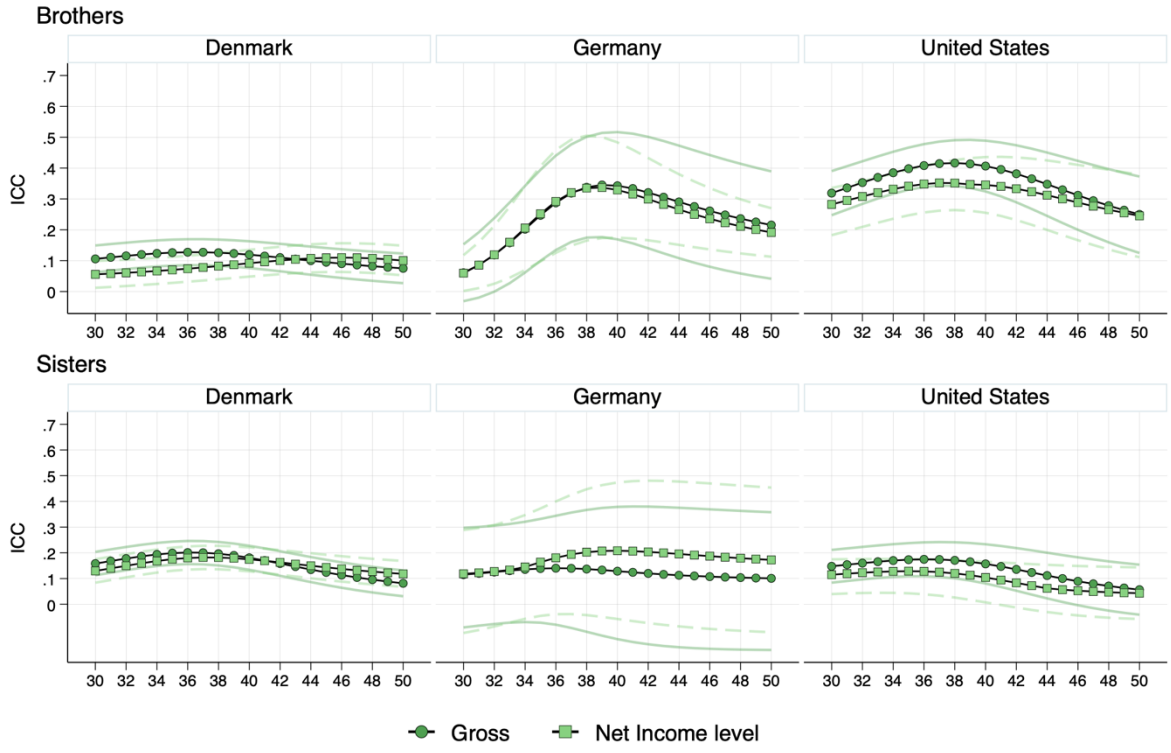
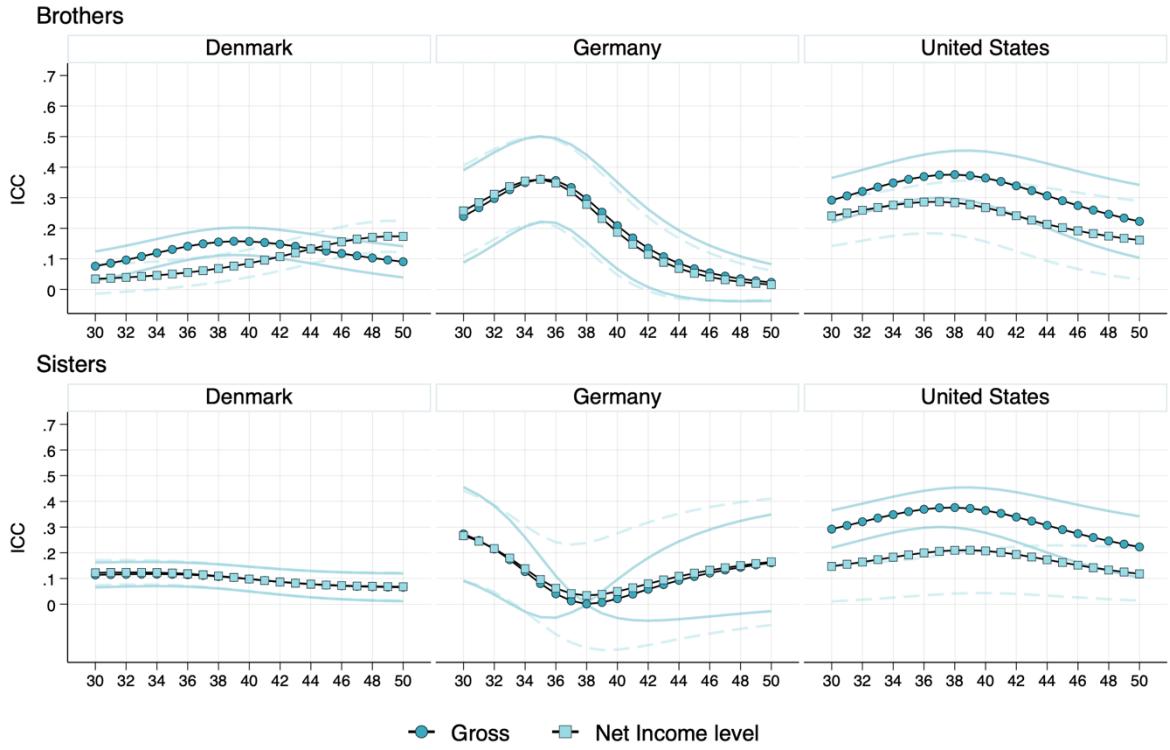


Figure C2: Sibling correlation in volatility disposable income over the life cycle gross and net of income levels.



Chapter 3

Social Origin and Secondary Labour Market Entry: ascriptive and institutional inequalities over the early career in Italy and Germany[1]

1. Introduction

Studies on intergenerational social mobility have long been concerned with providing a sophisticated description of social-mobility rates, patterns, and variations among Western countries while have paid less attention to the mechanisms that generate mobility, with the mediating role of education being the main exception (Breen and Müller 2020; Bukodi et al. 2016; Erikson and Goldthorpe 1992). A second, less-common stream of research has focused on the structural and institutional determinants at the basis of different patterns and outcomes of social mobility, amongst which demographic variations and labour market reforms have been deemed to be the most influential (e.g., Becker et al. 2018; DiPrete 2020; Esping-Andersen 2015; Kalleberg and Mouw 2018; Lersch et al. 2020; Yaish and Andersen 2012). However, such factors have never benefited from a central position in the stratification debate. More in detail, to the best of our knowledge, analyses and research papers focusing on the *interaction* between persistent ascriptive inequalities in mobility opportunities (the Direct Effect of Social Origin) and the restructuring of employment relations in post-Fordist labour markets (the effect of dual-EPL – Employment Protection Legislation – reforms (Bentolila et al. 2019)) is essentially missing. This lack of knowledge is problematic because the process of labour market flexibilisation and further dualisation has led to additional inequalities in the labour market that may have strengthened the role of social origin in conditioning inter- and intragenerational mobility patterns.

Western countries have reacted to the *Eurosclerosis*[2], the increasing global competition, and the rapid technological change by pursuing labour market flexibilisation aimed at optimizing efficiency, tackling unemployment, and sustaining the need for quick size- and skills adjustments by lowering the adjustment costs (Breen 1997; Esping-Andersen and Regini 2000; Van Eyck 2003). European Continental countries have leveraged job security by introducing fixed-term- and other atypical employment contracts (DiPrete et al. 2006) thus opting for dual-EPL (Employment Protection Legislation) reforms (Bentolila et al. 2019). Scholars have paid particular attention to the

[1] This paper is co-authored with Paolo Barbieri. Access to the Multipurpose Household Social Survey (*Famiglie e soggetti sociali*, FSS) was kindly granted by the Italian Institute of Statistics (ISTAT, 2019). Access to the NEPS-SC6 data was granted under the agreement n.3910 by the Leibniz Institute for Educational Trajectories (LIfBi, Bamberg, 2019). The data collectors bear no responsibility for the analyses and interpretations provided in this paper. The authors wish to thank the participants to RC28 Spring Meeting 2023 (University of Turku, online) for their useful comments on previous versions of this paper. This paper has been published in Research in Social Stratification and Mobility, Volume 77, February 2022, 100670. https://doi.org/10.1016/j.rssm.2021.100670.

[2] Since the 80s, the combination of stringent regulation and the rising structural unemployment – also driven by the exogenous price shocks – marked a phase known as *Eurosclerosis* (Blanchard and Summers 1986. The growing amount of unemployment hardly absorbable in rigid labour markets has challenged the widespread model of stable, full-time, full-employment with full-welfare entailments, which characterized the *Fordist golden age* (Glyn et al 1988). Institutional rigidity and excessively high labour costs were blamed to constitute structural frictions shifting the Beveridge Curve towards higher equilibrium unemployment (Barbieri and Cutuli 2016; Daly et al. 2012, thereby increasing inefficiency and slowing down the productivity growth (Layard et al. 2005; Nickell 1997; Saint-Paul 1996a; 1996b).

Mediterranean and Continental contexts since their strict protection against dismissals for permanent employment against lower labour protection for flexible forms of employment, originated a process of labour market dualization, targeted either at youngsters or at unskilled workers depending on the characteristics of the national production regime (Barbieri 2009; Biegert 2019; Kahn 2010; 2012; King and Rueda 2008; Palier 2010; Palier and Thelen 2010).
This targeting on less protected social groups has cumulated with the classic drivers of social stratification, among which social origin takes the lion's share (Barbieri and Cutuli 2016; Blossfeld 2008.

Against this backdrop, we focus on the labour market entry process. Mobility studies point to the early career as the life-course phase in which initial negative experiences may establish long-lasting career disparities, especially in two-tiered labour markets (Barbieri et al. 2019; Polavieja 2003; 2005), and ascriptive differences greatly influence career prospects (Barone et al. 2011; Manzoni et al. 2014). In particular, class of origin affects individuals' occupational sorting and trajectories, even net of the achieved level of education (Bernardi and Ballarino 2016). Upper classes influence their offsprings' opportunities either by compensating potential initial disadvantages (Bernardi 2014; Breen and Goldthorpe 1997; Goldthorpe 2007) or by boosting status, earnings, and occupational prestige (Friedman and Laurison 2020), thereby leading to a process of cumulative advantage which, across work career development, further boosts inequality (DiPrete and Eirich 2006).

We know from recent evidence that despite the progressive labour market flexibilisation, ascriptive inequality affecting early career trajectories persists across cohorts and over periods (Passaretta et al. 2018). Such evidence challenges the idea that increasing flexibility paves the way for a more meritocratic job allocation with a decreasing direct effect of social origin.[3] To the best of our knowledge, no systematic attempt to focus – in a comparative perspective – on the potential combination of ascriptive and institutionally driven inequalities in shaping labour market disparities has been undertaken, yet. We aim at filling this gap, contributing to both literature on labour market dualisation and social stratification: By bringing together these perspectives, we empirically ask whether advantaged social origin can directly (net of the achieved level of education) compensate for a "*bad labour market entry*" over the early career and whether initial instability for less-socially privileged entrants represents a source of cumulative disadvantage. We do so by following the career development of Italian and German labour market youths over their first ten years after labour market entry and analysing the occupational achievement of stable and unstable entrants. We test the direct effect of the class of origin specifically over the career development (thus after the initial sorting) by comparing the career trajectories of labour market entrants from service and working-class families who counterfactually started their work career with the same occupational status but differ on their employment contract.

As a further step, we investigate whether the ascriptive-institutional inequality is moderated by the achieved level of education. Achieving tertiary education is expected to pave the way to a more meritocratic and *origin-free* labour market (Hout 1998; Zhou 2019) for both stable and unstable entrants – even more so in the presence of unrelenting technological progress, which increases (high)

[3] The effect of social origin, net of educational achievement, is known as "DESO" in the stratification literature: Bernardi and Ballarino 2016.

educational payoff and (high) skill remuneration (Autor 2015; Autor et al. 2003). Conversely, the combination of contractual instability, less-prestigious parental background, and low level of education is expected to lead to further disadvantages.

In the following, section 2 addresses the contextual influence of the Italian and German institutional and structural features, two different "institutional settlements" (Goldthorpe 1984) ideal typically identifiable as the Dualist and the Corporatist, focusing on educational models, labour market segmentation, and mobility structures. Then, subsection 2.1 reflects on the different occupational scenarios associated with flexible starts (*integration vs entrapment*). Subsequently, subsection 2.2 reviews the mechanisms through which social origin *directly* compensate for secondary labour market entry. In subsection 2.3 we discuss the moderating role of human capital in individuals' early career paths. Section 3 discusses data and methods; section 4 presents the empirical results, while section 5 presents our conclusions.

2. Institutionally originated inequalities, ascriptive disparities, and their interaction in Italy and Germany

We investigate the relation between institutional and ascriptive inequalities in Italy and Germany. These two countries share a marked labour market dualization and undertook a similar process of deregulation 'at the margin' but differ on other labour market and educational institutions that socioeconomic literature signals as responsible for different occupational outcomes. Italy and Germany typify the Dualist and the Corporatist regimes, different in terms of welfare states, labour policies, market economies and skill systems (Estevez-Abe et al. 2001; Goldthorpe 1984) as we expect these macro, institutional characteristics, to be at the basis of our empirical findings. Nevertheless, we take the institutional differences as contextual background scenarios, as we mainly aim at providing a so far absent comparative contribution in the stratification literature.

Concerning institutionally originated labour market inequalities, scholars generally blame the rigidity and segmentation of EU national labour markets for their degree of dualism and for further increasing penalties in the secondary labour market (Barbieri et al. 2019; Barbieri and Cutuli 2016; Betolila et al. 2019; Gebel and Giesecke 2016; OECD 2019). Specifically, two groups are particularly at risk of occupational precarity: young labour market entrants in Italy and less-skilled workers in Germany (Barbieri 2009). The former lack work experience, seniority, and networks, which prevents them from accessing secure and well-paid jobs. Low-skilled workers are hardly attractive to post-Fordist, technologically non-routine tasks (Oesch and Menés 2011). Employers therefore prefer to hire them via flexible arrangements that allow for longer trial and easier dismissal when fixed-term contracts expire. In line with this understanding, the literature generally associates Italy with the *entrapment* scenario (Barbieri et al. 2019; Barbieri and Scherer 2009), whereas the situation in Germany appears more fluid, with higher rates of secondary-to-primary labour market flows and fewer unemployment risks after a flexible career start (Eichhorst 2014; McGinnity et al. 2005).

Additionally, the two countries display major differences in terms of occupational achievement and intragenerational mobility as an outcome of the interaction between social background and labour market dynamics. Italy represents a *firm-based skill regime* (Estevez-Abe et al. 2001), characterized

by low social fluidity (Barone et al. 2011) and a strong and persistent effect of the class of origin in determining mobility chances (Bloise and Raitano 2019; Breen and Müller 2020). In this context, structural and institutional constraints hinder or limit career progression. Scholars point to strictly regulated labour- and product markets and to the dominant presence of small- and micro-firms opting for competitive strategies based on labour-cost reduction, which discourages workforce training (Cutuli and Guetto 2013; Gangl 2003; Konings and Vanormelingen 2015; Müller 2015; Nicoletti et al. 1999) or limit training to strict on-the-job essential instruction. Moreover, the Italian educational and skill-formation system provides general and standardized academic skills and does not adequately match the rapidly changing skill demand (Schizzerotto 1997). This inadequacy hence suggests that initial labour market disparities persist, thereby leaving vast room for the influence of parental background as a way of compensating for non-optimal initial occupational achievement (Raitano and Vona 2018). Germany, conversely, is a high-wage economy with a strong industrial core that mainly focuses on highly productive, capital-intensive and export-oriented productions. Such export orientation incentivizes firms to compete not only in terms of prices but also in terms of quality and innovation, which translates into better work- and pay conditions, also for temporary workers. Additionally, Germany represents an *industry-based skill regime* (Estevez-Abe et al. 2001) featuring a better match between skill supply and job demand, driven by both a dual, vocational education system that provides differentiated job-related skills and an occupational labour market (Maurice et al. 1986) that ensures and incentivizes vocational training and thus mobility chances. Again, this superior occupational match and the greater mobility chances supposedly also provide advantages in case of contractual precarity. Wage differentials in younger age between permanent and temporary contracts in Germany are, in fact, notably lower, especially when compared with Italy (Regoli et al. 2019). Despite the more-fluid labour market structure, the parental influence – and therefore the direct effect of social origin – is still present in Germany, albeit to a lesser extent than in Italy (Bernardi and Ballarino 2016).

Following Maurice and colleagues (1986), we therefore consider national labour market institutions to be the overarching structure in the development of employment relations, contextually dependent life-course trajectories (Lersch et al. 2020; Mayer 2004), and mobility chances (DiPrete 2020). Given the different institutional contexts and their impact on social stratification and mobility, we expect that **(H1)** in Italy, flexible labour market entries will be associated with higher occupational penalties both at the start and over the career: it follows that *the overall Italian immobility is expected to result in a stronger direct impact of ascriptive advantages.*
On the contrary, in Germany, *we expect to find reduced (or even non-tangible) flexibility-driven penalties*. However*, we expect to find a sizeable impact of the class of origin on occupational achievement either as compensation or as a boost for the career chances, despite the more diffused German training- and mobility opportunities*.

2.1 A flexible career start in Italy and Germany: a bridge or a mobility trap?

Initial employment instability is associated with greater variability in the development of occupational trajectories (Lersch et al. 2020). The literature has long tested whether atypical entry serves as a beneficial stepping-stone for secure and more-rewarding jobs or whether it stands as a scarring trap in the way of future career mobility. While most of the empirical work has addressed

micro- and macro-level differences in the mobility chances of transitioning to permanent employment (Kalleberg and Mouw 2018), our interest lies in occupational mobility outcomes: catching up with those who directly entered in the primary labour market is clearly a signal of upward mobility (Passaretta and Wolbers 2019).

The *entrapment* hypothesis states that employers rely on flexible arrangements primarily to buffer labour costs and to bypass strict dismissal rules, especially in strongly segmented labour markets (McGinnity et al. 2005. Neither employers nor employees are in this case encouraged to invest in training or skill development (Kahn 2010; Barbieri et al. 2014), and therefore protracted precarious experiences contribute to human capital depreciation (Galgliarducci 2005). In parallel, fixed-term job spells may be a negative signal for future employers, who feel discouraged by candidates who have not been offered a permanent position upon the expiration of a fixed-term contract. From a social mobility perspective, worse working conditions, less time for active job search, and negative future stigma increase the risk of being locked into carousel careers, thereby potentially reducing upward career chances and leading to immobile or reduced earnings (Barbieri and Cutuli 2018; Kuhn 2020).

In stark contrast, the *integration* scenario frames flexible starts as a necessary bridge towards stable and better-rewarded occupations. Employers may adopt fixed-term contracts as an initial screening device to evaluate workers' productivity before a longer employment relationship takes place (Gebel 2010; Giesecke and Groß 2004). Bad matching – particularly for high-skilled occupations – is very costly in primary labour markets, in which scarcely productive stable workers however enjoy high levels of protection from dismissals. In accounting for future hiring processes, this scenario predicts a positive evaluation for candidates with functional short-term work experiences, which signal an investment in gaining specific skills. While some empirical work has found positive impacts of initial flexibility on further contractual stability (Auray and Lepage-Saucier 2020; Berton et al. 2011), this impact is less clear for wages and socioeconomic mobility. Nonetheless, these premises point to greater chances of upward career mobility, thereby compensating for the bad start and even providing relative future advantages in terms of earnings and occupational status.

2.2 How social origin directly compensates for a disadvantaged career start

From a career-mobility perspective, the interaction between a flexible start and social origin deserves particular attention. Parental social class determines individuals' occupational career first of all influencing educational opportunities and achievements (Blau and Duncan 1967; Müller and Gangl 2003; Shavit and Müller 1998). We know, indeed, that the class of origin is known to lead to advantages in early skills (Karlson and Birkelund 2019), at school (Calarco 2018, and in the quality and chances of successfully completing tertiary education (Breen et al. 2009). Moreover, the social background directly intervenes in individuals' trajectories both at labour market entry and over the intragenerational development net of the achieved level of education. In other words, better-off parents with a high level of social status are rationally motivated to either compensate for their children's initial labour market "failures" to avoid them downward mobility or to boost their labour market achievement. At the beginning of and over the career, the class of origin can directly act through indirect endowments and direct investments (Erola et al. 2016). Inside the black box of the direct effect of the class of origin, scholars pointed to greater motivation, increased productivity-

related non-cognitive skills (Gil-Hernández 2019; Gugushvili et al. 2017), higher levels of self-esteem (Kraus and Park 2014), monetary safety nets in the case of low-paying jobs, and profitable networks (Friedman and Laurison 2020; Rivera 2016) in addition to easier conformity to formal and informal rules of social closure (Bernardi and Gil-Hernández 2020; Laurison and Friedman 2016).
In the present work, these direct mechanisms of the class of origin are assumed to be relevant in relation to initial flexible employment. We therefore investigate whether the class of origin *directly* differentiates the intragenerational career mobility (in terms of the socio-economic condition: ISEI score) of secondary labour market entrants.

Since contractual instability at labour market entry is potentially associated either with entrapment in the peripheral market (in strictly dualistic labour markets) or with employers' screening practices (in less segmented labour markets), we derive similar expectations according to both discussed scenarios. If initial flexible employment is associated with lower occupational achievement in dual labour markets, we expect entrants from higher classes to compensate over their careers any initial socioeconomic gap. Conversely, working-class entrants are expected to more likely end up entrapped in less-prestigious and more-poorly remunerated jobs compared both with the stable working-class entrants and with those coming from higher classes. Accordingly, ascriptive disadvantages and initial instability are expected to result in a cumulation of disadvantages.
When initial contractual instability tests workers' productivity, we expect labour market entrants from the upper classes to maximize their prospective upward mobility through the mentioned boosting mechanisms. Even in this positive case, a disadvantaged parental background is expected to hinder career progression, according to a "class ceiling" effect (see Friedman and Laurison 2020).

Thus, **H2** follows**:** Overall, in both countries, we expect *the class of origin to directly operate in maintaining or even reinforcing existing inequalities. If so, flexible employment solutions should be interpreted as contributors to the persistent inequality of opportunities.*

2.3 The Direct effect of social origin and the origin-education interaction

As mentioned, educational achievement is the main mediating mechanisms through which social origin affect children's career opportunities (Blau and Duncan 1967; Karlson and Birkelund 2019), and the remaining influence of the class of origin is what we refer as the direct effect. With respect to this residual direct effect, scholars (Bernardi and Gil-Hernández 2020) have further debated around an *additional moderator role of education*, which may differentiate the direct influence of the class of origin (thus when the mediating role of education is already accounted for). In this work, we hence ask whether also the ascriptive-institutional inequalities interaction of our interest is *moderated* by the achieved level of education.

Among less educated labour market entrants, we expect social origin to play a substantial direct difference in their career opportunities. We know that advantaged class parents want to compensate for children's poor educational achievement (Goldthorpe and Jackson 2007), and we expect an even stronger influence in case of precarious start in the labour market. Indeed, flexible contracts more likely serve to buffer demand fluctuations among less-skilled workers and less-complex occupations, which is in line with the entrapment scenario (Gebel 2010).

Thus, **H3** follows: *the less-educated high class descendants will benefit from their class position* whereas *we expect to find persisting occupational disparities among poorly educated* labour market *entrants from lower social class.*

Achieving tertiary education, instead, is claimed to be the *great equalizer* (Breen and Jonsson 2007). That is, the higher level of specific skills makes the labour market more meritocratic among degree holders, and background-related differences are supposed to vanish – or at least the gap in occupational and income attainments is expected to weaken over the career progression (Goldthorpe and Jackson 2007; Torche 2011). Reasons for the equalizing effect could be found in less common background-related discrimination in more bureaucratized sectors (Bernardi and Gil-Hernández 2020) and in the increasingly positive payoff from education and human capital (Autor et al. 2003) driven by the trend of growing technological change and processes of automation. Moreover, individuals' credentials and specific skills may also influence the occurrence of the *integrations* scenario when entrants experience contractual instability (Giesecke and Groß 2003), as the literature shows that more innovative sectors and firms often require initial probation periods for the newly hired (Mattijssen and Smits 2020). Alternatively, scholars pinpoint a contrasting reason behind reduced ascriptive inequality based on the positive selection of working-class individuals who achieve tertiary education (Karlson and Birkelund 2019; Zhou 2019). Degree-holders from a more disadvantaged background may display above-average abilities and motivation that made possible the overcoming of initial disadvantages. In either case, we should find neither background-related differences in the occupational trajectories of highly educated unstable entrants nor remarkable differences between stable and unstable tertiary-educated labour market entrants.

Thus, **H4a** follows: *For all graduated unstable entrants, we expect tertiary education to exert a tendential equalizing effect in the career progression, regardless of the class of origin and the initial contractual stability.*

Though, recent evidence is still revealing sizeable advantages for the upper classes among degree-holders in terms of both occupational prestige and income (Bernardi and Gil-Hernández 2020; Fiel 2020; Witteveen and Attewell 2020), even in highly mobile contexts.[4] Service-class descendants with a university degree not only manage to enter the labour market with better jobs but also – thanks to the family-related *boosting advantages* – reach more-remunerative job positions over their careers. This finding is in line with the *effectively maintained inequality* mechanism (Lucas 2001; 2017): A more prestigious parental background guarantees persisting advantages via the exploitation of family-based economic, cultural, and social capital.

Hence, **H4b** follows: *a higher social background is expected to result in additional boosting advantages for tertiary educated*, thereby increasing background-related differences over the career progression.

[4] Research on Scandinavian countries has shown that the disadvantages associated with low social origin have largely disappeared, but the advantages related to privileged origin persist (Esping-Andersen and Wagner 2012). However, other research based on more-appropriate longitudinal and register data for the US and DK has demonstrated that the greater Danish income mobility is mainly welfare-driven (via redistributional tax and transfers and wage-compression policies) while class educational differentials are maintained due to the redistributional policies that increase income mobility (Landersø and Heckman 2017).

To sum up, the two distinct ways in which advantaged social origin contributes to persisting intergenerational inequalities over the work career can be described by the "lift" (compensation for the low-educated) and the "push" (a boost for the highly educated) analogies.

3. Data and Methods

We draw on two country-specific retrospective datasets. For the Italian case, we use a newly built dataset merging the 2009 and 2016 waves of the Multipurpose Household Social Survey (*Famiglie e soggetti sociali*, FSS), a household longitudinal survey of Italian families collected indicatively every 5 years by the Italian Institute of Statistics (ISTAT) which retrospectively reconstruct individuals' work and educational careers. For Germany, we draw on the 10th wave of the Starting Cohort 6 of the National Educational Panel Study (NEPS, 2011). This survey started in 2007 and collects yearly individual information up to 2017 about educational and professional careers and lifelong learning. In both datasets, we make use of their retrospective components in spell format, which retrace the individuals' entire educational and work histories up to the moment of the last interview. The starting sample for the Italian case counts 68603 (43850 for 2009 and 24753 for 2016) individuals, while the German data has 17139 individuals.[5]

We follow individuals over the first ten years in the labour market, beginning with the first job (lasting at least three months) after leaving the educational system. Not all cases are followed for all ten years, but we ensured that everyone had been continuously observed for at least five years after labour market entry. We restricted our sample to labour market entrants that left the educational system at the age of 16–35 over the period 1970 and 2007. Appendix A, tables A1 and A2 retraces the stepwise deletion of cases to reach our analytical sample. After a listwise missing deletion, our samples are finally composed of 144,465 person-year observations for 14,893 individuals in Italy and 113,174 person-year observations for 11,470 individuals in Germany.

3.1 Analytical strategy and measures

The study of career development is conducted by performing a random growth-curve analysis, thereby exploiting the multilevel structure of the data. Individual temporal observations (Level 1, j) are nested within individuals (Level 2, i), which allows us to consider both time-varying and time-constant information as well as their interaction.

Individuals' occupational achievement is operationalized using the ISEI (International Socio-economic Index of Occupational Status; Ganzeboom et al., 1992). A metric score derived from the 1988 version of the International Standard Classification of Occupations (ISCO-88), which scales from 16 (e.g. laborers, cleaners) to 90 (e.g. doctors, CEO, judges), and hierarchically orders occupations according to the intervening role of such occupations in maximizing the education-

[5] A detailed discussion on the data construction, the sampling methods, the data structure, and the variables can be found in the provided data manuals. For the Italian data: https://www.istat.it/en/archivio/236643; for the German data: https://www.neps-data.de/Portals/0/NEPS/Datenzentrum/Forschungsdaten/SC6/3-0-1/SC6_3-0-1_DataManual_en.pdf.

income relation. The main advantages of adopting the ISEI instead of income are that any intra-individual change implies an actual change of position within the occupational stratification[6], and it is less subject to recall bias in a retrospective setting (Härkönen et al. 2016). Appendix A figure A1 shows the univariate kernel distribution for the whole sample and according to the achieved level of education.

Our baseline growth curve model includes a three-way interaction between unstable career start ($unst_i$), social origin ($orig_i$), and career development (car_{ij}), (and its square) as formalized in equation 1. The career counter is set as a random slope (μ_{3j}) to allow the coefficient to vary across individuals.

Equation 1

$$
\begin{aligned}
y_{ij} = {} & \beta_0 + \beta_1 unst_i + \beta_2 orig_i + \left(\beta_3 car_{ij} + \beta_4 car_{ij}^2\right) \\
& + \beta_5 unst_j * orig_i + \beta_6 unst_i * (car_{ij} * car_{ij}^2) + \beta_7 orig_i * (car_{ij} * car_{ij}^2) \\
& + \beta_8 unst_i * orig_i * (car_{ij} * car_{ij}^2) \\
& + \left(\mu_{0j} + \mu_{3j} + \varepsilon_{ij}\right)
\end{aligned}
$$

We define an unstable labour market start ($unst_i$) as a time-constant dummy indicator that groups workers who began their career with a fixed-term contract that lasted for at least four months without being converted into a permanent position.[7] Entrants with permanent contracts and those experiencing only three months of temporary employment and then shifting to a permanent position, compose the reference ("stable") group. Results remain robust to more-restrictive specifications, as discussed in Par. 5.3.

Class of origin ($orig_i$) is defined following an aggregated ESeC classification (Rose and Harrison 2007) in order to minimize occupational-measurement error (Houseworth and Fisher 2020) and by applying a dominance criterion among parents. We distinguish between *i)* the Service class, which is composed of managerial and professional occupations; *ii)* the Intermediate class, which includes small employers and high-grade white- and blue-collar workers; and finally, *iii)* the Working class, which includes lower-grade white- and blue-collar workers and routine occupations. To maximize the differences related to the class of origin, growth curves are reported comparing labour market entrants from the Service and the Working classes.

Our analytical interest, however, lies in the mechanisms through which social origin directly influence career mobility after initial instability. To this end, we incorporate in equation 2 the ISEI at labour

[6] As for other metric scores of occupational status (e.g. SIOPS), scholars focus their analyses on limited average ISEI variation within individuals' careers, which, nevertheless, are still indicative and investigated as (most likely horizontal) occupational mobility (see for instance the limited variation in Ballarino et al. 2020; Barone et al. 2011; Manzoni et al. 2014; Passaretta et al. 2018).

[7] We also define unstable entrants as workers who began with a fixed-term contract that lasted less than four months without any transition to permanent employment. For instance, if a worker became unemployed in the fourth month after three months of temporary employment (first experience), they count as part of the unstable group.

market entry ($1^{st}isei_i$) in interaction with career advancement and the stable/unstable start to absorb the portion of the effect of social origin that passes via unequal allocation into the first job.
By doing so, we isolate the influence of the class of origin over career progression.

Equation 2

$$
\begin{aligned}
y_{ij} = {} & \beta_0 + \beta_1 unst_i + \beta_2 orig_i + \left(\beta_3 car_{ij} + \beta_4 car_{ij}^2\right) \\
& + \beta_5 unst_i * orig_i + \beta_6 unst_i * (car_{ij} * car_{ij}^2) + \beta_7 orig_i * (car_{ij} * car_{ij}^2) \\
& + \beta_8 unst_i * orig_i * (car_{ij} * car_{ij}^2) \\
& + \beta_9 1^{st}isei_i + \beta_{10} 1^{st}isei_i * unst_i + \beta_{11} 1^{st}isei_i * unst_i * (car_{ij} * car_{ij}^2) \\
& + \left(\mu_{0j} + \mu_{3j} + \varepsilon_{ij}\right)
\end{aligned}
$$

As is well highlighted in the mobility literature, the initial occupational disparity has a deterministic mediating role, especially in socially immobile contexts like the Mediterranean/Dualist and Continental/Corporatist countries (Passaretta et al. 2018). In practice, we compare the career development of workers from the service- and working-class who counterfactually began with a similar ISEI score and differ solely depending on initial (in)stability. Initial precarity is indeed associated with different ISEI levels at the labour market entry, as shown in appendix A, figures A2 and A3. In Italy, initial job insecurity is associated with less-prestigious jobs, especially among the least educated. In stark contrast, Germany shows slightly higher-level occupational status for unstable entry jobs, but the process of labour market flexibilisation, however, has reduced the "*flexibility premium*" across school leaver cohorts.
The influence of the parental background remaining from equation 2, generally referred to as "*residual DESO",* includes often-unobservable direct mechanisms that are in act specifically after labour market entry.

3.2 Overcoming the educational mediation and observable confounders

To get the *direct effect* of social origin, we purge the portion of the origin effect that is mediated by the level of educational achievement (Hällsten 2013; Sullivan et al. 2018). In Italy, we distinguish between the levels of basic (primary or no formal education), intermediate (high-school diploma), post-secondary vocational, bachelor, and master or higher. In Germany, we distinguish between basic instruction, first-level vocational training, Gymnasium (Abitur), higher-level post-secondary vocational training, university of applied sciences, and finally, university or higher. We maintain country-based distinctions to preserve nation-specific educational characteristics and their impact.

We address the educational mediation and control for observable confounders in two separate steps. First, we consider the possible *non-random selection into initial non-standard employment* by applying a matching framework, and specifically the coarsened exact matching (CEM). As shown in appendix A, figure A4 and A5, workers exposed to contractual instability have different social characteristics that potentially influence also the intragenerational career development. The increasing use of flexible contracts at the labour market entry in the two countries diverges in its educational and skill compositions over the considered cohorts. In Italy, less-educated labour market

entrants have been the most at risk of instability since the 80s and have remained so since the major reforms (of the late 90s and early 2000s). In Germany, mainly the tertiary-educated had been exposed to temporary employment until the mid-90s, whereas the low- and mid-educated had been targeted until 1996, which further deregulated existing restrictions on newly hired employees and successful apprentices (Gebel 2010). The skill-biased pattern is also confirmed when considering the starting occupation defined as ISCO88 major groups of the first occupation.
It is thus important to make stable and unstable entrants comparable according to their characteristics antecedent to their labour market entrance by identifying adequate control cases for each treaded entrant. Differently from traditional matching strategies that rely on a predicted propensity score, the CEM (Iacus et al. 2012) splits the confounders into categories (e.g., age upon leaving education is coarsened into categorical subgroups) and sorts individuals into strata in which units have the same values on the coarsened variables. Individuals in strata without at least one treated and one control case are not matched and curbed from the analysis. The matching is performed at the exact beginning of the working career, and the resulting individual time-constant weights are generalized to the whole career trajectories. We specifically match on parental social class and education (dominance criterion for both), age upon leaving education, sex, achieved education, school-leaver cohort, regional position, and nationality (available only for Germany) by manually defining the coarsened categories. Appendix A, tables A3 & A4 evaluates the matching performance by presenting descriptive statistics for the stable and unstable entrants before and after applying weights.

As a second step, we control for sources of heterogeneous career development in the growth curve estimation. As reported in equation 3, we include the level of education, sex, and school-leaver cohorts in interaction with the career progression. For the sake of brevity, these three time-constant additional controls and their interaction are summarized with the notation $controls_i$.

Equation 3

$$
\begin{aligned}
y_{ij} = {} & \beta_0 + \beta_1 unst_i + \beta_2 orig_i + \left(\beta_3 car_{ij} + \beta_4 car_{ij}^2\right) \\
& + \beta_5 unst_i * orig_i + \beta_6 unst_i * (car_{ij} * car_{ij}^2) + \beta_7 orig_i * (car_{ij} * car_{ij}^2) \\
& + \beta_8 unst_i * orig_i * (car_{ij} * car_{ij}^2) \\
& + \beta_9 1^{st} isei_i + \beta_{10} 1^{st} isei_i * unst_i + \beta_{11} 1^{st} isei_i * unst_i * (car_{ij} * car_{ij}^2) \\
& + \beta_{12} controls_i + \beta_{13} controls_i * (car_{ij} * car_{ij}^2) \\
& + \left(\mu_{0j} + \mu_{3j} + \varepsilon_{ij}\right)
\end{aligned}
$$

The empirical section presents the predicted ISEI score over the first ten years estimated on the matched sample and according to equation 3. The inclusion of the confounders directly in the growth curves model leads to identical results. We preferred a two-step approach to evaluate the selection into initial contractual instability. This last model specification is replicated separately for the low-, middle-, and tertiary-educated to test the equalizing power of tertiary education.

4. Empirical evidence

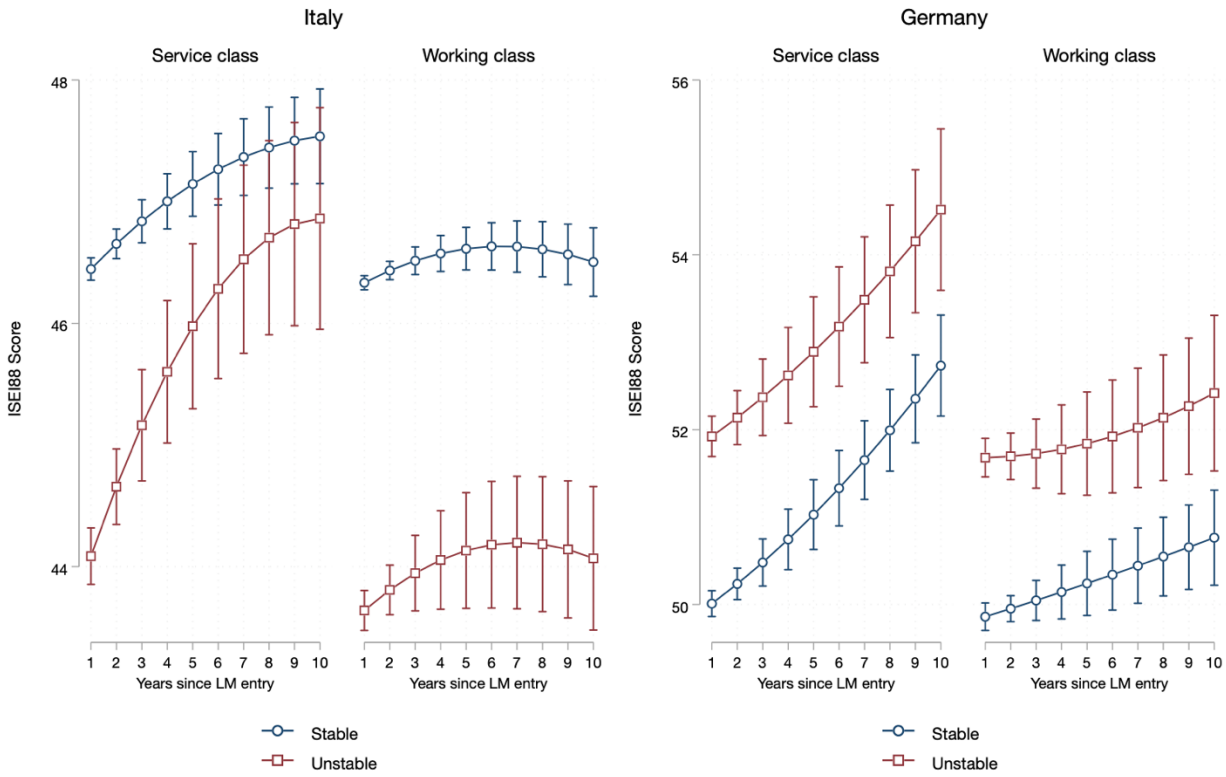
4.1 The Direct influence of parental background on unstable starts over the career

Following equation 3, we estimate the growth curves of stable and unstable labour market entrants that counterfactually began with comparable occupations that differ on their social origin. In so doing, we can study the interactive relation between initial contractual instability and the residual effect of the parental background that intervenes in supporting or compensating the career development. Figure 1 compares the career development along the first ten years in the labour market of young workers from the service- and working-class origin while controlling for the ISEI score of the first job, observable confounders, and sources of career heterogeneity.

In the Italian case, empirical evidence points to a clear *compensatory advantage* for the service class's descendants: Unstable entrants with a high social background almost entirely recover their initial gap with their stable counterparts within the first ≈ 6 years (a growth of around 3/4 ISEI points). Conversely, among working-class descendants who entered the labour market with a "flexible" position, no signals of compensation emerge, revealing the *trap* nature of initial career instability in Italy. In fact, despite trivial signals of upward mobility (not even 1 ISEI point in 10 years), unstable working-class entrants never catch up with their stable counterparts.

Upon examining the Italian stable entrants (and controlling for the level of the entry job) from the service class, they manage to increase their occupational socio-economic status (≈2 ISEI points), the overall rigidity of both the Italian labour market notwithstanding. Thus, the parental background not only compensates for initial disadvantages but also helps in overall boosting career chances. Stable entrants from the working-class are instead subject to a "*class-ceiling"* effect with consequent occupational immobility after their entrance.

Figure 1. *Residual DESO* model of the predicted ISEI score over the career development in Italy and Germany. Service and Working classes refer to the class of origin.



Source: Multipurpose Household Social Surve waves 2009 & 2016; NEPS starting cohort6

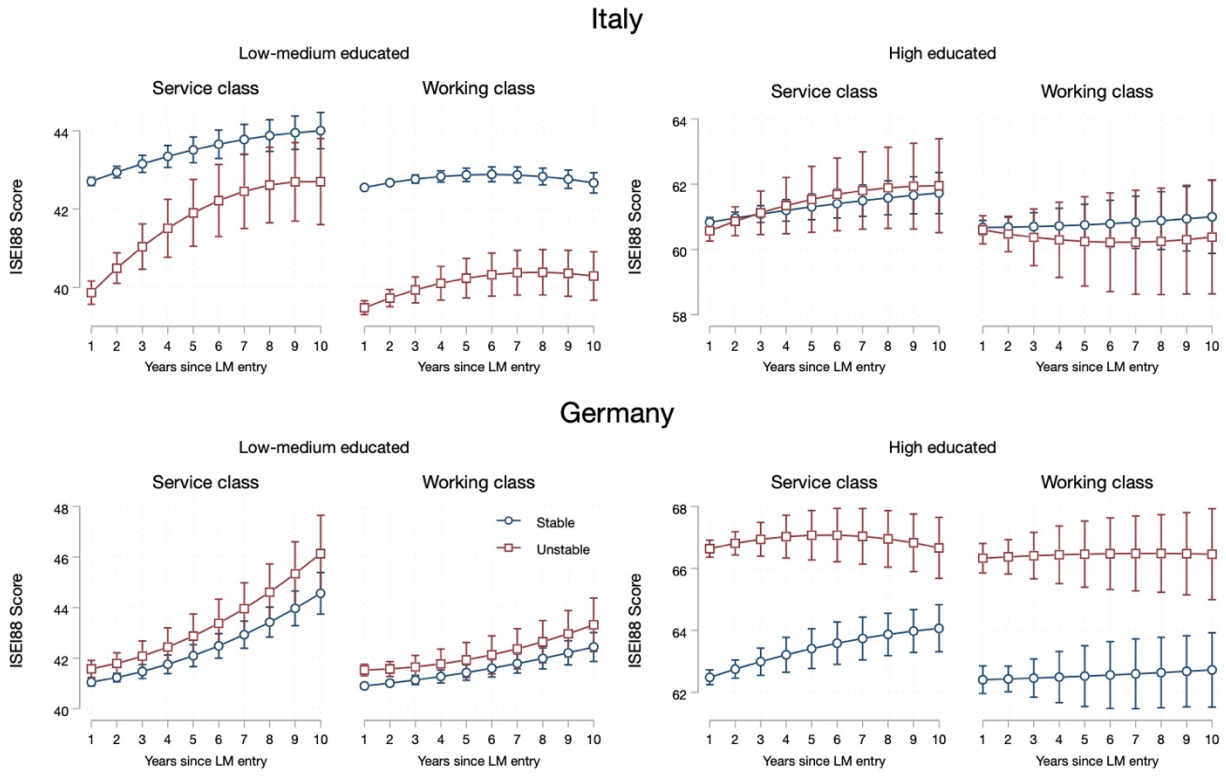
In the German case, a different interactive dynamic is at stake. First, a sort of *flexibility premium* (of about 2 ISEI points) is evident for both service- and working-class descendants. However, social-class differences are what strikes the most regardless of the initial contractual stability: the parental background exerts an occupational *boost* to the offspring of the upper class (a growth of more than 2 ISEI points), whereas working-class entrants remain de facto immobile. Figure 1 reveals that the flexibility premium in the German labour market functions as a class premium that largely benefits upper-class descendants. In other words, our results show that *ceteris paribus*, regardless of the stability at labour market entry, advantaged social origin nevertheless leads to mechanisms over the career that serve as a form of *compensation* (in Italy) or *boosting* (in Germany), which results in the reproduction of socially stratified occupational inequalities among labour market entrants during their early careers.

For both the Italian and German cases, we thus confirm Hypothesis 1 and Hypothesis 2 regarding the stronger flexibility penalty in Italy and the direct role of the class of origin in reinforcing the existing inequalities, either through a compensation mechanism (as in Italy) or via a boost of occupational achievement (in Germany).

4.2 Is tertiary education an equalizer? The origin-education interaction

Further, we decompose the results of the previous analysis according to the achieved level of education. We test the *equalizing* power of the college degree by splitting the sample between the low-to-medium educated (at most, upper-secondary) and the highly educated (those with any kind of tertiary degree). Based on our theoretical reflection, the DESO *compensation* pattern should be much more apparent among less-educated service-class descendants. Moreover, as highly educated individuals compete in a more-meritocratic market, they should be penalized less by initial instability, regardless of their origin (*equalization*), but, if class advantages persist, the entrants from the service class might present additional *boosting advantages*. Overall, empirical evidence for Italy and Germany (Figure 2) converges towards an *equalizing* effect of tertiary education, at least regarding the DESO mechanisms that operate after an unstable start. The overall educational moderation, however, leads to different contextual scenarios.

Figure 2. *Residual DESO* model of the predicted ISEI score over the career development in Italy and Germany – educational moderation. Blue lines (and circles) indicate stable entrants; red lines (and squares) indicate unstable entrants. Service and Working classes refer to the class of origin, while low-medium and high education refer to the individuals' achieved level of education.



Source: Multipurpose Household Social Surve waves 2009 & 2016; NEPS starting cohort6

Considering first the *low-to-medium-educated* (left panels), we confirm the expected compensation / entrapment dynamics only for the Italian case. The direct effect of the parental background over the career is visible in the compensation of the flexibility penalty among Italian entrants from the upper classes (unstable entrants pass from an ISEI score of less than 40 to more than 42, whereas stable entrants have an average ISEI score of around 43). The stable entrants from the service class also

show positive deviations from the initial ISEI. Conversely, the absence of social privileges translates to a visible ceiling effect for both stable and unstable working-class entrants.
In Germany, we can find neither significant penalties nor premiums attached to unstable starts among the lower-educated. What we see, instead, is that social origin plays a *direct* and major role, regardless of the contractual conditions: Advantaged social origin translate into better career chances for less-educated children, as revealed by their much-steeper upward trajectory with a growth of ≈4 ISEI points. The results from the analysis of less educated in both countries are in line with Hypothesis 3, and particularly we document a direct influence of the class of origin for precarious entrants in Italy and for all entrants in Germany, regardless of their contractual stability.

Finally, among the *tertiary-educated* (right panels), the direct effect of social origin over the career is no longer relevant as it is for the less-educated, especially in Germany. In Italy, we still detect little and not significant signs of initial upward mobility among stable and unstable entrants from the service class who might exploit their social origin to increase their career chances. The trend for individuals of working-class origin is less straightforward and the estimations more unstable, which points to their lower absolute representation among the tertiary educated.

The role of initial contractual instability among the highly educated displays further contextual differences. In Italy, no significant disparities emerge between the career development of stable and unstable labour market entrants. While attending university in Italy is clearly a socially stratified privilege (Barone et al. 2017; Schizzerotto and Barone 2006), earning a *laurea* does help in overcoming institutionally driven inequalities, even among the less-socially advantaged. In the more-egalitarian German system, a persistent flexibility premium (about 4 ISEI points) among the tertiary-educated is present, regardless of their class of origin, which reveals that jobs that require initial screening (and therefore that use flexible contracts) are generally associated with a higher socio-economic status and greater rewards in the highly skilled German labour market.
These findings support Hypothesis 4a in both countries, as the direct influence of the class of origin is sensibly or even entirely suppressed among labour market entrants who achieved a tertiary education.

4.3 Robustness checks and limitations

We finally test the sensitivity of our results, both core models and the educational moderation by performing a series of robustness checks, as presented in Appendix Section B. First, we assess the validity of our treatment variable – the unstable start – according to two alternative (and stricter) specifications.

The first alternative imposes a stricter form of initial contractual instability by restricting the treatment condition to those remaining with fixed-term contracts (i.e., contracts that are not converted into permanent contracts) throughout the entire first year (twelve months) in the labour market. The control group therefore comprises entrants with permanent contracts and entrants with a fixed-term contract that has been converted (or entrants who have found a stable job) before the end of the first year. The second alternative, on the other hand, draws on the core-treatment definition (starting and remaining for at least four months in temporary employment) but limits the comparison just to stable

entrants. Thus, we exclude flexible entrants who moved to permanent contracts in the first three months. Matching weights are re-estimated for each alternative specification. The results remain unaltered by these stricter specifications, thereby validating the results presented above.

Second, we test the Standard Occupational Prestige Scale (SIOPS) – a metric measure of occupational prestige – as an alternative dependent variable. SIOPS was developed as an instrument for cross-national comparative research (Ganzeboom and Treiman 1996). Despite its widespread adoption, its validity has been heavily debated in the literature (Hällsten 2020; Lynn and Ellerbach 2017) both in terms of measurement errors[8] and correlation with other SES dimensions (education, income, and wealth). Nevertheless, the strong correlation between ISEI and SIOPS led to virtually identical results, as expected. Finally, income- and wage measures can be alternative mobility measures yet are available only for Germany and for overly limited cases to perform additional checks. Even so, monetary scales would not be necessarily a better option. Compared with ISEI, income and wages are much more volatile (Jenkins and Van Kerm 2009) and display lower intergenerational significance (Hällsten 2020). More substantially, income is an epiphenomenon of structural cleavages and inequalities (Connelly et al. 2016) and thus misses major and consequential dimensions of social stratification of our interest (Goldthorpe 2012).

Despite the applied matching techniques, we must acknowledge that observable confounders might not fully absorb other crucial factors that may influence both the selection into stable or unstable labour market entry position and the chances of intragenerational career mobility. First, educational credentials may not be enough to fully get the direct effect of social origin. As pointed out by Bernardi and Gil-Hernández (2020), the field of study also contributes to a horizontal stratification, especially among tertiary educated. However, this information was not available for both countries in all waves, and this omission may only partially positively bias the estimated impact of the class of origin. Further, unobserved cognitive and non-cognitive skills, individuals' motivation, efforts, and genetic predisposition that are not captured by the included parental class and education may be the mechanisms through which social origin differentiates career trajectories rather than a direct parental support and sustainment throughout the career. Nevertheless, only a detailed mediation analysis with appropriate data could disentangle the precise mechanisms through which the class of origin influences the career development (after the entry), especially in case of initial disadvantages.

5. Discussion and Conclusions

We investigated the extent to which institutionally originated inequalities (unstable entry into the secondary labour market) interact with persistent ascriptive disparities, namely the direct effect of social origin. We focused particularly on Italy and Germany, two examples of different institutional settlements within Europe, as their different ways of dualizing labour markets are suitable cases for grasping the mechanisms by which advantaged social origin react to *bad labour market starts*, whose penalties are particularly persistent in conservative contexts (Barbieri et al. 2019; Gebel and Giesecke

[8] Concerning measurement errors in SIOPS, Hällsten (2020) points out that prestige scores are error-prone estimates of the socioeconomic attributes of occupations and are thus something different than socioeconomic status. Moreover, Lynn and Ellerbach (2017) have demonstrated that the cognitive maps underlying the basis of the hierarchical structure of prestige scales are highly influenced by individuals' level of education.

2016). Following the literature on social mobility, we found that the parental aversion to intergenerational downward mobility and the resulting social demotion – well-illustrated in the stratification literature (Breen and Goldthorpe 1997) – are also at stake when considering initial contractual instability, especially if it is associated with lower initial socio-economic positions.
We followed young Italian and German workers by adopting a dynamic perspective in order to study occupational mobility over the first ten years of their labour market career. In greater detail, we sought to uncover the direct effect of social origin over the career development, and particularly as a reaction to a disadvantaged entry – the *residual DESO*. To this end, we compared stable and unstable entrants who had counterfactually begun their careers with similar socio-economic statuses and differed only in terms of their social origin.

Striking contextual differences emerged regarding the implications of unstable initial employment as well as its relationship with ascriptive factors, which points to the centrality of institutional features such as the characteristics of the educational and occupational systems. Of course, we do not pretend to derive causal statements about the effect of specific institutional arrangements: That said, our analysis shows that Italy and Germany differ in the average composition and socio-economic status of initial flexible employment as well as in terms of the direct influence that social origin exerts on the further career development.

In line with previous literature, Italian instability is associated with less-skilled labour market entrants, and the flexibilisation process exacerbates the precariousness and penalties of the secondary labour market. We particularly documented how the direct effect of social origin is also crucial in reproducing an inequality of opportunities in relation to flexible employment. Upper-class descendants demonstrate their *compensatory advantages* by buffering initial labour market failures (i.e. the occupational penalty resulting from starting flexibly). This finding is strikingly evident when lower- and middle-educated labour market entrants are considered: In their case, the absence of ascriptive privileges prevents upward mobility throughout the career, thereby confining unstable entrants to less-prestigious and less-rewarding jobs. In Germany, on the other hand, we found no signs of occupational penalties related to an unstable labour market start: Flexible jobs in Germany seem far from being representative of "*bad starts*". Despite reports in the literature that wage- and security penalties are associated with flexible beginnings (Gebel 2010; Giesecke and Groß 2004; Scherer 2004), initial labour market instability in Germany is generally concentrated among highly educated workers (even though recent reforms have also marked an increase among low-skilled workers) and is associated with a significant occupational *premium*, as predicted by the *integration* scenario. Nevertheless, the direct influence of the class of origin contributed to explaining how inequalities are perpetuated, even when there are no detectable initial labour market penalties. Indeed, low-educated entrants from the service class, who started their career in the secondary labour market, manage to move upwards during their career progression.

A major finding common to both countries concerns the *equalizing role* of tertiary education, at least regarding our interactive mechanisms. Advantaged social origin generally result in slightly better initial job allocation among degree-holders; however, we did not find any significant direct effect of the class of origin (DESO) over the career. Service- and working-class entrants present similar patterns along the first ten years. Furthermore, tertiary education entirely reduces the flexibility penalty in the Italian context of working-class entrants who achieve tertiary education. Conversely,

in Germany, initial labour market flexibility serves as a gateway to more-prestigious jobs in the highly skilled labour market. All in all, graduating seems to foster greater equality of opportunities during the early stages of the working career either because of a more meritocratic market or a positive selection of working-class entrants *who achieved tertiary education*.

In conclusion, flexibility dynamics clearly matter in terms of both inter- and intragenerational mobility. Flexible employment at labour market entry in and of itself may be a driver of higher labour market fluidity, yet it may also exacerbate ascriptive inequalities, especially among less-educated workers. However, this finding does not represent an inexorable end because a flexible labour market entry may serve either as a trap or as a stepping-stone towards further career development. In Southern Europe, where a secondary labour market entry is usually a bad start, the unstable entry is experienced as a class failure by upper-class families, who fight back by "lifting" their members, while working-class secondary-labour market entrants remain trapped in the secondary labour market. In this situation, institutionally originated inequality in the labour market combines with ascriptive (class-based) disparity, thereby reinforcing *class-ceiling* effects and adding to the already-high level of social inequality.

APPENDIX

Appendix section A – Descriptive tables and figures

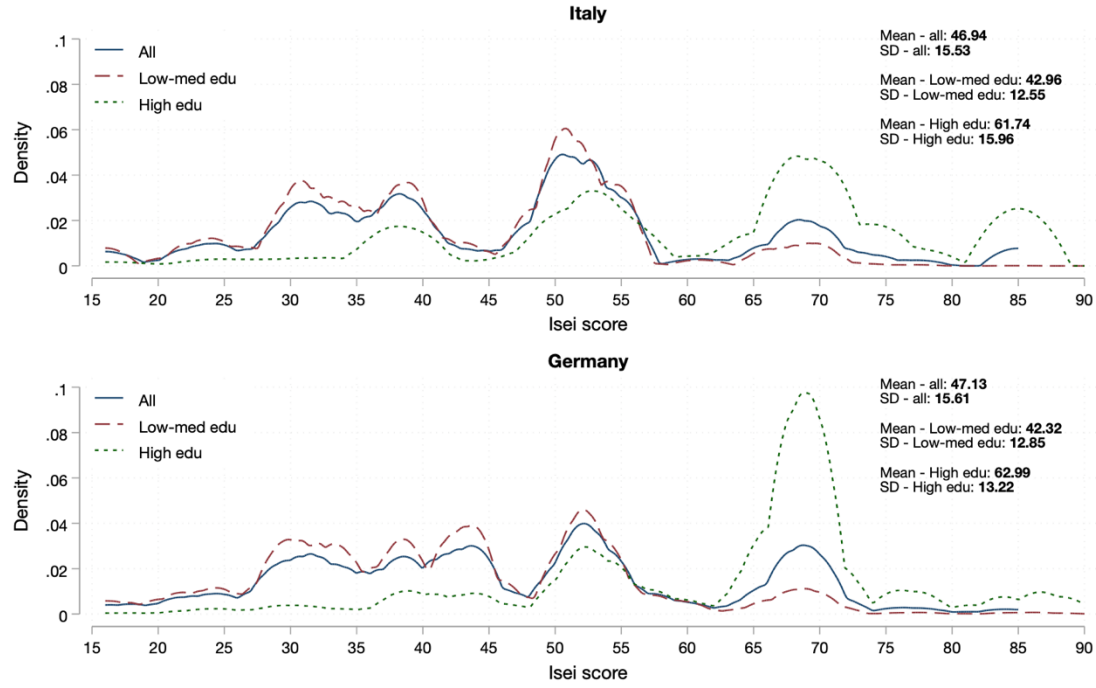
Table A1. Sample selection steps – Italy.

Italy	Individuals	Spells	%ind
FSS 2009 & 2016	68,603 (43,850 – 2009 24,753 – 2015)	-	100
Have work experience	49,365	115,244	72.0
No ISEI missing info	45,980	106,738	67.0
1st valid job longer than 3 months after end of education	42,348	89,276	61.7
	Individuals	Person-Months	%ind
	42,348	11,946,945	61.7
Followed for at least 5 years	37,371	11,802,099	54.5
Right censor at 10 years	37,371	4,344,559	54.5
Left education period 1970-2007 aged 16-35	15,808	1,826,088	23.0
	Individuals	Person-Years	%ind
	15,808	153,361	23.0
Analytical sample	14,893	144,465	21.7
Matched sample	14,721	142,800	21.5

Table A2. Sample selection steps – Germany.

Germany	Individuals	Spells	%ind
Neps 6th SC 10.0.1	17,139	-	100
Have work experience	17,051	81,971	99.5
No ISEI missing info	16,971	80,798	99.0
1st valid job longer than 3 months after end of education	16,136	60,489	94.2
	Individuals	Person-Months	%ind
	16,136	5,025,177	94.2
Followed for at least 5 years	15,026	4,991,938	87.7
Right censor at 10 years	16,353	1,767,115	87.7
Left education period 1970-2007 aged 16-35	12,636	1,491,126	73.7
	Individuals	Person-Years	%ind
	12,636	124,679	73.7
Analytical sample	11,470	113,174	66.9
Matched sample	10,467	103,420	61.1

Figure A1. Kernel density distribution, mean and standard deviation of ISEI score for the whole analytical sample and according to the achieved education.



Source: Multipurpose Household Social Surve waves 2009 & 2016; NEPS starting cohort6

Figure A2. Average ISEI score at labour market entry over school leavers cohorts (top left), class of origin (top right), own educational achievement (bottom left), and ISCO level of the first occupation (bottom right) – Italy.

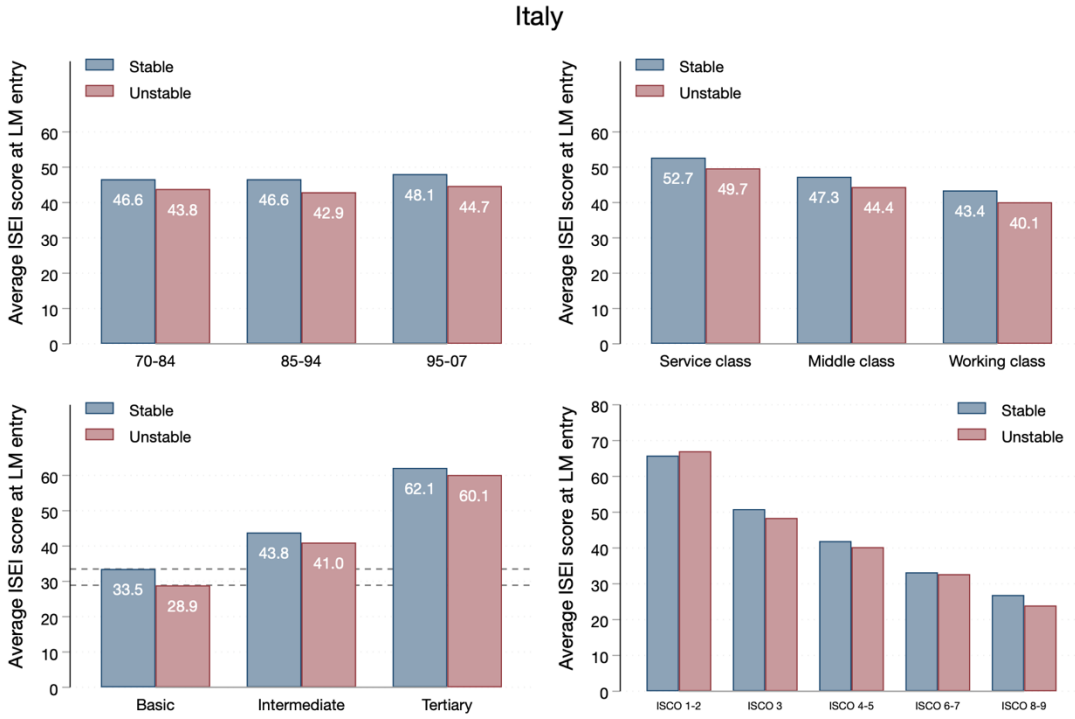


Figure A3. Average ISEI score at labour market entry over school leavers cohorts (top left), class of origin (top right), own educational achievement (bottom left), and ISCO level of the first occupation (bottom right) – Germany.

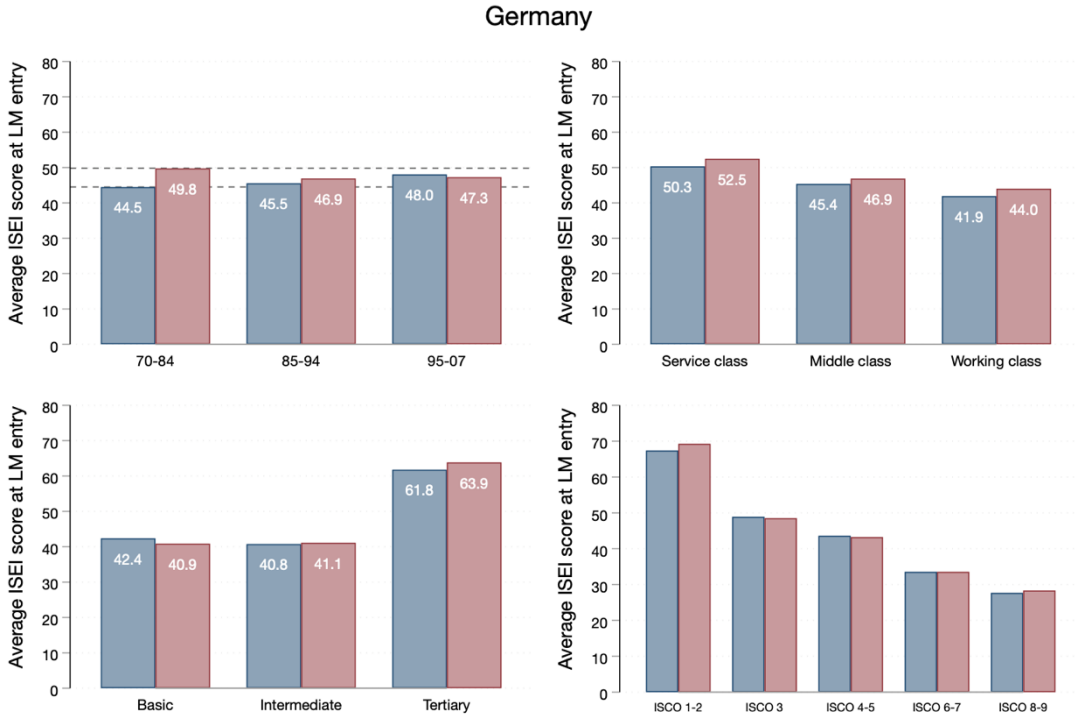


Figure A4. Exposure to unstable entry (expressed in proportion) over school leavers cohorts and class of origin (top right), own educational achievement (bottom left), and ISCO level of the first occupation (bottom right) – Italy.

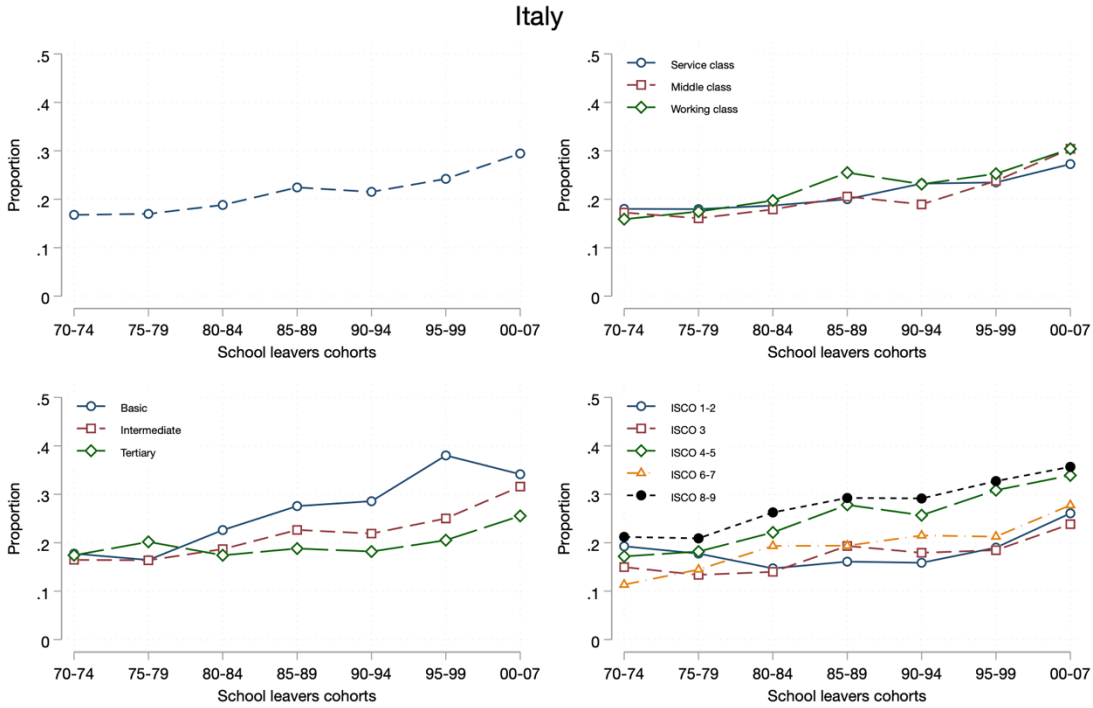


Figure A5. Exposure to unstable entry (expressed in proportion) over school leavers cohorts and class of origin (top right), own educational achievement (bottom left), and ISCO level of the first occupation (bottom right) – Germany.

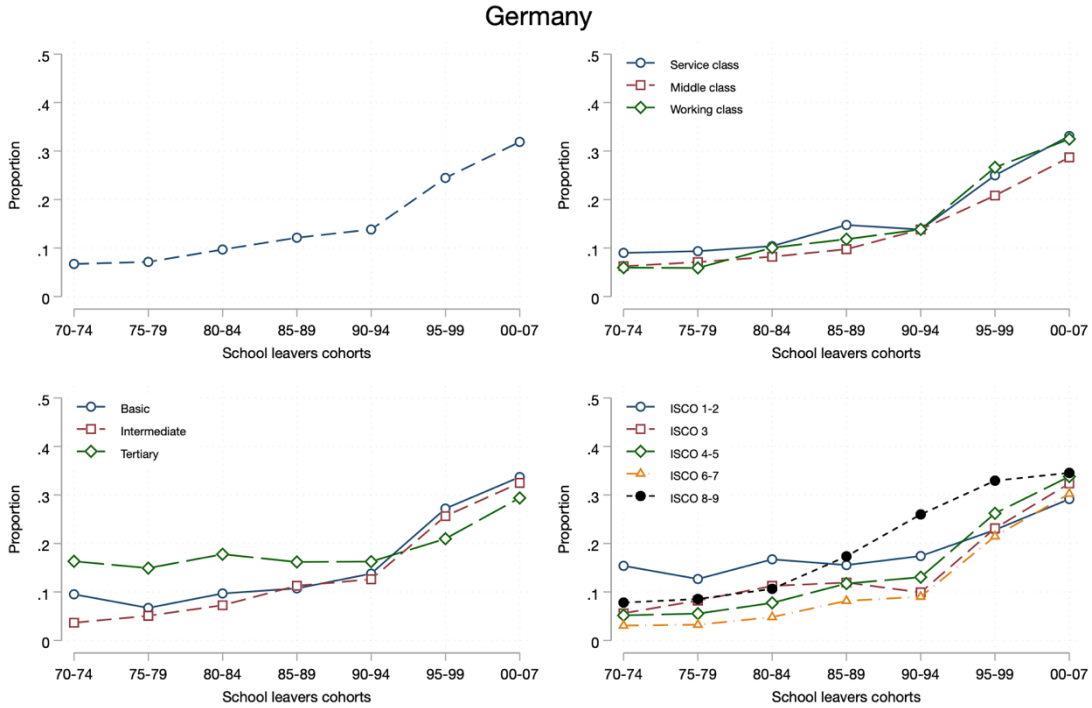


Table A3. Distribution of covariates among stable and unstable entrants before and after coarsened exact matching - Italy.

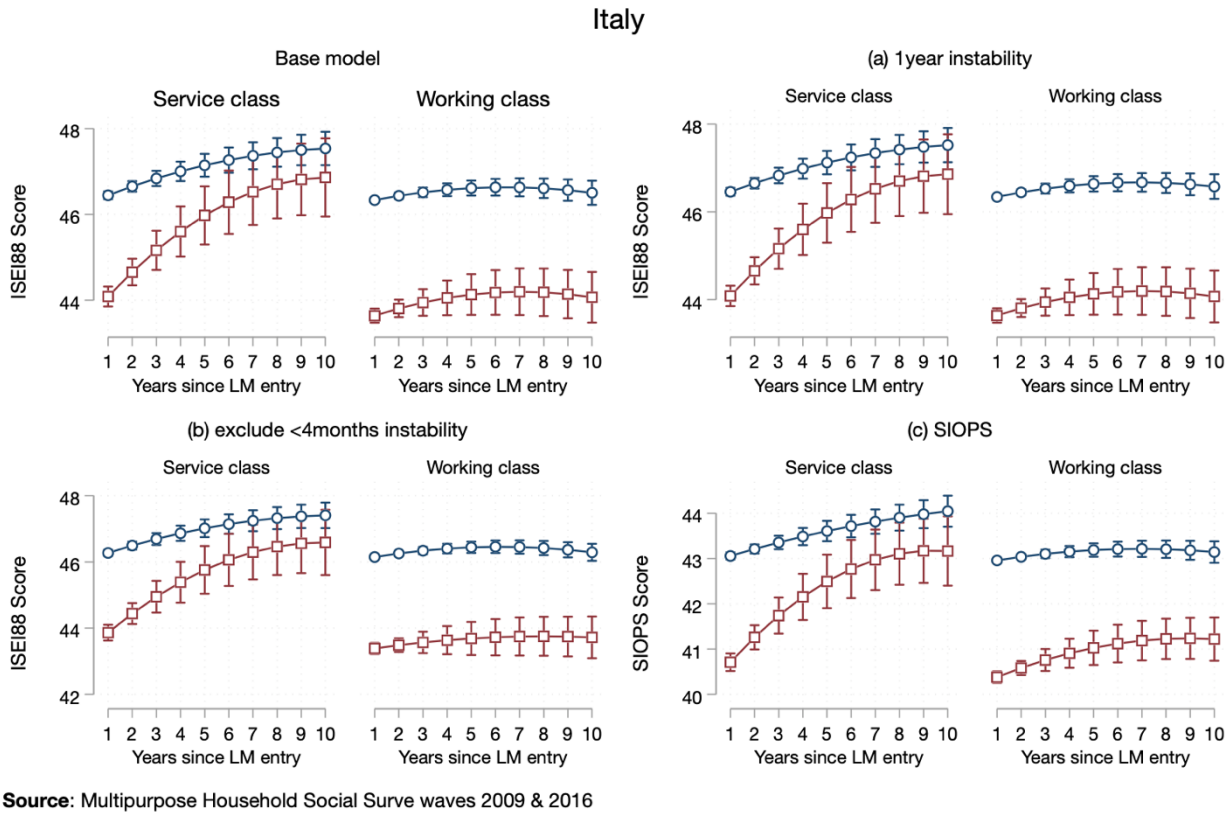
Italy	Unstable entry				Stable entry			
	Pre-matching		Post-matching		Pre-matching		Post-matching	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Female	0,54	0,50	0,54	0,50	0,45	0,50	0,45	0,50
Educational achievement								
None	0,01	0,09	0,01	0,09	0,01	0,07	0,01	0,07
Basic	0,07	0,25	0,06	0,25	0,06	0,24	0,07	0,25
Intermediate	0,72	0,45	0,72	0,45	0,71	0,45	0,72	0,45
Post-secondary voc	0,01	0,11	0,01	0,11	0,01	0,10	0,01	0,11
Bachelor	0,03	0,17	0,03	0,17	0,03	0,17	0,03	0,17
Master or more	0,17	0,37	0,17	0,38	0,18	0,39	0,17	0,38
Age left education								
16-20	0,72	0,45	0,73	0,45	0,70	0,46	0,73	0,45
21-25	0,17	0,38	0,17	0,38	0,19	0,39	0,17	0,38
26-30	0,08	0,28	0,08	0,27	0,09	0,29	0,08	0,27
31-35	0,02	0,15	0,02	0,14	0,02	0,14	0,02	0,14
Cohort left education								
1970-1984	0,34	0,47	0,34	0,47	0,43	0,50	0,38	0,49
1985-1994	0,32	0,47	0,32	0,47	0,32	0,47	0,28	0,45
1995-2007	0,34	0,47	0,34	0,47	0,26	0,44	0,34	0,47
Parental social class								
Service class	0,22	0,42	0,22	0,42	0,22	0,41	0,22	0,42
Middle class	0,38	0,49	0,38	0,49	0,40	0,49	0,38	0,49
Working class	0,40	0,49	0,40	0,49	0,38	0,49	0,40	0,49
Parental education								
ISCED 5 or more	0,08	0,26	0,08	0,26	0,08	0,27	0,08	0,27
ISCED 3/4	0,28	0,45	0,27	0,45	0,24	0,43	0,27	0,44
ISCED 2 or below	0,65	0,48	0,65	0,48	0,68	0,47	0,65	0,48
Macro-region								
North-West	0,21	0,40	0,21	0,40	0,23	0,42	0,23	0,42
North-East	0,30	0,46	0,30	0,46	0,27	0,44	0,27	0,45
Centre	0,18	0,39	0,18	0,39	0,19	0,39	0,18	0,39
South	0,22	0,41	0,22	0,41	0,23	0,42	0,22	0,41
Islands	0,10	0,30	0,10	0,30	0,08	0,27	0,10	0,30
Wave								
2009	0,52	0,50	0,52	0,50	0,57	0,50	0,56	0,50
2016	0,48	0,50	0,48	0,50	0,43	0,50	0,44	0,50
Number of strata: 335								
Number of matched strata: 217								

Table A4. Distribution of covariates among stable and unstable entrants before and after coarsened exact matching - Germany.

Germany	Unstable entry				Stable entry			
	Pre-matching		Post-matching		Pre-matching		Post-matching	
	Mean	*SD*	*Mean*	*SD*	*Mean*	*SD*	*Mean*	*SD*
Female	0,54	0,50	0,54	0,50	0,50	0,50	0,48	0,50
Non-native	0,03	0,18	0,03	0,17	0,03	0,18	0,03	0,18
Educational achievement								
Basic or none	0,13	0,34	0,13	0,34	0,12	0,32	0,10	0,30
Vocational 1st lvl	0,17	0,38	0,17	0,38	0,28	0,45	0,21	0,40
Abitur	0,27	0,44	0,27	0,45	0,36	0,48	0,27	0,45
Vocational 2nd lvl	0,03	0,18	0,03	0,17	0,05	0,21	0,03	0,17
UAS	0,08	0,27	0,08	0,27	0,07	0,26	0,08	0,27
University	0,32	0,47	0,32	0,47	0,13	0,33	0,32	0,47
Age left education								
16-20	0,34	0,48	0,35	0,48	0,49	0,50	0,34	0,48
21-25	0,36	0,48	0,36	0,48	0,36	0,48	0,36	0,48
26-30	0,25	0,43	0,24	0,43	0,12	0,33	0,24	0,43
31-35	0,05	0,22	0,05	0,22	0,03	0,16	0,05	0,22
Cohort left education								
1970-1984	0,31	0,46	0,31	0,46	0,52	0,50	0,37	0,48
1985-1994	0,29	0,46	0,30	0,46	0,31	0,46	0,25	0,43
1995-2007	0,40	0,49	0,39	0,49	0,17	0,38	0,39	0,49
Parental social class								
Service class	0,41	0,49	0,41	0,49	0,31	0,46	0,39	0,49
Middle class	0,24	0,43	0,24	0,43	0,27	0,44	0,27	0,44
Working class	0,35	0,48	0,35	0,48	0,43	0,50	0,35	0,48
Parental education								
ISCED 5 or more	0,43	0,50	0,43	0,50	0,34	0,47	0,42	0,49
ISCED 3/4	0,51	0,50	0,52	0,50	0,57	0,50	0,53	0,50
ISCED 2 or below	0,06	0,24	0,05	0,23	0,10	0,30	0,05	0,23
Macro-region								
West	0,77	0,42	0,78	0,41	0,68	0,47	0,69	0,46
East	0,14	0,35	0,14	0,35	0,23	0,42	0,23	0,42
Abroad	0,09	0,28	0,08	0,27	0,09	0,29	0,08	0,27
Wave								
2007-2008	0,38	0,48	0,38	0,49	0,34	0,47	0,35	0,48
2009-2010	0,25	0,43	0,25	0,43	0,26	0,44	0,28	0,45
2010-2011	0,01	0,11	0,01	0,09	0,01	0,11	0,01	0,09
2011-2012	0,29	0,45	0,29	0,46	0,28	0,45	0,29	0,46
2012-2013	0,01	0,11	0,01	0,10	0,02	0,13	0,01	0,10
2013-2014	0,01	0,11	0,01	0,11	0,01	0,10	0,01	0,11
2014-2015	0,01	0,08	0,01	0,07	0,01	0,10	0,01	0,07
2015-2016	0,01	0,08	0,01	0,07	0,01	0,09	0,01	0,07
2016-2017	0,01	0,08	0,01	0,07	0,01	0,10	0,01	0,07
2017-2018	0,03	0,18	0,03	0,18	0,05	0,23	0,03	0,18
Number of strata: 760								
Number of matched strata: 285								

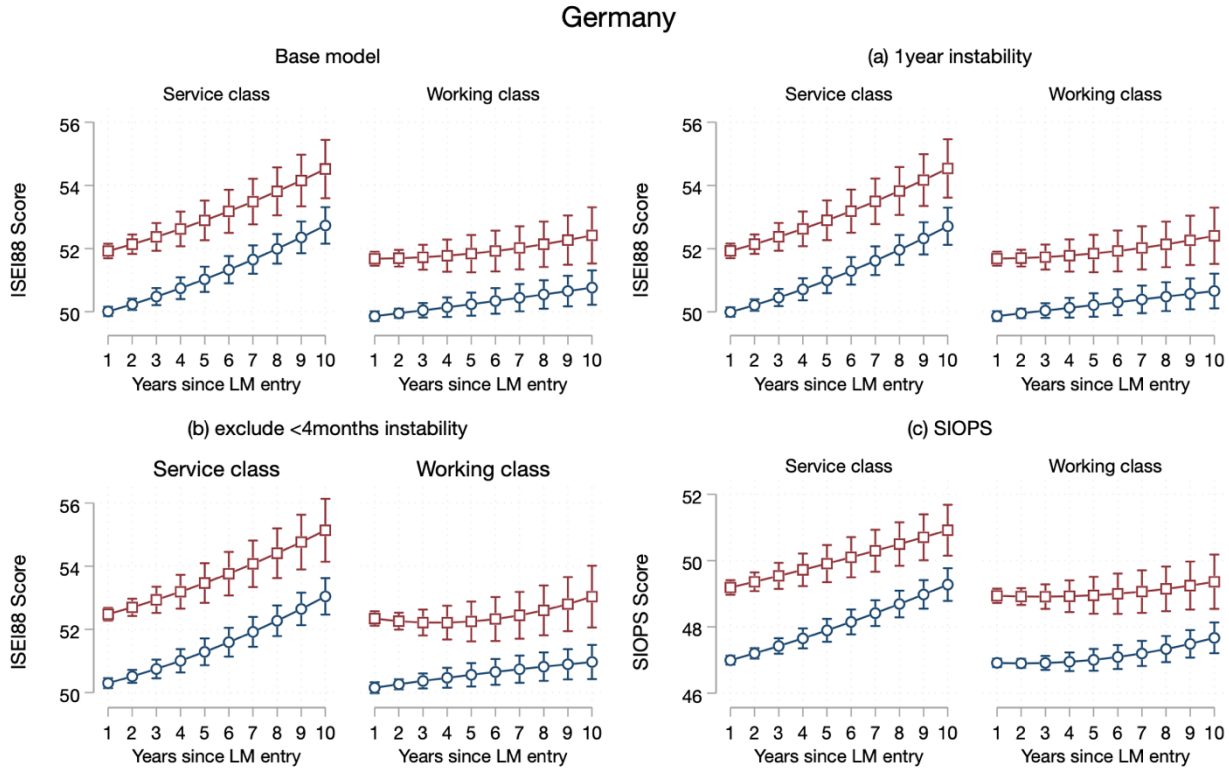
Appendix section B – Robustness checks

Figure B1. Residual deso model for Italy (figure 1 in the core text) according to different treatment and outcome specifications



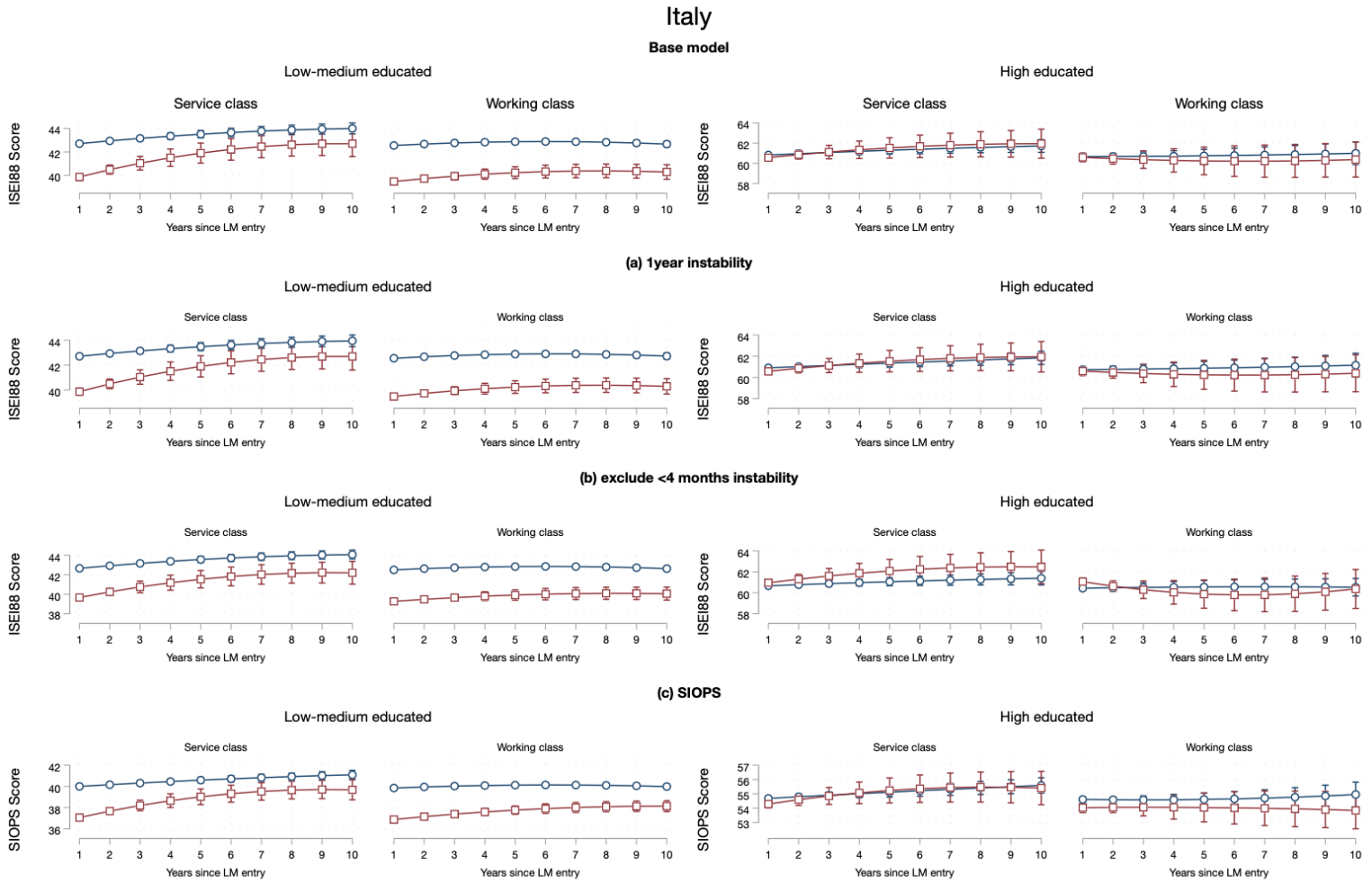
Notes: Blue lines (and circles) indicate stable entrants; red lines (and squares) indicate unstable entrants. The top left panel reports the model as specified in the core text. Top right panel (a) defines the treatment condition (unstable entry) as starting flexibly and do not reach a permanent contract for during the first year in the labour market. Bottom left panel (b) builds on the core treatment definition (first 4 months as unstable), but the control group is composed only by labour market entrants with a permanent contract. Bottom right panel (c) adopts SIOPS as outcome variable instead of ISEI. In this last model, we controlled for the SIOPS score at the labour market entry to construct the *residual DESO* model.

Figure B2. Residual deso model for Germany (figure 1 in the core text) according to different treatment and outcome specifications



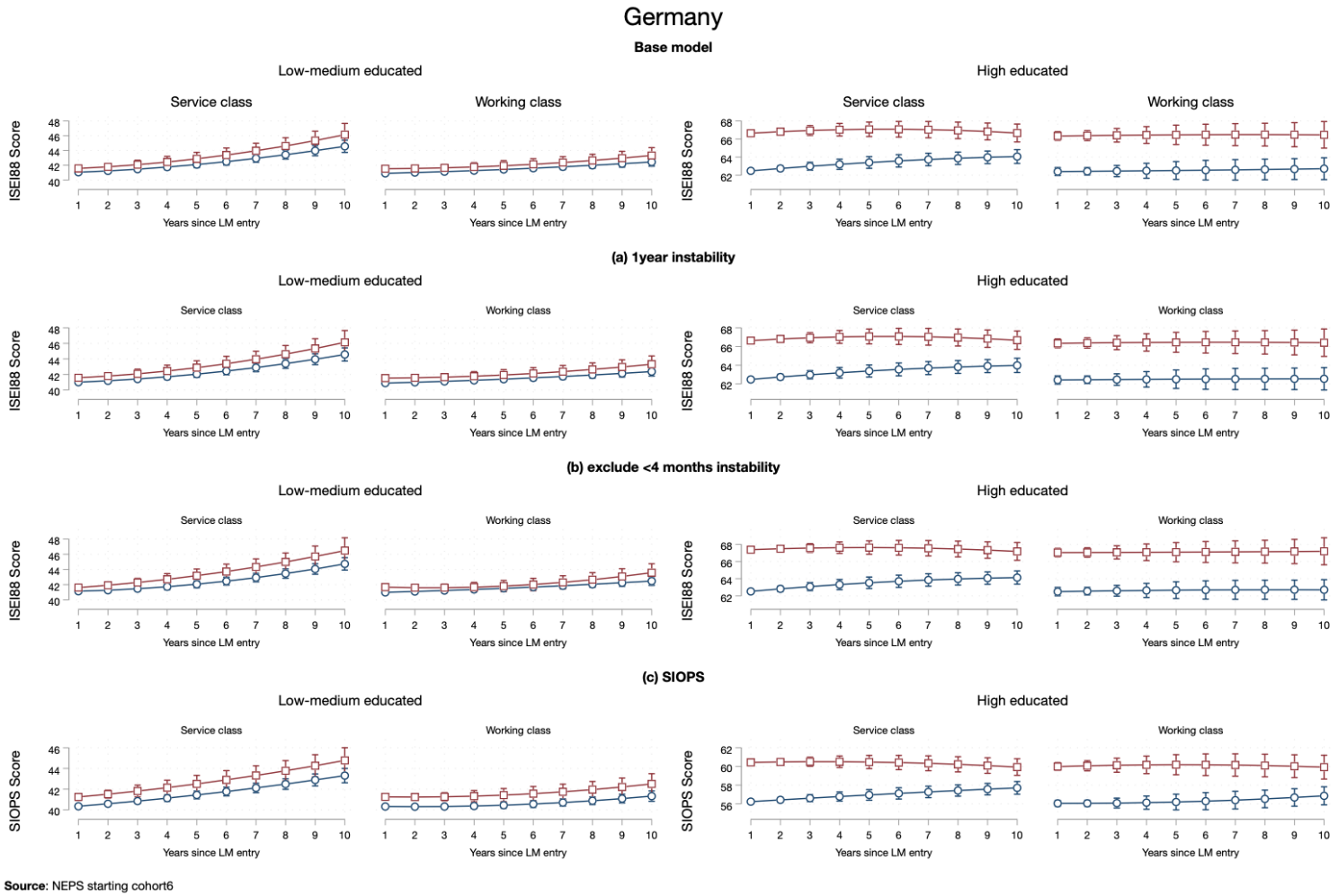
Notes: Blue lines (and circles) indicate stable entrants; red lines (and squares) indicate unstable entrants. The top left panel reports the model as specified in the core text. Top right panel (a) defines the treatment condition (unstable entry) as starting flexibly and do not reach a permanent contract for during the first year in the labour market. Bottom left panel (b) builds on the core treatment definition (first 4 months as unstable), but the control group is composed only by labour market entrants with a permanent contract. Bottom right panel (c) adopts SIOPS as outcome variable instead of ISEI. In this last model, we controlled for the SIOPS score at the labour market entry to construct the *residual DESO* model.

Figure B3. Educational moderation of residual deso model for Italy (figure 2 in the core text) according to different treatment and outcome specifications



Notes: Blue lines (and circles) indicate stable entrants; red lines (and squares) indicate unstable entrants. The top left panel reports the model as specified in the core text. Top right panel (a) defines the treatment condition (unstable entry) as starting flexibly and do not reach a permanent contract for during the first year in the labour market. Bottom left panel (b) builds on the core treatment definition (first 4 months as unstable), but the control group is composed only by labour market entrants with a permanent contract. Bottom right panel (c) adopts SIOPS as outcome variable instead of ISEI. In this last model, we controlled for the SIOPS score at the labour market entry to construct the *residual DESO* model

Figure B4. Educational moderation of residual deso model for Germany (figure 2 in the core text) according to different treatment and outcome specifications



Notes: Blue lines (and circles) indicate stable entrants; red lines (and squares) indicate unstable entrants. The top left panel reports the model as specified in the core text. Top right panel (a) defines the treatment condition (unstable entry) as starting flexibly and do not reach a permanent contract for during the first year in the labour market. Bottom left panel (b) builds on the core treatment definition (first 4 months as unstable), but the control group is composed only by labour market entrants with a permanent contract. Bottom right panel (c) adopts SIOPS as outcome variable instead of ISEI. In this last model, we controlled for the SIOPS score at the labour market entry to construct the *residual DESO* model.

Chapter 4

Hiring intentions at the intersection of gender, parenthood, and social status. A factorial survey experiment in the UK labour market[1]

1. Introduction

Individuals' labour market allocation significantly affects individual life chances and societal efficiency and equality (Atkinson 2015). Since recruiters serve as labour market gatekeepers, their decisions regarding candidates' suitability could potentially eradicate or reproduce existing inequalities. Several theoretical perspectives and empirical studies have shown that recruiters' evaluations are not solely based on candidates' qualities and human capital but also on personal attributes unrelated to the applicant's work performance, thus pointing to discriminatory practices.

It is unsurprising that hiring has long been a subject of research on the mechanisms of inequality. Numerous studies have suggested that recruiters' discriminatory behaviors are determined by candidates' ascribed and achieved characteristics (Neumark 2018). Gender, parenthood, and social status appear to be crucial aspects in recruiters' decision-making. Considering these attributes independently, gender has been repeatedly shown to trigger discriminatory behaviors. However, existing studies are ambiguous about the direction of such gendered effects and, specifically, whether these discriminatory behaviors are strengthened or weakened depending on the characteristics of the occupation in question (Galos and Coppock 2023). Parenthood status may also further exacerbate recruiters' discrimination against female candidates (Benard and Correll 2010). Finally, recruiters tend to show favorable discriminatory judgements towards candidates displaying markers of higher social status (Rivera 2016).

However, little is known about how recruiters react to different combinations of these personal attributes. The few studies addressing the joint impact of gender *and* social status (often referred to as class)[2] on recruiters' discrimination have focused solely on the US and yielded contradictory results (Rivera and Tilcsik 2016; Thomas 2018). Furthermore, the role of parenthood, a central element in gender-based discrimination, has been generally overlooked.

We draw on an original factorial survey experiment in which UK-based recruiters evaluated profiles of fictitious job applicants. The experimental manipulation of the signals of theoretical interest ensured valid causal testing of discriminatory intentions, and the reliance on a large sample of recruiters enhances the external validity of this study. We analyzed recruiters' discrimination in the UK labour market, a context in which economic stratification based on gender, parenthood, and,

[1] This paper is co-authored with Anna Zamberlan and Paolo Barbieri. We wish to thank the Doctoral School of Social Science (University of Trento) for the economic support provided for the data collection. We also thank the participants to ECSR 2023 (Charles University, Prague), IAB 2023 Survey experiment workshop (Nuremberg), and internal seminars at the University of Konstanz and the University of University of Trento for their useful comments on the research design, data collection and on previous versions of this paper..

[2] In accordance with prior research (Chan and Goldthorpe 2007; Grusky and Weeden 2001), in this contribution we use 'status' to connote cultural markers signaling an individual's positioning in the social hierarchy, instead of their occupational class.

especially, social class and status is particularly pronounced (Altintas and Sullivan 2017; Goldthorpe and McKnight 2006). In contributing to a better understanding of the determinants of social inequalities in the UK labour market, we provide more recent experimental evidence on social status-based discrimination in the British context (therefore adding to previous works, e.g., Jackson, 2009). Moreover, we expand the knowledge about intersecting forms of discrimination beyond the US setting, especially concerning how gender, parenthood, and social status interact (Di Stasio and Larsen 2020).

2. Theoretical Background

2.1 Labour market discrimination(s)

The hiring process is crucial in determining individuals' future labour market outcomes (Barbieri and Gioachin 2022; Bills 2003; Bills et al. 2017). However, compared to other occupational aspects such as wage negotiations or job promotions, hiring is characterized by inherent information asymmetry, as recruiters have limited information about job applicants. The economic literature argues that the lack of comprehensive information regarding candidates' future work commitments and performance is the fundamental condition triggering discriminatory behaviors (Cahuc et al. 2014). In line with this literature, one defined form of discrimination is *statistical discrimination* (Arrow 1973; Phelps 1972), which assumes that recruiters are rational actors seeking to maximize profits and minimize risks. When direct signals of applicants' work productivity (such as work experience and commitment to the job) are missing or unclear, recruiters are more likely to rely on indirect or 'probabilistic' signals (Fossati et al. 2020). Indirect signals usually coincide with individuals' group belonging (such as gender or social status), and employers infer candidates' work productivity from the average observed level of productivity characterizing the social group(s) applicants belong to.

While statistical discrimination theory assumes rational economic thinking of recruiters, this is not true for other forms of discrimination. *Taste-based discrimination* (Becker 1957) predicts that recruiters hold irrational preferences or distaste for certain social groups that trigger positive or negative discriminatory behaviors. As such, tastes are less rationally oriented, departing from risk aversion or profit maximization mechanisms.

Finally, *status characteristics theory* (Ridgeway 2011) contributes to the understanding of discriminatory behaviors by addressing the presence of status beliefs (a class of stereotypes) associated with group belonging. Such stereotypes involve perceptions of individuals' competence and warmth, key dimensions in discriminatory behavior (Fiske et al. 2002; 2007). Competence, a combination of ability and commitment, is a trait perceived as characterizing 'high-status' groups, while perceived warmth (i.e., communal qualities and friendliness) has a less clear-cut association. Most importantly, stereotypes and related status elements can influence recruiters' preferences and decisions. In line with this view, *role congruity theory* (Diekman and Goodfriend 2006; Eagly and Karau 2002) postulates that recruiters are attentive to the potential 'match' between candidate characteristics and position features, favoring applicants who stereotypically fit the job best.

These theoretical approaches inform the different mechanisms underlying recruiters' discriminatory preferences. In the following, we further discuss how these perspectives can guide our understanding of the intersection between gender, parenthood, and social status in terms of discriminatory behaviors and outline the related hypotheses.

2.2 Gender and parenthood

A vast body of literature has focused on (mainly employers') discrimination based on job applicants' gender to explain women's lower labour market achievements compared to men. Statistical discrimination, perhaps the most commonly invoked mechanism, suggests that the interaction between gender and parenthood is essential to understanding labour market inequalities between men and women.[3] Due to the persistent gendered division of housework and childcare, women, especially mothers, experience more frequent career interruptions and higher absenteeism than men. Following the statistical discrimination perspective, mothers represent the category of workers with the most uncertain returns regarding human capital accumulation, work commitment, and work performance. All else being equal, recruiters are more likely to discriminate against mothers when hiring than men and childless women. Studies based on different national contexts and occupations have found extensive hiring discrimination against mothers (Correll et al. 2007; González et al. 2019; Hipp 2020 Oesch et al. 2017), but the evidence remains mixed (Benard and Correll 2010; Bygren et al. 2017; Petit 2007).

To test the theory of statistical discrimination and focusing on markers of gender and parenthood, we hypothesize the following:

> **H1a:** When applying for a job, mothers suffer from recruiter discrimination compared to men and childless women.

While statistical discrimination theory assumes an overall relevance of indirect signals of work productivity, status characteristics and role congruity theories focus on recruiters' perceived match between individuals' personal characteristics and job features. Gender stereotypes prescribing normative roles for men and women in society include occupations considered suitable for individuals of a given gender. Men and 'male' occupations are associated with a higher perceived level of competence, whereas women and 'female' occupations are associated with greater warmth (Cuddy et al. 2008; Fiske et al. 2002). Applying the concept of role congruity (Diekman and Goodfriend 2006; Eagly and Karay 2002) to status characteristics theory, recruiters would tend to favor the gender of job applicants who stereotypically fit the job best, discriminating against women in male-dominated (perceived as competence-intensive) occupations and against men in female-dominated (perceived as warmth-intensive) ones. This perspective has been empirically corroborated in several experimental studies (as confirmed by the meta-reanalysis of Galos and Coppock 2023).

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[3] In this contribution, we focus on discrimination along the lines of three personal attributes: gender, parenthood, and social status. Our first set of hypotheses already considers the joint effects of gender and parenthood, as the latter appears to be an amplifier of the effect of the former, and both statistical discrimination and status characteristics theories postulate discrimination against women to be stronger when they have children.

Interestingly, parenthood status may amplify gender stereotypes, especially for women. Being a mother may contribute to the perception of women as being empathetic and caring, thus having greater communal capacities (Benard and Correll 2010), while it may worsen the perception of women's competence compared to men. Following the insights provided by status characteristics and role congruity theories, we outline an occupation-sensitive hypothesis of recruiter discrimination based on gender and parenthood:

> **H1b:** Mothers are the least preferred candidates when applying to a male-dominated job, but they are the preferred candidates when applying to a female-dominated job.

2.3 Social status

Social class, social status, and socioeconomic position are all crucial determinants of distributional and intergenerational inequality (Weeden et al. 2007). Socioeconomically privileged individuals often benefit from advantageous economic, cultural, and network resources throughout their education and labour market trajectories (Bourdieu 1979). As Rivera (2012) points out, class- and status-related disparities also emerge in hiring, which is not only a process of skill sorting but also cultural matching between candidates, recruiters, and a firm. To better understand the biases related to social standing in the hiring process, we rely on existing theoretical approaches and empirical practices, particularly regarding how individuals signal their social status.

Existing studies have generally followed a cultural approach to operationalizing social class. Such an approach stresses the multidimensionality of class belonging (Bourdieu 1979) and focuses on cultural resources and preferences that characterize different social strata (Savage et al. 2013; Wright 2005). In contrast, structural (or neo-Weberian) approaches clearly distinguish between class and status (Chan and Goldthorpe 2004; 2007; Grusky and Weeden 2001), with the first term indicating the (dis-)advantages emerging from employment relations (Breen and Rottman 1995) and the second pointing to a socially-recognized hierarchy based on individuals' ascribed attributes or their 'social honor'. When recruiters screen CVs or conduct job interviews, they cannot easily detect objective class clues in the form of employment relationships. However, recruiters can more easily infer an individual's social status based on tastes, cultural consumption, and lifestyle markers, elements that strongly correlate with background and social class (Jæger and Breen 2016). They also represent the roots of group membership and the related mechanisms of social closure (Weber 1904). Employing these concepts, most existing studies have relied on markers of cultural consumption to effectively measure multifaceted aspects of social status rather than occupational class, although the latter term is used more often. In our study, we follow the neo-Weberian distinction between class and social status and use the latter term when dealing with cultural preferences, behaviors, and markers denoting lifestyle features.

Different theoretical perspectives can illuminate why recruiters discriminate based on social status cues. Following status characteristics theory, markers of social status confer competence expectations (Correll and Ridgeway 2003; Ridgeway and Fiske 2012), with individuals of a higher social status being perceived as not only more prepared, competent, and committed but also as having superior

soft social skills (Fiske and Markus 2012; Rivera and Tilcsik 2016). These perceptions may further motivate recruiters' discrimination in favor of job applicants with a higher social status.

However, the advantages of high-status individuals may also derive from recruiters' irrational preferences and, thus, from taste-based discrimination. This is likely enhanced by recruiters coming from the upper classes and, therefore, having higher social statuses. Indeed, class and status homophily can amplify the perception of candidates as pleasant, trustworthy, and friendly (Galos 2023; McPherson et al. 2001).

According to the status characteristics and taste-based discrimination perspectives, we formulate the following hypothesis regarding social status-based discrimination:

> **H2a:** When applying for a job, candidates signaling a higher social status are preferred over those with a lower status.

Extending the concept of role congruity to the domain of social status, cultural and social network traits 'fitting' a given occupational culture likely represent an advantage in the hiring process. This is especially true in upper-level occupations, which feature formal and informal dynamics of social closure and in-group favouritism (Friedman and Laurison 2020).

The available evidence on this subject is limited and comes from qualitative and experimental studies concerning recruiters' discriminatory judgements based on status-related cultural traits in upper-level and/or elite occupations in the United States (Rivera 2012; 2016; Rivera and Tilcsik 2016). In the European context, Jackson (2009) performed a field experiment in professional and managerial job positions in the United Kingdom and found a positive effect of certain combinations of candidates' high social status signals on employers' callback rates.

Following the role congruity perspective and examining social status discrimination as a mechanism of social closure, we hypothesize that:

> **H2b:** Job applicants signaling a higher social status are preferred over those with a lower social status, especially when applying for a high-level job.

2.4 Intersecting inequalities

So far, we have outlined theoretical perspectives useful to understand hiring discrimination based on gender, parenthood, and social status. We further aim to provide a theoretical discussion and empirical test of their joint effects, as research on how attributes interact to determine hiring discrimination is still limited, and different studies often lead to contrasting findings.

Gender inequality in the division of unpaid work between couples cuts across class divisions and appears particularly pronounced for those with a higher social standing (Yavorsky et al. 2023). In other words, high-status women are more strongly associated (in terms of actual care burdens and societal perceptions) with the domestic and family sphere than low-status women. Thus, markers of high status might signal lower work orientation and commitment for women (Rivera and Tilcsik

2016), especially for mothers (Correll et al. 2007; Rivera and Tilcsik 2016), thereby maintaining or even reinforcing the extent of recruiters' statistical discrimination against them.

The existing literature suggests a further mechanism through which higher-status women and mothers may suffer from greater recruiter discrimination. As previously discussed, belonging to a high social status generally signals (for both genders) higher work competence and reliability (Fiske and Markus 2012). However, when it comes to upper-class mothers in particular, this perception of competence may violate the stereotype of mothers being caring and empathetic. Following status characteristics theory, violation of stereotypes related to gender and parenthood can result in a penalty against social groups with 'dissonant' personal traits, such as women – especially mothers – with a high social status in the job market.

Existing qualitative and experimental evidence supports this view. For example, Rivera (2016) and Rivera and Tilcsik (2016) have documented a lack of advantages for women deriving from signals of upper social status when applying to jobs in US professional firms. Relatedly, our first hypothesis concerning the intersectional impact of gender, parenthood, and social status on hiring chances states that:

> **H3a:** Recruiters' discrimination against mothers, compared to men and childless women, is higher for high-status candidates than for low-status candidates.

Conversely, a competing perspective suggests that markers indicating higher social status can offset the labour market disadvantage of mothers. This perspective is based on the observation that status has gender-specific meanings. Women tend to participate in high-status cultural activities more than men (Bihagen & Katz-Gerro, 2000). Consequently, and in opposition with the view presented in support for the previous hypothesis, women are more often stereotypically associated with highbrow culture (Christin, 2012), leading to the expectation of a stronger positive effect of high-status signals for women. Furthermore, as women (and mothers even more so) have historically been underrepresented in professional and managerial positions, signals of high-status belonging might be relatively more beneficial for them than for men.

In line with this perspective, Thomas (2018) has demonstrated the presence of positive discrimination towards women (but not towards men) signalling their belonging to a higher social status when applying for middle-income occupations in the US.

Such perspective appears to be in line with the compensatory advantage framework (Bernardi 2014), according to which displaying a high social status may mitigate the negative effects of other personal characteristics – in this case being female, which is further amplified by motherhood status, on recruiters' discrimination and the applicant's hiring chances. Accordingly, we formulate our second intersectional hypothesis, as opposed to the previous one, as follows:

> **H3b:** Recruiters' discrimination against mothers, compared to men and childless women, is lower or absent for hihg-status candidates than for low-status candidates.

These two intersectional hypotheses are tested by examining the heterogeneity of the effect of gender and parenthood by subgroups of social status. Appendix Table A1 provides an overview of the

personal attributes, the related hypotheses and theoretical arguments underlying their formulation, and how they are empirically tested.

2.5 The context: social inequalities in the United Kingdom

Studying hiring discrimination in a specific country requires a consideration of its institutional characteristics. Although a cross-sectional single-country study does not enable the identification of causal macro-micro relationships, contextualizing the observed levels and mechanisms of discrimination can contribute to our understanding of the conditions under which discriminatory preferences and behaviors are more likely to emerge.

The United Kingdom features a liberal economy with a residualistic welfare state (Esping-Andersen 1990) in which individuals and families mostly rely on services provided by the market to handle social and care needs. This market-based management widens disparities related to labour market participation, performance, and ascribed and achieved social standing. In particular, social class is a significant determinant of individuals' labour market outcomes and life chances in British society (Goldthorpe and Mcknight 2006). Furthermore, existing research has highlighted a strong degree of social immobility, with relatively low instances of exchange between social groups at the top and bottom of the class structure (Bukodi et al. 2015). With an institutional setting that reproduces social divisions between individuals and families across generations, the UK represents a relevant context to study the mechanisms of social inequality and discrimination based on social status markers. Most importantly for the present study, previous research has shown that social class strongly predicts leisure behavior and lifestyle in the country (Katz-Gerro and Sullivan 2010; 2023), which largely depends on monetary resources (Roberts 2013).

Gender inequality in the UK's labour market appears to be more moderate than in other European countries with conservative welfare states. Women show comparatively high participation rates in the labour market, which might have partially eroded traditional gender stereotypes. Moreover, the predominant types of skills required in the British labour market are more portable general skills, that do not generate additional disadvantages for mothers (in particular, in the form of employer statistical discrimination, see (Estévez-Abe 2005), who generally have higher turnover rates (mostly related to childbirth and care obligations) and are perceived as having more uncertain work productivity (Zamberlan and Barbieri 2023). However, it should also be noted that the persistence of gendered roles in the private sphere, exemplified by the UK modified male breadwinner work-family type (Altintas and Sullivan 2017), might counteract the positive consequences of a more widespread female labour force participation and lower statistical discrimination against women and mothers.

3. Experimental setting

To empirically test our hypotheses, we designed an online factorial survey experiment targeting recruiters residing in the UK. Respondents were asked to evaluate fictitious job candidates for one (out of four) job vacancies. Complete control over the treatments delivered makes experimental methods particularly suitable for examining discrimination (Barone and Solga 2020). To enhance the

study's external validity, we relied on a large sample of recruiters, statistically accounted for recruiters' actual experience, and statistically addressed the (mis)match between the experimental job vacancy and the occupational sector in which respondents have recruiting experience.

3.1 Experimental and analytic sample

We sent vignettes presenting the attributes of fictitious job applicants to UK-based respondents through Prolific, an online platform designed for survey recruitment that provides a pool of respondents participating voluntarily in exchange for monetary compensation. The eligibility criterion for selecting participants was their professional hiring experience. To ensure that respondents had actual recruiting experience and to obtain relevant details, we included four filter questions at the beginning of the survey (following Mari and Luijkx 2020). Respondents who answered that they did not have experience in all four areas were excluded from the survey. Furthermore, to ensure the sufficient quality of responses, we included an attention check that, if failed, led to immediate exclusion from the survey. Further details on the experiment design, including filter questions and the attention check, are presented in Appendix Section B.

A total of 2,948 recruiters passed the filter questions and attention check, thereby fully completing the survey. However, we eliminated respondents (N=53) whose response times were too fast (survey duration <1%=2.83 minutes) or too slow (duration >99%=20.02 minutes) (see Figure A1 for the duration distribution in the final analytic sample). Among the remaining respondents, we excluded those (N=324) showing constant answer behaviour, namely those who selected the same value for both dependent variables for all vignettes. Finally, we excluded respondents (N=9) who provided answers of dubious quality, namely those who gave a low callback score (less than 4) but a high hiring score (more than 7) to at least one vignette. The final analytic sample comprised 2,562 recruiters who evaluated eight vignettes each, leading to 20,496 answers. Appendix Table A2 presents the respondents' sociodemographic and occupational characteristics, while Table A3 compares these characteristics with those of respondents (recruiters) from different UK representative samples.

3.2 Fictitious job vacancies

Recruiters were asked to evaluate profiles of fictitious job applicants for one of four randomly selected job vacancies: human resource manager, architect, sales assistant, and carpenter. The four jobs were chosen because they allowed us to assess the possible combinations of gender composition (male- or female-dominated) and occupational level (high or medium/low) of the job. By doing so, we could adequately test our hypotheses concerning job characteristics and the fit between candidates' and jobs' features. Table 1 presents the four jobs selected along with their characteristics. Further details about the jobs are included in Appendix Section B.

Table 1. Selected jobs and their characteristics.

		Gender composition	
		Female-dominated	Male-dominated
Occupational level	High-level	Human resource manager (ISCO 1212)	Architect (ISCO 2161)
	Low or medium-level	Sales assistant (ISCO 5223)	Carpenter (ISCO 7115)

3.3 Treatments

The signals of theoretical interest that varied in the vignettes concern the fictitious job applicants' gender, parenthood status, and social status.

Job candidates' gender (male or female) was signaled by their first name. To ensure that names unambiguously signaled a given gender to respondents, we checked the most common names for boys and girls from the Office of National Statistics[4]. It should be noted that the final first name choices resulted from both their gender and status signals (see the subsection related to social status).

Parenthood status was signaled by stating in the vignette that the job applicant either has no children or has two children, the youngest being three years old. By doing so, we could differentiate between job applicants with and without family responsibilities.

Different theoretical perspectives on social class and status are reflected in multiple conceptualizations and measurements (Weeden and Grusky 2005). Ensuring that respondents (recruiters) observed plausible information and clear signals of individuals' social standing was crucial for the present study. Providing information about job applicants' parental occupation or relying on classifications and rankings (Erikson and Goldthorpe 1992; Oesch 2006) to reflect candidates' employment relations or work logic would have rendered the setting unrealistic, possibly leading to biased responses. Some previous studies (Jackson 2009) employed the prestige of the university attended as a signal of social status. However, Rivera and Tilcsik (2016) noted that differences in educational prestige may also lead to variations in perceived human capital, which confounds the trigger of discriminatory intentions and behaviors. Accordingly, we signaled social status by drawing upon everyday social and cultural constructions of status. We considered different status signals separately, as they might exert various effects on callback and hiring intentions.

The first social status marker inserted in the vignettes was the candidate's first name and surname. Names operate as signals for various background characteristics in a variety of different cultural contexts (Broad 1996). Because they are chosen by (first names) or inherited from (surnames) one's

[4]https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/livebirths/bulletins/babynamesenglandandwales/2021

parents, names can be clear and unambiguous signals of one's background of origin. In the UK context, double-barreled surnames are usually equated with elite social backgrounds. We relied on previous research performed in the British context (particularly Jackson, 2009) to retrieve first names and surnames signaling an elite or non-elite social background.

In line with existing research, the second way we signaled social status was through the candidates' hobbies. We chose highbrow and non-highbrow hobbies based on existing research using similar validated social status markers (Fossati et al. 2020; Rivera and Tilcsik 2016; Thomas 2018) and British reports on background differences in extracurricular activities (Donnelly et al. 2019). Highbrow activities included playing the violin in an orchestra, playing tennis, sailing, and skiing. Lowbrow hobbies were instead hip-hop dancing, playing snooker, listening to rap music, and playing videogames in an E-Sport team. To test for the equivalence of these signals, Table A3 shows their effects on callback and hiring (while they are pooled in the main results) and confirms that highbrow and lowbrow activities have systematically different effects.

3.4 Design

Considering our explicit interest in the interactions between attributes, we favored an experimental design that ensured complete control over the orthogonality of the dimensions and levels and through which single and interactional effects could be unambiguously estimated.

Each respondent was presented with job applicants for only one (randomly selected) job vacancy. We partitioned the total vignette population into four decks with eight vignettes each (an appropriate number of vignettes for avoiding fatigue effects; see Auspurg and Hinz 2014) that appeared to respondents in random order. To decide which vignettes to assign to each deck, we followed a confounded factorial design (Arzmüller and Steiner 2010; Cochran and Cox 1950) and carefully planned the confounding structure. Thanks to this design, we could unambiguously identify all single-dimension effects and all two-way interactions. Moreover, we were able to identify all three-way interactions of interest. More details on the experimental design are presented in Appendix Section B.

3.5 Dependent variables

For each fictitious job candidate, respondents were asked to indicate on a 0–10 scale (where 0 indicated 'not likely at all' and 10 'very likely') how likely they would be to (a) invite the candidate for a face-to-face interview (callback) and (b) hire the candidate (hiring). Recruiters are often given little information about the work-related attributes of job applicants, a setting that we expected would lead to asking for more information through a callback. Instead, the intention to hire represented a stronger statement, and we expected recruiters to rely more firmly on the job candidates' characteristics in this case. Appendix Figure A2 presents the distribution of the answers to the two questions.

4. Methods

We accounted for the nesting of answers given to the different vignettes within respondents by performing random-intercept multilevel linear models. Standard errors were clustered at the respondent level.

Depending on the specific hypothesis to be tested (see Table A1), we relied on results from multilevel regressions, including (1) all treatments (when the interest was in single effects) or (2) the two- or three-way interaction of interests (when the aim was to test the intersection between treatments). To increase the precision of the estimates, we included a series of variables, namely the device type used, the date and time of survey completion, its duration, and the order of appearance of each vignette. We controlled for respondents' hiring experience by including four variables containing information retrieved from the filter questions regarding which type of hiring experience recruiters had, and we inserted a variable capturing whether the job being randomly assigned to the respondent matched the sector in which they had recruiting experience. We also included respondents' gender, age, educational level, children, occupation, and parental social class. Finally, although randomly varied and with a narrow range, we included the age of the fictitious job applicants as an extra precaution.

The dependent variables were z-standardised to ensure a more straightforward interpretation of the coefficients, which are presented in the form of average marginal effects (AME).

5. Findings

Figure 1 presents the AME of all the treatments of interest on callback and hiring intentions separately by job vacancy. Although the difference is not statistically significant, the effect sizes were slightly more prominent in the case of hiring than recruiting intentions, as expected.

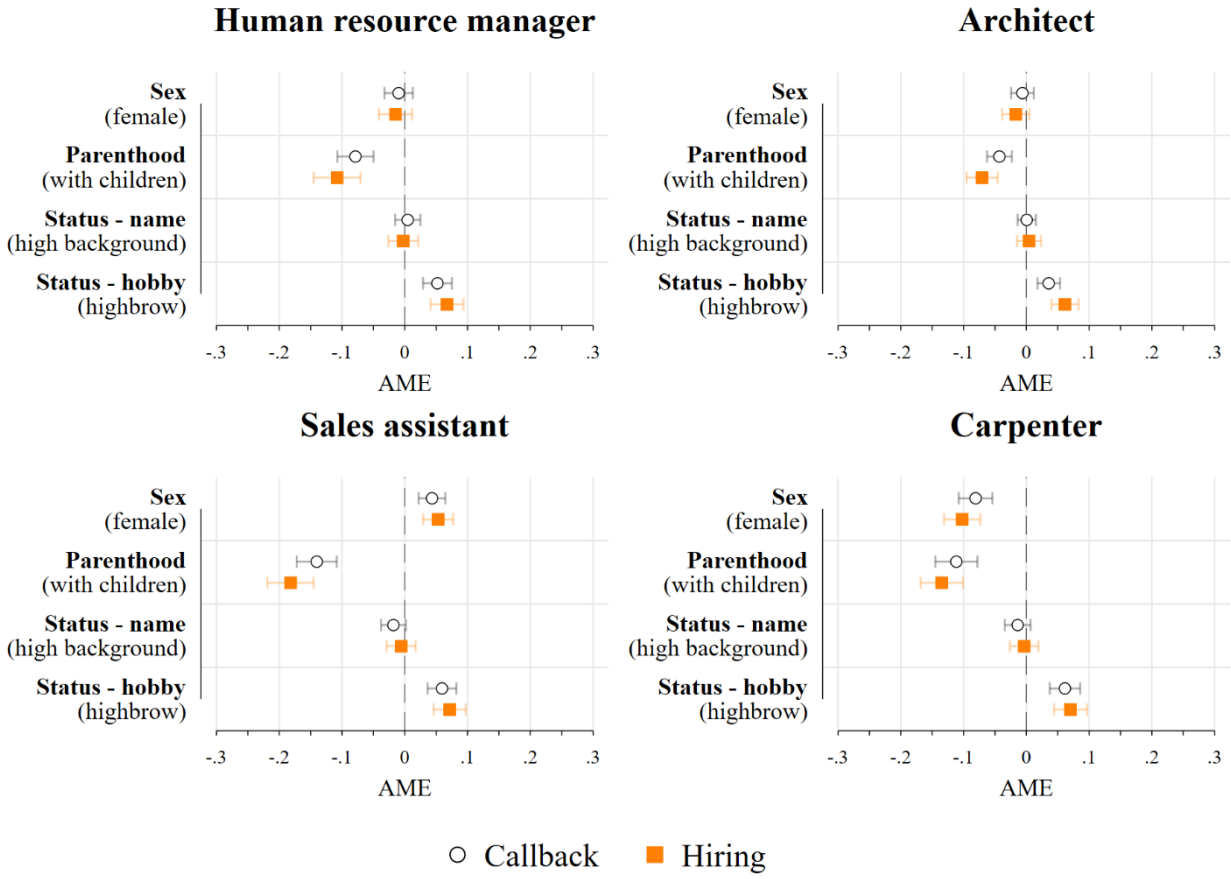
Gender had no statistically significant effect on the probability of receiving a callback or being hired in the two upper-level occupations of human resource manager and architect. However, gender did have a positive, statistically significant effect in the case of sales assistant, a low-level female-dominated occupation. Being a woman rather than a man affected the probability of being positively evaluated by British recruiters by 0.05 standard deviations. The opposite was observed in the case of carpenter, a low-level but strongly male-dominated job. In this case, being a woman had a negative effect of around -0.1 standard deviations. In sum, a significant effect of gender was observed only in low-level occupations with a strong gender dominance, whereas no discrimination based on gender was detected in higher-level occupations. A similar result was found in an audit study conducted by Yavorsky (2019), in which discrimination against female job applicants in male-dominated and masculinized jobs was found only in working-class occupations.

Being a parent of small children, rather than being childless, also emerged as a relevant driver of discrimination for all job vacancies. Recruiters' discriminatory intentions were particularly strong in low-level job vacancies, with AMEs ranging between -0.2 and -0.15 for the sales assistant position and between -0.15 and -0.1 for the carpenter. Such a strong effect of parenthood status may be because having children entails a leave period and higher absenteeism due to childcare duties, especially for

mothers. With a lack of precise signals of work commitment and productivity of job applicants, having children (or not) may, therefore, become a proxy of work experience and gain strong relevance compared to the other treatments.

Finally, noteworthy differences were observed between the two social status markers. Candidates' first name and surname did not affect recruiters' callback or hiring intentions. Conversely, a clear positive effect of having highbrow hobbies was observed for all four job vacancies. Effect sizes were all between 0.05 and 0.1 of a standard deviation (see Figure A3 for AMEs of the single hobby items). The effects of these class markers enabled us to test hypotheses H2a and H2b. According to the taste-based and statistical discrimination perspectives, we predicted a positive effect of signalling a high social status on recruiters' callback and hiring intentions. Our findings corroborate this expectation for all job vacancies, as predicted in H2a. In contrast to role congruity theory and social closure dynamics, we did not find a greater positive effect of high social status in upper-level job positions, leading us to reject H2b.

Figure 1. Average marginal treatment effects (standardized dependent variables).



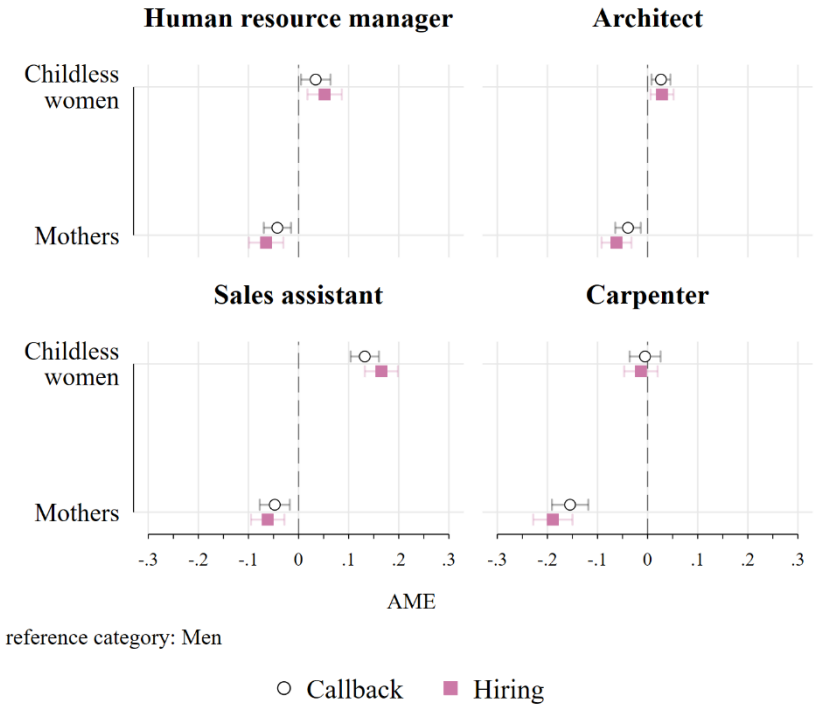
After exploring the individual effects of the treatments of interest, we now turn to their interactions. Figure 2 shows the average marginal effects of the interaction between gender and parenthood for callback and hiring intentions. To provide a precise test of our gender-parenthood hypotheses (H1a

and H1b), we present the AME of parenthood for childless women and mothers, considering all men (both childless and with children) as the reference category.

According to statistical discrimination theory (H1a), we predicted that mothers are more discriminated against than men and childless women in all job positions. This expectation finds empirical support: being a woman with children exerted a statistically significant negative effect. In substantive terms, AMEs were around -0.05 standard deviations for all job positions except carpenter, for which the effect equals -0.2 standard deviations. It is worth mentioning that the marginal effects for childless women were either non-significantly different from zero (thus indicating no difference with men) or positive. In other words, childless women were not necessarily disadvantaged compared to the whole group of men. The predicted values for different groups defined by the intersection of gender and parenthood (presented in Figures A5 and A6) indeed show that job applicants with children were disadvantaged in terms of callbacks and hiring probabilities, independent of their gender. Although beyond the scope of this contribution, the presence of a parenthood penalty for fathers also represents an interesting finding, which is consistent with recent evidence that disconfirms the existence of a labor market premium for fathers (e.g., Mari 2019).

Our second hypothesis (H1b) aimed at testing the status characteristics theory, according to which motherhood amplifies empathetic and communal characteristics (i.e., perceived warmth), thus providing mothers with an advantage in female-dominated occupations. Our empirical findings, however, did not provide empirical proof of this expectation.

Figure 2. Intersection between gender and parenthood. Average marginal treatment effects (standardized dependent variables).



Finally, Figure 3 presents the results of the interaction between signals of gender and parenthood, by social status subgroups. Since hobbies were the only factor that exerted a significant effect among the social status markers used (Figure 1), we opted for a parsimonious presentation of the results and provided the results related to this marker only. Appendix Figure A4 presents the findings using candidates' names as signals of social status (while predicted values are shown in Figure A6).

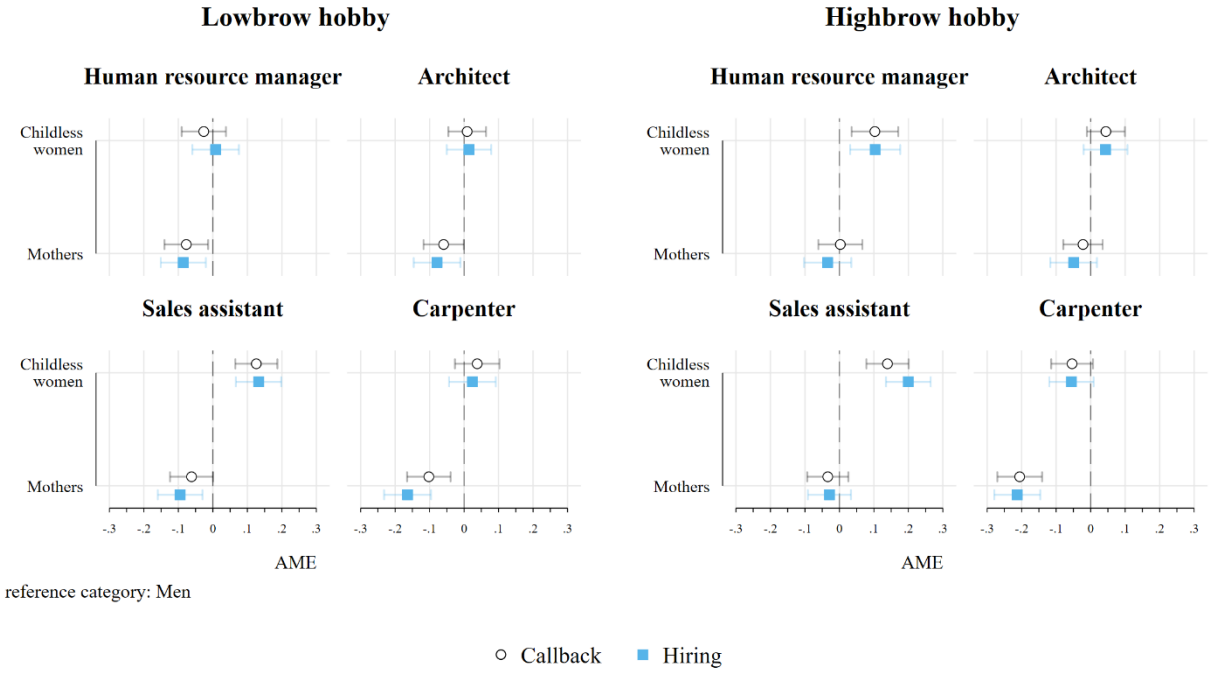
Compared to men, the AMEs for being a childless woman or a woman with children are presented as distinguishing between job candidates signaling a high or low social status. For candidates with a low status (left panels), we observed negative (around -0.1 of a standard deviation) and often statistically significant effects for job applicants who are mothers, mirroring the previous overall results (Figure 2). Looking instead at the AMEs for candidates with a highbrow hobby (right panels), we observed no statistically significant differences between mothers and men, except for the carpenter job. In this case, being a mother exerted a negative effect (around -0.2 of a standard deviation) compared to men. These findings lead us to reject H3a, which predicted that discrimination against mothers should be stronger among high-status applicants than low-status applicants. In other words, the expectation that signals of high status are dissonant with being a woman and having children, thereby leading to greater labour market penalization, is not corroborated.

On the contrary, the finding of a substantially and statistically significant penalty against mothers among candidates reporting lowbrow hobbies and the absence of such a penalty among those with highbrow hobbies (except for the low-level, strongly male-dominated position) is consistent with H3b, which postulated that discrimination against mothers is lower if not entirely absent when signals of high status are displayed.

Moreover, the non-statistically significant interaction between gender, parenthood, and social status (as reported in Table A6) implies the impossibility to confirm a full compensatory effect of displaying high status signals. Indeed, the overlap between the confidence intervals of the coefficients for mothers between the two groups suggests that the penalty against high-status and low-status mothers could be of the same magnitude (a result also visible in Figure 3). However, while we cannot rule out the possibility that the penalty against mothers is zero in the highbrow hobbies' subgroup, the confidence intervals in the lowbrow hobbies' subgroup do not overlap zero, indicating the presence of discrimination against mothers not displaying high status signals and the presence of hypothesized heterogenous effect.

Notably, mothers tended to receive fewer positive callback or hiring intentions also when compared to women without children, which were significantly favored compared to mothers in the two female-dominated jobs, particularly in the low-level position of sales assistant. This result underscores a particularly detrimental effect of parenthood for women in low-level occupations that are typically female.

Figure 3. Intersection between gender, parenthood, and social status (highbrow or lowbrow hobbies). Average marginal treatment effects by social status (standardized dependent variables).



Even though the name marker yielded a non-statistically significant effect when considered alone (Figure 1), it is interesting to note that similar heterogenous effects to those observed for the hobbies marker when testing H3a and H3b are observed in this case too, albeit limited to callbacks (Figure A4). The fact that the influence of social status indicated by names and surnames only partially reduced the negative effects of gender and parenthood while the main effect of this status marker was null further underlines the importance of considering the intersection of various dimensions of discrimination to fully comprehend how different systems of inequality and discrimination affect individuals' life chances.

6. Summary and discussion

Understanding the multiple dimensions of discrimination in the labour market is a desirable goal from many points of view. Individuals belong and signal their belonging to multiple social groups (e.g., gender and social standing), and the role of certain characteristics may change when viewed in combination with others. In light of this context, an effective inquiry into the mechanisms of discrimination requires theoretical perspectives and empirical strategies attentive to the intersection of different personal attributes. Our aim with this study was to provide an original contribution to the literature investigating discrimination based on gender, parenthood, and social status by placing particular emphasis on exploring the intersection between these personal attributes.

We designed an online factorial survey experiment administered to real-life recruiters in the United Kingdom. Building upon existing research, we experimentally manipulated fictitious attributes of job

candidates (primarily gender, parenthood status, and social status), as well as the characteristics of job vacancies. Varying the occupational level and gender composition of the jobs enabled us to test not only significant theoretical perspectives on discrimination, such as statistical and taste-based discrimination but also approaches attentive to the match between job seekers and job vacancies, namely status characteristics and role congruity theories.

We found a substantial and statistically significant incidence of recruiters' discrimination against mothers, thus corroborating the prediction derived from statistical discrimination theory. This finding aligns with prior research on other national contexts (González et al. 2019; Oesch et al. 2017), but it also highlights the lack of evidence in favor of status characteristics and role congruity mechanisms among UK recruiters, as mothers were the least-preferred candidates regardless of occupational features. Furthermore, signaling a higher social standing (via lifestyle markers such as hobbies) led to positive discrimination in all job vacancies, thus aligning with the prediction from taste-based and status characteristics perspectives and adding to existing evidence from the US context (Galos 2023; Rivera 2012; 2016). Once again, this effect was present in all occupations, disconfirming social closure dynamics about discriminatory intentions, at least for what the high-level occupations (i.e., human resource manager and architect) tested here are concerned. Most importantly, our findings shed light on the interactive effect of gender, parenthood, and social status, a topic that has been largely neglected in existing studies. While signaling a high social status (especially through class-specific hobbies) does not significantly compensate entirely the negative effects of being a woman and having children, mothers did not seem to suffer from recruiters' discrimination if they displayed the belonging to privileged social positions, except in the low-level, strongly male-dominated occupation, where discrimination along gender and parenthood lines persisted. In addition, our findings could also be read as proving a double disadvantage faced by mothers with a lower social status.

These final results are particularly relevant, as they underline the importance of examining the intersection of different dimensions (i.e., personal attributes) to fully comprehend discrimination in the labour market. Interestingly, our results align with some (Thomas 2018) but depart from other previous experimental evidence investigating recruiters' discrimination by intersecting gender and social status. For example, Rivera and Tilcsik (2016) found high-status women to be disadvantaged compared to high-status men when competing for elite jobs in the US. However, our study differed from Rivera and Tilcsik's in many respects, including the context under investigation, the jobs considered, the experimental design, and the markers of social status used. Beyond study-specific characteristics, these divergent results call for a more explicit investigation of whether and to what extent institutional context matters. For instance, it might be that the UK and the US differ in such a way that markers of social status exert a compensatory effect in the former context but not in the latter. Therefore, comparative experimental studies are necessary for further enhancing our knowledge of the conditions under which discrimination occurs (Di Stasio and Lancee 2020).

While this study assessed and tested different theoretical approaches, our experimental design did not allow us to clearly disentangle them. In particular, the amount of information concerning candidates' work productivity did not vary experimentally; thus, we were unable to unambiguously distinguish statistical and taste-based discrimination. While the current study provides new evidence about the

intersectional effects of different personal attributes, future studies could further analyze the specific discriminatory mechanisms in place.

Studies based on online platforms with a pool of self-selected candidates may raise concerns about the non-representativeness of the sample and, thus, the limited external validity of the findings. Descriptive statistics reassure us that the recruiters participating in our online experiment resembled the population of interest (See Table A3). If anything, our respondents were slightly better educated, which might lead to underestimating the extent of discrimination in hiring intentions, thereby stressing the seriousness of recruiters' biases in their hiring preferences even more. Moreover, limited external validity can also derive from the signals used in the vignettes, and particularly the choice to signal parenthood responsibilities through having two children with the youngest being 3 years old. Although this operativisation allowed us to test our hypotheses on the role of parenthood), we cannot rule out the possibility that slightly different operativisation of parenthood (different number of children, different age of the youngest child, etc.) would have led to different results. In view of the substantial discrimination against parents uncovered in our study, it would be particularly relevant for future research to test whether labour market discrimination varies according to the extent of caring responsibilities and the possibility of candidates having other children (displayed, for instance, by being at a fertile age and having young children).

APPENDIX

Appendix Section A – Hypotheses overview, descriptive statistics, and further analyses

Table A1. Overview of the theoretical hypotheses.

Discrimination domain	Hypothesis	Argument	Empirical testing
Gender/parenthood	H1a: When applying for a job, mothers suffer from recruiter discrimination compared to men and childless women.	*Statistical discrimination*: mothers are perceived as, on average, less committed to their job and less productive than men and childless women.	Effect of the gender/parenthood interaction on callback/hiring intentions.
	H1b: Mothers are the least preferred candidates when applying to a male-dominated job, but they are the preferred candidates when applying to a female-dominated job.	*Status characteristics + role congruity*: motherhood is a marker enhancing the perception of women having greater communal and empathetic capacities, thus being a good fit for female-dominated occupations, while worsening the stereotype of them being less competent than men, thus being a bad fit for male-dominated occupations.	Effect of the gender/parenthood interaction on callback/hiring intentions, comparing male-dominated and female-dominated jobs.
Social status	H2a: When applying for a job, candidates signaling a higher social status are preferred over those with a lower status.	*Status characteristics*: upper-status candidates are perceived as more competent and committed than lower-status ones. *Taste-based discrimination*: upper-status candidates are more likable than lower-status ones.	Effect of social status on callback/hiring intentions.
	H2b: Job applicants signaling a higher social status are preferred over those with a lower social status, especially when applying for a high-level job.	*Role congruity theory*: upper social status candidates represent a better fit for upper-level occupations.	Effect of social status on callback/hiring intentions, comparing high-level and low-level jobs.
Gender/parenthood/status	H3a: Recruiters' discrimination against mothers, compared to men and childless	*Statistical discrimination*: mothers are perceived as, on average, less committed	

	women, is higher for hihg-status candidates than for low-status candidates	to their job and less productive than men (and childless women), even if having an upper social status. *Status characteristic*: mothers with an upper social status are penalized for signaling dissonant status characteristics (both warmth and competence).	Effect of the gender/parenthood interaction on callback/hiring intentions, comparing high and low by social status.
	H3b: Recruiters' discrimination against mothers, compared to men and childless women, is lower or absent for high-status candidates than for low-status candidates.	*Compensatory advantage framework*: belonging to an advantaged social position compensates for the negative effect of being a mother.	

Table A2. Respondents' characteristics (N: 2,562).

	Percentage / Average (std. dev.)
Gender	
Men	50.6%
Women	49.4%
Age	42.872 (12.584)
Education level	
Primary	0.1%
Secondary (GCSEs)	8.0%
Secondary (A-level or equivalent)	22.0%
Tertiary (Bachelor or Master)	66.3%
Doctorate	3.6%
Marital status	
Single	23.4%
Married	48.8%
Registered Partnership/Cohabiting	21.0%
Separated	1.4%
Divorced	4.1%
Widowed	1.3%
Number of children	
Childless	41.0%
With children	59.0%
Ethnicity	
White	89.6%
Asian	4.9%
Black	2.0%
Mixed	2.7%
Other	0.8%
Employment status	
Employed, supervisory resp.	54.0%

Employed, no supervisory resp.	24.7%
Self-employed, employees	2.8%
Self-employed, no employees	5.9%
Unemployed	1.8%
Inactive	10.8%
Occupation (current or last)	
Manager	28.8%
Professional	34.6%
Technician/Associate professional	13.1%
Clerical	11.5%
Services	8.4%
Skilled agricultural	0.8%
Craft	1.7%
Plant and machine operator	0.4%
Elementary/Routine	0.5%
Armed forces	0.2%
Number of employees in the firm (current or last)	
No employees	6.4%
<10	8.3%
10-20	7.5%
21-50	9.3%
51-100	10.5%
100<	58.0%
Occupational sector (current or last)	
Accountancy, banking, finance	9.0%
Creative Arts and design	4.2%
Engineering and manufacturing	7.1%
Healthcare	11.1%
Information technology	10.9%
Public services	12.5%
Retail	7.8%
Social care	2.1%
Agriculture, animals and horticulture	1.0%
Construction	2.7%
Hair and beauty	0.2%
Hospitality and catering	2.8%
Leisure, sport and tourism	1.9%
Recruitment and HR	1.6%
Training and education	12.6%
None of the above	12.5%
Father's occupation (current or last)	
Manager	20.9%
Professional	18.5%
Technician/Associate professional	9.4%
Clerical	4.3%
Services	7.4%
Skilled agricultural	5.0%
Craft	17.5%
Plant and machine operator	8.4%
Elementary/Routine	5.4%
Armed forces	3.2%

Table A3. Main characteristics of respondents, compared with two representative samples of UK-based recruiters.

	Experimental sample	EU Labour Force Survey sample Year 2019 Selection on ISCO or ESEG (both =1)	EU Labour Force Survey sample Year 2019 Selection on ISCO or ESEG (both =1), plus employees reporting to have supervisory tasks	Understanding Society sample Wave 11 (2019, 2020) Selection on NS-SEC (detailed): employers in large/small establishments, higher/lower managerial and adm. occ., higher supervisory occ.
Gender				
Men	50.6%	62.6%	56.1%	54.7%
Women	49.4%	37.4%	43.9%	45.3%
Age	42.872 (12.584)	44.598 (10.716)	42.589 (11.181)	45.706 (11.349)
Educational level				
Primary or lower	0.1%	13.2%	11.5%	6.3%
Secondary (GCSEs)	8.0%	34.0%	32.3%	13.2%
Secondary (A-level or equivalent)	22.0%		32.3%	21.2%
Tertiary (Bachelor, Master, PhD)	69.9%	52.8%	56.2%	59.3%
Presence of children				
Childless	41.0%	48.1%	50.4%	63.1%
W/ children	59.0%	51.9%	49.6%	36.9%

Figure A1. Survey duration (analytic sample).

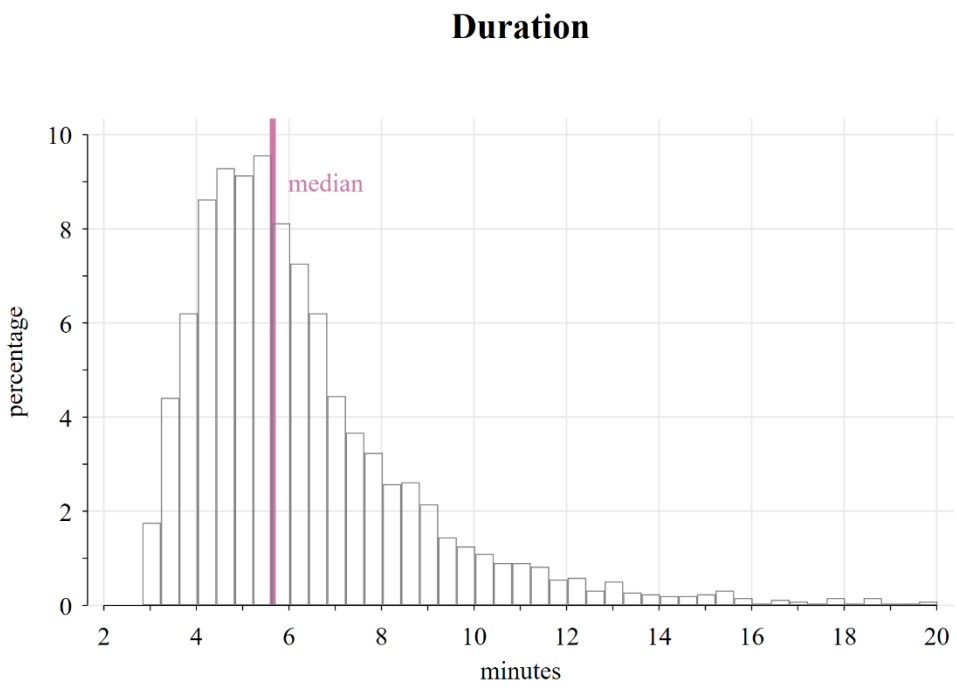


Figure A2. Dependent variables' distribution.

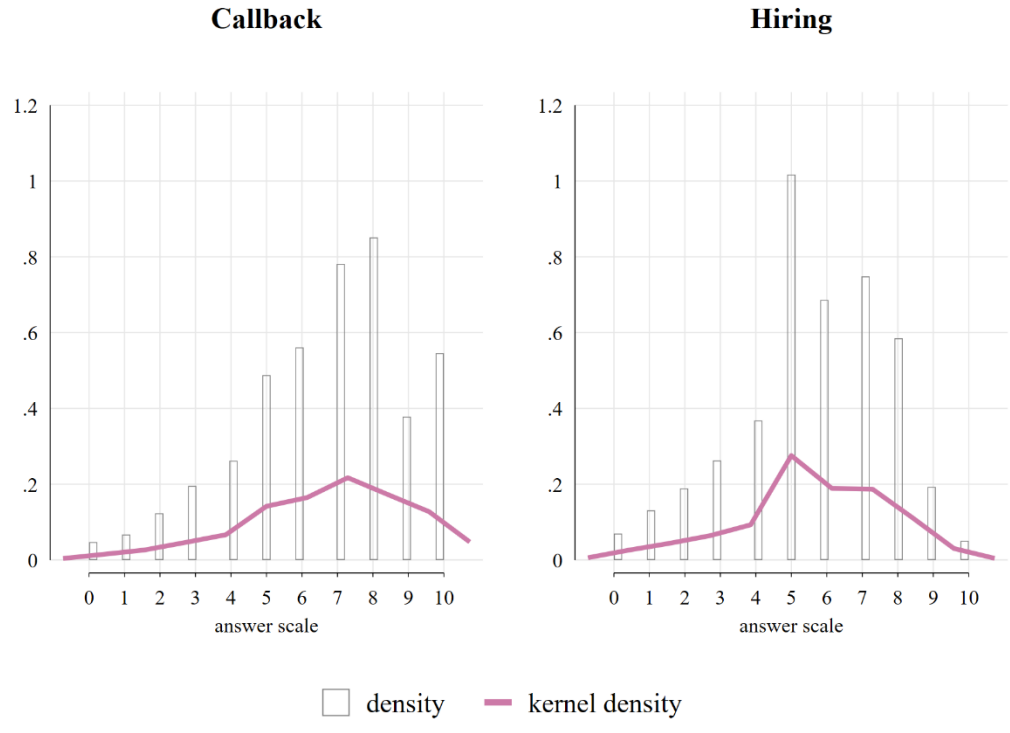


Table A4. Average marginal treatment effects (standardised dependent variables).

	Human resource manager		Architect		Sales assistant		Carpenter	
	Callback	**Hiring**	**Callback**	**Hiring**	**Callback**	**Hiring**	**Callback**	**Hiring**
	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value
Vignette's gender: female (base: male)	-0.01 (0.01) 0.40	-0.01 (0.01) 0.27	-0.01 (0.01) 0.50	-0.02 (0.01) 0.13	0.04*** (0.01) 0.00	0.05*** (0.01) 0.00	-0.08*** (0.01) 0.00	-0.10*** (0.01) 0.00
Vignette's parenthood status: parent (base: childless)	-0.08*** (0.01) 0.00	-0.11*** (0.02) 0.00	-0.04*** (0.01) 0.00	-0.07*** (0.01) 0.00	-0.14*** (0.02) 0.00	-0.18*** (0.02) 0.00	-0.11*** (0.02) 0.00	-0.13*** (0.02) 0.00
Vignette's social status: elite name (base: non-elite)	0.00 (0.01) 0.64	-0.00 (0.01) 0.84	0.00 (0.01) 0.94	0.00 (0.01) 0.66	-0.02 (0.01) 0.07	-0.01 (0.01) 0.63	-0.01 (0.01) 0.19	-0.00 (0.01) 0.76
Vignette's social status: highbrow hobby (base: lowbrow)	0.05*** (0.01) 0.00	0.07*** (0.01) 0.00	0.04*** (0.01) 0.00	0.06*** (0.01) 0.00	0.06*** (0.01) 0.00	0.07*** (0.01) 0.00	0.06*** (0.01) 0.00	0.07*** (0.01) 0.00
Vignette's age	0.02* (0.01) 0.02	0.03* (0.01) 0.01	-0.00 (0.01) 0.57	-0.00 (0.01) 0.59	-0.01 (0.01) 0.23	-0.01 (0.01) 0.21	-0.00 (0.01) 0.60	-0.01 (0.01) 0.48
Completion date 11/04/2023 (base: 27/03/2023)	-0.15 (0.44) 0.74	-0.13 (0.41) 0.76	-0.64 (0.47) 0.17	0.08 (0.27) 0.77	0.05 (0.17) 0.78	-0.33 (0.17) 0.05	-0.79 (0.43) 0.07	0.16 (0.22) 0.46
12/04/2023	-0.23 (0.44) 0.60	-0.13 (0.41) 0.75	-0.68 (0.47) 0.15	0.10 (0.26) 0.70	-0.04 (0.16) 0.79	-0.46*** (0.16) 0.00	-0.87* (0.42) 0.04	0.20 (0.21) 0.36
Completion hour	-0.00 (0.00) 0.57	-0.00 (0.00) 0.70	-0.00 (0.00) 0.33	-0.00 (0.00) 0.50	-0.00 (0.00) 0.44	-0.00 (0.00) 0.13	-0.00 (0.00) 0.53	-0.00 (0.00) 0.97
Survey duration (minutes)	0.02 (0.02) 0.16	0.01 (0.02) 0.67	-0.00 (0.01) 0.81	0.00 (0.01) 0.82	0.00 (0.01) 0.68	0.01 (0.01) 0.38	0.01 (0.02) 0.35	-0.00 (0.01) 0.96
Vignette's order: 2 (base: 1)	0.01 (0.03) 0.69	0.09* (0.03) 0.01	-0.01 (0.02) 0.80	0.05 (0.03) 0.08	0.00 (0.03) 0.89	0.07* (0.03) 0.02	0.04 (0.03) 0.22	0.10*** (0.03) 0.00
3	0.03 (0.03) 0.26	0.16*** (0.03) 0.00	-0.04 (0.03) 0.09	0.01 (0.03) 0.69	0.02 (0.03) 0.47	0.14*** (0.03) 0.00	0.07* (0.03) 0.04	0.15*** (0.03) 0.00
4	0.06 (0.03) 0.05	0.20*** (0.03) 0.00	-0.00 (0.03) 0.91	0.09*** (0.03) 0.00	0.09* (0.03) 0.01	0.20*** (0.04) 0.00	0.11*** (0.03) 0.00	0.19*** (0.04) 0.00
5	0.04 (0.03) 0.16	0.16*** (0.04) 0.00	-0.06* (0.03) 0.03	0.06* (0.03) 0.05	0.13* (0.03) 0.00	0.24* (0.04) 0.00	0.15* (0.04) 0.00	0.25* (0.04) 0.00
6	0.03* (0.03) 0.30	0.18* (0.03) 0.00	-0.03* (0.03) 0.23	0.09* (0.03) 0.01	0.10* (0.03) 0.00	0.24* (0.04) 0.00	0.18* (0.03) 0.00	0.27* (0.04) 0.00
7	0.04 (0.03)	0.19*** (0.04)	-0.01 (0.03)	0.10*** (0.03)	0.12*** (0.03)	0.24*** (0.04)	0.14*** (0.04)	0.25*** (0.04)

	0.30	0.00	0.59	0.00	0.00	0.00	0.00	0.00
8	0.06	0.22***	-0.00	0.10***	0.09*	0.23***	0.13***	0.25***
	(0.03)	(0.04)	(0.03)	(0.04)	(0.03)	(0.04)	(0.04)	(0.04)
	0.06	0.00	1.00	0.00	0.01	0.00	0.00	0.00
9	0.06	0.21***	-0.01	0.11***	0.12***	0.27***	0.17***	0.29***
	(0.03)	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)
	0.09	0.00	0.82	0.00	0.00	0.00	0.00	0.00
Any recruiting experience: yes, previous job (base: yes, current job)								
	-0.06	-0.10	0.17	0.12	-0.03	-0.04	0.15	0.08
	(0.11)	(0.11)	(0.09)	(0.09)	(0.09)	(0.10)	(0.09)	(0.09)
	0.58	0.35	0.07	0.21	0.74	0.72	0.10	0.40
no	0.11	0.11	0.16	0.28	0.27	0.50	-0.22	-0.20
	(0.24)	(0.26)	(0.17)	(0.19)	(0.29)	(0.28)	(0.25)	(0.23)
	0.64	0.67	0.35	0.13	0.35	0.07	0.38	0.37
Hiring experience: yes, previous job (base: yes, current job)								
	0.01	-0.01	-0.13	-0.06	-0.10	-0.18	0.06	0.16
	(0.13)	(0.13)	(0.11)	(0.12)	(0.12)	(0.12)	(0.12)	(0.13)
	0.94	0.93	0.24	0.60	0.39	0.15	0.61	0.20
no	-0.11	-0.17	-0.09	-0.05	-0.12	-0.11	-0.03	0.09
	(0.12)	(0.12)	(0.11)	(0.11)	(0.12)	(0.12)	(0.13)	(0.13)
	0.35	0.17	0.39	0.65	0.33	0.37	0.79	0.52
Pay setting experience: yes, previous job (base: yes, current job)								
	-0.04	0.15	0.18	0.12	0.29*	0.31*	0.20	0.11
	(0.14)	(0.14)	(0.12)	(0.12)	(0.12)	(0.11)	(0.16)	(0.15)
	0.75	0.28	0.13	0.30	0.02	0.01	0.21	0.49
no	0.07	0.21	0.22*	0.10	0.14	0.19	0.05	-0.04
	(0.12)	(0.11)	(0.10)	(0.10)	(0.11)	(0.10)	(0.12)	(0.13)
	0.56	0.05	0.03	0.30	0.19	0.05	0.68	0.73
Promotion decision experience: yes, previous job (base: yes, current job)								
	-0.15	-0.11	-0.17	-0.13	-0.16	-0.16	-0.13	-0.08
	(0.13)	(0.13)	(0.11)	(0.11)	(0.12)	(0.12)	(0.12)	(0.12)
	0.26	0.43	0.13	0.24	0.18	0.16	0.28	0.50
no	-0.19	-0.15	-0.18	0.03	0.03	-0.02	-0.04	-0.03
	(0.12)	(0.11)	(0.10)	(0.10)	(0.11)	(0.10)	(0.11)	(0.11)
	0.10	0.17	0.06	0.79	0.76	0.83	0.72	0.77
Correspondence exp. vacancy – recruiting experience: match, current job (base: no match)								
	-0.17	-0.12	-0.16	-0.13	-0.19	-0.18	-0.13	-0.08
	(0.13)	(0.13)	(0.11)	(0.11)	(0.12)	(0.12)	(0.12)	(0.12)
	0.22	0.36	0.15	0.27	0.12	0.12	0.28	0.51
match, previous job	-0.21	-0.17	-0.16	0.04	0.02	-0.03	-0.05	-0.03
	(0.12)	(0.11)	(0.10)	(0.10)	(0.11)	(0.10)	(0.11)	(0.11)
	0.08	0.14	0.10	0.70	0.86	0.74	0.69	0.76
Participant device: mobile (base: desktop)	0.04	0.07	-0.07	0.02	0.11	0.18*	-0.09	-0.04
	(0.08)	(0.08)	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)	(0.08)
	0.63	0.35	0.29	0.76	0.12	0.01	0.26	0.58
tablet	-0.30	-0.14	-0.04	0.02	-0.38	-0.31	0.08	0.06
	(0.21)	(0.23)	(0.28)	(0.20)	(0.24)	(0.20)	(0.28)	(0.26)
	0.15	0.53	0.89	0.90	0.11	0.11	0.76	0.81
else	0.50	1.05*	0.16	0.27	-0.10	-0.23	0.10	-0.36
	(0.55)	(0.52)	(0.24)	(0.24)	(0.23)	(0.27)	(0.60)	(0.49)
	0.36	0.04	0.50	0.26	0.66	0.40	0.87	0.46
Respondent's gender: female (base: male)	-0.02	-0.06	0.06	0.08	0.19***	0.22***	0.12	0.14
	(0.08)	(0.07)	(0.07)	(0.06)	(0.06)	(0.06)	(0.08)	(0.07)
	0.77	0.44	0.35	0.20	0.00	0.00	0.11	0.05
Respondent's age	-0.00*	-0.00*	-0.01*	-0.01***	-0.00	0.00	-0.01	-0.01*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
	0.30	0.33	0.02	0.00	0.93	0.75	0.07	0.04

Respondent's education level (base: primary)								
Secondary (GCSEs)	.	.	.	.	0.56*	0.14	-1.06***	0.12
					(0.20)	(0.19)	(0.22)	(0.20)
					0.01	0.46	0.00	0.56
Secondary (A-level or equivalent)	-0.03	-0.15	0.08	0.20	0.57***	0.20	-1.11***	0.22
	(0.14)	(0.15)	(0.15)	(0.14)	(0.18)	(0.17)	(0.18)	(0.17)
	0.83	0.34	0.58	0.16	0.00	0.24	0.00	0.20
Tertiary (Bachelor or Master)	-0.22	-0.25	-0.00	0.20	0.61***	0.15	-1.09***	0.15
	(0.14)	(0.15)	(0.14)	(0.13)	(0.17)	(0.16)	(0.18)	(0.17)
	0.11	0.09	0.98	0.14	0.00	0.35	0.00	0.37
Doctorate	0.13	0.22	-0.06	-0.16	0.81***	0.26	-1.37***	-0.10
	(0.22)	(0.21)	(0.22)	(0.20)	(0.27)	(0.23)	(0.24)	(0.24)
	0.56	0.29	0.78	0.44	0.00	0.27	0.00	0.66
Respondent's parenthood status: parent (base: childless)	0.02	0.07	0.04	0.08	0.03	0.07	0.08	0.12
	(0.08)	(0.08)	(0.07)	(0.06)	(0.07)	(0.07)	(0.08)	(0.08)
	0.85	0.37	0.54	0.19	0.60	0.31	0.34	0.11
Respondent's occupation: Professional (base: Manager)	0.00	-0.05	-0.06	-0.17*	0.04	0.06	0.02	0.00
	(0.10)	(0.10)	(0.08)	(0.08)	(0.08)	(0.08)	(0.09)	(0.09)
	0.98	0.60	0.45	0.02	0.64	0.40	0.80	0.99
Technician/Associate professional	0.10	0.09	-0.14	-0.06	-0.11	-0.02	0.11	0.08
	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.12)	(0.11)
	0.38	0.42	0.22	0.59	0.35	0.84	0.36	0.50
Clerical	0.21	0.21	-0.02	-0.00	0.05	0.03	0.04	0.08
	(0.12)	(0.12)	(0.11)	(0.11)	(0.12)	(0.11)	(0.14)	(0.14)
	0.09	0.09	0.84	0.99	0.68	0.81	0.80	0.57
Services	-0.02	-0.18	-0.05	0.05	0.08	0.03	0.17	0.13
	(0.15)	(0.14)	(0.11)	(0.11)	(0.14)	(0.14)	(0.15)	(0.14)
	0.87	0.20	0.67	0.65	0.60	0.82	0.24	0.36
Skilled agricultural	0.13	0.15	-0.19	0.20	0.04	0.08	.	.
	(0.30)	(0.28)	(0.19)	(0.24)	(0.28)	(0.31)		
	0.67	0.60	0.33	0.38	0.89	0.80		
Craft	-0.04	0.15	-0.02	-0.19	-0.73***	-0.67*	0.40	0.31
	(0.22)	(0.26)	(0.20)	(0.22)	(0.24)	(0.29)	(0.30)	(0.30)
	0.85	0.55	0.92	0.38	0.00	0.02	0.18	0.30
Plant and machine operator	0.11	-0.06	.	.	-0.34*	-0.15	-0.08	-0.09
	(0.52)	(0.49)			(0.15)	(0.14)	(0.23)	(0.29)
	0.84	0.90			0.02	0.27	0.73	0.75
Elementary/Routine	1.09***	-0.18	0.63***	0.30	-0.79	-0.83***	-0.20	0.14
	(0.22)	(0.24)	(0.14)	(0.37)	(0.44)	(0.29)	(0.56)	(0.61)
	0.00	0.46	0.00	0.43	0.07	0.00	0.72	0.82
Armed forces	0.20	0.07	0.32*	0.26	0.71*	1.00*	.	.
	(0.59)	(0.53)	(0.14)	(0.13)	(0.34)	(0.41)		
	0.74	0.90	0.02	0.05	0.04	0.01		
Respondent's father's occupation: Professional (base: Manager)	-0.12	-0.05	-0.07	0.04	-0.00	0.03	-0.15	-0.03
	(0.12)	(0.11)	(0.09)	(0.09)	(0.10)	(0.10)	(0.12)	(0.11)
	0.31	0.64	0.44	0.69	0.97	0.76	0.21	0.81
Technician/Associate professional	0.16	0.20	-0.13	-0.09	0.10	0.04	-0.15	-0.01
	(0.14)	(0.14)	(0.11)	(0.11)	(0.12)	(0.11)	(0.15)	(0.14)
	0.25	0.17	0.24	0.41	0.42	0.72	0.32	0.92
Clerical	-0.30	-0.18	0.21	0.15	0.02	0.03	-0.02	-0.01
	(0.17)	(0.18)	(0.19)	(0.19)	(0.15)	(0.15)	(0.16)	(0.15)
	0.07	0.33	0.27	0.43	0.90	0.85	0.92	0.95
Services	-0.10	-0.05	0.11	0.15	0.12	-0.01	-0.03	0.12
	(0.15)	(0.15)	(0.11)	(0.13)	(0.13)	(0.13)	(0.14)	(0.14)
	0.51	0.75	0.34	0.23	0.35	0.95	0.80	0.40
Skilled agricultural	0.00	0.06	-0.17	0.11	0.09	-0.07	-0.37	-0.32
	(0.15)	(0.16)	(0.14)	(0.14)	(0.16)	(0.16)	(0.22)	(0.22)
	0.99	0.73	0.23	0.43	0.57	0.67	0.09	0.15
Craft	0.05	0.05	-0.13	-0.04	0.29*	0.14	-0.05	0.03
	(0.11)	(0.10)	(0.10)	(0.10)	(0.11)	(0.10)	(0.11)	(0.10)

	0.62	0.60	0.17	0.67	0.01	0.16	0.66	0.75
Plant and machine operator	-0.03	-0.05	-0.04	-0.06	0.18	0.04	0.17	0.25
	(0.15)	(0.15)	(0.12)	(0.12)	(0.13)	(0.12)	(0.15)	(0.15)
	0.85	0.72	0.75	0.62	0.16	0.77	0.26	0.10
Elementary/Routine	-0.03	-0.11	0.18	0.11	-0.01	-0.08	0.01	0.16
	(0.20)	(0.18)	(0.16)	(0.14)	(0.14)	(0.16)	(0.15)	(0.16)
	0.89	0.51	0.26	0.43	0.93	0.63	0.92	0.31
Armed forces	-0.13	-0.14	0.11	0.22	-0.07	-0.09	-0.34	-0.24
	(0.29)	(0.30)	(0.17)	(0.15)	(0.20)	(0.19)	(0.25)	(0.27)
	0.66	0.63	0.50	0.14	0.74	0.62	0.17	0.38
Sd (respondent level)	0.83	0.81	0.70	0.68	0.76	0.73	0.84	0.80
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Sd (vignette level)	0.52	0.57	0.44	0.52	0.53	0.58	0.53	0.56
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Intercept	-0.28	-0.62	1.63*	0.41	-0.75	0.07	1.82***	-0.49
	(0.58)	(0.57)	(0.58)	(0.47)	(0.44)	(0.44)	(0.59)	(0.47)
	0.63	0.28	0.01	0.38	0.09	0.86	0.00	0.30

*** p<0.001, **p<0.01, *p<0.5

Table A5. Intersection between gender and parenthood. Average marginal treatment effects (standardised dependent variables). N: 20,496 (2,562 respondents).

	Human resource manager		**Architect**		**Sales assistant**		**Carpenter**	
	Callback	**Hiring**	**Callback**	**Hiring**	**Callback**	**Hiring**	**Callback**	**Hiring**
	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value
Vignette's gender*parenthood: female, childless (base: male)	0.03**	0.05***	0.03***	0.03**	0.13***	0.17***	-0.01	-0.01
	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
	0.02	0.00	0.01	0.01	0.00	0.00	0.75	0.44
Vignette's gender*parenthood: female, with children (base: male)	-0.04***	-0.06***	-0.04***	-0.06***	-0.05***	-0.06***	-0.15***	-0.19***
	(0.01)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Controls	yes	yes	yes	yes	yes	yes	yes	yes
Sd (respondent level)	0.83	0.81	0.70	0.68	0.76	0.73	0.84	0.80
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Sd (vignette level)	0.52	0.57	0.44	0.52	0.53	0.58	0.53	0.56
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Intercept	0.13	-0.02	1.62***	0.35	-0.52	0.41	2.23***	-0.05
	(0.58)	(0.56)	(0.58)	(0.46)	(0.44)	(0.44)	(0.58)	(0.46)
	0.82	0.97	0.01	0.45	0.24	0.35	0.00	0.91

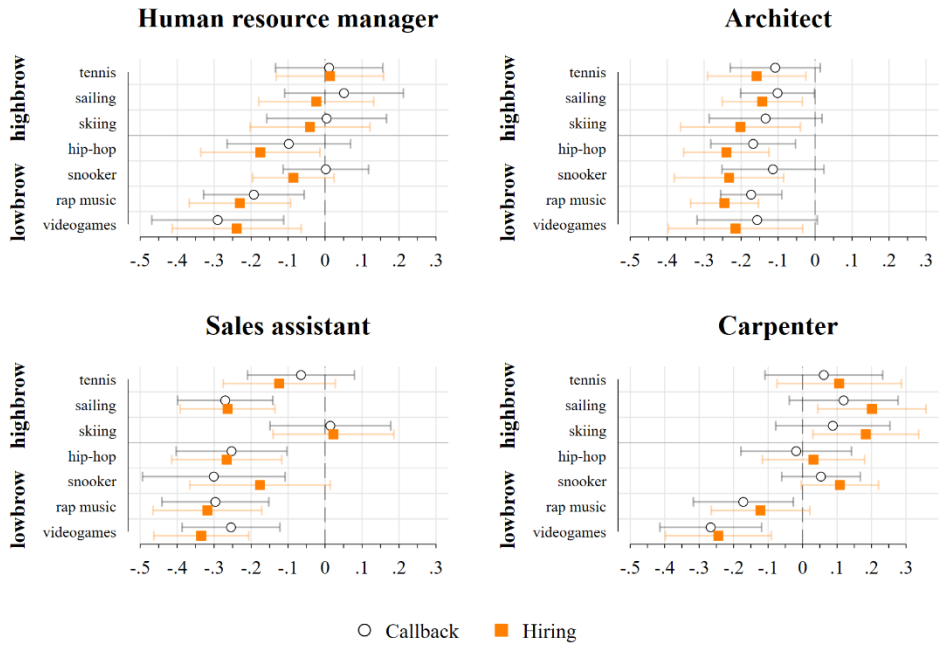
*** p<0.01, **p<0.05, *p<0.1

Table A6. Intersection between gender, parenthood, and social status (highbrow or lowbrow hobbies). Average marginal treatment effects (standardised dependent variables). N: 20,496 (2,562 respondents).

	Human resource manager		**Architect**		**Sales assistant**		**Carpenter**	
	Callback	**Hiring**	**Callback**	**Hiring**	**Callback**	**Hiring**	**Callback**	**Hiring**
	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value	AME (std. err.) p-value
Vignette's gender*parenthood: female, childless (base: male)	-0.03 (0.03) 0.42	0.01 (0.03) 0.82	0.01 (0.03) 0.75	0.01 (0.03) 0.66	0.13*** (0.03) 0.00	0.13*** (0.03) 0.00	0.04 (0.03) 0.25	0.02 (0.03) 0.48
Vignette's gender*parenthood: female, with children (base: male)	-0.08** (0.03) 0.02	-0.09*** (0.03) 0.01	-0.06** (0.03) 0.05	-0.08** (0.03) 0.02	-0.06* (0.03) 0.05	-0.09*** (0.03) 0.00	-0.10*** (0.03) 0.00	-0.16*** (0.03) 0.00
Vignette's social status: highbrow hobby (base: lowbrow)	0.00 (0.03) 0.91	0.04 (0.03) 0.28	0.02 (0.03) 0.48	0.05 (0.03) 0.12	0.05* (0.03) 0.10	0.04 (0.03) 0.21	0.11*** (0.03) 0.00	0.10*** (0.03) 0.00
Vignette's gender*parenthood*social status: female, childless, highbrow hobby	0.13** (0.06) 0.03	0.10 (0.06) 0.12	0.04 (0.05) 0.50	0.03 (0.06) 0.64	0.01 (0.06) 0.81	0.07 (0.06) 0.24	-0.09* (0.06) 0.10	-0.08 (0.06) 0.17
Vignette's gender*parenthood*social status: female, with children, highbrow hobby	0.08 (0.06) 0.17	0.05 (0.06) 0.38	0.04 (0.05) 0.48	0.03 (0.06) 0.64	0.03 (0.05) 0.61	0.07 (0.06) 0.23	-0.10* (0.05) 0.05	-0.05 (0.06) 0.38
Controls	yes	yes	yes	yes	yes	yes	yes	yes
Sd (respondent level)	0.83 (0.02)	0.81 (0.02)	0.70 (0.02)	0.68 (0.02)	0.76 (0.02)	0.73 (0.02)	0.84 (0.02)	0.80 (0.02)
Sd (vignette level)	0.52 (0.02)	0.57 (0.02)	0.44 (0.02)	0.52 (0.02)	0.53 (0.02)	0.58 (0.02)	0.53 (0.02)	0.56 (0.02)
Intercept	0.47 (0.58) 0.42	0.29 (0.56) 0.60	1.82*** (0.59) 0.00	0.59 (0.48) 0.22	-0.61 (0.45) 0.18	0.28 (0.45) 0.53	1.69*** (0.59) 0.00	-0.51 (0.47) 0.28

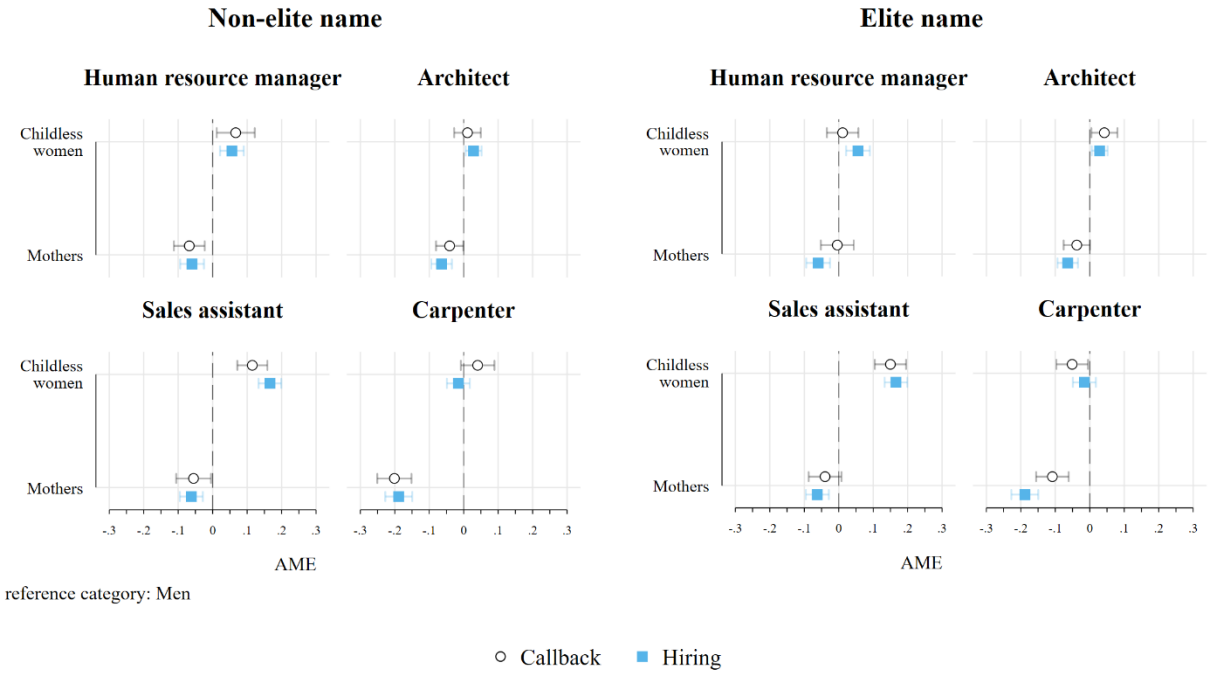
*** p<0.01, **p<0.05, *p<0.1

Figure A3. Average marginal treatment effects of detailed hobby items (standardised dependent variables).



reference category: violin (highbrow)

Figure A4. Intersection between gender, parenthood, and social status (elite or non-elite name). Average marginal treatment effects by social status (standardised dependent variables).



reference category: Men

Figure A5. Intersection between gender, parenthood, and social status (highbrow or lowbrow hobby), predicted values.

Note: Results from random-intercept multilevel models with dependent variables in the original 0-10 scale.

Figure A6. Intersection between gender, parenthood, and social status (elite or non-elite name), predicted values.

Note: Results from random-intercept multilevel models with dependent variables in the original 0-10 scale.

Appendix Section B – Experimental design

Pre-registration

This study was pre-registered on March 13, 2023 (doi: https://doi.org/10.17605/OSF.IO/HCDX8)) and administered between the end of March and the beginning of April 2023.

Online survey platform (Prolific)

To find the pool of participants, we relied on Prolific (www.prolific.com), an online platform designed for survey recruitment that, as opposed to commercial platforms, is explicitly meant for researchers conducting survey studies. Relying on existing online sampling platforms has become increasingly common in experimental sociological research and appears to produce similar experimental treatment effects as experiments based on representative samples (Mullinix et al. 2015; Weinberg et al. 2014). Although participants part of the Prolific pool are not randomly selected (they enter the platform on a voluntary basis), this setting appears to produce high-quality data concerning respondents' comprehension, attention, and honesty (Peer et al. 2021).

Participants decide to take part in surveys in exchange for monetary compensation. In the case of our experiment, the average reward per hour was £7.98.

Prolific presents the additional advantage of providing a high number of participants, especially in the British context, which can be selected by researchers based on their prescreening information (see also Palan and Schitter 2018). In this study, the eligibility criterion was professional hiring experience. We further required that respondents were not students when the survey was administered and that they had not taken part in any pilot study of the same survey before.

Filter questions on recruiting experience

At the beginning of the questionnaire, we asked respondents whether they have (in their current job) or had (in a previous job) experience in different tasks. Specifically, the questions asked were: (1) Have you ever taken part in any phase of the recruitment process, such as screening of CVs and job interviews?; (2) Have you ever had the responsibility to hire or fire employees?; (3) Have you ever been entitled to set or influence the rate of pay received by employees?; (4) Have you ever had an influence on or decided over the promotion of other employees?. The answer options were "Yes, in my current job", "Yes, in one of my previous jobs", and "No". Respondents could choose more than one answer per question so that we could know whether they had recruiting experience both in their current and past jobs.

Attention check

To ensure the quality of respondents' answers, we included an attention check in a random position among the vignettes. Specifically, we added an extra candidate profile (not counted in the calculation of the vignettes' universe) with the instruction to evaluate it with values of 0 or 10 (the specific instruction was randomly assigned to respondents). Respondents who failed the check were immediately excluded from the survey.

With the aim of further increasing overall attentivity levels, the presence of an attention check was signaled at the beginning of the survey.

Fictitious job vacancies

We selected jobs representing some of the most common occupations in the UK according to the PIAAC data for Great Britain (2011-2012). To identify these jobs, we started from the raw PIAAC data and excluded public-sector workers (as they may undergo a more structured and less biased recruiting process) and the self-employed, and explored the occupations meeting the following classification criteria:

- *Female-dominated*: the proportion of female employees in a given ISCO category is higher than 0.5;
- *Male-dominated*: the proportion of female employees in a given ISCO category is lower than 0.5;
- *Low- or medium-level*: the monthly income is equal to or below the 10th percentile, and ISCED is 1, 2, 3, or less (i.e., from no educational title to upper secondary education);
- *High-level*: the monthly income is equal to or above the 90th percentile and ISCED is 5A or 6 (i.e., bachelor's degree, master's degree, and tertiary degree without distinction).

However, it is important to note that there are relevant differences between these jobs and that these differences enable us to explore more nuanced effects of occupational level and gender composition. Concerning the latter feature, in particular, women represent 53% of employees with a human resource manager position, 27% among architects, 70% of sales assistants, and 0% in the carpenter occupation. While upper-level occupations show a more gender-balanced composition, lower-level ones are more clearly female- and especially male-dominated, an aspect that has to be taken into account when interpreting the results.

Before presenting the vignettes to respondents, a concise description of the tasks required for the job (written on the basis of real-life job vacancies advertised on online platforms, e.g., www.monster.com) was presented.

Fictitious job applicants' profiles

To provide a task as realistic as possible, respondents were asked to imagine they worked in a company in which a job vacancy for a specific job was open and they were responsible for evaluating the profiles of job candidates that were already screened by an employment agency and synthesized in summary tables. This task description enabled us to create a credible hiring setting while keeping the candidates' productivity-related characteristics constant. The tabular format has been proven to perform as well as, or even better than, the text format (Auspurg and Hinz 2014).

Table B1 provides an overview of the specific items used to signal the dimensions' levels of theoretical interest.

Table B1. Treatment conditions and their operativisation.

Treatment condition (dimension)	Levels	Operativisation
Gender	Male	First name: Edward, Charles, Gary, Kevin
	Female	First name: Camilla, Lucinda, Stacey, Donna
Parenthood	Childless	Childless
	With children	Has two children, the youngest is 3 years old
Social Status (1)	Elite background	First name and surname: Edward/Charles/Camilla/Lucinda + Acheson-Gray/Bevans-Brown/Bartle-Jones/Ashford-Smith
	Non-elite background	First name and surname: Gary/Kevin/Stacey/Donna + Roberts/Brown/Wilson/Taylor
Social Status (2)	Highbrow hobbies	Plays the violin, Practices tennis, Goes sailing, Member of a theatre company
	Non-highbrow hobbies	Hip-hop dance, Plays snooker, Listens to rap music, Plays videogames in an E-Sport team

In this study, we are interested in testing the effect of job candidates' probabilistic signals (Fossati et al. 2020; Spence 1973) on recruiters' hiring intentions. Therefore, it is crucial to maintain fixed characteristics (such as education and previous work experience) that are directly linked to work productivity. We do so by informing respondents that all job candidates for a given vacancy are suitable in terms of the required education and work experience.

To create a more realistic scenario and to avoid social desirability bias (Auspurg and Hinz 2014), we included more dimensions than those of primary interest in the vignettes. The citizenship of the job applicant is included as a fixed dimension; all candidates have British citizenship. The age of the job candidate is also included, and it varies randomly from 33 to 35 years. For the aim of the current research, it is crucial that candidates do not substantially differ with respect to their age as it may signal differences in potential fertility, leading recruiters to discriminate against younger women (Zamberlan and Barbieri 2023), or it may lead to discrimination against old-age applicants (Van Borm et al. 2021).

We also included information on the educational level and field of the job applicants. Educational information is consistent with each job vacancy; therefore, there is no variation in the educational level or field within the same job. We relied on the PIAAC data for the UK (collected in 2011-2012) to retrieve the modal educational category of the variable "requirements for current work: education level" for the four ISCO codes considered. With the aim of providing realistic information about the most common educational level for young job applicants (age the interval 33-35), in the case of low-skilled occupations, we further restricted the sample to respondents not older than 34. As the field of study does not represent an important requirement in low-skilled jobs, it is not specified. Instead, for high-skilled occupations, it represents the modal category of the variable "highest qualification–area of study". In sum, fictitious job applicants for the low-skilled positions of sales assistant and carpenter are assigned "GCSEs" achievement, candidates for the architect position have a "master degree in architecture," and, finally, job applicants for the position of human resource manager are assigned a "master degree in sociology."

Finally, we included extra information on time spent unemployed (two levels: whether the job applicant has been looking for a job for 3 months or for 12 months), ensuring its orthogonality with the other dimensions.

The validity of all the treatments was tested beforehand with experts on experimental designs and in the British context.

Confounded factorial design

Within each of the four jobs considered, we experimentally vary 5 dimensions with two levels each. Therefore, the total universe of vignettes within each job is equal to 32. A vignette's universe of limited size presents the advantage of enabling coverage (in terms of respondents' answers) of the entire universe, with no need to fraction it. As 32 vignettes were too many to be evaluated by each respondent, we partitioned the total vignette population into 4 decks of 8 vignettes each.

In practice, the eight vignettes in each deck are selected such that all dimension levels are present the same number of times (we have all 2-levels dimensions, so each level appears 4 times in the deck), and that all their possible combinations (i.e., 2-way interactions) are equally present in the deck as well (i.e., the 4 possible combinations of 2 dimensions with 2 levels each appear 2 times in each deck).

The only combinations that remain confounded with the set effect are 3-way interactions of no theoretical relevance between (a) sex, social status (hobby), unemployment, and (b) social status (name), social status (hobby), and parenthood.

Intra-class correlation

The intraclass correlation (ICC) in an empty multilevel model represents the proportion of variance in the dependent variable attributable to the respondent level, and thus to the correlation between evaluations given by the same individual. It is equal to 0.74 in the case of callback, and to 0.68 in the case of hiring. Most of the variance can therefore be attributable to differences between respondents, which we take into account by including covariates related to respondents' characteristics in the models. However, a non-negligible portion of the variance (approximately 30%) is due to differences between vignettes.

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"I see now that the circumstances of one's birth are irrelevant; it is what you do with the gift of life that determines who you are." In keeping with the theme of this thesis and the interests I have cultivated over the years, I conclude with this playful quote from a youthful origin, which unintentionally conveyed an important message to our growing generation.

Cheers everyone!

Summary

This dissertation examines contemporary intergenerational inequalities and life chances, centering on how social origin shapes today's labor market achievements. The overarching question guiding this work is whether the recent structural and institutional shifts impacting the stability and security of work-life trajectories have fostered greater equality of opportunity, reinforced existing disparities, or even generated new ones. The research unfolds through four empirical chapters, each engaging with the broader theoretical framework, and employing and developing advanced methodological approaches. The first chapter delves into the repercussions of macro-level institutional transformations on work-life trajectories in Germany and the UK, revealing country-specific nuances in exposure and economic penalties associated with accumulated employment instability across birth cohorts. The second chapter broadens the perspective by revealing that family background significantly influences exposure to income and earnings volatility across the lifecycle, over and above the levels of individuals' resources, with institutionally driven variations between Denmark, Germany, and the United States. Moving to specific life course junctures, the third chapter illustrates how flexibilization-driven inequalities during the school-to-work transition interact with intergenerational social inequalities, in Italy more than in Germany. This research highlights that only Italian workers from advantaged family backgrounds manage to offset occupational penalties resulting from unstable labor market entry. The final chapter, focusing on the UK labor market and using an experimental design, unveils significant discriminatory tendencies favoring candidates with high-status backgrounds, intersecting gender, and parenthood. Through these empirical contributions, this dissertation advances our understanding of evolving intergenerational inequalities, emphasizing the importance of adopting a life-course perspective for a comprehensive analysis.