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Welfare regime patterns in the social class-fertility relationship: Second births in Austria, France, Norway, and the United Kingdom

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ABSTRACT

This paper develops a theoretical framework to analyze the relationship between social class and fertility. The framework borrows elements from social class analysis, institutional perspectives on the labor market and fertility, and welfare and gender regime theories. I hypothesize that individuals' social class positions impinge on their economic security, employment–parenthood role compatibility, and gender relations, which are key variables in the explanation of fertility in contemporary postindustrial societies. Different combinations of these variables for each social class and country lead to class-specific fertility patterns. I use Austrian, French, Norwegian, and British samples from the European Union Statistics on Income and Living Conditions, for the years 2004–2015, and discrete-time event–history analysis techniques to analyze second birth probabilities. A simultaneous equations approach is adopted to account for unobserved heterogeneity. The results document substantial differentials between social classes and distinct social class patterns for each country, consistently with the theoretical expectations. In Norway and France, overall high levels of second birth probabilities are found that follow a positive social ordering. In the United Kingdom and Austria, a U-shaped relationship between class and second birth probabilities prevails. Once unobserved heterogeneity is accounted for in the analyses, social class shows a positive effect on fertility in the four countries. The results show that social class is not only key to understanding intracountry differentials in fertility but is also useful for understanding the functioning of the welfare regime and its relationship to overall levels of fertility.

1. Introduction

Several puzzling changes in family behavior have been documented in economically advanced countries. First, a wide variety of fertility levels has been observed that tend to cluster into two groups, one with relatively moderate period total fertility rates of approximately 1.9, and the other group with very low levels of approximately 1.3. The first group includes Northern and Western Europe, Oceania, and the United States; the second group comprises countries in Central, Southern, and Eastern Europe and East and Southeast Asia (McDonald, 2000a; Rindfuss & Choe, 2016). Second, the aggregate-level correlation between female employment and fertility reversed in the 1990s, changing from negative to positive. Moreover, we observe substantial changes or reversals in the social correlates of childbearing and partnership behavior (Goldscheider et al., 2015). In many West European countries, second and third birth rates correlate positively with women's education and highly educated couples (Klesment et al., 2014; Nitsche et al., 2018).

These trends challenge well-established theories of fertility, including neoclassical economics and theories of ideational change such as the Second Demographic Transition theory, because they contradict their expectations about family behavior (Esping-Andersen & Billari, 2015; Goldscheider et al., 2015). Several authors have instead emphasized the importance of social institutions in allowing compatibility between the roles of parent and worker, and the diversity of support to parents provided by the institutional configurations in each country (Baizan et al., 2016; Neyer & Anderson, 2008). In this literature, the changing gender relations in the public and private spheres, and their differential pace of change, are considered as key to explaining family changes (Goldscheider et al., 2015; McDonald, 2000a, 2000b). The "Gender revolution" entails changes in gender roles that modify women's labor market situation and their class positions. Institutional and gender relations theories, however, are generally delineated in society-level terms and do not provide an account of how macrolevel processes translate into individual-level behavior. In particular, the

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literature has paid insufficient attention to how these theories apply to different social groups.

This paper helps to fill this gap by examining social class fertility differentials, using both a theoretical and empirical approach. In this study, social class refers to categories of individuals who share similar positions in labor markets and employment relations (Goldthorpe, 2007). In market economies, market position, especially the position in the occupational division of labor, is fundamental to the generation of social inequalities (Korpi, 2006). The focus on social class, rather than on education as most of the existing literature, is based on several reasons.[1] First, social class should capture the life chances of individuals and families in a more direct manner than using proxies of class. In particular, social class provides a closer link with several variables, such as job conditions and role compatibility, that are key to understanding fertility decisions. Second, conceptualizing social classes as positions in the labor market provides a clear link between individual behavior and the institutional configuration of a society, because labor market relationships are shaped by the institutional context. From an institutional perspective, it is more consistent to analyze intra-society differentials by class, in which inequalities are seen as a property of society, rather than explaining them by an individual attribute such as education. And third, because class differentials involve disparities in resources and risks, the effects of institutions and policies are unlikely to be even across social classes. As a result, an analysis that treats the effect of the institutional context as being homogeneous in the population is likely to be misleading.

Clearly, educational institutions act as "sorting machines" (Kerckhoff, 1995), profoundly influencing the positions individuals occupy in society. Several studies have documented, however, that individuals' educational level does not closely correspond to their occupational attainment (Bernardi & Ballarino, 2012), nor to their income[2] (Blau & Kahn, 2017). This is especially the case in countries where educational expansion has been fast and a majority of young birth-cohorts members have reached tertiary education levels, a process that is rapidly spreading across societies (Barakat & Shields, 2019). Occupational upgrading has often proceeded at a slower pace than educational expansion (Oesch & Rodríguez-Menés, 2011). Given pervasive gender segregation and discrimination in the labor market, measures of (partners') educational level underestimate actual gender differentials in occupational attainment, income, and bargaining power. Remarkably, there is a strong heterogeneity in the actual fertility of women with the same educational level. Indeed, it has been shown that the field of education, which is closely related to the (future) occupation, is a far better predictor of childbearing than the level of education (Martin-Garcia & Baizan, 2006; Neyer et al., 2017).

Very little research has investigated the association between social class and fertility in contemporary postindustrial societies (for exceptions see Barbieri et al., 2015; Dalla-Zuanna, 2007; Skirbekk, 2008), and none of them has provided a theoretical account that explains that relationship. Thus, the contribution of this paper is twofold. First, I develop a conceptual framework that links social class and fertility, and second, I empirically document the patterns of the relationship between social class and second births in four countries with contrasting welfare and gender regimes: Austria, France, Norway, and the United Kingdom.[3] Whereas Austria has shown very low levels of fertility during recent decades (the total fertility rate in 2010 was 1.44 children per woman), fertility in the other three countries is close to replacement level, despite their different institutional configurations: 2.02 in France, 1.95 in Norway and 1.92 in the United Kingdom (Human Fertility Database, 2021). Although the proposed theoretical framework is intended to be useful in the analyses of all birth orders, I focus the empirical analyses on second births for two reasons. First, cross-country fertility differences are—to an important extent—due to differences in second birth rates (Albis et al., 2017; Billari & Kohler, 2004); second, space limitations were considered.[4]

The structure of the paper is as follows. Section 2 outlines the core theoretical arguments about the link between social class and fertility, focusing on the key variables and mechanisms that explain that relationship. The labor market relationships specific to each class are the basis to derive several expectations about systematic differentials by occupational class in the levels of economic security, employment–parenthood role compatibility, and gender equality, which in turn lead to class-specific fertility patterns.[5] Section 3 focuses on how different welfare regimes influence class inequalities by shaping the resources and constraints available to each class, particularly through their regulation of the labor market and family relationships. Thus, welfare regimes mediate the relationship between social class and fertility by influencing the levels of economic security, employment–parenthood role compatibility, and gender equality available to each class. This framework leads to the formulation of hypotheses on the class-fertility relationship for each of the countries studied (Section 4), considering the specificities of their welfare and gender regimes. Sections 5 and 6 describe the data and the methods, respectively. The data come from the European Union Statistics on Income and Living Conditions (EUSILC) for Austria, France, Norway, and the United Kingdom, and covers the period 2004–2015. The analyses use event history models with correlated unobserved heterogeneity, to address the possible endogeneity between class attainment and fertility.[6] The results (Section 7) document substantial differentials between social classes and distinct social class patterns for each country, mostly in accordance with the theoretical expectations. The final section provides some concluding remarks and reflections.

2. Social class and fertility

In classical sociological theory, class positions and their associated inequalities are generated from social relations in the labor market (Weber, 1978 [1922]). Of course, the specific nature of labor market relations is heavily shaped by other institutions, especially by the welfare state, educational system, and collective bargaining (Esping-Andersen, 1999; Swedberg, 2005). How care is organized, and more generally, the prevailing gender relations, are key to understanding

[1] Micro-economic perspectives of family behaviour often use educational level as an indicator of the earnings potential of individuals (Becker, 1991). Alternatively, educational level is considered an indicator of value orientations by some researchers (Lesthaeghe & Surkyn, 2012), although the link with family behavior is tenuous (Hakim, 2003; Sobotka, 2008).

[2] Income is weakly linked to economic deprivation and is often volatile both at the individual level and the household level (Whelan, 2001). Moreover, income levels widely change over the life course, as a result of family events (such as childbearing) and occupational changes (Aassve et al., 2005; Gustafsson, 2001).

[3] The choice of countries was based on both theoretical grounds and data availability. These included the lack of data for Germany, and the availability of a larger sample for Norway than for other Nordic countries. The analyses made with Danish data provided similar results to those of Norway (results on request).

[4] Moreover, analyzing first births would have involved developing a different set of hypotheses and modeling timing and selection effects specific for this birth order. The samples available for third births were too small for meaningful analyses.

[5] Some of the arguments are also presented in a paper that focuses on the labor market situation and fertility in Spain (Baizan, 2020).

[6] An empirical test of the role of each of the mechanisms linking social class and fertility is beyond the scope of this paper.

employment arrangements or the type of jobs available (Daly & Lewis, 2000; Orloff, 2009). But it is the literature on labor market institutions and firm organizations that has provided specific answers to how firms organize production, how firms select and reward workers, and how individuals are allocated to different occupations with qualitatively different types of employment relations (Berg & Kalleberg, 2001; Osterman & Burton, 2004). This last question, namely, why different forms of labor contracts exist, is linked to two potential problems that are crucial from the standpoint of employers: a) the degree of difficulty in monitoring employees' work, and b) the degree of human asset specificity (Goldthorpe, 2007; Goldthorpe & McKnight, 2006). A "service" relationship occurs when monitoring is difficult and skill specificity is high. This type of regulation is typical of professional and managerial employees. Low-level occupations with few skill requirements, where the production is easily measured and controlled, are characterized by "labor" contracts that approximate a spot contract for the purchase of a quantity of labor on a piece- or time-rate basis. Contracts are easily terminated because workers receive little or no training and can be replaced without a great loss for the firm. Between the higher professionals and the unskilled workers, other occupations combine in different degrees these traits of employment relationships, leading to modified or mixed forms of contracts (see below the section on data for details on the classification applied) (Harrison & Rose, 2006). The class theory just outlined provides a consistent explanation for the systematic differentials in economic rewards and work conditions experienced by each class. Yet, this theory is also relevant when explaining fertility decisions, as explained below.

2.1. Economic security

Goldthorpe's theory of employment relations implies that workers in basic occupations should have the highest risk of unemployment. Moreover, individuals in the secondary labor market or with characteristics that are disadvantageous when competing for access to jobs (e.g., low educated individuals or individuals who received little on-the-job training) are disproportionally likely to be unemployed (Osterman & Burton, 2004). Several studies have shown a clear negative association between class and the risks and duration of unemployment in different countries (Bihagen & Halleröd, 2000; Chan & Goldthorpe, 2007; Layte et al., 2000). The processes of economic restructuring and deregulation of the labor market since the 1980s have led to the increasing prevalence of "atypical" contracts (in particular short-term contracts), subcontracting between firms, and self-employed individuals, which has added to the dimensions of economic insecurity (Barbieri & Cutuli, 2016). Although these factors' connections with social class have been little documented, the framework suggests heightened economic insecurity for unskilled workers and lower white-collar workers, since they can be replaced with lower cost for the employers. Furthermore, class positions are linked to the access and level of unemployment benefits, maternity/paternity and parental leave, sick leave, and other benefits associated with the occupation, which provide additional economic security associated with parenthood. Numerous examples in the literature have shown that all these dimensions of the labor market situations of men and women have substantial effects on fertility, considering that the presence of children involves a large and long-term increase in expenditures for parents (Adserà, 2011; Diprete et al., 2003; Özcan et al., 2010; Vignoli et al., 2012). Thus, it can be expected that the level of economic security has positive effects on fertility at both the household level and for each couple's member. Yet, women's unemployment can lead to an increased probability of childbearing if men's employment is secure and welfare state institutions strongly support maternity (Kreyenfeld & Andersson, 2014).

The relationship between class and the evolution in the level of earnings over the life course is also relevant. Goldthorpe and McKnight (2006) show that in Britain there is a strong divergence between the earning profiles of low-skilled workers, which are basically flat beyond age 30, and the earnings of professionals and managers, which show increases beyond age 50. The income age-profiles also sharply differ between genders and educational levels: they are less steep for those with lower levels of education and women (Sigle-Rushton & Waldfogel, 2007). Because high-earning women have higher returns to experience and job tenure than low-earning women, any interruption or reduction in employment associated with motherhood results in stronger income penalties (England et al., 2016). Conversely, for women holding low-skilled jobs, labor market interruptions or a reduction of work hours involve a lower penalty, in terms of future earnings and the probability of returning to an equivalent job if they leave the labor market to take care of a child. Furthermore, women holding unskilled jobs are more likely to experience recurrent unemployment and can often only access jobs that provide low economic rewards, harsh employment conditions, and little social identity. Such chronic precarity should generally lead to low fertility. Yet, under the conditions of low role compatibility between employment and childcare, and strong gender inequality (e.g. if the husband holds a better occupational class position than the wife), exclusion from the labor market may render the role of mother and housewifery, on a full- or part-time basis, comparatively attractive, potentially leading to high fertility (Friedman et al., 1994).[7]

2.2. Role compatibility

A further implication of the class theory concerns the job conditions experienced by individuals in each class, with clear consequences for the compatibility between employment and care. Both theoretical arguments and empirical studies suggest that enhanced role compatibility has a clear positive effect on fertility, since it allows to avoid the economic opportunity costs of employment interruptions due to childbearing (including loss of wages, experience, firm-specific skills, career advancement opportunities and job position), as well as the costs in terms of decrease in autonomy, dependency upon the partner, loss of social networks, loss of self-esteem and skills unused (Begall & Mills, 2011; Rindfuss et al., 2010). Enhanced compatibility also allows avoiding stressful "double-shift" situations resulting from motherhood, which are clearly detrimental for fertility (Frejka et al., 2018; Torr & Short, 2004). Given that women still do most of the childcare work (Altintas & Sullivan, 2016), this dimension is especially relevant for the analysis of women's class. The literature has indicated a positive relationship between class and degree of autonomy and flexibility in work arrangements, including such dimensions as the beginning and ending working times, daily flex-time, the possibility of taking time off for personal or family reasons, control over work hours, and control over the pace and organization of work or job strain (Präg & Mills, 2014; Swanberg et al., 2005). Work-family options are more likely to be offered to "service" class employees or to skilled workers with firm-specific skills, because employers have higher incentives to provide these benefits to employees whose replacement would be costly for the firm. These benefits, including maternity and sickness leave, are offered mostly to women and are very much dependent on the welfare regime context.

Several studies have highlighted the key positive role of the availability, quality, and affordability of formal childcare for fertility, but class differentials have seldom been analyzed. Market mechanisms imply that the relative costs of childcare are much higher for "labor" class women, resulting in less use of formal childcare compared with "service" class women, unless public subsidies alter the costs for each

[7] These situations of pervasive women's labor market exclusion were frequent in Western countries until the 1970s (Orloff, 2009). A negative overall relationship between class and fertility can thus be hypothesized under such conditions. During the period considered in this study (2005–2015) labor market exclusion is likely to affect mostly lower class women, potentially given rise to a U-shaped relationship between class and fertility.

class (Del Boca et al., 2009; Ermisch, 1989; Shalev, 2008). As a result, and considering that both formal childcare use and flexibility in work conditions are positively related with occupying "service" class positions (versus "labor" contract positions), a positive social class ordering in fertility can be expected.[8]

2.3. Gender (in)equality

The mechanisms just reviewed lead to stronger gender inequalities for "labor" class women compared to "service" class women. For instance, role compatibility allows ("service" class) women to remain in the labor market, reducing income and employment penalties and facilitating gender equality. Other labor market dimensions are relevant to explain the positive class ordering in gender equality. Pervasive gender segregation, horizontally across occupations and vertically across firm hierarchies, accounts for the bulk of the income gaps between genders (Blau & Kahn, 2017). Segregation has been explained on the supply side, largely by socialization or "doing gender"[9] ; on the demand side, the evidence of hiring and promotion discrimination practices by employers is increasing (England, 2005). Women often find themselves in a lower occupational class than their educational qualifications would lead one to expect, with direct consequences for gender economic differentials and bargaining positions within couples.

Dual labor market and job competition theories have also predicted lower positions and higher job instability for women (Piore, 2002; Thurow, 1975). Because "labor" class women have more discontinuous work trajectories and more difficulties for role compatibility, they may have greater exposure to statistical discrimination. Lower investments in skills by employers, however, also involve a lower cost for them in the case of a reduction or termination of employment. Jobs that require high expertise and are more essential for the firm organization may involve a more severe statistical discrimination, especially if role compatibility is difficult, maternity leaves are long, and internal labor markets are important (Estevez-Abe, 2005; Mandel & Semyonov, 2005).

Labor market gender and class inequalities are closely linked to household roles. Time use surveys have shown the still-substantial gender differentials in time devoted to household chores and care work, with a systematic variation across educational levels and social classes (Altintas & Sullivan, 2017; Baizan et al., 2014; Hook, 2015). Additionally, value surveys consistently report that the working classes display more conservative attitudes (Svallfors, 2007); as a consequence, couples' division of labor should follow a class pattern where more egalitarian gender arrangements are more prevalent among higher class groups (Crompton, 1999; Pfau-Effinger, 2005b). There is a growing consensus in demographic literature on the positive role of gender equality on fertility levels, at both the individual and contextual levels (Goldscheider et al., 2015; McDonald, 2000a; Neyer et al., 2013). In contemporary advanced societies, gender equality is a key factor enhancing fertility, since it is linked to reduced economic costs of fertility and is highly valued by individuals. Moreover, men's increased domestic involvement reduces the pressure on women. Thus, if gender equality is positively related with occupying "service" class positions (versus "labor" contract positions), as argued above, the level of gender equality should be a crucial factor contributing to a positive fertility ordering by social class.

3. Welfare regimes and class inequalities

The mechanisms identified in the previous section, and their associated social class inequalities, are obviously not independent from the manner in which welfare is produced and allocated among the state, market, and family. These institutions are clearly interdependent; thus, decisions made by family members influence, and are influenced by, the welfare state and labor market. Indeed, the relative weight of these institutions in providing welfare and in managing social risks furnishes the main criterion for welfare regime classification (Esping-Andersen, 1999, p. 85). As will be seen below, welfare regime characteristics are closely linked to the gender system (Esping-Andersen, 1999; Keck & Saraceno, 2013; Mayer, 2001).

Esping-Andersen's three-regime typology was initially based on the degree of de-commodification and the character of the social protection offered by each welfare state (Esping-Andersen, 1990). The profile of life course risks and general level of inequality in a society varies between the Conservative countries (based on a social insurance model, such as Germany, Austria and France), Social Democratic countries (based on universalistic principles, e.g. Sweden and Norway), and Liberal countries (characterized by a "residual" approach, e.g. USA and UK).[10] These differences have profound implications for the levels of resources available to each class, the associated risks of poverty, exclusion from the labor market, and economic security. The social class structure itself, in particular the size of the lower service class, is directly shaped by the welfare regime type, with straightforward consequences for women's labor force participation opportunities (Esping-Andersen, 1993).

Regime types also vary systematically in how they regulate the labor market, thus modifying "pure" market mechanisms. *Liberal* systems set few government regulations, but the primacy of firm-level bargaining leads to wide class differentials in income, job security, and work conditions. *Social Democratic* countries have attained even higher levels of women's labor market participation, supported by a strong welfare state commitment to full employment and gender equality. The approach combines medium levels of labor market regulation with social investment policies, associated with the expansion of public social services. Since the 1980s, *Conservative* countries have made their labor markets flexible at different paces and levels (Barbieri & Cutuli, 2016; Palier & Thelen, 2010). This flexibility has mainly been achieved through the growth of the secondary labor market, including temporary, fix-term, part-time, and agency jobs, while the protection of "core" jobs has largely been maintained.

An additional differentiation criterion between welfare regimes is their level of "familialism," namely, welfare production by households, and in particular, care (Esping-Andersen, 1999; Keck & Saraceno, 2013).[11] This dimension is closely linked to the level of gender equality, and specifically to the way care and labor market participation are organized in households. Currently, three main ideal types of household organization can be distinguished (modified from Crompton, 1999 and Pfau-Effinger, 2005b): Male breadwinner/female (part-time) carer; dual breadwinner/state or market carer; and dual breadwinner/dual carer model. These models have varying prevalence across countries and social classes and are substantially influenced by contextual factors (Fuwa, 2004; Hook, 2015). Demographic literature has shown that these models are associated with different levels of fertility, in societies where a majority of adult women participate in the labor market (Goldscheider et al., 2015; McDonald, 2013). Thus, the male breadwinner/female

[8] While members of the professional and managerial classes are clearly advantaged with respect to the intermediate classes (self-employed, white-collar workers), and the wage-earning working classes, "any single ranking of the intermediate classes is more problematic" (Chan & Goldthorpe, 2007: 514).

[9] Self-selection of women into occupations with low investment in job-specific skills is also likely to be important (Polavieja, 2012).

[10] Note that the classification is based on *ideal types*. Individual countries display institutional configurations with mixed characteristics.

[11] Of course, familialism and defamilialization (as other welfare regime characteristics) are rooted in cultural values, which in turn inspire policies and are influenced by them (e.g. Pfau-Effinger, 2005a).

carer model has depressing effects on fertility when it has a long duration over the life course[12] since its economic and gender inequality consequences become pronounced and difficult to reverse (Hoem et al., 2001; Thévenon & Neyer, 2014). By contrast, shorter durations of the male breadwinner/female carer model (i.e. short maternity/parental leaves) can have positive effects on fertility, especially when combined with sufficient levels of economic security (Lappegård, 2010; Sigle-Rushton, 2010). The dual breadwinner/state or market carer model should also favor moderate levels of fertility since it obviously allows for a high degree of role compatibility. Yet this model may be associated with low levels of gender equality in the household. Consistently with the framework presented in this paper, the dual breadwinner/dual carer model should lead to the highest levels of fertility, since it combines gender equality in the labor market and in the household (Hoem, 2005). This model also provides a high amount of parents' time with children, thus stimulating attitudes favoring family formation (Duvander et al., 2010).

Although in theory the level of familialism should set apart conservative regimes from the other two, the picture is more complex, as has been discussed in the literature on care and gender regimes (Bettio & Plantenga, 2004). Familialistic welfare arrangements provide scarce market or state alternatives to family care, and thus favor a male breadwinner/female (part-time) carer model when dependent children are present (Crompton, 1999; Pfau-Effinger, 2005b). But, whereas in some Conservative countries policies exists that explicitly support family care by providing substantial income transfers and time rights for care, in other countries these policies are much less developed. The supportive form of familialism predominates in countries such as Austria (and West Germany until the policy reforms that started in 2005), whereas unsupported forms predominate in southern Europe (Leitner, 2010; Saraceno, 2016). Both forms of familialism underpin gender and social class inequalities, but while unsupported familialism leaves the family to provide care and reliant on its own resources, supportive contexts may provide taxation favorable to gender asymmetrical couples, long paid parental leaves reserved or used mostly by women, or payments for care financially attractive to low-class women (Saraceno, 2016). In France and Belgium, explicit familialistic policies predominated until the 1980s, but since then these countries have moved towards defamilializing policies, particularly by expanding state-financed childcare services. Yet, some class and gender biases have remained, as will be explained in the hypotheses section for the case of France.

Familialism has a different character in the Social Democratic countries. Family formation is generously supported with earnings-related parental leaves that allow continuous work careers and with child benefits that reduce the risk of poverty. The wide provision of public or publicly financed childcare services has powerful defamilializing effects. Gender equality is promoted with childcare leaves reserved for men. As a result, male breadwinner/female carer situations are of shorter duration than in the Conservative countries, and parents are more often found in more egalitarian arrangements, i.e. dual breadwinner/state carer or dual breadwinner/dual carer model (Hook, 2015).

The Liberal regime, by contrast, generally provides little explicit support to families in the form of state-provided care or long parental leaves. At the same time, market deregulation and low taxation facilitate the expansion of market-provided care (Esping-Andersen, 1999). De-familialization can be further supported by income transfers (cash benefits, vouchers or tax deductions) to help buy services on the market. The level of de-familililization is heavily class-stratified, since it depends on the resources available to individuals and families. Policies such as means-tested child benefits or tax deductions may reinforce class inequalities in the gender division of labor (Leitner, 2003; Sigle-Rushton, 2008).

The discussion so far about welfare regime differentials has several consequences for the connection between occupational class attainment and fertility. Welfare regimes moderate this relationship by shaping differently the levels of economic security, role compatibility and gender relationships available to each social class, with systematic effects on fertility. The effects of institutional conditions, however, need to be analyzed considering their dynamics over the individuals' life course. This is crucial when studying women's trajectories in fertility and employment, since their decisions in these two domains are unlikely to be made independently from each other. By contrast, men's decisions concerning employment and fertility can be made more independently from each other, leading to lower levels of interrelationship between class attainment and fertility. Life course research has shown that individuals' goals, resources, and behaviors in one domain are interrelated with goals, resources, and behaviors in other domains, leading to correlation between them over time (Bernardi et al., 2019). Past experiences and conditions affect current fertility decisions, leading to self-selection over time as a consequence of path dependency in individuals' life course (Huinink & Kohli, 2014). In particular, occupational choice and investments may be determined by prospects of parenthood[13] (van Bavel, 2010). The anticipation of the negative consequences of bearing a child for labor force attachment and couple's relationships may reduce fertility. Moreover, country-specific institutional conditions are likely to influence individuals' values and orientations with consistent effects over the life course[14] (Neyer et al., 2017). The fact that gender family values are to some degree patterned according to social class suggests that they reflect class-specific resources and constraints. Fertility research has shown that the social context is relevant as a source of learning environment and social influence (Bernardi & Klärner, 2014). Thus, contexts characterized by low role compatibility compel women to take harsh choices between career and fertility. High levels of gender discrimination and exclusion from the labor market disincentivate investments in the occupational career, while making household production and fertility relatively attractive. As a result, measurements of class attainment at a given point in time may reflect earlier life course choices about family and career, in addition of the current class situation. Selection effects should be, therefore, more important in Conservative regimes characterized by low role compatibility and strong gender inequalities, and comparatively lower in more gender egalitarian regimes where fertility considerations may play a smaller role in women's career choices. Similarly, selection effects should generally be larger for working class women, since they are more affected by role conflict and gender inequality, especially where class differentials in these dimensions are wide (i.e. Liberal regime).

4. Hypotheses

The aforementioned arguments have implications for the levels of fertility of each social class and intercountry differentials in fertility. Although each country has developed a unique package of policies, here the examples of Norway, United Kingdom, Austria and France are taken as illustrative of the welfare and gender regimes outlined above. The following expectations focus on second birth probabilities and take into account the situation of the countries studied during the period

[12] Specifically, maternity leaves or periods outside the labor market that last more than one year have substantial and permanent effects on women's labor force attachment and income (Gornick & Meyers, 2008; Sigle-Rushton & Waldfogel, 2007).

[13] The choice of the field of education is strongly patterned by sex, with important effects on fertility and occupation (Martin-Garcia & Baizan, 2006). Women self-select into occupations that allow a higher level of compatibility with motherhood, with negative consequences for their class attainment.

[14] Adaptation of values based on the individual's situation and selection into particular family states according to values are processes that influence each other over the life course (Lesthaeghe & Moors, 2002).

Table 1
Descriptive statistics: proportion or mean values of the variables.[a]

Second birth's sample	Austria	France	Norway	United Kingdom
Years since first birth (mean)	4.45	4.16	3.91	3.84
Age (mean)	32.28	32.33	31.76	31.60
Educational level				
Lower secondary	0.13	0.11	0.14	0.09
Higher secondary	0.63	0.44	0.35	0.49
University	0.24	0.45	0.52	0.42
ESeC class (woman)				
Higher professionals & administrators	0.08	0.10	0.20	0.16
Lower professionals & administrators	0.11	0.17	0.15	0.11
Higher grade white-collar workers	0.21	0.27	0.22	0.19
Small employers & self-employed	0.02	0.02	0.01	0.03
Lower grade white-collar workers	0.31	0.24	0.25	0.28
Skilled manual workers	0.04	0.02	0.03	0.01
Semi- & unskilled manual workers	0.11	0.12	0.06	0.07
Never worked	0.13	0.06	0.08	0.15
ESeC class (household)				
Higher professionals & administrators	0.16	0.19	0.32	0.27
Lower professionals & administrators	0.16	0.22	0.20	0.14
Higher grade white-collar workers	0.19	0.22	0.18	0.16
Small employers & self-employed	0.03	0.03	0.02	0.04
Lower grade white-collar workers	0.26	0.18	0.19	0.22
Skilled manual workers	0.09	0.06	0.04	0.03
Semi- & unskilled manual workers	0.07	0.07	0.03	0.06
Never worked	0.04	0.03	0.03	0.09
Person years	2259	4966	2621	2904
No. of women	1251	2135	1272	1870
No. of second births	287	819	554	440
First birth's sample				
Age (mean)	24.49	24.40	23.21	24.70
Educational level				
Lower secondary	0.26	0.27	0.39	0.28
Higher secondary	0.56	0.42	0.34	0.43
University	0.18	0.31	0.27	0.29
Enrolled in education	0.26	0.33	0.36	0.25
Birth-cohort. 1960–69	0.12	0.09	0.07	0.10
1970–79	0.35	0.31	0.28	0.37
1980–99	0.53	0.60	0.64	0.53
Person years	108,584	138,674	101,616	172,932
No. of women	10,349	13,339	11,024	16,156
No. of first births	4548	5306	4107	7449
Social class attainment's sample				
ESeC class (woman)				
Higher professionals & administrators	0.08	0.09	0.17	0.17
Lower professionals & administrators	0.11	0.15	0.14	0.13
Higher grade white-collar workers	0.22	0.27	0.19	0.21
Small employers & self-employed	0.04	0.02	0.01	0.02
Lower grade white-collar workers	0.39	0.28	0.38	0.36
Skilled manual workers	0.04	0.03	0.03	0.01
Semi- & unskilled manual workers	0.12	0.15	0.07	0.10
ESeC class (household)				
Higher professionals & administrators	0.14	0.17	0.27	0.24

2004–2015.

Norway (Social–democratic regime): high levels of fertility for all groups should be expected, coupled with relatively low social differentials. A positive relationship between class and second birth probabilities is expected, mainly based on the positive social gradient in gender equality. Relatively high levels of employment security are prevalent, combined with narrow income differentials. Formal childcare is available and affordable for all social classes (Rindfuss et al., 2007). Lower social classes, however, remain more often out of the labor market after the first birth, show a higher prevalence of part-time employment, and make higher use of childcare cash benefits (Aassve & Lappegård, 2009; Duvander et al., 2010). Comparatively minor selection effects due to the interrelationship between class attainment and fertility should be expected.

United Kingdom (Liberal regime): a U-shaped relationship between class and second birth probabilities is expected, where lower and higher social classes should show the highest second birth probabilities. This pattern results from two effects. First, the model *male breadwinner/female (part-time) carer* should prevail among the lower classes because of low employment security, few opportunities to combine employment with childcare, and the low wages and relative easiness of re-entering the labor market after childbirth. Additionally, financial benefits conditional on employment introduced in 1999 (Working Families' Tax Credit), coupled with increases in income support to unemployed families provide comparatively large support to parents (Thévenon, 2011). These factors could account for the declining first half of the U. By contrast, a "conciliation" strategy should be more feasible the higher the occupational class. In particular, high levels of income inequality imply that market-provided child care is most affordable to higher class women. The institutional characteristics imply comparatively large selection effects, strongly patterned by social class. Once selection effects are taken into account in the analyses, a positive gradient by social class is expected.

Austria (Conservative regime): a flattened U-shaped effect of class on second birth probabilities is expected, combined with low social class differentials and low overall levels of fertility. Family and labor market policies foster a strong form of "explicit familialism", which has been "modernized" in recent decades (Leitner, 2010; Pfau-Effinger, 2005b). This system involves socially stratified variation in household models and generalized gender inequality. A key element of the approach is the parental leave system. Different models of childcare allowance are offered, ranging from a duration of 30 months and flat-rate benefits to an income-dependent leave of 12 months, which amounts to 80 % of the maternity allowance. The large majority of women choose very long durations, especially among the lower classes, but also among the higher grade white-collar and self-employed women, while the income-dependent model is mainly chosen by high-income women. The choice is closely linked to differential economic incentives for each class (Leibetseder, 2013). The increasing but still low provision of formal childcare hinders parents from opting for short employment breaks. In 2013, 23 % of children in the age group zero to two were enrolled in formal care. This is a clear increase from less than 5% during the mid-1990s (Population Europe, 2014). Furthermore, childcare providers' limited opening hours and long breaks during the holiday season pose obstacles for mothers to combine full-time employment and motherhood. As a result, a large proportion of women from all social classes hold a part-time job after the end of parental leave (Berghammer & Riederer, 2018). Finally, the policy package includes substantial cash benefits and tax deductions linked to parenthood, which are relatively higher for low-income groups, further promoting the gender division of labor. Therefore, the *male breadwinner/female carer* model is expected to be more predominant the lower the class, combined with relatively high levels of economic security, with conflicting effects on their fertility. Only a minority of mostly professional class couples can achieve a *dual breadwinner/state carer* model, potentially favoring their second birth probabilities. Substantial selection effects are expected. Once selection

Table 1 (*continued*)

Second birth's sample	Austria	France	Norway	United Kingdom
Lower professionals & administrators	0.15	0.19	0.18	0.14
Higher grade white-collar workers	0.21	0.24	0.16	0.19
Small employers & self-employed	0.05	0.03	0.01	0.03
Lower grade white-collar workers	0.32	0.22	0.31	0.30
Skilled manual workers	0.06	0.06	0.04	0.02
Semi- & unskilled manual workers	0.07	0.09	0.04	0.07
Age (mean)	32.82	33.81	33.10	32.19
Log of work experience (years)	1.98	1.80	0.23	0.78
Educational level				
Lower secondary	0.15	0.13	0.17	0.07
Higher secondary	0.62	0.46	0.40	0.52
University	0.23	0.42	0.43	0.41
Health status				
Good	0.60	0.66	0.28	0.55
Bad	0.14	0.19	0.10	0.14
Missing	0.25	0.14	0.62	0.31
No. of women	8707	10,663	8032	13,106
Person years	22,445	41,443	25,698	28,991

[a] Values of variables are measured at the episode's last observed wave.
Source: EUSILC (EUROSTAT, 2016). Unweighted data.

effects are taken into account in the analyses, a positive ordering by social class should be found.

France (Conservative regime): given the relatively high degree of compatibility between labor force participation and fertility and its positive social gradient, a generally positive pattern is expected in the class–fertility relationship. The diversified system of support that provides parents with supplementary resources in the form of money, time, and services required to raise children (Thévenon, 2016) should lead to overall high levels of second birth probabilities. Yet, the system involves socially stratified incentives for behavior and choices among these policies. The dualization of the labor market, which has increased precarious situations among working class women, makes the model *male breadwinner/female carer* attractive. A relatively inflexible labor market, in which it is difficult to re-enter after a long leave, reinforces gender inequality and depresses the fertility of lower social classes. Working class women more often opt for the cash benefits linked to a (temporary or partial) withdrawal from the labor force (Pailhé & Solaz, 2012; Ponthieux & Screiber, 2006). Middle, and especially professional classes benefit more from childcare tax deductions and can more easily afford childcare provided by private childminders or childcare centers. Among these groups, the model *dual breadwinner/state or market carer* is expected to be highly prevalent, leading to high second birth probabilities. Intermediate selectivity levels are expected.

5. Data

The data are from the European Union Statistics on Income and Living Conditions (EU-SILC) longitudinal samples for the years 2004–2015 (EUROSTAT, 2016). Each individual in this sample responded to the survey in at least two waves and up to four waves (Austria and the United Kingdom), eight waves (Norway), or nine waves (France). Overall nonresponse rates for the panel vary greatly by country for the years analyzed. They are relatively low in France (17–21 percent) and Austria (20–28), but much higher in Norway (30–47) and United Kingdom (23–43) (EUROSTAT, 2019). Crucially for this study, the proportion of women with one child followed up for 4 years is higher than 60 percent (except for very young women), and follow-up probabilities do not differ significantly between socioeconomic groups in EU-SILC (Greulich & Dasré, 2017).[15]

The EUSILC provides the date of birth of each child residing in the household; therefore, the data does not include deceased children or children no longer living with their mothers. Extremely low levels of infant and juvenile mortality and the fact that practically all children live with their mothers allow a reconstruction of fertility histories based on the data reported in the survey. The validity of EU-SILC data to analyze fertility has been thoroughly evaluated by comparing them with registered data. The results have demonstrated that women can be included in the models up to their early forties without introducing any significant bias (Greulich & Dasré, 2018; Nitsche et al., 2018).

The main focus of the paper is the analysis of the transition to a *second birth*. The analytical sample for second births includes women aged 17–42 who already had a first child, and durations up to 10 years since the birth of their first child. Explanatory variables include the years since first birth, the woman's age, social class, and her education (which is an important determinant of social class).[16] Table 1 shows descriptive statistics for the samples analyzed.

I perform several simultaneous equations models in which the time to first birth and class attainment are the dependent variables, in addition to the transition to second births (as explained in the methods section below). For *first births*, the analytical sample includes all women aged 17–42 present during the panel years (2004–2015). I construct a person-year file covering the period from age 17 up to the year when they bore their first child, or they were last observed in the panel (for childless women). The explanatory variables include woman's age, educational level, educational enrolment, and birth-cohort.

The analyses of *class attainment* include data for all women aged 17–42 and their partners (married or unmarried) if there are in a partnership, during the panel years (2004–2015). To establish occupational class, I use the information on women's and men's occupation for each job. Thus, the analyses for women's class attainment exclude women who never had a job; and the analyses for household class attainment exclude the situations in which both partners never had a job (for partnered women). The explanatory variables included in the class attainment models are woman's age, the logarithm of the women's work experience (measured in years), her level of education, and her health status (Table 1).

The empirical analyses use the European Socio-economic Classification (ESeC) (Harrison & Rose, 2006), which is based on the Erikson–Goldthorpe–Portocarero (EGP) social class schema (Erikson & Goldthorpe, 1992). Both classifications aim to distinguish positions within labor markets and production units in terms of their typical "employment relations." Notably, the ESeC improves on the EGP Schema because it is more updated to reflect recent changes (especially the expansion of lower services) and provides a more thorough validation and better documentation for comparative purposes. The inclusion in each class is based on the International Standard Classification of Occupations, measured at each wave of the survey or last occupation (for individuals with no job at a given wave). The ESeC has rules that

[15] Lack of follow up in EU-SILC is particularly linked to divorces and separations (Iacovou & Levy, 2012).

[16] Woman's partnership status is not included in the models, since it is likely to be endogenous to fertility (Steele et al., 2005). However, the results for social class are not substantially different when a control for partnership status is included in the models.

provide coverage for the total adult population into the following classes[17] : 1. *Higher grade professionals and administrators*; 2. *Lower-grade professionals and administrators*; 3. *Higher grade white-collar workers*; 4. *Small employers and the self-employed*; 5. *Lower-grade white-collar workers*, 6. *Skilled manual workers*, and 7. *Semi- and unskilled manual workers*. Higher professionals and administrators are characterized by a "service" relationship, and the semi- and unskilled workers are characterized by a basic labor contract. Other workers are characterized by "modified" or "mixed" labor contracts (Goldthorpe, 2007). The ESeC also includes a category with individuals that have *Never worked* and the long-term unemployed. EUSILC does not provide any information on the duration of unemployment, and therefore this last category includes only individuals who have *never worked* for at least six months.

The measurement of class is made at the women's level or at the couple level (*household class*). I perform analyses for each of these perspectives, because both perspectives are relevant and complementary. An individual-level measurement of class takes into account gender differentials in job conditions and labor force attachment. While a couple-level perspective implies a focus on household resources and takes into account that generally, couples are the decision-making units about fertility. The characterization of social class as a household position is indicated by the highest occupation held by the members of a couple (Erikson, 1984; Harrison & Rose, 2006). This is done on the basis of a hierarchical ordering of occupational categories, in which categories with higher qualifications dominate those with lower qualifications, and nonmanual categories dominate manual ones. The variable *household ESeC* refers to the woman's class if she is not in a partnership.

6. Methods

Event history analysis techniques are suited to analyze the interdependencies between different life course domains. First, this kind of regression models focuses on the impact of variables that change their values over time (such as social class) and accounts for the time order of events; second, they take into account duration effects, i. e. the time of exposure until a particular event from an "event of origin" (for first births I consider time since age 17, and when I analyze second births, the analyses start at the birth of the first child); and third, event-history models allow us not only to consider women with a complete fertility history but also those interviewed before the end of their reproductive age (i.e. right-censored) (Blossfeld, Rohwer, Schneider, & Halpin, 2019).

In a first stage of the analyses, I use a standard discrete-time event–history technique to model factors associated with the annual probability of experiencing a second birth, given that a first birth has been experienced by the woman, that a second birth has not already occurred and a set of covariates. To apply discrete-time event–history models, I constructed a person-year file that uses multiple annual observations for each woman. Then, I apply a standard logistic specification to model the probability of bearing a second child by individual *i* in each of the years *j* (Rabe-Hesketh & Skrondal, 2012).

$$\ln\left\{\frac{\Pr\left(y_{ij}^{2B}=1\middle|\boldsymbol{X}_{ij}\right)}{1-\Pr\left(y_{ij}^{2B}=1\middle|\boldsymbol{X}_{ij}\right)}\right\}=\beta_1+\beta_2\,x_{2ij}+\beta_3 x_{3ij}+\beta_4 x_{4ij}+\ \beta_5\boldsymbol{X}_{5ij}+\beta_6\,\boldsymbol{X}_{6ij} \tag{1}$$

where $\boldsymbol{X}_{ij}$ are vectors of the covariates included in the equation, β_1 is the intercept, β_2 and β_3 form the baseline hazard function (years since first birth and years since first birth squared, respectively), β_4 and β_5 denote the value of the estimated coefficients of the model for the covariates woman's age and education, respectively, and β_6 represents the value of the estimated coefficients of class. For the individuals included in the analyses, episode starting times are known (i.e. date of first birth), although the panel may not cover the whole episode (involving left-truncation). This type of data is handled by the conditional likelihood approach, which conditions the likelihood function on the subject having survived to the start of the observation period (Guo, 1993). However, individuals who had their second child before being observed in the panel are left-censored. To avoid reverse causality, I use the information on social class and on education that refers to the year preceding each wave. Weights were not used for the analyses.

The specification above (Eq. (1)), however, does not take into account the possible existence of selection effects linked to the unobserved heterogeneity in the population in the propensity to bear a first child. Women who are at risk of a second birth are a select group of individuals because they must already have one child. For instance, some woman's unobserved characteristics, such as a greater propensity towards building a career as opposed to a family, or primary infecundity, may systematically lead to lower fertility. Eq. (1) also does not sufficiently take into account differentials in the timing and intensity of first birth, according to educational level or to social class. Previous research has shown that these biases can be corrected by using simultaneous equations for first and second births, in which a common random term is added to the first and second birth equations (Kravdal, 2001). This term captures unobserved heterogeneity among women. It can be thought of as reflecting the combined effect of the omitted woman-specific covariates that cause some women to be more prone to bear a child than other women (Rabe-Hesketh & Skrondal, 2012). Thus, in a second stage of the analyses, I added an equation for first births to the previous equation for second births, and these equations were jointly estimated. The first birth equation uses retrospective information, but unfortunately, the EUSILC does not provide retrospective information on social class (Table 1). The first birth equation is also specified as a discrete-time event–history model. Given that the covariates used for first and second birth are different, and that their effects differ for each parity, they were modeled as separate equations.

A second type of potential bias may arise if unmeasured attributes affect both social class attainment and fertility. As explained above, class attainment goals and strategies might not be exogenous to fertility choices, as these two roles compete in time and resources. Furthermore, career advancement can be hindered by an unplanned birth, and revised upwards by unexpected childlessness. Childbearing may have affected a woman's interests and opportunities for occupational advancement, thus producing an underestimation of the true causal effect of social class. To investigate whether there is a joint determining effect for both processes, I run a multi-process model of class attainment and fertility. The statistical specification is derived from the framework developed by Lillard (1993) and Upchurch, Lillard, and Panis (2002). It consists of three simultaneous equations (Eqs. (2)–(4)), two of them specified as event history models for second and first births, and an additional ordered probit equation for social class attainment (Rabe-Hesketh & Skrondal, 2012).

$$\ln\left\{\frac{\Pr\left(y_{ij}^{2B}=1\middle|\boldsymbol{X}_{ij},\eta_i\right)}{1-\Pr\left(y_{ij}^{2B}=1\middle|\boldsymbol{X}_{ij},\eta_i\right)}\right\}=\beta_1+\beta_2\,x_{2ij}+\beta_3 x_{3ij}+\beta_4 x_{4ij}+\beta_5\boldsymbol{X}_{5ij}+\beta_6\,\boldsymbol{X}_{6ij}+\eta_i \tag{2}$$

$$\ln\left\{\frac{\Pr\left(y_{ij}^{1B}=1\middle|\boldsymbol{W}_{ij},\eta_i\right)}{1-\Pr\left(y_{ij}^{1B}=1\middle|\boldsymbol{W}_{ij},\eta_i\right)}\right\}=\alpha_1+\alpha_2 w_{2ij}+\alpha_3 w_{3ij}+\alpha_4 w_{4ij}+\alpha_5\boldsymbol{W}_{5ij}+\ \alpha_6\boldsymbol{W}_{6ij}+\eta_i \tag{3}$$

[17] ESeC also distinguishes two additional classes: "Self-employed occupations in agriculture" and "Lower supervisory and lower technician occupations": the former has been merged with class 4 in the analyses due to the small number of observations in the sample and their similarities. And the latter class could not be distinguished in the analyses, because the longitudinal sample of SILC does not provide information on supervisory status.

Table 2
Results of the event–history analysis for 2nd births. Household ESeC.

	Austria				France				Norway				United Kingdom			
	Plain Model		Simultan. Equations		Plain Model		Simultan. Equations		Plain Model		Simultan. Equations		Plain Model		Simultan. Equations	
Panel A: Second Births (Odds Ratios)																
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
Years since first birth	1.74	***	1.77	***	3.05	***	3.10	***	2.67	***	2.72	***	2.37	***	2.47	***
Years since first birth squared	0.93	***	0.92	***	0.89	***	0.89	***	0.91	***	0.90	***	0.90	***	0.89	***
Woman's age	3.03	***	3.22	***	1.70	***	1.73	***	1.83	***	1.92	***	1.48	***	1.79	***
Woman's age squared	0.98	***	0.98	***	0.99	***	0.99	***	0.99	***	0.99	***	0.99	***	0.99	***
Education. Ref.: Lower secondary	1		1		1		1		1		1		1		1	
Upper secondary	0.77		0.73		0.95		0.93		0.78		0.79		0.94		0.94	
Tertiary	1.26		1.18		1.05		1.02		0.97		0.96		1.10		0.92	
Household's ESeC																
Higher professionals	1		1		1		1		1		1		1		1	
Lower professionals	0.92		0.84		0.84		0.81	*	0.83		0.79		0.80		0.65	**
Higher grade white-collar workers	0.59	**	0.44	***	0.63	***	0.57	***	0.74	*	0.68	**	0.59	***	0.41	***
Small employers & self-employed	1.49		1.26		0.58	**	0.51	**	0.34	**	0.30	***	0.86		0.52	*
Lower grade white-collar workers	0.56	**	0.39	***	0.61	***	0.50	***	0.54	***	0.43	***	0.60	***	0.35	***
Skilled manual workers	1.33		0.96		0.71	*	0.59	***	0.55	**	0.43	***	1.35		0.77	
Semi- & unskilled manual workers	0.70		0.44	**	0.63	**	0.48	***	0.51	**	0.40	***	0.93		0.44	***
Never worked	2.54	**	2.11	*	0.54	*	0.47	**	0.48	*	0.43	**	1.08		0.74	
Panel B: First Births (Odds Ratios)																
Age			1.89	***			2.30	***			2.13	***			1.64	***
Age squared			0.99	***			0.99	***			0.99	***			0.99	***
Education. Ref.: Lower secondary			1				1				1				1	
Upper secondary			0.79	***			0.90	***			1.38	***			1.23	***
Tertiary			0.57	***			0.68	***			1.13	**			0.69	***
Enrolled in education			0.20	***			0.13	***			0.37	***			0.37	***
Birth-cohort. 1960–69 (ref.)			1				1				1				1	
1970–79			0.89	***			1.31	***			0.81	***			1.12	**
1980–99			0.65	***			1.13	***			0.52	***			1.29	***
Panel C: Social Class Attainment (coefficients)																
Age			0.26	***			0.18	***			0.16	***			0.22	***
Log work experience			0.06	***			0.24	***			0.07	***			0.05	***
Education Ref. Lower secondary			0				0				0				0	
Upper secondary			0.89	***			0.36	***			0.39	***			1.12	***
Tertiary			1.66	***			1.45	***			1.85	***			2.83	***
Health status Ref Good			0				0				0				0	
Bad			0.10				−0.09	***			−0.04				−0.12	**
Missing			0.38	***			0.35	***			0.60	***			0.31	***
Random terms																
Standard deviation of η (fertility)			0.53	***			0.26	***			0.33	***			0.96	***
Standard deviation of λ (class attainment)			8.67	***			8.58	***			7.45	***			8.07	***
Correlation $\sigma_\eta\ \sigma_\lambda$			−0.29	***			−0.29	***			−0.24	***			−0.36	***

Significance:'*' = 10 %;'**' = 5%; '***' = 1%.

$$\Pr\left(y_{ij}^{CA} > s \middle| \mathbf{Z}_{ij}, \lambda_i\right) = \Phi(\gamma_2{}'\mathbf{Z}_{2ij} + \lambda_i - k_s) \qquad s = 1, \ldots, 7-1 \tag{4}$$

Eq. (2) refers to second births, and it is specified as Eq. (1), except that a random term η is included. In the first birth equation (Eq. (3)), $\mathbf{W}_{ij}$ are vectors of the covariates included in the equation, α_1 is the intercept, α_2 and α_3 form the baseline hazard function (age and age squared, respectively), α_4 and α_5 denote the value of the estimated coefficients of the model for the covariates enrollment in education and woman's education, respectively, and α_6 represents the value of the estimated coefficients of birth-cohort. Finally, the random term η captures unmeasured heterogeneity in woman's fertility.

The outcome class attainment y_{ij}^{CA} may take seven possible ordered categories s corresponding to each of the ESeC social classes, from the lowest class (Semi-and unskilled workers) to the highest (Higher grade professionals). The "never worked" category is excluded, since it cannot be ordered. Eq. (4) shows an ordinal probit model, where $\Phi(\cdot)$ is the standard normal cumulative density function and γ denotes the coefficients associated with each covariate. The outcome represents the cumulative probability that a response is in a higher category than s given the vector of covariates Z and the random term λ; k are category-specific parameters. The analyses included all women aged 17–42 and, for most women, several annual observations.

In the system of Eqs. (2)–(4), the random variables η and λ capture unobserved heterogeneity. In particular, η reflects unobserved factors influencing births, and λ reflects unobserved factors influencing class attainment. η and λ are specific to each woman and constant over time. They and are assumed to follow a joint bi-variate normal distribution[18]:

$$\begin{pmatrix}\eta\\ \lambda\end{pmatrix} \sim N\left(\begin{pmatrix}0\\ 0\end{pmatrix}, \begin{pmatrix}\sigma_\eta^2 & \\ \sigma_{\eta\lambda} & \sigma_\lambda^2\end{pmatrix}\right) \qquad \text{where} \quad \sigma_{\eta\lambda} = \rho_{\eta\lambda}\,\sigma_\eta\,\sigma_\lambda \tag{5}$$

$\sigma_{\eta\lambda}$ represents the correlation between the unobserved random terms of the processes of fertility and class attainment. This correlation provides a test of whether women with unobserved above-average risks of

[18] Previous research has shown that regression parameters are not affected strongly by reasonable deviations from normality of the heterogeneity components (Heagerty & Kurland, 2001). The possibility of including an asymmetric distribution, such as the multivariate finite mixture, was not pursued here, but its estimation in similar models did not lead to substantially different results (e.g. Upchurch et al., 2002).

Table 3
Results of the event–history analysis for 2nd births. Woman's ESeC.

	Austria				France				Norway				United Kingdom			
	Plain Model		Simultan. Equations		Plain Model		Simultan. Equations		Plain Model		Simultan. Equations		Plain Model		Simultan. Equations	
Panel A: Second Births (Odds Ratios)																
	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6		Model 7		Model 8	
Years since first birth	1.72	***	1.78	***	3.06	***	3.18	***	2.61	***	2.64	***	2.39	***	2.46	***
Years since first birth squared	0.93	***	0.92	***	0.89	***	0.88	***	0.91	***	0.91	***	0.90	***	0.89	***
Woman's age	3.03	***	3.64	***	1.82	***	1.93	***	1.97	***	2.01	***	1.52	***	1.94	***
Woman's age squared	0.98	***	0.98	***	0.99	***	0.99	***	0.99	***	0.99	***	0.99	***	0.99	***
Education. Ref.: Lower secondary	1		1		1		1		1		1		1		1	
Upper secondary	0.88		0.82		0.99		0.97		0.81		0.81		1.02		1.05	
Tertiary	1.52		1.35		1.07		1.01		1.11		1.11		1.16		0.97	
Woman's ESeC																
Higher professionals	1		1		1		1		1		1		1		1	
Lower professionals	1.22		0.98		0.74	**	0.62	***	0.81		0.73	*	1.14		1.06	
Higher grade white-collar workers	0.69		0.48	**	0.56	***	0.42	***	0.69	**	0.58	***	0.62	**	0.42	***
Small employers & self-employed	1.16		0.65		0.30	***	0.20	***	0.52		0.41	**	0.61		0.45	**
Lower-grade white-collar workers	0.74		0.40	***	0.57	***	0.36	***	0.72	*	0.56	***	0.68	**	0.43	***
Skilled manual workers	0.94		0.44		0.48	**	0.27	***	0.84		0.62		0.91		0.68	
Semi- & unskilled manual workers	0.87		0.34	**	0.45	***	0.22	***	0.51	***	0.34	***	1.05		0.53	**
Never worked	3.09	***	2.05	**	1.03		0.69		0.73		0.58	**	1.45	*	1.05	
Panel B: First Births (Odds Ratios)																
Age			1.98	***			2.34	***			2.12	***			1.62	***
Age squared			0.99	***			0.99	***			0.99	***			0.99	***
Education. Ref.: Lower secondary			1				1				1				1	
Upper secondary			0.81	***			0.90	***			1.38	***			1.21	***
Tertiary			0.64	***			0.73	***			1.22	***			0.67	***
Enrolled in education			0.21	***			0.13	***			0.38	***			0.35	***
Birth-cohort. Ref.: 1960–69			1				1				1				1	
1970–79			0.88	***			1.30	***			0.82	***			1.10	**
1980–89			0.61	***			1.12	**			0.52	***			1.21	***
Panel C: Social Class Attainment (coefficients)																
Age			−0.01				0.02	***			0.02	***			0.04	***
Log work experience			0.02				−0.05	***			0.07	***			0.00	
Education Ref. Lower secondary			0				0				0				0	
Upper secondary			0.29	***			−0.06				0.10	*			0.79	***
Tertiary			0.70	***			0.28	***			0.27	***			3.40	***
Health status Ref Good			0				0				0				0	
Bad			0.03				0.00				0.19	***			−0.70	
Missing			−0.08	**			0.03				0.31	***			0.08	**
Random terms																
Standard deviation of η (fertility)			0.79	***			0.46	***			0.25	***			1.02	***
Standard deviation of λ (class attainment)			7.94	***			9.24	***			9.50	***			9.67	***
Correlation σ_η σ_λ			−0.45	***			−0.45	***			−0.45	***			−0.32	***

Significance:'*' = 10 %;'**' = 5%; '***' = 1%.

fertility ($\eta > 0$) also tend to have below-average class attainment propensities ($\lambda < 0$); and vice versa. Model estimation was performed using full-information maximum likelihood, as implemented in the software package aML (Lillard & Panis, 2003).

The extent of variation among women in the random terms is identified strongly by multiple occurrences of each outcome for some women (Lillard, 1993; Upchurch et al., 2002). Repeated outcomes in each of the processes for a given woman are unlikely to be independent. Moreover, the observation of repeated events for a subset of women, with some overlap in events across the two processes for the same woman, means that identification is possible without covariate exclusions. The model is identified under the assumption that all residual dependence between processes can be accounted for by allowing cross-process correlation between individual-level residuals that are constant across replications for the same individual. Conditional on the woman-specific random terms, the measures that are based on past outcomes are effectively exogenous, and thus their effects are identified in the model, even without co-variate exclusions. That said, the equation for social class attainment contains several variables that are excluded from the fertility equations (and vice-versa). Omitting them, however, does not affect any of the coefficient estimates of interest in a substantial manner.

7. Results

Tables 2 and 3 present the results of the event history analyses for the effect of household ESeC and woman's class on second births, respectively. For each class perspective and country two models are presented, one showing a standard event history model for second births, and a model with simultaneous equations for second births, first births, and class attainment.[19] Remarkably, the results obtained using a woman and a household's perspective showed only minor differences, that were somewhat wider when a simultaneous equations approach is adopted. This similarity can be related to the high degree of homogamy in class attainment between partners, albeit women's class is generally lower than men's class (Table 1). Thus, household class indirectly reflects the effects of women's class situation on fertility.

Starting with the "plain" models, the results show that class

[19] Models using a man's class perspective yielded practically identical results to those obtained with a household perspective (results on request). This reflects both, the dominance of class homogamy between partners and class hypergamy (women marrying up).

differentials are substantial in the four countries, both with a household perspective and with a woman's perspective.[20] These differentials are present while controlling for education, suggesting that class is a distinct dimension.[21] Moreover, the patterns observed are broadly consistent with the proposed hypotheses. In the results for the United Kingdom, a U-shaped effect of class can be observed, where the Skilled workers and the Semi- and unskilled workers show non significantly different odds ratios compared to the Higher professionals (the reference category). The lowest odds are found among the Higher grade white-collar workers and the Lower grade white-collar workers (respectively 0.59 and 0.60 at $p < 0.01$ with a household perspective). It can be noted that the Lower grade withe-collar workers, which includes a large proportion of women in the four countries (Table 1), display low levels of fertility everywhere. The relative class differentials are of the same order of magnitude in Austria compared to the UK, although the fertility levels in terms of predicted probabilities are much lower, resulting in narrower absolute class differentials (Fig. 1). Thus, the odds ratio for Higher and Lower grade white-collar workers are 0.59 and 0.56 respectively (at $p < 0.05$) with a household perspective. In both countries, the category of Small employers and self-employed, which is a highly heterogeneous and numerically small group, is not statistically significant from the reference category. The Never worked have high odds ratios, suggesting the presence of (a small group of) long-term housewives.

The results of the "plain" models for Norway and France show a clear positive class ordering, both adopting a household and a women's class perspective.[22] The predicted probabilities of a second child are high in both countries (Fig. 1). Again, these results are consistent with the hypotheses for each country presented above. In Norway, the odds ratio for the Unskilled workers is 0.51 ($p < 0.05$) and for the Lower white collar is 0.54 ($p < 0.01$), while in France the odds are respectively 0.63 ($p < 0.05$) and 0.61 ($p < 0.01$), in both cases with a household perspective. The large class differentials found in Norway are unexpected. On the one hand, this finding points to a strong positive class gradient in the levels of gender equality (Hook, 2015; Kitterød & Pettersen, 2006). And on the other hand, these results are consistent with increasingly positive fertility differentials by income and education[23] (Hart, 2015; Kravdal & Rindfuss, 2008). Moreover, socio-economic fertility differentials linked to partnership stability and migrant background have also been documented (Lappegård & Rønsen, 2013; Statistics Norway, 2019).

It should be noted that the above results are not driven by class differences in the timing of childbirth. The inclusion of an interaction between household class and years since first birth did not yield significant results in any country. Moreover, any pairwise comparison between classes in the marginal (log odds) predictions showed significant effects for the duration since first birth ($p < 0.05$). Therefore, there is no evidence that higher-class women accelerate second births to minimize their absence from the labor market. The graphs for predicted probabilities of second birth also include an interaction effect between the years since first birth and household class (Fig. 1). As can be seen, for most categories the timing is very similar. In particular, there is no indication that women from the higher classes space their births closely together. Fig. 1 is presented because the metric of predicted probabilities allows for direct comparisons in the size effects between countries and classes (Mood, 2010).[24] To improve the readability of the graphs, I have plotted four classes: the most extreme groups and also those with the largest proportion of individuals. Besides, I have marked whether the difference with respect to the reference category (Higher professionals) in the predicted probability for a given duration is statistically significant. The results obtained do not differ substantively from the analyses using odds ratios. In particular, the differences between, on the one hand, the Higher professionals and, on the other hand, High and Low-grade white-collar workers are large and statistically significant in all countries, especially for the durations with the highest probability levels. The graphs clearly show relatively high second birth probabilities in Norway, and to a lesser extent in France and the United Kingdom. The predicted probabilities of the class with the highest probabilities in Austria (i.e. Higher professionals) displays similar levels as the one with the lowest probabilities in the United Kingdom (Low-grade white-collar workers) and France (Nonskilled workers).

The results presented so far do not take into account the possible interrelationship between the processes of class attainment and fertility. I have argued above that institutional and class factors are the key ones shaping this interrelationship. Contexts and classes where low role compatibility and strong gender inequalities prevail should show large selection effects. The bottom rows of Tables 2 and 3 contain the estimates of the standard deviation of the random terms for fertility and occupational attainment as well as estimates of the coefficients of correlation between them. All these estimates are statistically significant, confirming that indeed selection effects are present. We can see that the correlations between the random terms of fertility and class attainment are negative, meaning that women with unobserved above-average risks of fertility also have below-average class attainment propensities, and vice-versa. The correlations are larger when adopting a women's class perspective compared with a household class (except for the United Kingdom). In both instances, this is likely to reflect the interdependency between women's career and fertility choices, albeit a household perspective only indirectly accounts for this interrelationship. For a given class perspective, the differences between countries in the size of the correlations are small, which is unexpected. Yet the standard deviation of the random terms for fertility are considerably larger for Austria and United Kingdom. This is particularly salient when adopting a women's class perspective (Austria: 0.79; UK: 1.02; France: 0.46; Norway: 0.25), suggesting larger selection effects in the former countries, as hypothesized above.

The use of simultaneous equations has important consequences for the estimates of the effect of social class on second birth probabilities. Once selection effects are controlled for, a clear positive relation between class and second birth probabilities emerges in the four countries.[25] The changes between the "plain model" and the simultaneous equation model are particularly striking in the United Kingdom and Austria, where the U-shape relationship between class and fertility vanishes almost completely. This involves particularly substantial selection effects for the lower classes in these two countries. The only exception is the Skilled workers, who still show relatively high second

[20] The only exception are the results for Austria using women's class, that are statistically insignificant. This is partly due to the relatively small sample.

[21] The effects of class are somewhat stronger when education is not included in the models. Moreover, the inclusion in the models of the woman's activity status and household income did not substantially change the results for class. The variable household income did not yield significant results, except for Norway (Results in Appendix A, Table A1). These results show that the effects of class are robust to the inclusion of these two variables, that can be seen as consequences of the class situation.

[22] The results for the skilled manual workers in Norway (woman's class) show high odds (0.84) of second births, that deviate from the expected positive pattern. This suggest that skilled workers enjoy higher levels of economic security and better working conditions than white collar workers and unskilled workers.

[23] Since 2009 a substantial decline in fertility has been recorded in the Nordic countries, including Norway, but its social class correlates have not been investigated.

[24] These probabilities can be interpreted as the average partial effect of class at given durations since first birth, controlling for the average effect of the remaining covariates (age and education) (Mood, 2010).

[25] It should be noted, however, that the coefficients of the "plain models" cannot be directly compared to the simultaneous equations' results. The reason is that whereas the former models are formulated for the population–averaged probability (equation no. 1) conditioning only on covariates, the latter are for the subject-specific probability, given the subject-specific heterogeneity terms and the covariates (Rabe-Hesketh & Skrondal, 2012, p.529).

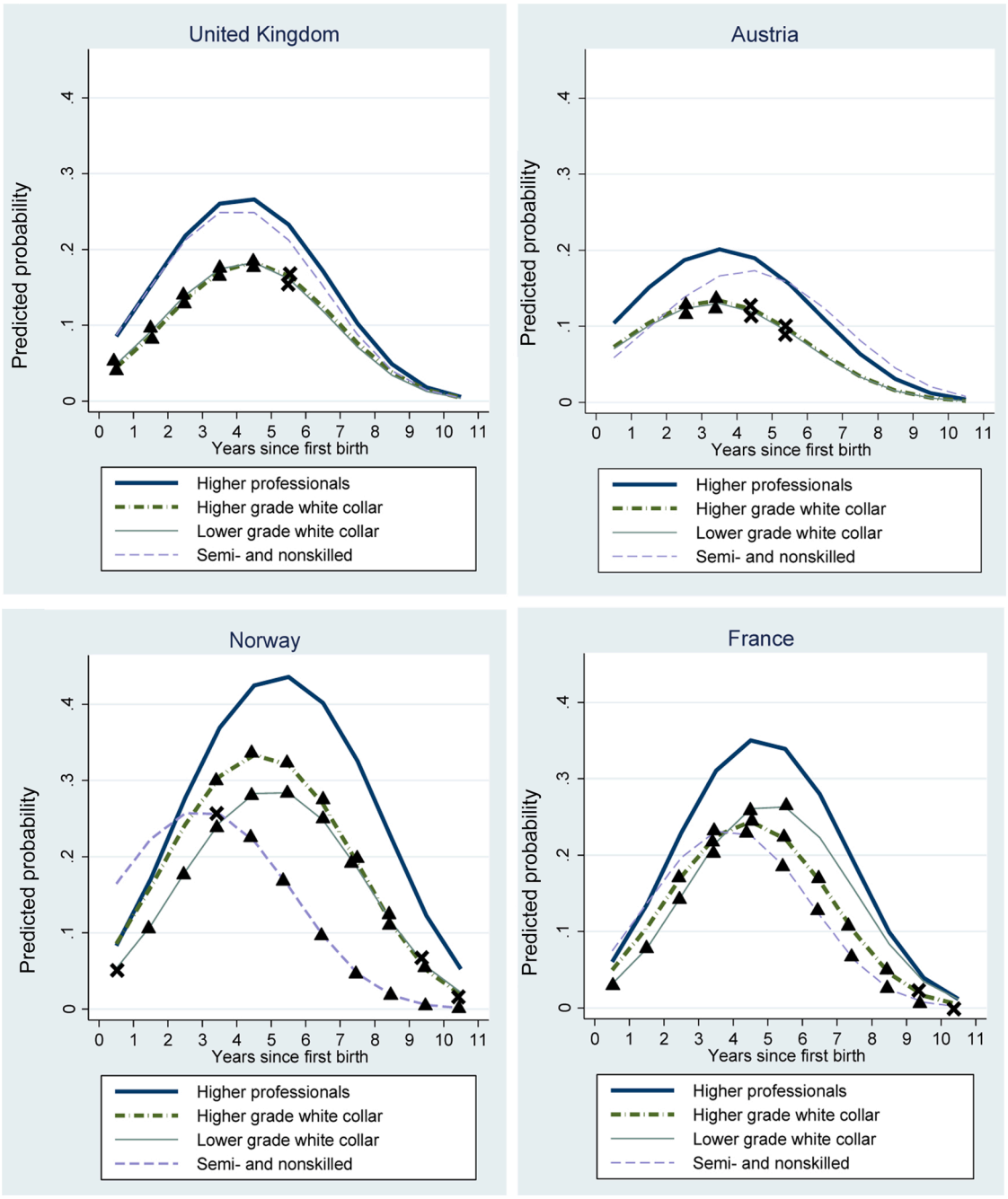

Fig. 1. Predicted probabilities of a second birth. Model with an interaction effect between household ESeC and years since first birth, without simultaneous equations. Higher professionals is the reference category. The other categories show a triangle if the difference with respect to the reference category in the predicted probability for a given duration is significant at $p < 0.05$ and with an X if significance is $p < 0.10$.

birth odds ratios (compared to higher professionals), especially when adopting a household class perspective: Austria 0.96 and UK: 0.77. These results suggest that Skilled workers enjoy a better income and employment conditions than other workers. Moreover, the positive relationship between class and fertility is clearly reinforced in Norway and France. Failing to take selectivity into account would have led to an underestimation of this positive relationship between social class and second birth probabilities in all countries, and to a distortion of the "net" class effects in the United Kingdom and Austria.

8. Conclusions

During the last few decades, many advanced countries have witnessed increasing socioeconomic inequalities and polarizing occupational structures. In parallel with these evolutions, there have been important changes or reversals in long-standing relationships between several social stratification indicators and family behavior, including the correlation between women's labor force participation and fertility, and the effect of educational level on fertility. Intriguing differentials in the fertility levels between countries have occurred.

This paper argued that social class is a key dimension to understand fertility levels, both when considering intracountry and international differentials. Social class is a major basis for the stratification of resources and employment conditions in the population. The concept of social class, by focusing on the individuals' situation in the labor market, provides a link between microanalyses of fertility and the social structure and institutional configuration of a society, since the occupational class structure itself is institutionally shaped. Therefore, the analyses should consider the interactions between social stratification in the labor market with other welfare regime characteristics, including the crucial factor of gender relations. Yet, despite the theoretical relevance of the social class concept, this is the first paper that provides a theoretical account of the mechanisms linking social class and fertility in detail.

This study developed a theoretical framework for the analysis of the relationships between social class and fertility in which the institutional configuration of each society has a central role. The comparison of different welfare regimes has been instrumental in showing how institutional features interact with individuals' social class positions, and how the inequalities in access to e.g. formal childcare, parental leave, or employment and income security, translate into fertility outcomes that are not homogeneous across social groups. Nevertheless, a thorough investigation of how specific characteristics of the national context moderates the association between social class and fertility would involve additional analyses, that are left for future research.[26]

Based on this framework, I have proposed several hypotheses on the class patterns of second birth probabilities in Austria, France, Norway, and the United Kingdom. The main concepts and mechanisms proposed in the theoretical framework, however, can be applied to other birth orders, considering their specificities.[27] For instance, postponement is key in the analysis of first births for the highly educated, while occupational attainment is likely to accelerate and increase the probability of this transition, as well as the closely interlinked union formation process (Kalmijn, 2011).

Data from the EUSILC and event-history models have allowed me to empirically explore the theoretical perspective proposed above. Substantial differentials between social classes in second birth probabilities are found in all countries analyzed, which are broadly consistent with the hypotheses proposed. In the analyses where an event-history model with an independent equation for second birth was applied, I found that in Austria and United Kingdom the relationship between class and fertility is U-shaped, with stronger class differentials in the United Kingdom and lower overall levels of fertility in Austria. By contrast, France and Norway showed a clear positive ordering by social class, with overall high levels of fertility. Yet, when a simultaneous equations approach was applied to account for unobserved heterogeneity, the results changed substantially, leading to a positive relationship between class and fertility in all countries. The effects of selectivity can be seen as mainly reflecting woman's biographical orientations towards family and career. Class attainment goals and strategies might not be exogenous to fertility choices, as these two roles compete in time and resources. In this interpretation, the relevance of these orientations for fertility behavior is shaped by both the institutional setting and by the woman's social class position. Thus, as explained above, in contexts (UK and Austria) and social groups in which it is difficult to combine motherhood with career goals (Skilled and Unskilled workers, Lower-grade white-collar workers), strong selection effects are found. As highlighted in the theoretical framework, social class has a fundamentally positive effect on fertility under the conditions of contemporary advanced societies. Once selection is accounted for in the analyses, this effect becomes visible in the results.

These results have several implications. For one thing, they are inconsistent with neoclassical economics predictions, according to which women and households of higher socioeconomic groups should have lower fertility. The positive socio-economic gradient of second births found rather points to theories focusing on changing gender relations and polarizing labor markets. The results also point to a close link between the patterns and levels of fertility with the welfare and gender regime. It should be highlighted that the results obtained here reflect very recent behavior, mostly from the cohorts born in the 1970s and 1980s. The family behavior of these birth-cohorts has been shaped by changes in gender relations and several institutions, including for example the expansion of formal childcare or labor market regulations. To the extent that these changes favor more equal gender relations in both labor markets and care provision, they may sustain moderate fertility levels (Goldscheider et al., 2015; McDonald, 2000b). At the same time, increased instability in the labor market should depress fertility. Overall, the results obtained are consistent with an end of the secular negative relationship between social class and fertility (Barnes & Guinnane, 2012; Dribe & Scalone, 2014). Recent research on the link between education and fertility has also found positive effects of education in several societies, while in others this relationship seems to be weakening (Nisén et al., 2021; Nitsche et al., 2018). These developments are likely to have consequences for the intergenerational reproduction of social inequalities. Several studies focusing on how educational advantage is transmitted across birth cohorts have found that the key factor limiting such transmission is the lower fertility of the highly educated (Breen & Ermisch, 2017; Maralani, 2013). Yet if the relationship between socio-economic position and fertility becomes positive, as shown in the present study, one can expect a reinforcement in the transmission of advantage between generations (other things being equal).

Data availability

The datasets analyzed during the current study are not publicly available due the restrictions imposed by EUROSTAT. According to the agreement that the author signed with EUROSTAT to access and analyze the data, he is not allowed to give access the dataset to any other person.

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The analyses presented in the paper are based on the European Union Statistics on Income and Living Conditions, Longitudinal Users Data Base 2005–2016. The results and conclusions are of author and not those of Eurostat, the European Commission or any of the national statistical authorities whose data have been used.

Appendix A

[26] Future research might also further account for each couple's member perspective and combinations of partner's class, as well as for more detailed analyses on the role of each of the specific mechanisms linking social class and fertility (i.e., economic security, role compatibility, and gender equality), which were not possible to conduct in this study due to space and data limitations.

[27] A wide diversity exists on how much each parity contributes to the overall fertility level in each country (Zeman, Beaujouan, Brzozowska, & Sobotka, 2018).

Table A1
Results of the event–history analysis for 2nd births. Household ESeC and woman's ESeC.

	Austria				France				Norway				United Kingdom			
Odds Ratios	*Househ. ESeC*		*Woman's ESeC*		*Househ. ESeC*		*Woman's ESeC*		*Househ. ESeC*		*Woman's ESeC*		*Househ. ESeC*		*Woman's ESeC*	
Years since first birth	1.89	***	1.78	***	3.00	***	3.07	***	2.87	***	2.78	***	2.44	***	2.49	***
Years since first birth squared	0.93	***	0.93	***	0.89	***	0.89	***	0.90	***	0.90	***	0.90	***	0.90	***
Woman's age	3.08	***	3.00	***	1.71	***	1.78	***	1.69	***	1.83	***	1.51	***	1.53	***
Woman's age squared	0.98	***	0.98	***	0.99	***	0.99	***	0.99	***	0.99	***	0.99	***	0.99	***
Education. Ref.: Lower secondary	1		1		1		1		1		1		1		1	
Upper secondary	0.81		0.88		0.99		1.00		0.75		0.79		1.07		1.11	
Tertiary	1.50		1.59		1.10		1.09		1.00		1.13		1.29		1.29	
Woman's ESeC																
Higher professionals	1		1		1		1		1		1		1		1	
Lower professionals	0.88		1.13		0.84		0.75	*	0.79	*	0.78		0.81		1.11	
Higher grade white-collar workers	0.60	**	0.67		0.64	***	0.58	***	0.72	**	0.68	**	0.57	***	0.57	***
Small employers & self-employed	1.59		1.48		0.57	***	0.29	**	0.35	**	0.54		0.83		0.61	
Lower-grade white-collar workers	0.56	**	0.72		0.62	***	0.59	***	0.55	***	0.73	*	0.56	***	0.60	***
Skilled manual workers	1.31		0.91		0.71	*	0.50	**	0.56	**	0.82		1.10		0.89	
Semi- & unskilled manual workers	0.66		0.76		0.61	**	0.47	***	0.51	*	0.53	**	0.79		0.91	
Never worked	2.40	**	2.05	**	0.57	*	1.22		0.54		0.81		0.76	*	0.96	
Activity status																
Full-time employed (ref.)	1		1		1		1		1		1		1		1	
Unemployed	0.78		0.82		0.88		0.81		0.63		0.58		0.74		0.74	
Student	0.30		0.29		0.57		0.45	**	0.50	***	0.49	***	0.89		0.83	
Housewife	2.89	***	2.45	***	1.08		0.88		1.28		1.22		2.14	***	2.17	***
Part-time employed	1.33		1.34		1.07		1.10		1.03		0.99		1.31	*	1.37	**
Household income quintiles																
1 st quintile (ref.)	1		1		1		1		1		1		1		1	
2nd quintile	1.12		1.12		0.93		0.92		0.56	**	0.51	***	0.84		0.87	
3rd quintile	0.88		0.85		0.89		0.89		1.00		1.01		0.90		0.97	
4th quintile	0.93		1.00		0.94		0.98		1.11		1.12		0.85		0.94	
5th quintile	1.23		1.34		0.95		0.99		0.94		0.97		0.80		0.90	

Significance:'*' = 10 %;'**' = 5%; '***' = 1%.

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