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Beyond the Economic Gaze: Childbearing during and after recessions in the Nordic countries

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Abstract: This study investigates fertility responses to the business cycle in the Nordic countries by comparing period variation in women's childbearing propensity. We harmonize register data from Denmark, Finland, Iceland, Norway and Sweden to compare childbearing in the aftermath of the two most recent crises that hit those economies: the 1990s and 2010s. We use event-history techniques to present parity-specific fertility, by calendar year, relative to a defined pre-recession year. We further examine any possible impact of the two recessions by women's age and education. Results show a large heterogeneity across the five Nordic countries in the childbearing developments after 1990. This variation largely disappears after 2008 when period trends in birth hazards become more similar across countries. Likewise, the educational differences that characterized the variation in childbearing relative risk after 1990 considerably diminish in the years after 2010, especially for first and second births. Economic theories do not suffice to explain this reversal from the heterogeneity of the 1990s to the homogeneity of the 2010s in the childbearing response to recession episodes across countries and socioeconomic groups. Our findings suggest the need to expand the theoretical framework explaining the cyclicity of fertility towards the perception of economic and welfare uncertainty.

Keywords: childbearing, recession, economic uncertainty, welfare uncertainty, Nordic countries

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Introduction

The Nordic countries are widely recognized for their generous family policies, their protective, employment-oriented welfare systems, their high rates of labor force participation among women, and their comparatively high fertility rates. After the large decline in fertility that took place in the 1970s common to most Western countries, Total Fertility Rates (TFR) in the Nordic countries have remained in the range between 1.7 and 2.3 children per woman for several decades (1980–2010). Only in Denmark and Sweden did it temporarily fall to 1.4 and 1.5 children per woman in the mid-1980s (Denmark) and mid-1990s (Sweden), respectively. Most other countries in Europe in the same period registered fertility rates constantly below 1.7 and during the 1990s many Southern and Eastern European countries even experienced lowest-low fertility rates below 1.3 children per woman (Kohler et al. 2002). Scholars tend to attribute the high fertility in the Nordic countries to their comprehensive welfare state coverage and their family policies that support the reconciliation of employment and family commitments for both women and men (McDonald 2000; Esping-Andersen et al. 2002, 2009). This is argued to have enabled these countries to maintain their period fertility around the replacement level, at least until the very recent period. Since 2010, TFR has been declining in all Nordic countries, hitting the historically low levels of 1.40 children per woman in Finland and 1.56 in Norway in 2018, and 1.71 in Iceland in 2017 (Nordic Statistical Central Bureaus 2018 and 2019). This ongoing decline in period fertility came largely unexpected and it represents a conundrum that demographers have yet to address. The timing of the decline suggests a link to the Great Recession, i.e., the financial and economic crisis that hit Europe after the end of 2007. Despite the Nordic countries' relative financial solidity based on a combination of low public debts, efficient public administration and a competitive business sector, they are small export-oriented economies, vulnerable to external financial and demand shocks (Lin et al. 2014). After the onset of the crisis, a few crucial manufacturers went bankrupt (e.g. Saab in Sweden), or slipped into great financial difficulties (e.g. Nokia in Finland). Unemployment rates doubled in Iceland and Denmark and rose substantially in the other countries. Governments intervened with stimulus packages estimated to range in 2009–2010 between 0.7% and 2.7% of GDP (Lin et al. 2014).

The cyclicity of fertility rates in relation to business cycles has been studied quite extensively in recent years. Empirical research generally shows that TFRs tend to decline during economic downturns in response to increasing unemployment and labor market insecurity, dropping housing value, declines in consumer confidence and rise in financial uncertainty (Schneider 2015; Comolli 2017; Örsal and Goldstein 2018). However, many studies also show that the fertility reaction varies significantly across recession episodes, countries, parities, age groups and social strata (Sobotka et al. 2011; Neels et al. 2013; Comolli

2018; Bellido and Marcén 2019). Economic downturns tend to affect more negatively first births among younger adults who have the opportunity to postpone childbearing until economic and labor market security has been restored (Andersson 2000). Higher parities and births to older women are usually (but not always, see Comolli and Bernardi 2015 and Caltabiano et al. 2017) less influenced by business cycles (Sobotka et al. 2011; Goldstein et al. 2013; Comolli 2017). Economists commonly attribute the decline of fertility rates during periods of economic turbulence largely to the financial costs of children and the irreversibility of childbearing (Becker 1960; Ranjan 1999). Childbearing entails immediate expenses and a long-term financial commitment. Therefore, when financial and labor market insecurity rises, present income drops and career prospects deteriorate, individuals tend to postpone major financial commitments such as childbearing. However, we argue that a purely financial perspective that focuses only on the ups and downs of economic indicators may be insufficient to elucidate how fertility develops under different circumstances. We need a broader theoretical approach that considers how countries manage any economic crisis. The crisis management may be mainly directed at the economic performance of the country, for example stabilizing the banking sector or supporting specific industries. Or it may also concern the social, welfare, or family policy sector. It is often assumed that extensive welfare-state or family support alleviates the negative impact of economic depressions on fertility (Myrdal 1945; McDonald 2002; Sobotka et al. 2011). However, we argue that even in comprehensive welfare states, the measures taken to tackle a crisis may matter for fertility. Whether social support is maintained, extended or cut during an economic crisis may not only affect people's financial capacity; it also affects their perception of insecurity with respect to the welfare state. This perception of welfare uncertainty contributes to the feeling of uncertainty in securing one's well-being and one's offspring's well-being, possibly influencing childbearing decisions during and after an economic crisis.

To substantiate our argument, we compare childbearing intensities in the Nordic countries, which were affected by the Great Recession to a different degree and, recently before that, were shaken by another common wave of economic turmoil. This recession episode occurred in the early 1990s, and also then, to a varying degree among the countries, birth rates fluctuated. The societal, welfare and macroeconomic features shared by the Nordic countries allow us to apply the most-similar case comparison (Przeworski and Teune 1970; Neyer and Andersson 2008) in two ways: to investigate the development of birth rates across two economic crises and across similar welfare states. We present a systematic comparison of individual-level fertility behavior in response to recessions in Denmark, Finland, Iceland, Norway and Sweden, and we contrast the childbearing response to two episodes of economic downturn: the 1990s crisis and the Great Recession of 2008. This has not been done previously within a systematic comparative framework across countries and across time. We use harmonized longitudinal register data to analyze the fertility history of women in the Nordic

countries and examine the childbearing risk by age, parity and education. We extend previous studies by including higher order births, performing separate analyses for women aged 16–29 and 30–46, and distinguishing between different educational levels. For the analyses, we follow a previously tested approach (Hoem 1991, 1993; Andersson 1999, 2002, 2004; Kravdal 2002; Vikat 2004; Andersson and Kolk 2016; Jónsson 2017) of using event-history techniques to present parity-specific indices of childbearing risks, over calendar years relative to a baseline year. By reconstructing population-level year-to-year changes in childbearing risks based on individual-level data, instead of relying on aggregate synthetic measures of fertility, this method provides better insights into childbearing dynamics (e.g. by parity and age). Finally, we frame our study within the context of crisis management. We provide an overview of the measures that countries took to tackle the crisis of the 1990s and the Great Recession. This expands the explanatory dimensions commonly used in studies of economic crises and fertility reactions, and offers us a broader perspective to interpret the links between the two.

Background

The business cycle - fertility nexus: theoretical approaches and previous findings

In the aftermath of the economic and financial crisis which started in the fall of 2007, several studies reported declining fertility rates in the economies hit by the Great Recession (Goldstein et al. 2013; Lanzieri 2013; Hillamo 2017; Örsal and Goldstein 2018). They suggest that birth rates tend to decline in association to negative macroeconomic developments, such as declining economic growth and rising unemployment rates. In addition, these developments occurred in association with changes in less tangible measures of economic uncertainty and its perception, such as the rise in private and public debt or housing foreclosure rates, the reduction in consumer confidence and the negative tone in the media coverage of a crisis (Schneider 2015; Comolli 2017). Despite crisis-related declines in fertility being usually smaller and temporary compared to persistent long-term secular demographic trends (Lee 2003; Lesthaeghe 2010), strong recessions can be followed by long-term fertility declines (Elder 1974; Comolli and Bernardi 2015). Why do people postpone childbearing during a recession and why may recessions have long-term effects on childbearing behavior? First, economic theories assume that the *income effect* (Becker 1960) is at play. It states that couples avoid making large investments (such as children) when the expected future income level is low or uncertain. Having a child is a costly and irreversible transition. Individuals might delay expensive and life-changing decisions when the economy and the labor market are insecure, jobs at risk, income prospects dire, banks more reluctant to grant loans and firms more hesitant

to hire¹. Beyond childbearing among couples, economic recessions also affect partnership formation and union stability negatively. Employment insecurity is known to correlate with an increase in union dissolution (Jalovaara and Kulu 2018). Financial strain and poor economic prospects may cast doubts on one's ability to provide for a family or on whether a secure life together will be possible in the future (Kalmjin 2011). Oppenheimer (1994, 1997) named this mechanism *uncertainty effect* to distinguish it from the pure financial income effect described above. Fertility rates may therefore decline during a recession due to the lowered rates of entry into coresidential unions and marriages and the higher rates of separation and divorce (Jalovaara and Fasang 2015; Jalovaara and Kulu 2018).

A third mechanism, that we name *perceived uncertainty effect, or wait-and-see* is at play beyond the material economic conditions individuals live in. This effect has two components. First, according to Bloom (2009) the economic uncertainty generated by major recessions make actors wait and see how the future develops before they make far-reaching decisions. Childbearing may therefore be postponed in the wake of a recession even if the economy has recovered. Second, Comolli (2017) and Schneider (2015) show that perceived uncertainty – although more difficult to measure – raises the insecurity about future financial and labor market opportunities and induces individuals to abstain from or postpone having a child. Finally, welfare-state retrenchment or social-policy expansions during an economic crisis may have a decisive influence on childbearing behavior. Roosevelt's New Deal and the fertility development in the US during the Great Depression is a first example of the link between reform programs that support and protect people at large and fertility development during an economic trough (Fishback et al. 2007). In welfare states with comprehensive coverage of labor market, social and family risks, childbearing decisions may depend on the capacity of the social security system to provide the protection and services that one expects. Cuts to benefits and services or investments in employment and education to tackle an economic crisis send different signals as to how much people can rely on the welfare state to maintain their own and their family's well-being during and after the crisis. How the welfare state manages the crisis and what kind of measures it implements may shape childbearing behavior in both the short and long run, irrespective of whether one experiences the cuts or benefits of the welfare system or not. We term this mechanism that link the welfare state and crisis management to fertility the "*perceived welfare effect*".

Regarding the Nordic countries, the literature has mostly studied the business-cycle fertility nexus separately for each country (Andersson 2000; Kravdal 2002; Vikat 2004;

¹ Childrearing though also entails the indirect cost of forgone career opportunities due to the time devoted to child care instead of work. Theoretically, career interruptions thus offer a momentum for having children because the opportunity cost is thereby minimal.

Huttunen and Kellokumpu 2016). These studies generally show findings in accordance with those of other advanced economies. In the Nordic countries, in response to economic downturns, the decline in births is mostly concentrated on young adults, on low parities (one and two) and mostly among highly educated individuals. Jónsson (2018) reports that in Iceland, after the onset of the economic crisis in 2008, a trend of declining first-birth intensity emerged. In 2011, three years into the crisis, turnarounds in second and third births rates were also registered, which continued until the end of the study period in 2013. Jónsson argues that simultaneous decrements in parental leave benefits were partially responsible for the post-crisis decline in birth intensities and that family policies failed to compensate for the impact of the economic crisis on fertility. For Sweden, Andersson (2000) demonstrates that the increasing share of women with low income during the 1990s explain much of the decline in fertility during the period. Neyer et al. (2006) attribute the differences in fertility development in Sweden and Finland after the 1990s crisis to different family policies in these countries. Also studying Sweden, Hoem (2000) shows that women's first birth rates correlate with their municipality's employment rates, especially regarding births to young women below the age of 30. For Finland, Hiilamo (2017) finds a negative association between unemployment rates and delivery rates during 1991–2015. However, Comolli (2018) shows that if the two periods of the 1990s and 2000s are considered separately, a reversal from a positive to a negative association between unemployment and fertility emerges in Finland. In Denmark, only first and second birth risks seem to diminish in response to women and men's own unemployment experience while third birth risks are positively related to individual unemployment (Kreyenfeld and Andersson 2014). Furthermore, the relationship strongly depends on socioeconomic characteristics, with highly educated men and women negatively affected by their own unemployment while the low educated are not. Finally, Dommermuth and Lappegård (2017) investigate the Norwegian context, where the most recent drop in TFR seems to be due both to a change in the timing of first births and a long-term negative trend in the proportion of women that have three or more children. Economic activity, work experience and the unemployment rate in the municipality significantly affected first birth rates. The decline in third births is instead a reflection of a long-lasting downward trend although results also suggest that individual income and local unemployment rates have had an impact on the continued decline in third birth rates that has taken place since 2010.

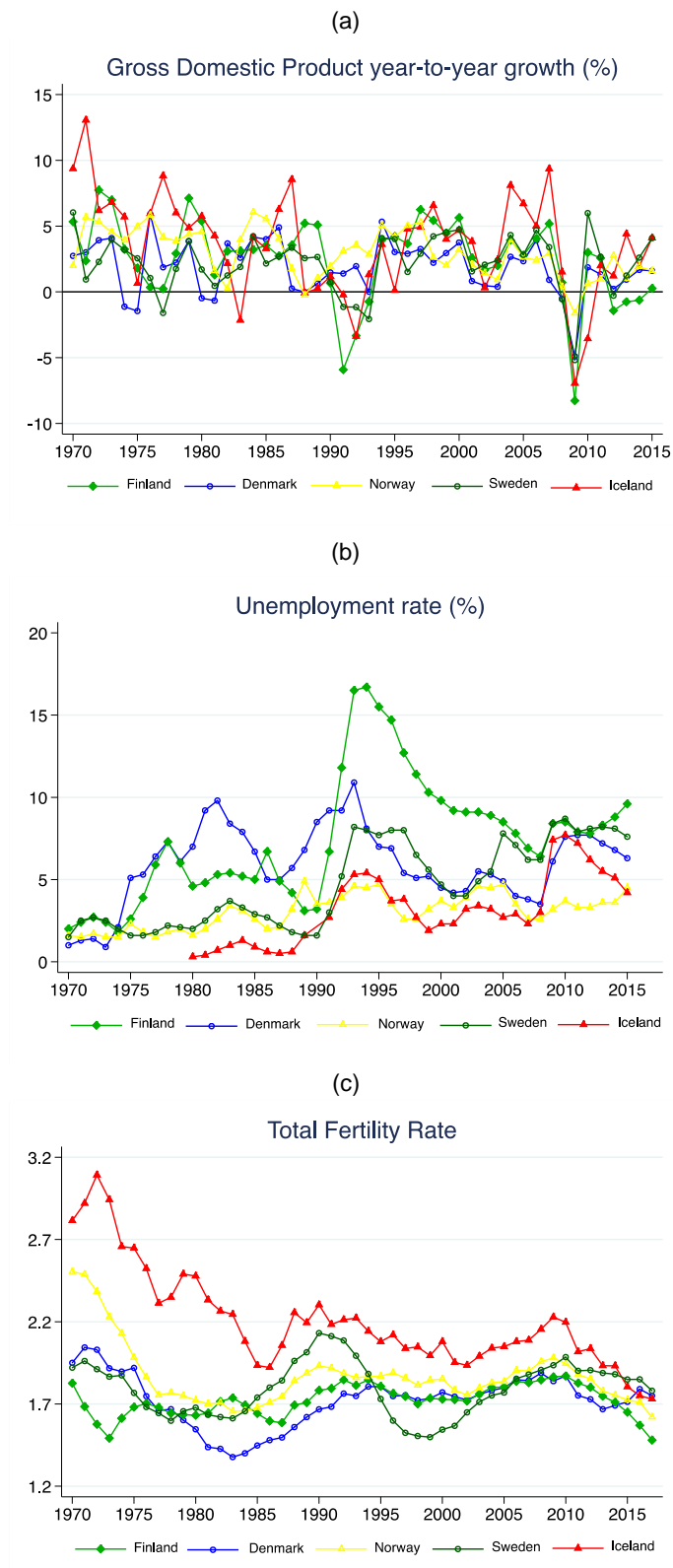
A few comparative studies on Europe also include the Nordic countries. Neels et al. (2013) investigate first births in 14 countries including four Nordic countries (not Iceland). They show that the deterioration of the economic conditions between 1970 and 2005 significantly slowed down first births, especially among men and women below the age of 30 and particularly for the higher educated. Goldstein et al. (2013) do not report a significant aggregate fertility response to unemployment rates in the Nordic country cluster (excluding Iceland)

during the recent Great Recession, except for the early-twenties age group. However, Comolli (2017) suggests that when considering more recent years after the onset of the crisis in Europe, the impact on fertility is larger than previously thought also for the Nordic countries.

The two recessions in the Nordic countries

Until the 1980s, the macroeconomic outlook of the Nordic countries was remarkably similar in terms of public finance, economic growth and employment rates (Andersen 1997). All five countries, for instance, had been able to avoid the mass unemployment crises that plagued most European countries in the 1970s. Denmark exceptionally experienced unemployment rates above 5% in the mid-1980s, but it was not before the onset of the financial crisis of the early 1990s that the Nordic countries experienced a communal recession. To illustrate the development across countries and economic crises, we present the trends in the period 1970–2015 of two macroeconomic indicators that are commonly used to describe recessions – Gross Domestic Product (GDP) growth rate and unemployment rates – as well as Total Fertility Rates in 1970–2017 (Figure 1; Table A.1). Despite the shared timing and the global roots of the financial crisis, the 1990s recession was still very heterogeneous across the five Nordic countries, partly due to national conditions at the onset of the recession and its subsequent management (Ólafsson et al. 2019). GDP growth (Fig. 1a) shows that during the early 1990s the Nordic countries split into two groups: the ones which did not register negative growth of their GDP at all, Norway and Denmark, and the ones which experienced a negative economic development and partly severe drops of their GDP growth rate during 1991 to 1993 (e.g. Finland in 1991: -5.9%; Iceland in 1992: -3.4%; Sweden in 1993: -2.1%). By contrast, all five countries experienced negative GDP growth in 2009. The negative development was considerably worse during the most recent episode, with GDP growth rate falling by -8.3% in Finland, 6.9% in Iceland, 5.2% in Sweden, 4.9% in Denmark and 1.6% in Norway, all in 2009. Except for Iceland, all countries recovered quicker from the Great Recession than from the early 1990s recession. GDP growth rates were positive again in 2010, although Finland and Norway had to endure another economic setback in 2012–2014 (Finland) and 2013 (Norway). Figure 1b shows that negative peaks in production growth are mirrored by rapid increases in unemployment rates. During the 1990s recession the unemployment rate doubled in three of the five Nordic countries. The steepest rise in unemployment was registered in Finland where the rate grew from 3.2% in 1990 to 16.7% in 1994, followed by Sweden with an increase from 1.6% in 1990 to 8.2% in 1993. Except for Denmark and Norway, the unemployment rates of the Nordic countries have never returned to their low rates of the early 1980s. During the Great Recession, unemployment did not rise as dramatically as two decades earlier, but the recovery also seems slower, and in all five countries, unemployment was higher in 2015 than in 2008.

Figure 1: Annual GDP per capita growth rate (a), Unemployment rate (b) and Total Fertility Rate (c) in the Nordic countries, 1970–2015



Source: Elaboration by the authors based on World Bank data for GDP and Eurostat for Unemployment rate and TFR. 1970-1979 Unemployment from Labor Force Statistics, from Furaker et al. (1990).

Figure 1c shows that also the fertility developments in the 1990s differed across the five countries. Sweden had a more volatile TFR over extended time compared to the other countries (Hoem and Hoem 1996; Andersson 2004), while Finland displayed no fertility reaction to the 1990s recession (Andersson 2000; Vikat 2004; Neyer et al. 2006). Despite the weakness of the 1990s recession in Norway, the positive trend in fertility rates of the late eighties came to a halt after 1991. The fertility trends during the 1990s in Denmark are very similar to the Norwegian ones. All countries show a similar development of the TFR since the turn of the century and, despite the brevity of the Great Recession, a remarkable decline over the past decade, with TFRs in Finland, Norway and Iceland falling below the levels of the 1980s and to all-time lows in 2018.

The 1990s recession

Despite the common roots in the global financial deregulation of the late eighties and early nineties, the crisis of the 1990s in the Nordic countries was also self-inflicted and very national in its developments and management. On the one hand, Denmark and Norway dealt with the deregulation more gradually and used, respectively, social policy instruments and oil revenues to counterbalance the recession. On the other hand, Finland and Sweden deregulated their financial markets more abruptly, and later suffered from a severe currency and banking crisis (Jonung et al. 2009). The crisis in Finland was additionally aggravated by the collapse of the Soviet Union which generated a sudden drop in the exports thereby directed. Not only did the unemployment rate increase dramatically, but also, in the second half of the 1990s, job insecurity in the form of precarious, temporary work contracts rapidly spread (Salmi and Lammi-Taskula 1999; Nätti et al. 2001). Although the Finnish welfare state on the whole retained its functions (Heikkilä and Uusitalo 1997), disposable income decreased as tax rates rose. Most social benefits, including parenthood allowance, were reduced, and eligibility requirements were tightened for housing support, for instance (Vikat 2004; Kangas 2019).

In Sweden, the banking sector was rapidly deregulated in the late 1980s, in response to which the amount of credit expanded quickly and the economy overheated. In 1990 several financial institutions went bankrupt, followed by more bankruptcies in the following years. The crisis hit the economy broadly, spreading from the private to the public sector (Palme 2019). Severe drops in male and female employment, a collapse of house prices, budget cuts for most publicly funded social services and reductions of almost all cash transfers including parental leave, generated significant hardship for individuals and especially for households with children (Palme 2019). Despite later revisions of the cuts, heavy investments in active labor market policies and in secondary and tertiary education, and the extension of rights to

child-care services, employment levels did not get back to pre-crisis levels until the end of the 1990s.

The Danish recession hit earlier than the Swedish. Through too high private and public spending, a persistent savings deficit and rapid wage growth throughout the early 1980s, the Danish economy overheated in 1987 (DØR 2007). To try to stem the overheating, Denmark introduced a series of reforms in 1986-87 that capped access to credit and mortgages, aimed to encourage increased private savings, increased taxation of financial institutions to discourage speculation, and encouraged saving through large national pension funds. The timing of the reforms likely contributed to increasing the economic slowdown (DØR 2007). From 1987 to 1993, Denmark saw seven lean years with small to no growth in GDP together with rising unemployment topping out in 1993 at around 12 percent of the labor force. From 1994, unemployment began to decrease. This coincided with a series of reforms of active labor market programs, increased eligibility requirement for the unemployment insured, “flexicurity” policies that eased both hiring and firing, and the introduction of extensive paid parental leave, education and sabbaticals arrangements to stimulate job rotation (Madsen 2006; Compton and Madsen 2001). Further, the economy received a ‘kickstart’ in 1994 through lowering the marginal tax rate and increasing the tax deductible share of interest rates on loans (DØR 2007), which increased both GDP growth as well as the national production. From 1994, Denmark saw steady growth and decreasing unemployment throughout the rest of the decade.

Similar to Denmark, the recession came earlier in Norway and was reinforced by an oil price collapse in 1986. Housing prices went down and, at the same time, interest rates went up. In addition, the drop in demand following the collapse of the Soviet Union affected Norway too. However, in 1990 the Oil Fund was established to mitigate volatility stemming from fluctuating oil prices. A percentage of the fund revenues are used in the state budget giving Norway a unique scope of action. Efficiency in the bank sector increased and tax reforms to stimulate private investment were implemented. Contrary to Sweden, where the crisis affected the public sector negatively and which undertook segmented reforms with partial cuts in social benefits, Norway introduced a comprehensive employment strategy. It tightened rules on temporary employment, expanded employment in the public sector and in childcare, extended parental leave from 12 to 44 weeks at 100 percent wage compensation (in 1994) and prolonged unemployment benefit from one to two years (in 1997; Dølvik and Oldervoll 2019). Additionally, it renewed its vocational training system and expanded further and higher education. These reforms stimulated employment and strengthened the welfare state, so that Norway emerged from the crisis with a welfare state and employment regime that was significantly more comprehensive and “Nordic” than the one before the crisis (Dølvik and Oldervoll 2019). Taken together these factors contributed to moderate the impact of the crisis in Norway.

Finally, Iceland being a small economy vulnerable to external shocks, its business cycle is closely tied to the ups and downs in the global economy (Einarsson et al. 2015, 2016). Prior to the twin currency and bank crisis in 1993, the Icelandic economic activity had been moving in parallel to fish catches and trade shocks. The country had also experienced persistent inflation and depreciation of its currency, and high interest rates in the period leading up to the economic recession. Combined with a global economic downturn, the vulnerability of the Icelandic economy led to a relatively short-lived recession, but one that had significant impact on the labor market and, importantly, led to considerable emigration (Einarsson et al. 2015). In the upswing of the economy and the height of unemployment, benefits including child benefits were reduced and user fees for health and education increased. These restructurings were later countered by introducing and expanding gender-equal parental leave during the late 1990s (Eydal and Ólafsson 2008; Ólafsson 2003).

In sum, all Nordic countries used active labor market policies and expansion of social services, such as education and partly childcare, to mitigate the consequences of the crisis. Denmark, Norway and Iceland even expanded their parental leave. The degree of investment and of cuts varied across the countries and across the policies involved. However, the social policy steps taken during and in the aftermath of the crisis made the welfare states of these countries more similar than before the crisis.

The 2000s Great Recession

The Great Recession of 2008 was a global crisis. Its roots are to be found in the subprime crisis originated in the US in the summer of 2007 which rapidly spread on the other side of the Atlantic through contagion in the banking system. After the European financial markets nearly collapsed in the fall of 2008, the crisis spread to the real economy through the abrupt reduction in credit lending by banks to firms. This rapidly translated into negative economic growth and dramatically rising unemployment rates all around Europe. The five Nordic countries have certainly not escaped the recession but, differently from the 1990s, they have been spared the major drama that hit other parts of the continent. The negative growth registered in 2009 originated in the global recession and, as such, the crisis background and roots have been more similar in the Nordic countries compared to the 1990s crisis.

Iceland represents the exception, being one the most affected economies in the world (around 90% of the country's financial system collapsed). In the years leading up to the crisis, the country saw an increase in private and public indebtedness with an accumulated foreign debt around eight-fold Iceland's GDP. Housing prices had increased significantly, the trade deficit was large and the currency overvalued. In late 2008, consumption fell by roughly 20%

and in 2010 the unemployment rate rose to 7.6% (Ólafsson 2011; Einarsson et al. 2015). Social and political unrest followed and Iceland had to undergo a comprehensive economic program which included cuts in social spending, including the parental leave program. Despite welfare policies implemented during and after the crisis, such as debt relief and active labor market programs or increases in child benefits, young families with children were among the hardest hit by the crisis. Emigration, as during the 1993 crisis, increased considerably and contributed to lowering unemployment (Ólafsson 2019).

The second most affected country in the group has been Finland, first, because when the Great Recession hit it had just started recovering from the austerity measures taken after the previous crisis. Second, idiosyncratic shocks such as the well-known Nokia and Information and Communication Technology sector crises, the less known paper-industry crisis, the Western embargo on and the recession in Russia, one of Finland's largest trade partners, negatively affected the Finnish economy. Third, the more rigid salary structure and the consequently rapid decline in competitiveness of Finnish workers compared to the other countries made it more vulnerable (Suni and Vihriälä 2016). Finally, since Finland had entered the Eurozone in 2000, it could not devalue its currency as in the early 1990s and as the other Nordic countries did. Although compared to the 1990s crisis the Great Recession was milder, the post-recession period lasted longer and austerity measures including reduced services and raised fees for families, cut deep into welfare provisions and partly "neo-familialized" parental responsibilities (Kangas 2019).

In Denmark, the 2008 recession led to large decreases in private spending and investments (Jensen and Johannesen 2017) as well as soaring unemployment rates. Beyond the general slowdown of the international economy, the crisis in Denmark was further magnified by the burst of a national housing market bubble and the collapse of several large banks (Erhvervs- og Vækstministeriet 2013; Jensen and Johannesen 2017). As of 2013, it was estimated that the crisis had inflicted a bill on the Danish society at the equivalent of 20% of one-year GDP (Erhvervs- og Vækstministeriet 2013). GDP per capita only reached its pre-crisis level in 2016 and recent evidence indicates that especially younger people suffered long-term lower employment levels (Andersen et al. 2017; Jonassen *forthcoming*). To counterbalance the effects of the crisis on the deficit, Denmark enacted policies aimed to strengthen and increase labor supply (Andersen 2019). This was done through cutting social benefits and tightening eligibility criteria. This affected individuals and households with low income and low education more than others (Andersen 2019).

The Great Recession hit Sweden comparatively mildly relative to most other countries. However, large Swedish export-oriented companies had to reduce employment due to declining global demand, making unemployment rise. Despite the Swedish economy maintaining an overall good shape, by 2015 the unemployment rate had not returned to its pre-

crisis levels yet. Unlike in the 1990s, the Swedish financial and construction sector was not hit very hard and the crisis did not spread to the public sector. The policy responses regarding the financial sector were similar to those of the 1990s, but different regarding social policies (Palme 2019). Contrary to the 1990s crisis there was no substantial retrenchment. In fact, the introduction of earned income tax deductions just prior to the Great Recession lowered the fiscal pressure on those in employment. As a consequence, and despite some cutbacks of social transfer programs, financial hardship on the population remained modest (Palme 2019).

Finally, the slowdown in economic growth and the rise in unemployment rates during the Great Recession in Norway have been minor and mostly linked to the drop in oil prices. Using the still consistent revenues from the Oil Fund, the Norwegian government implemented a number of measures that buffered the increase in unemployment and greatly weakened the overall impact of the crisis on the population. Fiscal stimulus packages, selective but sizable tax reliefs and spending increases, and expansionary monetary policy reduced credit constraints from banks to families, relieved taxes and stimulated investments in infrastructures (Dølvik and Oldervoll 2019).

To sum up, compared to the crisis in the 1990s, the Nordic countries reacted quicker to the Great Recession and used their own and the experience of others with previous policy interventions to manage the recession. Despite differences still existing, the crisis management of the 2010s deviated less across the Nordic countries than the one in the 1990s.

Data and method

We use high quality and harmonized population-register data for Denmark, Finland, Iceland, Norway and Sweden. The data offer full, accurate and reliable coverage of the entire population in each country and their vital events, including the entire childbearing history of our subjects. We focus on the native-born population to ensure we dispose of their entire childbearing history. We follow women born in 1942–1999, with a focus on childbearing risk during the period ranging from the late 1980s to the mid-2010s. Table 1 shows the initial size of the study population, meaning the pool of women at risk of first birth, for each dataset and the period for which they are available.

Table 1: Number of women at risk of first birth and period of observation

Country	N	Period
Finland	1,314,163	1987–2014
Denmark	1,163,612	1987–2016
Norway	1,093,990	1987–2015
Sweden	1,901,091	1987–2012
Iceland	70,294	1987–2013

Source: Elaboration of the authors based on each country's register data.

We use event-history techniques to present parity-specific indices of childbearing risks over calendar years relative to a baseline year. Calculations are based on the records of registered live births in each country and the corresponding exposure times at risk, by birth order. Women enter the analysis in the month they turn 16 for parity one, and at the time of last previous birth for higher order parities. For each birth order, we present relative risks of childbirth for each country and calendar year, standardized for age and duration since previous birth, which means that we control for the effect of compositional demographic changes over the categories of these variables over time. We censor observations at age 46, first outmigration, first twin birth, death, and end of observation period. This method allows to examine the period effect of the economic crises at the individual level. The approach is described further in Hoem (1991, 1993).

We focus explicitly on the period effects of the two recessions by presenting separate time series of relative risks for women in two periods: 1989–1999 and 2007–2015. Each period has a reference year (1990 and 2008, respectively) as the baseline year from which the deviation from the relative risk is measured. By applying event-history techniques to the population-register data of five countries, we are able to get an accurate picture of similarities or differences in childbearing response to the two episodes of recession in the five countries considered. We thus investigate 5×2 country-period cases of childbearing dynamics following the crises (running separate but identical models for each country).

Finally, we suspect that the childbearing intensity during the two recession episodes are heterogeneous across parity, age and educational groups. Therefore, we run separate analyses for each parity including higher order ones (up to the fourth birth order). We further distinguish the standardized birth-rates by age (16–29 vs. 30–46 years) and education (primary or lower secondary education; upper secondary education; tertiary education). Results are mainly presented graphically by parity, age and educational group to facilitate the cross-country comparison. Full tables of relative risks are available in the Appendix.

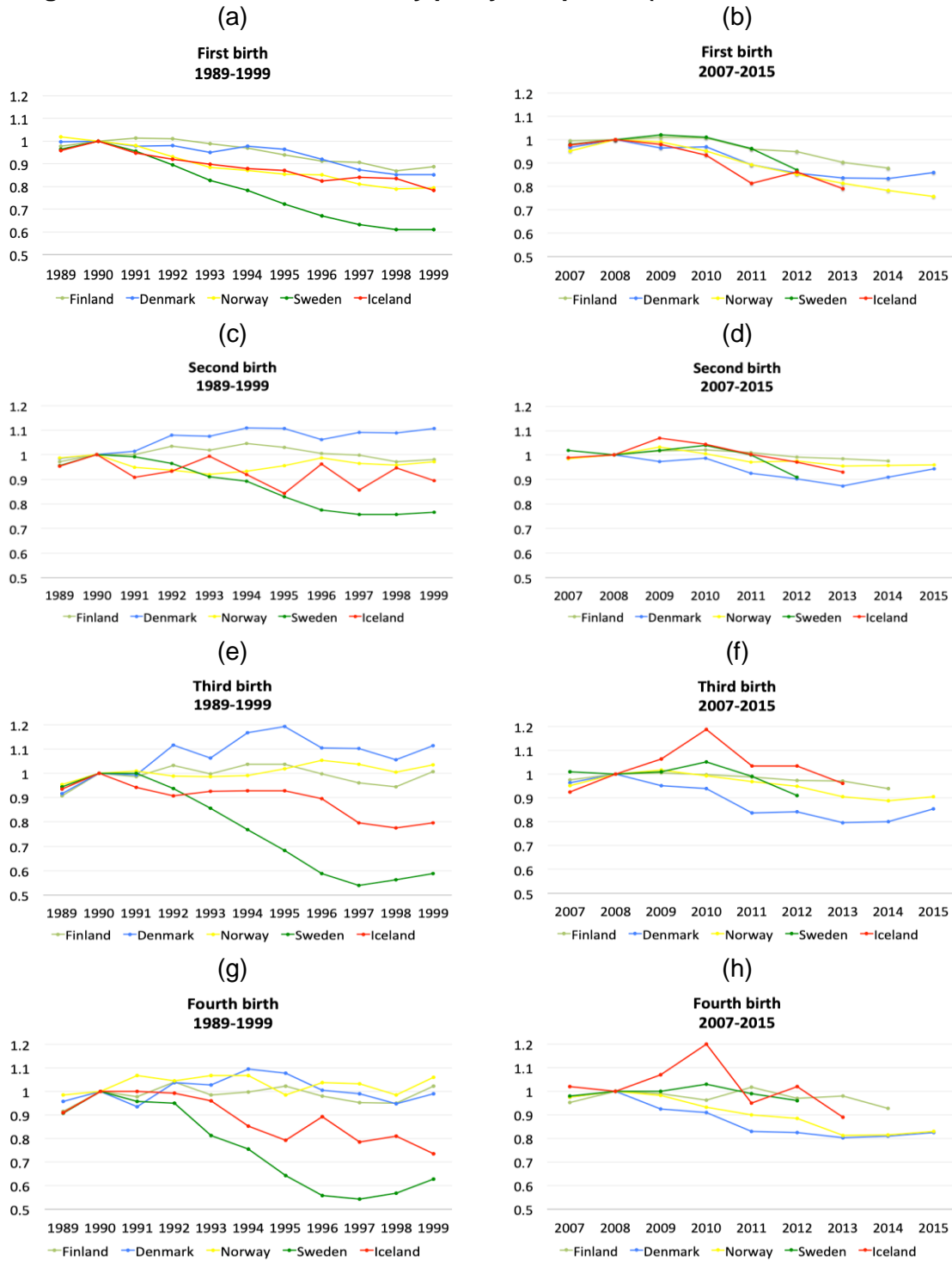
Results

Birth risk by parity

Figure 2 displays the relative risk of the first to fourth births, by country, in the two periods (panels a–h). The panels on the left-hand-side show the yearly risk of births in the period 1989–1999 relative to the reference year 1990, while the right-hand-side panels show the relative risk in the period 2007–2015 with respect to the baseline year 2008. In all five Nordic countries the relative risk of first birth declined and this happened in both recessionary periods. Relative to 1990 the strongest drop in the risk of first birth is witnessed in Sweden, followed by Iceland and Norway. A delayed and milder, but still observable, reduction in the risk of first birth occurred in Denmark and Finland. Ten years after the onset of the crisis, Sweden still has a relative risk of first birth that is 40% lower than in 1990. In the other four countries in 1999 it is around 10–20% lower (some of this is due to postponed first-birth fertility; see next in Figure 3). The drop in the relative risk of first birth is generally smaller in the more recent period. Norway then experienced the largest drop as seen over the entire follow-up (around -25% in 2015 relative to 2008). Iceland and Denmark witnessed a similar decline as Norway early into the recession, but contrary to Norway and Iceland, in Denmark the relative risk of first birth started recovering after 2014. Our data for Denmark and Norway stretch to 2015, those for Sweden and Iceland to 2012 and 2013. More recent data might show more pronounced declines in first-birth risks as aggregate measures of fertility (TFRs) have continued to fall.

The change in the relative risk of second birth is more heterogeneous across the two periods. Relative to 1990, the risk of second birth declined more pronouncedly in Iceland and Sweden than in the other Nordic countries, it dropped but quickly recovered in Norway, remained basically the same in Finland, and increased in Denmark. By contrast, relative to 2008, the risk of second birth did not change much at all, with the only exception of Denmark where in 2013 the risk of a second birth was more than 10% lower than before the onset of the Great Recession. The figures for third and fourth parities are extremely similar to each other within each period, but again differ strongly across periods. First, the period changes in relative risks were more heterogeneous in the 1990s than after 2008. Relative to 1990 the risk of higher parity births dropped dramatically in Sweden (more than -40%), followed by Iceland. On the contrary, the same two countries after 2008, if anything, did witness an increase in the relative risk of higher-order births. In Denmark the opposite holds, with higher-order fertility increasing after 1990 and decreasing after 2008. Finally, in Norway and Finland there was basically no change in the risk of third and fourth births in neither of the two periods.

Figure 2: Relative risks of birth by parity and period (1989–1999 and 2007–2015)



Source: Elaboration of the authors based on each country's register data. Baseline years 1990 and 2008 respectively.

Overall, we can conclude that, as found in previous studies, earlier parities are the more uniformly negatively affected by economic conditions (Goldstein et al. 2013; Comolli 2017).

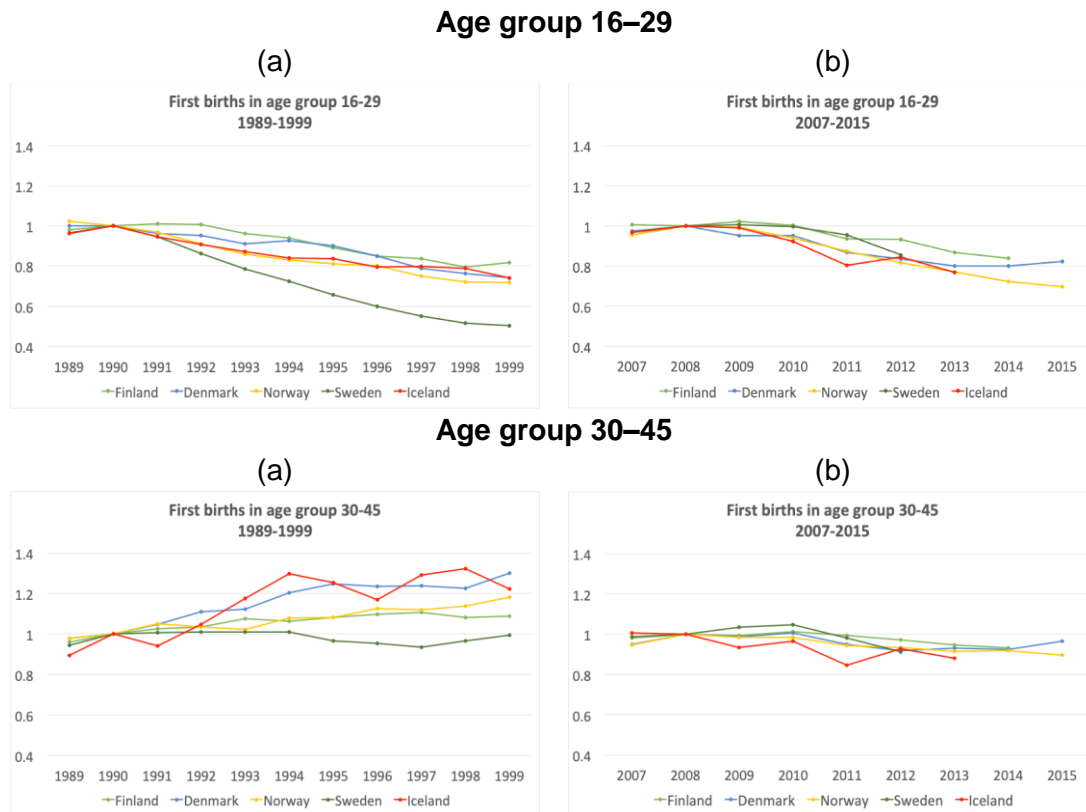
More importantly though, it seems that the drops in the relative risk of childbearing after 1990 were far more heterogeneous across the Nordic countries than compared to after the Great Recession. After 2008 the decline in childbearing risk has been milder but more persistent and more homogenous across the five countries.

Birth risk by parity and age group

Figure 3 reports the two periods' changes in relative risks of first birth by women's age groups: 16–29 vs. 30–45 years of age. The substantive impressions from the results regarding higher parities are very similar to those presented in Figure 3, so for the sake of brevity, the corresponding figures are reported in the Appendix (Figures A.1–A.2). Overall, we see again that after the onset of the Great Recession the variation in changes in childbearing risks is much more homogenous across countries than in the 1990s. During the later period, relative risks vary in the range 0.70–1 while during the earlier period they vary in the range 0.40–1. In all five countries the strongest decline in the relative risk of first birth took place after 1990 for women younger than 30. By 1999 the relative risk of first birth for young Swedish women was 50% lower than in 1990. In all other countries it was more than 20% lower. In the same age group, the risk of first birth in 2015 was around 30% lower than in 2008 in Norway and between 10% and 20% lower in the other countries. A major difference between the two periods though is observed for older women. In the 1990s, notwithstanding the onset of the crisis, the relative risk of first birth among 30+ women remained constant in Sweden and even increased in the other countries. Five years into the crisis, the relative risk of having a first child was 25% higher in Iceland and Denmark and 10% higher in Norway and Finland and it stayed similarly high until the end of the 1990s, altogether reflecting postponed first-birth fertility. After 2010, in contrast, the relative risk of first birth declined among both older and younger women, contributing to the overall decline in the quantum of fertility. The decline among older women, though, was milder compared to that of the younger, with the lowest relative risk of first birth to 30+ women being registered in 2011 in Iceland (-15%). In the other countries the risk gradually dropped to being around 10% lower than in 2008.

The divergence in first-birth risks between younger and older women in the 1990s is certainly a result of increasing ages at becoming a parent during that period. Women in their twenties postponed childbearing that was recuperated by women in their thirties. It is interesting to note that even in the aftermath of the 1990s economic crisis women over 30 kept recuperating childbearing, thus adopting a counter-cyclical behavior. On the contrary, in the more recent period, which was also characterized by delayed family formation, recuperation among women in their thirties was not so evident.

Figure 3: Relative risk of first births by period (1989–1999 and 2007–2015) and age group.



Source: Elaboration of the authors based on each country's register data. Baseline years 1990 and 2008 respectively.

Birth risk by parity and educational groups

Figures 4–5 present the relative risk of first and second births in the two periods by women's level of education. To facilitate the comparison across educational groups, results are plotted by country and the reference category is the risk of first or second birth in the baseline years (1990 and 2008) within each educational group. For Iceland unfortunately, education was not available so it had to be excluded. In many aspects, higher parities offer similar findings to those presented for parities one and two across educational groups so the results are reported in the Appendix (Fig. A.3–A.4).

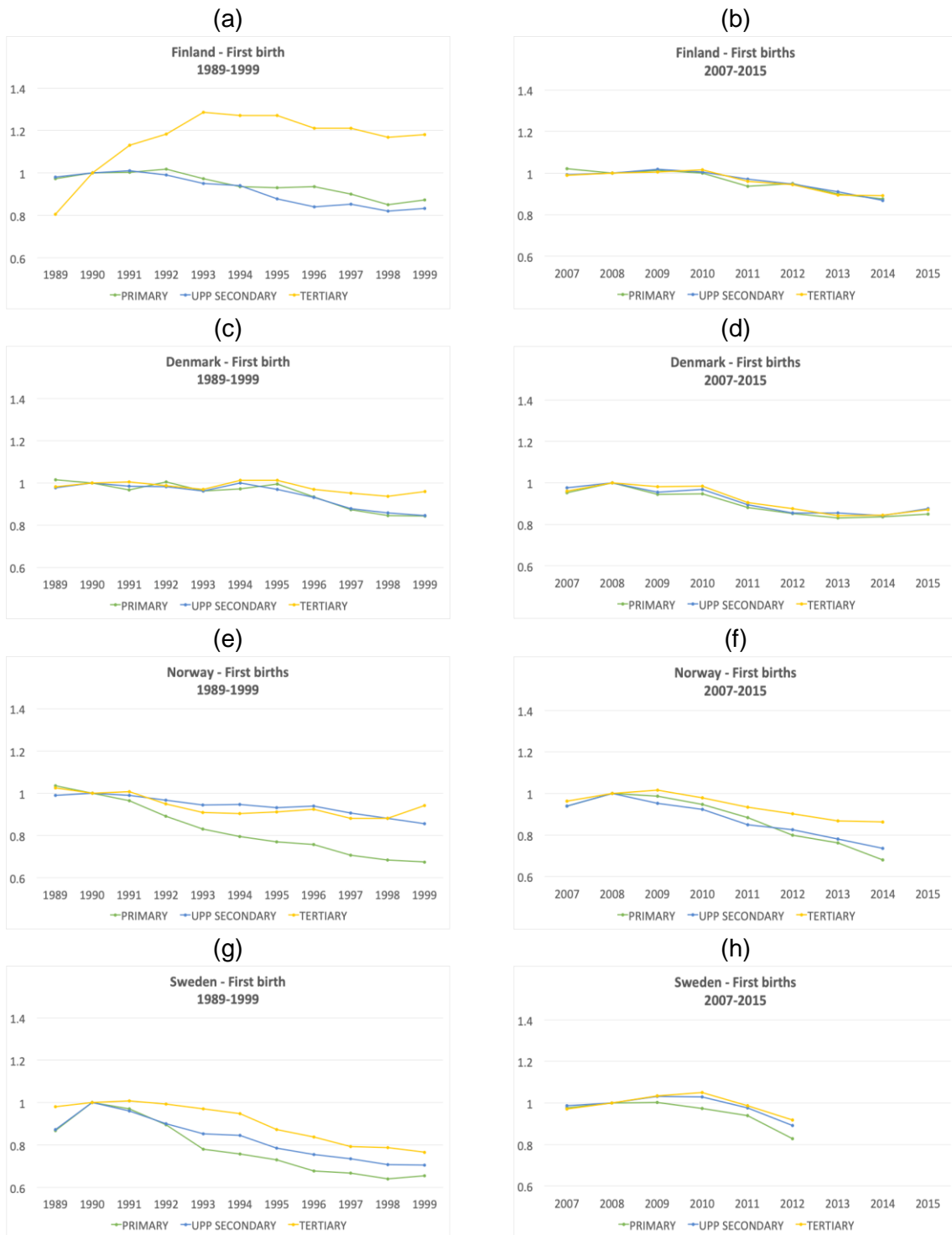
First, we notice that in each country the development of the relative risks of first births was more education specific in the 1990s than after 2008. In Sweden in the wake of the 1990s crisis, first birth risks declined in all educational groups but more pronouncedly among low educated women than among women with higher education. In Finland, the relative risks of first birth among low and medium educated women remained more stable during the first years

after the 1990 crisis and the subsequent decline was more moderate than in Sweden. The first birth risks of tertiary educated women in Finland even increased in the 1990s relative to the baseline year 1990. Similar to Sweden, in Norway, first birth risks in the 1990s declined markedly for low educated women, but contrary to Sweden, the decrease in first birth risks among secondary and tertiary educated women was moderate and rather similar. In Denmark, first birth risks among women of all educational groups remained relatively stable and remarkably similar during the first half of the 1990s. Thereafter, the relative risk of first birth declined somewhat among medium and low educated women. Compared to the 1990s, first birth risks after 2008 developed astonishingly similarly across all educational groups and all countries: first birth risks dropped to a similar extent for all categories of women. In Finland and Denmark, there is no difference at all in the development of first birth risks between different educational groups. In Norway and Sweden, the decline in first birth risks was more substantial among less educated women (Fig. 4).

For second births the educational differences in the development of relative risks in the 1990s are smaller than for first births in all countries except Denmark. Only in Sweden did the relative risks of second births decline noticeably in all educational groups (Fig. 5). In Finland, similar to first birth risks, second birth risks among highly educated women were increasing in the first few years following the 1990s crisis. This finding contradicts previous findings on highly educated women being the most negatively affected by economic downturns (Miettinen and Jalovaara 2018). The development of second birth risks after the Great Recession is also quite uniform among the educational groups in each country. In Denmark the second birth risks dropped more among primary educated women than for other groups of one-child mothers. Finally, in both periods, tertiary educated women and especially in Denmark, register a much steeper decline in the relative risk of a third or fourth birth than upper secondary or primary educated women (Fig. A.3–A.4).

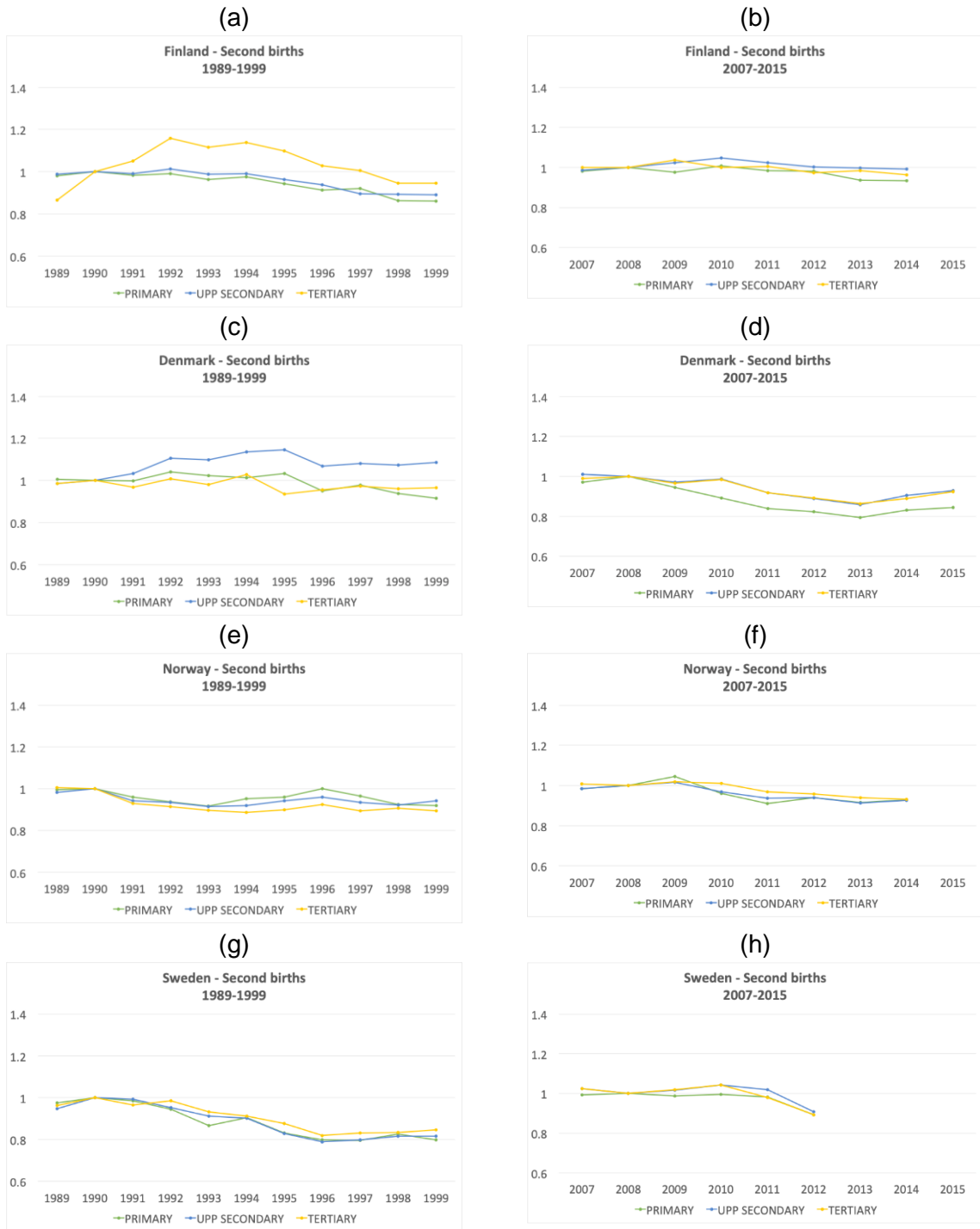
Overall, we find that regarding first births highly educated women were least affected by the 1990s crisis. Their first birth risks increased (Finland), remained stable (Denmark and Norway) or declined much less than the first birth risks of low and medium educated women. After 2008 such educational differences in the development of first birth risks no longer exist; except for Norway, the relative risks of entering parenthood were declining at the same pace in each educational group. With respect to second births, educational differences after 1990 were merely visible in Finland and Denmark. After 2007 the development of second birth risks across educational groups were very homogenous in all countries (perhaps with the exception of Denmark). Only at higher parities does the educational gradient in period changes reverse and tertiary educated mothers display the steepest decline in relative risk of childbearing.

Figure 4: Relative risk of first births by country, education and period (1989–1999 and 2007–2015).



Source: Elaboration of the authors based on each country's register data. Baseline years 1990 and 2008 respectively within educational level and country.

Figure 5: Relative risk of second birth by country, education and period (1989–1999 and 2007–2015).



Source: Elaboration of the authors based on each country's register data. Baseline years 1990 and 2008 respectively within educational level and country.

Discussion

The recent decline in the Nordic countries in period total fertility after 2010 has caught many scholars by surprise and attracted the attention of media and policy makers in the region. The timing of the fertility rate contraction would suggest a link with the global economic and financial crisis that plagued most advanced economies in 2008 and some years thereafter. It has been shown, in fact, that fertility rates in advanced economies are pro-cyclical, meaning that they tend to rise with economic growth and decline with stagnation or recession (Sobotka et al. 2011; Comolli 2017; Örsal and Goldstein 2018). The cyclicity of fertility rates in the Nordic region has not been systematically studied in comparative terms prior to this study. However, single-country studies demonstrate that the five Nordic countries are not exceptional with regard to the pro-cyclicity of birth rates (Andersson 2000). Economic and financial uncertainty and labor market insecurity – whether measured through rise in unemployment or in job precariousness – induce individuals to delay major life commitments such as family formation. Childbearing is a costly and irreversible transition, and even if couples do not directly experience a drop in income (*income effect*) or joblessness (*uncertainty effect*), they might perceive their future as less secure if the economy slows down or skids into a recession (*perceived economic uncertainty effect*) or if their social or family benefits are threatened to be cut (*perceived welfare uncertainty*). In response, couples may prefer to “wait-and-see” (Bloom 2009; Bachmann and Bayer 2013) how the economy evolves before having a(nother) child.

Our study on the development of childbearing risk in the aftermath of two economic crises, i.e., the 1990-1992 and the 2008-2010 recessions, produced several interesting findings. Despite that the five Nordic countries already in the 1970s-80s shared similar macroeconomic outlooks and labor market structures (at the very least with respect to female employment) and similar welfare policies, our study shows a significant country heterogeneity in the fertility developments after the 1990s recession. Moreover, despite the fact that the 2008 crisis was milder than in the 1990s and hit the different Nordic countries asymmetrically, the consequences in terms of fertility rate developments were surprisingly negative and uniform across the five countries. Finally, the economy recovered more quickly after 2008 than after 1990-92, and yet the 2008 recession seems to have had more lasting and scarring effects on childbearing. The divergence in childbearing developments after the 1990s crisis and their homogeneity after the 2008 crisis show that the fertility consequences of a recession will not necessarily be the same across similar welfare states. Furthermore, a similar economic uncertainty induced by a similar crisis may be related to different fertility consequences. To discern the underlying reasons, we need to expand the explanatory framework and include, for example, how countries manage an economic crisis and how this may be related to subsequent fertility behavior. Crisis management, that is the policies that are introduced to

tackle economic turmoil, may have a decisive influence on how economic uncertainty is perceived. In developed welfare states, where markets are more regulated by policies (Hall and Soskice 2001) and social policies guard more against market risks than in liberal economies, people may rely more on the protective capacity of the state (Kumlin et al. 2018). In those countries, the crisis management may influence people's trust in the present and future ability of the state to allocate resources for the protection of more disadvantaged social groups (what we refer to as *the perception of welfare uncertainty*). The 1990s crisis was in part unexpected, and each country handled it largely nationally following different approaches: Sweden cut its benefits considerably (after expanding its welfare state in the 1980s); Finland reacted less severely and less abruptly; and Denmark expanded its parental leave program and introduced job rotation programs, while at the same time imposing shorter durations and stricter eligibility criteria for receiving unemployment benefits. Subsequently, all five Nordic countries mobilized and extended their active labor market programs (albeit with different strength), and supported education programs for young people, particularly those with lower levels of training.

The 2008 crisis was also largely unexpected. However, it was handled more quickly and less idiosyncratically with respect to social policies. Furthermore, the countries concerned could rely on the lessons learnt during the 1990s (Ólofsson et al. 2019). The greater homogeneity in the crisis management seems to have generated a more uniform fertility response across countries that can be observed independently of parity, age and educational level. The crisis management may help explain the similarity in fertility change across the five Nordic countries, however, it does not elucidate the strength and persistence of the drop in childbearing intensities after 2010. To unravel this development, we note that other western countries also experienced contractions in birth rates, sometimes starting a few years earlier than in the Nordic countries. In the U.S., and other countries in Southern and Western Europe, this fertility decline persists and, at the time of writing (2019), there has been no sign of trend reversals. The same goes for the five Nordic countries examined in this study. The magnitude of the fertility rate's contraction in the U.S. is very similar to that of the Nordic countries, with a TFR declining from 2.12 in 2007 to 1.76 children per woman in 2017 (CDC 2018). This similarity in experience in terms of fertility decline may perhaps be explained by the fact that today's world is much more interconnected than in the 1990s. Accordingly, the Nordic countries could have imported some of the uncertainty that is generated elsewhere and this could have helped produce an extraordinary perception of economic and welfare uncertainties – despite the fact that neither the economy nor the welfare states are in demise in the Nordic countries. We consider that the accumulation of various sources of perceived uncertainty has produced a uniformly strong negative fertility reaction across the Nordic countries – irrespective of the underlying material circumstances and the stability of the Nordic welfare state. By the same

token, at the individual level the perception of economic and welfare uncertainty may only partially be linked to the experience of financial or welfare deprivation. In fact, as our findings demonstrate advantaged (tertiary educated or older) and disadvantaged (primary educated or younger) women exhibited very similar childbearing reactions in the wake of the Great Recession in 2008.

To view fertility behavior after a crisis from the perspective of “dual uncertainties” helped us to understand some of the puzzles regarding fertility development across the two time periods, across educational and age groups, and across countries. We conclude from our study that future research on the links between economic recessions and fertility development needs to expand the explanatory framework considerably. A purely economic view based on material costs and benefits of childbearing may not suffice to grasp how economic downturns affect fertility behavior. We need to combine approaches from different perspectives in order to understand the differences and similarities of fertility consequences of economic shocks.

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Appendix

**Figure A.1: Relative risk of births by parity and period (1989–1999 and 2007–2015).
Second, third and fourth parity. Age group 16–29.**



Source: Elaboration of the authors based on each country's register data. Baseline years 1990 and 2008 respectively.

**Figure A.2: Relative risk of births by parity and period (1989–1999 and 2007–2015).
Second, third and fourth parity. Age group 30–45.**



Source: Elaboration of the authors based on each country's register data. Baseline years 1990 and 2008 respectively.

Figure A.3: Relative risk of third births by country, education and period (1989–1999 and 2007–2015).



Source: Elaboration of the authors based on each country's register data. Baseline is year 1990 and 2008 respectively within educational level and country.

Figure A.4: Relative risk of fourth birth by country, education and period (1989–1999 and 2007–2015).



Source: Elaboration of the authors based on each country's register data.
 Baseline is year 1990 and 2008 respectively within educational level and country.

Table A.1: Aggregate indicators by country (1970–2015)

	TFR					Unemployment rate					GDP growth (annual %)				
	DK	FI	IS	NO	SE	DK	FI	IS	NO	SE	DK	FI	IS	NO	SE
1970	1.95	1.83	2.81	2.50	1.92	1.00	2.00		1.60	1.50	2.74	5.33	9.37	2.00	6.04
1971	2.04	1.68	2.92	2.49	1.96	1.30	2.40		1.50	2.50	3.01	2.36	13.06	5.67	0.94
1972	2.03	1.58	3.09	2.38	1.91	1.40	2.70		1.70	2.70	3.93	7.74	6.18	5.33	2.29
1973	1.92	1.49	2.94	2.23	1.87	0.90	2.40		1.50	2.50	4.09	6.98	6.81	4.53	3.97
1974	1.90	1.61	2.66	2.13	1.87	2.10	1.80		1.50	2.00	-1.12	3.24	5.71	3.92	3.20
1975	1.92	1.68	2.65	1.98	1.77	5.10	2.60		2.30	1.60	-1.46	1.80	0.65	4.95	2.55
1976	1.75	1.70	2.52	1.86	1.68	5.30	3.90		1.80	1.60	5.92	0.34	5.96	5.83	1.06
1977	1.66	1.68	2.31	1.75	1.64	6.40	5.90		1.50	1.80	1.87	0.24	8.82	4.16	-1.60
1978	1.67	1.64	2.35	1.77	1.60	7.30	7.30		1.80	2.20	2.23	2.92	6.02	3.87	1.75
1979	1.60	1.64	2.49	1.75	1.66	6.10	6.00		2.00	2.10	3.87	7.12	4.86	4.37	3.84
1980	1.55	1.63	2.48	1.72	1.68	4.9	4.6	0.3	1.6	2.0	-0.48	5.39	5.75	4.56	1.70
1981	1.44	1.64	2.33	1.70	1.63	7.9	4.8	0.4	2.0	2.5	-0.67	1.29	4.27	1.60	0.45
1982	1.43	1.71	2.27	1.71	1.62	8.4	5.3	0.7	2.6	3.2	3.68	3.09	2.15	0.24	1.25
1983	1.38	1.74	2.24	1.66	1.61	8.4	5.4	1.0	3.4	3.7	2.60	3.12	-2.15	3.97	1.90
1984	1.40	1.69	2.08	1.66	1.66	7.9	5.2	1.3	3.1	3.3	4.17	3.21	4.13	6.05	4.23
1985	1.45	1.64	1.93	1.68	1.74	6.7	5.0	0.9	2.6	2.9	4.00	3.54	3.29	5.55	2.16
1986	1.48	1.60	1.92	1.71	1.80	5.0	6.7	0.6	2.0	2.7	4.90	2.73	6.27	4.04	2.69
1987	1.50	1.59	2.06	1.74	1.84	5.0	4.9	0.5	2.1	2.2	0.25	3.56	8.55	1.75	3.35
1988	1.56	1.69	2.26	1.84	1.96	5.7	4.2	0.6	3.2	1.8	-0.01	5.21	-0.09	-0.26	2.56
1989	1.62	1.71	2.19	1.89	2.01	6.8	3.1	1.6	4.9	1.6	0.65	5.09	0.26	1.04	2.65
1990	1.67	1.78	2.30	1.93	2.13	8.5	3.2	1.8	3.5	1.6	1.48	0.68	1.17	1.93	0.75
1991	1.68	1.79	2.18	1.92	2.11	9.2	6.7	2.7	3.6	3.0	1.39	-5.91	-0.22	3.08	-1.15
1992	1.76	1.85	2.21	1.88	2.09	9.2	11.8	4.4	3.9	5.2	1.96	-3.32	-3.37	3.57	-1.16
1993	1.75	1.81	2.22	1.86	1.99	10.9	16.5	5.3	4.6	8.2	0.01	-0.73	1.31	2.85	-2.07
1994	1.81	1.85	2.14	1.87	1.88	8.1	16.7	5.4	4.5	8.0	5.33	3.94	3.61	5.06	4.09
1995	1.80	1.81	2.08	1.87	1.73	7.0	15.5	5.0	4.7	7.7	3.03	4.21	0.12	4.15	4.02
1996	1.75	1.76	2.12	1.89	1.60	6.9	14.7	3.7	3.5	8.0	2.90	3.66	4.79	5.03	1.52
1997	1.75	1.75	2.04	1.86	1.52	5.4	12.7	3.8	2.6	8.0	3.26	6.25	4.91	5.28	2.90
1998	1.72	1.70	2.05	1.81	1.50	5.1	11.4	2.7	2.6	6.5	2.22	5.43	6.57	2.62	4.23
1999	1.73	1.73	1.99	1.85	1.50	5.2	10.3	1.9	3.2	5.6	2.95	4.44	4.00	2.01	4.53
2000	1.77	1.73	2.08	1.85	1.54	4.5	9.8	2.3	3.7	4.7	3.75	5.63	4.68	3.21	4.74
2001	1.74	1.73	1.95	1.78	1.57	4.2	9.2	2.3	3.3	4.0	0.82	2.58	3.83	2.09	1.56
2002	1.72	1.72	1.93	1.75	1.65	4.3	9.1	3.2	3.9	4.0	0.47	1.68	0.31	1.44	2.07
2003	1.76	1.76	1.99	1.80	1.71	5.5	9.1	3.4	4.6	4.9	0.39	1.99	2.44	0.92	2.39
2004	1.78	1.80	2.04	1.83	1.75	5.3	8.9	3.2	4.5	5.5	2.67	3.93	8.10	3.96	4.32
2005	1.80	1.80	2.05	1.84	1.77	4.9	8.5	2.7	4.7	7.8	2.34	2.78	6.70	2.62	2.82
2006	1.85	1.84	2.08	1.90	1.85	4.0	7.8	2.9	3.5	7.1	3.91	4.06	5.00	2.40	4.69
2007	1.84	1.83	2.09	1.90	1.88	3.8	6.9	2.3	2.6	6.2	0.91	5.18	9.35	2.93	3.40
2008	1.89	1.85	2.15	1.96	1.91	3.5	6.4	3.0	2.6	6.2	-0.51	0.72	1.52	0.38	-0.56
2009	1.84	1.86	2.23	1.98	1.94	6.1	8.4	7.4	3.2	8.4	-4.91	-8.27	-6.94	-1.62	-5.18
2010	1.87	1.87	2.20	1.95	1.98	7.6	8.5	7.7	3.7	8.7	1.87	2.99	-3.56	0.60	5.99
2011	1.75	1.83	2.02	1.88	1.90	7.7	7.9	7.2	3.3	7.9	1.34	2.57	1.99	0.97	2.66
2012	1.73	1.80	2.04	1.85	1.91	7.7	7.8	6.2	3.3	8.1	0.23	-1.43	1.22	2.75	-0.29
2013	1.67	1.75	1.93	1.78	1.89	7.2	8.3	5.5	3.6	8.2	0.93	-0.76	4.41	1.00	1.24
2014	1.69	1.71	1.93	1.75	1.88	6.8	8.8	5.1	3.6	8.1	1.68	-0.63	1.93	1.92	2.60
2015	1.71	1.65	1.80	1.72	1.85	6.3	9.6	4.2	4.5	7.6	1.61	0.27	4.10	1.61	4.08

Source: Elaboration by the authors based on World Bank data for GDP and Eurostat for TFR and Unemployment rate 1980-2015. Unemployment rates 1970-79 from Furaker et al. 1990.

Table A.2: Relative risk of births by parity (1989–2015).

	Relative risk of first birth					Relative risk of second birth					Relative risk of third birth					Relative risk of fourth birth				
	FI	DK	NO	SW	IS	FI	DK	NO	SW	IS	FI	DK	NO	SW	IS	FI	DK	NO	SW	IS
1989	0.98	1.00	1.02	0.96	0.96	0.97	0.99	0.99	0.95	0.95	0.91	0.92	0.95	0.94	0.93	0.91	0.96	0.98	0.91	0.91
1990	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1991	1.01	0.98	0.98	0.95	0.95	1.00	1.01	0.95	0.99	0.91	0.99	0.99	1.01	1.00	0.94	0.98	0.93	1.07	0.96	1.00
1992	1.01	0.98	0.93	0.89	0.92	1.03	1.08	0.94	0.96	0.93	1.03	1.12	0.99	0.94	0.91	1.04	1.04	1.04	0.95	0.99
1993	0.99	0.95	0.88	0.83	0.90	1.02	1.07	0.92	0.91	0.99	1.00	1.06	0.99	0.86	0.93	0.98	1.03	1.07	0.81	0.96
1994	0.97	0.98	0.87	0.78	0.88	1.05	1.11	0.93	0.89	0.92	1.04	1.17	0.99	0.77	0.93	1.00	1.09	1.07	0.75	0.85
1995	0.94	0.96	0.85	0.72	0.87	1.03	1.11	0.96	0.83	0.84	1.04	1.19	1.02	0.68	0.93	1.02	1.08	0.99	0.64	0.79
1996	0.91	0.92	0.85	0.67	0.82	1.00	1.06	0.99	0.77	0.96	1.00	1.10	1.05	0.59	0.90	0.98	1.01	1.04	0.56	0.89
1997	0.91	0.87	0.81	0.63	0.84	1.00	1.09	0.96	0.76	0.86	0.96	1.10	1.04	0.54	0.80	0.95	0.99	1.03	0.54	0.79
1998	0.87	0.85	0.79	0.61	0.84	0.97	1.09	0.96	0.76	0.95	0.95	1.06	1.01	0.56	0.77	0.95	0.95	0.98	0.57	0.81
1999	0.89	0.85	0.79	0.61	0.78	0.98	1.11	0.97	0.77	0.90	1.01	1.11	1.03	0.59	0.80	1.02	0.99	1.06	0.63	0.74
2007	1.00	0.97	0.95	0.98	0.98	0.99	0.99	0.98	1.02	0.99	0.98	0.96	0.95	1.01	0.92	0.95	0.97	0.97	0.98	1.02
2008	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2009	1.01	0.96	0.99	1.02	0.98	1.02	0.97	1.03	1.02	1.07	1.01	0.95	1.02	1.01	1.06	0.99	0.92	0.98	1.00	1.07
2010	1.01	0.97	0.95	1.01	0.93	1.02	0.99	1.01	1.04	1.04	1.00	0.94	0.99	1.05	1.19	0.96	0.91	0.93	1.03	1.20
2011	0.96	0.89	0.89	0.96	0.81	1.01	0.93	0.97	1.00	1.00	0.99	0.84	0.97	0.99	1.03	1.02	0.83	0.90	0.99	0.95
2012	0.95	0.86	0.85	0.87	0.86	0.99	0.90	0.98	0.91	0.97	0.97	0.84	0.95	0.91	1.03	0.97	0.83	0.88	0.96	1.02
2013	0.90	0.84	0.81		0.79	0.99	0.87	0.95		0.93	0.97	0.80	0.91		0.96	0.98	0.80	0.81		0.89
2014	0.88	0.83	0.78			0.98	0.91	0.96			0.94	0.80	0.89			0.93	0.81	0.82		
2015		0.86	0.76				0.95	0.96				0.85	0.91				0.82	0.83		

Source: Elaboration of the authors based on each country's register data. Baseline years 1990 and 2008 respectively.

Table A.3: Relative risk of births by parity (1989–2015). Women aged 16–29.

	Age 16-29																			
	Relative risk of first birth					Relative risk of second birth					Relative risk of third birth					Relative risk of fourth birth				
	FI	DK	NO	SW	IS	FI	DK	NO	SW	IS	FI	DK	NO	SW	IS	FI	DK	NO	SW	IS
1989	0.98	1.00	1.02	0.97	0.96	0.98	0.98	0.99	0.95	0.96	0.93	0.90	0.98	0.94	0.95	1.02	0.92	1.16	0.86	1.04
1990	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1991	1.01	0.96	0.97	0.94	0.95	1.00	1.01	0.93	0.98	0.91	1.03	1.01	1.01	0.98	0.89	1.00	0.93	1.07	0.92	0.90
1992	1.01	0.95	0.91	0.86	0.91	1.05	1.06	0.91	0.94	0.92	1.04	1.11	0.97	0.91	0.85	1.14	1.13	1.04	0.97	1.05
1993	0.96	0.91	0.86	0.78	0.87	1.03	1.06	0.89	0.88	1.00	1.05	1.02	0.97	0.82	0.89	1.07	0.91	1.12	0.75	0.89
1994	0.94	0.93	0.83	0.73	0.84	1.04	1.08	0.92	0.87	0.93	1.08	1.14	0.93	0.73	0.91	1.16	1.00	1.07	0.70	0.90
1995	0.89	0.90	0.81	0.66	0.84	1.01	1.06	0.93	0.79	0.78	1.07	1.18	0.94	0.61	0.92	1.14	1.09	0.99	0.57	0.81
1996	0.85	0.85	0.80	0.60	0.80	0.98	1.02	0.94	0.73	0.91	1.03	1.09	1.00	0.51	0.84	1.13	0.99	1.11	0.47	1.13
1997	0.84	0.79	0.75	0.55	0.80	0.97	1.05	0.92	0.71	0.83	0.99	1.08	0.98	0.47	0.81	1.12	0.99	0.99	0.51	0.69
1998	0.79	0.76	0.72	0.52	0.79	0.95	1.03	0.91	0.69	0.95	0.95	1.06	0.95	0.48	0.79	1.13	0.87	1.06	0.52	0.80
1999	0.82	0.74	0.72	0.50	0.74	0.94	1.04	0.91	0.70	0.85	1.00	0.99	0.96	0.51	0.80	1.21	1.01	1.06	0.62	0.81
2007	1.00	0.98	0.95	0.97	0.97	0.99	1.01	0.98	0.99	1.02	0.97	0.93	0.95	0.99	0.81	1.00	0.95	0.93	0.94	3.78
2008	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2009	1.02	0.95	0.99	1.01	0.99	1.02	0.96	1.03	1.01	1.07	1.01	0.94	1.00	1.01	0.97	1.10	0.98	0.95	1.09	2.86
2010	1.00	0.95	0.94	1.00	0.92	1.03	0.94	0.98	1.03	1.03	1.01	0.92	0.97	1.09	0.91	1.02	1.01	0.87	1.06	4.84
2011	0.94	0.87	0.87	0.95	0.80	1.03	0.89	0.94	0.99	1.06	1.01	0.75	0.93	1.00	0.96	1.03	0.78	0.79	1.04	1.63
2012	0.93	0.84	0.82	0.86	0.85	1.00	0.88	0.97	0.89	0.99	0.98	0.77	0.93	0.91	0.78	0.96	0.77	0.80	0.99	1.10
2013	0.87	0.80	0.77		0.77	0.99	0.83	0.93		0.90	0.98	0.70	0.88		0.73	0.98	1.01	0.79		2.29
2014	0.84	0.80	0.72			0.98	0.89	0.93			1.00	0.72	0.84			0.97	0.85	0.71		
2015		0.82	0.70				0.93	0.94				0.81	0.84				0.87	0.88		

Source: Elaboration of the authors based on each country's register data. Baseline years 1990 and 2008 respectively.

Table A.4: Relative risk of births by parity and age groups (1989–2015). Women aged 30–45.

	Age 30-45																			
	Relative risk of first birth					Relative risk of second birth					Relative risk of third birth					Relative risk of fourth birth				
	FI	DK	NO	SW	IS	FI	DK	NO	SW	IS	FI	DK	NO	SW	IS	FI	DK	NO	SW	IS
1989	0.96	0.98	0.98	0.95	0.90	0.96	0.98	0.99	0.96	0.93	0.90	0.92	0.94	0.94	0.92	0.89	0.96	0.95	0.92	0.88
1990	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1991	1.03	1.05	1.05	1.01	0.94	1.01	1.03	0.99	0.99	0.91	0.97	0.99	1.01	1.01	0.97	0.97	0.94	1.07	0.97	1.02
1992	1.04	1.11	1.04	1.01	1.05	1.02	1.11	0.98	1.00	0.97	1.03	1.12	1.00	0.95	0.94	1.02	1.02	1.05	0.94	0.98
1993	1.08	1.12	1.02	1.01	1.18	1.02	1.10	0.97	0.94	1.00	0.98	1.08	1.00	0.87	0.95	0.96	1.06	1.06	0.83	0.96
1994	1.06	1.21	1.08	1.01	1.30	1.06	1.16	0.97	0.93	0.92	1.02	1.18	1.02	0.80	0.94	0.96	1.11	1.06	0.77	0.84
1995	1.08	1.25	1.08	0.97	1.26	1.06	1.18	1.01	0.88	0.97	1.03	1.21	1.06	0.72	0.94	0.99	1.08	0.98	0.66	0.79
1996	1.10	1.24	1.13	0.96	1.17	1.03	1.13	1.06	0.85	1.08	0.99	1.12	1.08	0.62	0.93	0.94	1.01	1.02	0.58	0.86
1997	1.11	1.24	1.12	0.94	1.29	1.03	1.16	1.03	0.82	0.92	0.95	1.12	1.07	0.57	0.80	0.91	0.99	1.04	0.55	0.80
1998	1.08	1.23	1.14	0.97	1.32	1.01	1.18	1.04	0.85	0.97	0.94	1.06	1.03	0.60	0.78	0.91	0.96	0.97	0.58	0.81
1999	1.09	1.30	1.18	0.99	1.22	1.03	1.20	1.07	0.86	1.00	1.01	1.15	1.07	0.62	0.80	0.98	0.99	1.06	0.62	0.73
2007	0.98	0.95	0.95	0.99	1.01	0.98	0.98	0.99	1.03	0.96	0.98	0.97	0.95	1.02	0.97	0.94	0.98	0.98	0.98	0.90
2008	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2009	0.99	0.99	0.98	1.03	0.93	1.01	0.98	1.03	1.02	1.07	1.00	0.95	1.02	1.01	1.10	0.96	0.92	0.99	0.99	0.99
2010	1.01	1.01	0.98	1.05	0.97	1.01	1.01	1.03	1.05	1.06	0.99	0.94	1.00	1.04	1.28	0.94	0.90	0.94	1.02	1.06
2011	0.99	0.95	0.94	0.98	0.84	1.00	0.95	0.99	1.00	0.95	0.98	0.85	0.98	0.99	1.07	1.01	0.84	0.91	0.99	0.92
2012	0.97	0.92	0.93	0.91	0.93	0.98	0.92	0.98	0.92	0.95	0.97	0.86	0.95	0.92	1.12	0.97	0.83	0.89	0.96	1.01
2013	0.95	0.93	0.91		0.88	0.98	0.91	0.97		0.96	0.97	0.82	0.91		1.04	0.98	0.78	0.81		0.83
2014	0.93	0.93	0.92			0.97	0.93	0.98			0.92	0.82	0.90			0.91	0.81	0.83		
2015		0.96	0.90				0.96	0.97				0.86	0.92				0.82	0.82		

Source: Elaboration of the authors based on each country's register data. Baseline years 1990 and 2008 respectively.

Table A.5: Relative risk of births by parity and education level (1989–1999).

		First birth			Second birth			Third birth			Fourth birth		
		Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary
Finland	1989	0.973	0.982	0.806	0.980	0.988	0.865	0.928	0.927	0.780	0.926	0.944	0.141
	1990	1	1	1	1	1	1	1	1	1	1	1	1
	1991	1.004	1.012	1.132	0.984	0.990	1.051	0.960	0.982	0.944	0.955	0.981	0.869
	1992	1.019	0.990	1.185	0.990	1.014	1.159	0.987	1.000	1.077	1.043	0.982	1.039
	1993	0.973	0.951	1.286	0.962	0.988	1.116	0.956	0.933	0.974	0.970	0.922	0.930
	1994	0.935	0.942	1.272	0.976	0.990	1.139	0.981	0.954	0.954	0.975	0.910	1.069
	1995	0.931	0.877	1.271	0.944	0.964	1.099	0.970	0.940	0.908	0.998	0.921	0.967
	1996	0.935	0.840	1.210	0.913	0.938	1.027	0.926	0.887	0.828	0.969	0.866	0.790
	1997	0.901	0.852	1.212	0.921	0.897	1.005	0.892	0.836	0.745	0.967	0.793	0.821
	1998	0.851	0.819	1.169	0.863	0.893	0.945	0.858	0.814	0.722	0.940	0.803	0.746
1999	0.874	0.832	1.181	0.861	0.891	0.946	0.910	0.858	0.729	0.973	0.875	0.765	
Denmark	1989	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary
	1990	1.015	0.978	0.982	1.005	0.985	0.986	0.943	0.914	0.959	1.021	0.893	0.810
	1991	1	1	1	1	1	1	1	1	1	1	1	1
	1992	0.966	0.986	1.006	0.998	1.034	0.967	0.938	1.052	0.930	0.938	0.908	0.807
	1993	1.004	0.983	0.986	1.040	1.106	1.009	1.038	1.129	1.066	1.064	0.918	0.885
	1994	0.961	0.961	0.970	1.024	1.100	0.980	0.964	1.099	0.922	1.034	0.924	0.872
	1995	0.972	0.999	1.011	1.014	1.136	1.029	1.029	1.217	0.954	1.104	0.967	0.863
	1996	0.995	0.969	1.012	1.033	1.146	0.935	1.055	1.234	0.897	1.091	1.021	0.671
	1997	0.935	0.931	0.970	0.952	1.069	0.955	0.973	1.108	0.823	1.052	0.906	0.617
	1998	0.875	0.879	0.953	0.978	1.081	0.972	0.967	1.072	0.810	1.036	0.886	0.593
1999	0.845	0.857	0.937	0.939	1.073	0.960	0.911	1.009	0.758	0.967	0.846	0.591	
Norway	1989	0.843	0.845	0.960	0.916	1.086	0.966	0.914	1.053	0.803	1.013	0.872	0.606
	1990	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary
	1991	1.034	0.991	1.026	0.995	0.982	1.004	0.948	0.976	1.004	1.021	0.987	0.980
	1992	1	1	1	1	1	1	1	1	1	1	1	1
	1993	0.965	0.990	1.007	0.959	0.942	0.930	1.002	0.994	0.976	1.025	1.066	1.050
	1994	0.892	0.967	0.948	0.937	0.935	0.914	0.943	0.961	0.962	1.010	1.012	1.009
	1995	0.830	0.943	0.908	0.916	0.914	0.896	0.920	0.960	0.909	1.070	0.991	0.977
	1996	0.795	0.946	0.904	0.953	0.919	0.886	0.944	0.924	0.913	1.007	1.050	0.878
	1997	0.770	0.932	0.912	0.958	0.941	0.898	0.984	0.921	0.920	0.940	0.914	0.847
	1998	0.758	0.938	0.924	0.999	0.924	0.972	0.964	0.964	0.925	1.074	0.919	0.792
1999	0.708	0.907	0.881	0.964	0.934	0.894	0.960	0.942	0.883	1.054	0.920	0.753	
Sweden	1989	0.684	0.880	0.882	0.923	0.921	0.906	0.899	0.918	0.833	0.982	0.867	0.731
	1990	0.675	0.855	0.941	0.920	0.942	0.892	0.952	0.909	0.845	1.098	0.921	0.727
	1991	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary
	1992	0.867	0.872	0.981	0.975	0.946	0.961	0.899	0.923	0.925	0.838	0.870	0.960
	1993	1	1	1	1	1	1	1	1	1	1	1	1
	1994	0.971	0.961	1.009	0.984	0.993	0.963	1.012	1.005	0.983	0.928	0.981	0.973
	1995	0.896	0.899	0.993	0.945	0.953	0.984	0.932	0.937	0.907	0.866	0.973	0.981
	1996	0.780	0.854	0.970	0.867	0.913	0.932	0.913	0.853	0.812	0.859	0.833	0.769
	1997	0.758	0.844	0.948	0.903	0.902	0.911	0.811	0.774	0.748	0.789	0.751	0.790
	1998	0.730	0.785	0.873	0.831	0.829	0.877	0.776	0.668	0.663	0.731	0.629	0.644
1999	0.677	0.755	0.837	0.798	0.789	0.819	0.680	0.566	0.590	0.642	0.567	0.521	

Source: Elaboration of the authors based on each country's register data. Baseline category is 2008 for upper secondary educated women.

Table A.6: Relative risk of births by parity and education level (2007–last year available).

		First Birth			Second Birth			Third Birth			Fourth Birth		
		Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary
Finland	2007	1.021	0.993	0.990	0.981	0.986	0.999	0.974	0.944	1.019	0.868	0.969	1.002
	2008	1	1	1	1	1	1	1	1	1	1	1	1
	2009	1.013	1.018	1.004	0.976	1.022	1.036	1.043	0.992	0.997	1.017	0.993	0.987
	2010	0.999	1.004	1.015	1.007	1.048	1.000	1.031	1.012	0.958	0.916	1.034	0.952
	2011	0.937	0.971	0.960	0.984	1.023	1.005	0.991	1.011	0.955	1.032	1.069	1.004
	2012	0.950	0.948	0.944	0.981	1.002	0.973	0.978	1.004	0.932	0.957	1.032	0.982
	2013	0.898	0.909	0.893	0.937	0.998	0.985	0.971	1.018	0.911	0.998	1.073	0.932
	2014	0.875	0.868	0.891	0.933	0.991	0.963	0.983	0.965	0.862	0.853	1.053	0.896
Denmark		Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary
	2007	0.953	0.975	0.961	0.971	1.011	0.989	0.968	0.981	0.986	0.955	1.025	0.943
	2008	1	1.000	1	1	1.000	1	1	1	1	1	1	1
	2009	0.945	0.955	0.982	0.943	0.970	0.966	0.937	0.901	0.962	0.972	0.906	0.889
	2010	0.947	0.967	0.983	0.892	0.986	0.984	0.930	0.891	0.922	1.057	0.918	0.770
	2011	0.880	0.895	0.904	0.839	0.918	0.918	0.790	0.812	0.806	0.904	0.874	0.718
	2012	0.853	0.855	0.876	0.823	0.888	0.891	0.852	0.798	0.794	0.843	0.921	0.703
	2013	0.831	0.854	0.841	0.793	0.858	0.863	0.839	0.773	0.721	0.994	0.842	0.637
	2014	0.835	0.842	0.845	0.831	0.905	0.889	0.849	0.774	0.721	0.947	0.899	0.636
2015	0.850	0.875	0.871	0.844	0.929	0.923	0.886	0.799	0.789	0.987	0.883	0.651	
Norway		Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary
	2007	0.938	0.938	0.963	0.984	0.983	1.007	0.954	0.960	0.987	0.990	1.006	0.967
	2008	1	1	1	1	1	1	1	1	1	1	1	1
	2009	0.987	0.952	1.017	1.045	1.015	1.018	0.991	0.980	1.011	1.129	0.918	0.922
	2010	0.948	0.924	0.978	0.960	0.968	1.010	0.994	0.909	0.984	1.065	0.869	0.867
	2011	0.882	0.849	0.933	0.910	0.936	0.967	0.973	0.869	0.945	0.935	0.863	0.856
	2012	0.799	0.825	0.902	0.939	0.938	0.958	0.981	0.863	0.896	0.957	0.890	0.783
	2013	0.761	0.779	0.867	0.915	0.912	0.939	0.960	0.847	0.832	0.861	0.777	0.764
	2014	0.680	0.736	0.863	0.928	0.926	0.931	0.936	0.837	0.813	0.875	0.817	0.746
Sweden		Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary	Primary	Upp Secondary	Tertiary
	2007	0.975	0.987	0.972	0.993	1.023	1.024	1.005	1.027	1.020	1.067	0.961	0.954
	2008	1	1	1	1	1	1	1	1	1	1	1	1
	2009	1.002	1.033	1.033	0.986	1.015	1.017	1.075	1.013	1.000	1.188	1.002	0.924
	2010	0.974	1.029	1.050	0.994	1.042	1.043	1.177	1.061	1.013	1.187	1.019	0.985
	2011	0.938	0.976	0.987	0.982	1.019	0.978	1.072	1.023	0.939	1.068	1.062	0.891
2012	0.827	0.890	0.918	0.892	0.907	0.892	1.019	0.967	0.833	1.127	1.039	0.834	

Source: Elaboration of the authors based on each country's register data. Baseline category is 2008 for upper secondary educated women.

