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A longitudinal micro-data analysis of 21
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The influence of family policies on women's childbearing: A longitudinal micro-data analysis of 21 countries

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Abstract: This study analyzes whether and how family policies are related to women's first and second child transitions in 21 post-industrial countries. We adapt the social investment approach developed in welfare state research and distinguish between investment-oriented family policies and traditional, protection-oriented family policies. Our family policy indicators vary over time and are merged with fertility histories provided by harmonized individual level data. We use multilevel event-history models and control for time-varying unobserved heterogeneity at the country level and individual-level characteristics. Higher family-policy support of both types is correlated with the postponement of first births, particularly among young women, whereas traditional-family support is also correlated with postponement among older women and women in education. Both types of family support are linked to earlier first births among lower educated women. Only investment-oriented support is correlated with second birth transitions and this positive relationship does not vary for women with different educational levels.

Keywords: fertility, family policy, investment-oriented policies, earner-carer support, protection-oriented policies, childbearing, multilevel analysis

Introduction

The history of contemporary theory on low fertility can be tracked from economic centred arguments (Becker 1981; Hotz, Klerman, and Willis 1997), to those on women's reconciliation of work and care (Begall and Mills 2011; Brewster and Rindfuss 2000; Neyer 2003, 2005), and the more recent focus on gender inequality in the home (McDonald 2000, 2013; Goldscheider, Bernhardt, and Lappegård 2015; Esping-Andersen and Billari 2015). The current debate on fertility developments in post-industrial societies has brought family policies to the forefront as a main factor that shapes fertility behavior and fertility outcomes. Previous research on the impact of family policies on fertility has often yielded inconclusive results. This may partly be attributed to the fact that a vast range of policies fall within the category of "family policy" (Kamerman and Kahn 1976). Each of these policies may fulfil a different function, such as providing financial support, setting the frame for organizing work and care, or shaping the gender structure within the family and society (Neyer and Andersson 2008).

Demographers have rarely considered these multidimensional orientations of family policies in their theoretical and empirical work. Theoretically, such an approach requires a framework that captures the role of family policies in intersecting economic, career, and gendered caring determinants of fertility behaviour. Empirically, it requires indicators that distinguish between the different aims and implications of family policies for women's and men's paid work, their financial resources, and the organization of care. Moreover, the relationship between family policies and fertility needs to be investigated on the micro-level and in a longitudinal setting, because macro-level fertility indicators such as the Total Fertility Rate and cross-sectional explorations are unsuitable to elicit the complex links between family policies and individuals' fertility behaviour (see e.g. Hoem 2008; Neyer and Andersson 2008).

This study addresses these issues simultaneously and provides evidence that has so far been lacking. First, we adapt the social-investment oriented policy approach developed in welfare state research as a theoretical framework that conjoins the economic, work-care, and gender-related orientations of family policies and yet distinguishes between the different aims that family policies may pursue.

Second, we use indicators that capture the multidimensional and dynamic aspects of family policies and their changes over time and across countries. We differentiate between

1) “social investment oriented” family policies, that is, family policies that support women’s and men’s labor market attachment and take a life course perspective, and 2) traditional “protection oriented” family policies, that is, family policies that support a traditional division of work and care characterized by gender inequality and address risks only when they occur. Our indicators measure how prevalent each of these aspects is within the family-policy configuration of a country and whether and to what extent the magnitude of each changes over time.

We assess the relationship between different family policy configurations and fertility with individual fertility histories from 21 countries, including Western and Eastern European countries and the US. Our comparative approach strengthens the generalizability of the results, particularly as it is based on countries with radically different historical and institutional legacies.

The data we use cover a 13-year time-span (1995-2008), allowing us to assess variation both over time and between countries. The years cover the period when persistently low fertility levels in many post-industrial countries triggered much debate and concern about suitable policy intervention to enable women and men to have the number of children they desire (OECD 2011). The time-span we analyze also includes the beginning of widespread increases in fertility rates, thus broadening variation in fertility behavior and allowing us to contribute to the discussion on the role that family policies may play in the recovery of fertility rates (Bongaarts and Sobotka 2012; Goldstein, Sobotka, and Jasilioniene 2009; Myrskylä, Goldstein, and Cheng 2013).

We use multilevel event-history models to trace how the set-up of family policies at one time-point influences women’s childbearing in a few subsequent years, controlling for unobserved heterogeneity at the country and year level as well as for individual-level factors that are known to influence childbearing. We explore differences in the relationship between policy indicators and 1) the entrance to parenthood, 2) second child transitions, as well as whether this relationship functions differently for women depending on their age or educational attainment.

The link between family policies and fertility: A literature review

Most comparative studies explore the specific impact of different types of family policies, such as child care, child benefit, or parental leave, and they weigh the influence of each of

them separately. The extent to which a country supports fertility via a specific policy is usually measured through an indicator that is argued to reflect the generosity of a policy. The most commonly used indicator is expenditure, such as expenditure on childcare or on family benefits. Other indicators are, e.g., duration of maternity/parental leave or childcare coverage. The outcome variable is often the Total Fertility Rate. Studies based on these premises find that family policies are positively related to the TFR, although the results may vary by the type of family policy, the period or the countries studied (Castles 2003; Gauthier and Hatzius 1997; Luci-Greulich and Thévenon 2013; Rovny 2011). Acknowledging the weakness of the TFR as an indicator of fertility behavior (Hoem 2008; Neyer and Andersson 2008), some studies therefore investigate the link between different types of family policies, the expenditure on them and first or second birth (Adsera 2011; Begall and Mills 2011; Kalwij 2010). These researchers find that, taken independently, policies such as expenditure on maternity and parental leave are positively related to first births, while expenditures on other policies, such as family allowance, may not be or the relationship may vary depending on which birth is investigated.

Welfare-state and gender researchers have pointed out that family policies are multidimensional (Korpi 2000; Sainsbury 1996). They do not only provide support to families, but they also structure gender and social relationships in the family, the labor market, and society at large (Crompton 1998; Lewis 1992; Neyer 2003, 2005; Pfau-Effinger 1998; Siaroff 1994). Due to their structural functions, neither looking at single policies nor at expenditure on them are suitable means to capture the essence of the policy setting and to assess its impact on individual behavior and social outcomes (Bolzendahl 2011; Esping-Andersen 1990; Ferrarini 2003; Korpi 2000; Korpi, Ferrarini, and Englund 2013; Neyer and Andersson 2008). The same may be said of other pure summary indicators of family policies. Researchers have therefore stressed the need to classify family policies according to their aims or orientation, in particular their orientation towards gender equality. Korpi (2000), Ferrarini (2003), Korpi et al. (2013), Billingsley and Ferrarini (2014), and Wesolowski and Ferrarini (2015) suggest to distinguish between family policies that support a more gender-equal division of employment and care (*earner-carer support*) and family policies that support a traditional gender division of labor (*traditional-family support*). In contrast to the conventional use of family policies in fertility studies, i.e., the use of disaggregated single types of policies, of expenditure or of some summed-up indicator of support, identifying and

classifying family policies along these dimensions offers the possibility to measure both the strength and the direction of family policies.

To our knowledge, only a few studies have applied a multidimensional approach to fertility research in comparative perspective so far and none have analyzed parity-specific transitions. Wesolowski and Ferrarini (2015) find that earner-carer support is associated with higher TFR; Ferrarini's (2003) results show that both high earner-carer support as well as traditional-family support is correlated with higher TFR. Billingsley and Ferrarini (2014) look at intentions to have a first or second child. They demonstrate that earner-carer support and traditional-family support may work differently by parity. More substantial family policy support is positively linked to individuals' intentions to have a first child, irrespective of whether the support is directed towards earner-carer couples or traditional family behavior. In contrast, only policy support geared towards more earner-carer arrangements encourages individuals' intentions to have a second child.

We employ the classification of family policies used by these authors to investigate how family policies with different orientations are associated with first and second births across European countries and the US. We incorporate the classification into the broader theoretical framework of "social-investment policies", which stresses the different employment and longitudinal perspectives of earner-carer and traditional-family support. In the following section, we outline this framework and relate it to fertility issues.

Theoretical framework to assess the linkages between family policies and fertility outcomes

Demographic theories that link policies and fertility in advanced (post-)industrial societies have mainly focused on economic and on gender-equality aspects: Economic theories maintain that family policies which reduce the costs of children support a couple's decision to have a child. The costs may be related to direct costs of children as well as to long-term opportunity costs of women (Becker 1981). Gender-oriented theories of fertility stress the need of family policies to support gender equality in the family in order to reduce the double burden of women due to work and care (Esping-Andersen and Billari 2015; Goldscheider, Bernhardt, and Lappegård 2015; McDonald 2000). Each of these theories addresses mainly a specific dimension of family policies. Research has shown that family policies usually comprise a set of different policies, such as cash benefits for children, birth

allowance, marriage subsidies, maternity leave, parental and paternity leave, child care leave, and the like. These policies vary with respect to their economic support and their gender-egalitarian orientation. This multidimensionality of family policies (Korpi 2000; Korpi, Ferrarini, and Englund 2013) may make it difficult to break them down to their purely economic or purely gender-egalitarian aspects. Moreover, the composition of family policies as well as their various components may change over time, making it even more difficult to disentangle the cost-related and gender-related impact of family policies on fertility.

The social-investment approach offers a framework that unites the economic and gender-related aspects and incorporates the multidimensional and dynamic features of family policies over time. The origin of this approach can be traced back to the fertility crisis of the 1930s and Alva and Gunnar Myrdal's suggestion to view social policies not as costs but as an investment in the productivity of the population (Morel, Palier, and Palme 2012a). The approach re-emerged in comparative welfare-state research to capture the fundamental changes from traditional "protection-oriented" social policies towards more "investment-oriented" employment-focusing social policies in European welfare states since the mid-1990s (Gilbert 2009; Hemerijck 2017; Morel, Palier, and Palme 2012b; Beramendi et al. 2015). These changes were implemented as a response to new demands of labor markets, to the restructuring of welfare states, the transformation of gender relationships and families, the need to increase female labor force participation, and - explicitly or implicitly --to increase fertility (Morel, Palier, and Palme 2012a; Henninger, Wimbauer, and Dombrowski 2008).

Traditional protection-oriented social policies have primarily provided financial support in case of – what are now called – "old" social risks, that is, the loss of income and the incurred costs due to illness, sickness, invalidity, old age, and unemployment. Characteristic of these policies are income-related payments in case the protected event occurs, such as unemployment benefit, sickness benefit, or retirement benefit. These benefits are tied to previous employment, but take no long-term perspective beyond providing coverage during the period of need.

Family policies in traditional protection-oriented welfare systems are, however, largely based on the notion of the male breadwinner – female carer family (Jenson 2009). They are rooted in the assumption that mothers stay home to take care of the family. They have therefore tended towards supplementing the income of the family to reduce the costs of

having and caring for children. Traditional protection-oriented family policy benefits are often unrelated or only weakly related to employment and previous income. They typically encompass flat-rate cash transfers of various types, like birth grants, child allowance, care grants, marriage subsidies or tax deductions (for the main earner). By presuming mothers' exit from the labor market, supporting a gendered division of paid work and care, and providing mostly flat-rate benefits, traditional protection-oriented family policies follow a different logic and are constructed differently than the other – employment- and income-based - social policies (unemployment, sickness, old age) within the protection-oriented welfare setting.

By contrast, investment-oriented social policies focus on life-long employment for everyone. They aim to activate women's and men's employment capacities and to enable them to be employed throughout their life (Morel, Palier, and Palme 2012a; Beramendi et al. 2015). Their main objective is not to solely provide social security protection in case of need, but to promote and retain a person's employability even if circumstances may hamper his or her employability for some time. They thus do not confine themselves to protect only against "old" social risks, but they also target "new" social risks, that is, individual and social issues that may impede a person's labor-force participation in the short and the long run. Viewed from a life-course perspective, having a (small) child or children to care for or having low education are regarded as "new" social risks (Bonoli 2005).

The shift towards a social-investment welfare system originally concerned labor-market policies mainly, - e.g., the introduction of active labor-market policies, investments in education, and stricter employment requirements for social insurance entitlements. But it engendered paradigmatic changes in family policies.

Investment-oriented family policies regard each parent as earner and focus on the reconciliation of paid work and care (Bonoli 2005; Morgan 2012). As such, they take an inherently gender-egalitarian orientation (Jenson 2009; Saraceno 2017). The goal of investment-oriented family policies is to enable both parents to care without cutting their ties to the labor market, compromising their long-term employability and economic security, and increasing gender inequality associated with raising children (Bonoli 2005; Saraceno 2017; Jenson 2009, 2012; Morgan 2012). They thus comprise what other researchers call "earner-carer" oriented family policies (Ferrarini 2003; Korpi 2000; Korpi, Ferrarini, and Englund 2013), yet with an emphasis on earners despite being carers. They

follow a similar logic as other investment-oriented social policies and base benefits largely on the same principles.

Investment-oriented family policy benefits paid in connection with the birth/adoption of a child – e.g., maternity leave, paternity leave, and parental leave – are employment- and income-related.¹ In general, their income replacement rate does not differ substantially from that of other social-security transfers (such as sickness or unemployment benefits). Investment-oriented family benefits are therefore considerably higher than the flat-rate benefits of traditional protection-oriented family benefits, at least if compared to full-time wages. They are more an incentive for fathers to take parental leave than flat-rate benefits. Additionally, investment-oriented parental leave schemes often reserve part of the parental leave to be exclusively used by one parent in order to actively encourage fathers to engage in early child rearing. The primary aim to change family policies towards an income-related benefits system was to support women/mothers and to provide them with an incentive to take up employment prior to and return to the labor market after the birth of a child. The social-investment approach highlights the longitudinal dimension implicit in the concepts of earner-carer policies and its lack in the concepts of traditional protection-oriented family policies.

Since family policies comprise a set of different policies, the distinction between traditional protection-oriented family policies and earner-carer policies is usually not clear cut. Many countries still adhere to mainly traditional family policies. If moves occurred, they were neither linear nor uniform across Europe (Morgan 2012). Nor have shifts towards more investment-oriented family policies led to the abandonment of traditional family policies. The changes were often incremental and/or only concerned specific parts of the policies (e.g., introduction of paternity leave alongside still traditional forms of parental leave). Family policies across welfare states and within each welfare state vary thus mainly with respect to the weight that protection-oriented traditional vs. investment-oriented earner-carer family policies have within the whole set of family policies at a specific point in time.

¹ *In the welfare-state literature, high-quality public childcare is also considered part of the investment-oriented family policies. Since we are interested in investigating the link between family policies directly associated with childbearing rather than in public services for families with children per se, we would have liked to have childcare data for children below the fertility-relevant age two for all countries and the time frame included in our empirical analysis. We could not find such data and therefore cannot weigh what we call public-service investment-oriented policies vs. family-centered investment-oriented family policies.*

In the main, and as mentioned above, earner-carer family policies have become more prevalent since the 1990s, in the wake of the transformation towards investment-promoting welfare states. Some countries, like the Nordic countries, implemented pronounced investment-oriented family policies as early as the 1970s and early 1980s. These were directed at promoting mothers' employment and were later on supplemented by explicit incentives for fathers to take parental leave. In Eastern European countries, the socialist variant of investment-oriented family policies, namely (female and male) earner-centered family policies have been abandoned or drastically reduced after the fall of state socialism. In several countries they were replaced by more extensive protection-oriented family policies. Subsequent changes between these policy orientations have been rather frequent in some countries, so that they have oscillated between being more traditional or more investment-promoting (Szelewa and Polakowski 2008; Rostgaard 2004). Continental Western and Southern European countries have been mostly "slow movers" (Morgan 2012) towards some earner-carer components in their family policies or have not changed their – usually protection-leaning – policy mix much.²

Taking these aspects into account, we can formulate some assumptions as to the potential impact of traditional protection-oriented and investment-oriented or earner-carer policies on first and second childbearing. It has often been argued that with women's increasing education and female labor-force participation, traditional family policies may hamper childbearing because these policies may increase their opportunity costs and enlarge gender inequality (Goldscheider, Bernhardt, and Lappegård 2015). Earner-carer policies should work in the opposite direction, so that childbearing propensity should be higher in countries which have implemented more investment-oriented family policies.

Since the financial benefits to (new) parents in investment-oriented welfare states are usually income related, we may also expect that women living in such countries postpone having their first child until they are established in the labor market and/or have a sufficiently large income. We may therefore expect higher propensities to have a first child at higher ages in countries with earner-carer support. The prevalence of traditional family policies may be an incentive to have one's children earlier, that is, before one is firmly established in the labor market, so that one does not have to interrupt employment for a

² This refers to policy changes between 1995 and 2005, since this is the time-span for which we have family policy indicators (1995, 2000, 2005).

long time or lose a lot of income.

One would furthermore expect no first-birth differences between low and highly educated women in countries with more investment-promoting family policies, because these aim at maintaining the caring parent's income-level during a leave, reducing economic uncertainty, retaining employment- and career potentials beyond the childbearing period, and promoting gender-egalitarian life-courses of employment and care (Korpi, Ferrarini, and Englund 2013). In other words, differences in entry into parenthood between low and highly educated women should be smaller or levelled out in countries with earner-carer dominated family policies compared to countries with mainly traditional family policies.

By the same reasoning, we may assume that second-birth intensities are higher in countries with a stronger earner-carer focus of their family policies than in countries with predominantly traditional family policies. There should also be no differences in second-birth intensities among different educational groups in countries with earner-carer orientation of their family policies. If traditional-family support prevails, we would expect second-birth risks to be lower among the highly educated because of the potentially more negative long-term career consequences for the highly educated if they intend to refrain from employment twice due to care.

Data and Method

In this section we first describe the family policy dimensions and then the individual-level data on fertility histories together with the method used.

Family policy dimensions: Earner-carer vs. traditional family policy support

In order to distinguish between earner-carer and traditional family policies and classify countries according to the degree to which they embrace investment-oriented vs. traditional protection-oriented family policies, we measure the financial incentive (= monetary transfer) provided by the policy components included in each of these sets of family policies. Earner-carer support, that is, financial support resulting from investment-oriented family policies, comprises income-related benefits paid during maternity leave and dual parental leave, that is, parental leave that addresses both parents. *Traditional-family support* includes benefits paid during child care leave (typically for mothers), maternity (or birth) grants, cash and fiscal child allowances, and marriage subsidies. These are usually flat

rate. The data of the family policies for the 21 countries included in this study are taken from the Social Policy Indicator Database (SPIN 2017), developed at Stockholm University, complemented by data collected by Wesolowski and colleagues at Stockholm University, for the years 1995, 2000, and 2005.

The *earner-carer support* dimension includes earnings-related family policy transfers, namely maternity-leave and dual parental-leave benefits.³ These benefits are employment-related and the amount a parent receives depends on her/his pre-leave income. The paid leave period differs in length from country to country and may also vary within a country over time. Maternity leave is reserved for pregnant women before and for mothers after the birth of their child and was originally introduced to protect their health (Blum, Koslowski, & Moss, 2017). Due to its earnings-relatedness it also provides incentives for women to enter and stay in the labor market before becoming a mother (Bäckman and Ferrarini 2010). The income-related dual parental leave can be shared between the parents, and in some countries, a part of this leave is a non-transferable right of either parent. During the time period covered in our study, this applies to Sweden, Norway, and Finland.

The *traditional-family support* comprises family policy transfers that are not related to previous employment. These include child care leave allowances (also called home care allowances or cash-for-care allowance), which are usually paid in low flat-rate amounts. These leaves may be taken after earnings-related maternity and/or parental leave; but they may also be granted to every parent irrespective of any previous employment (see also Morgan and Zippel 2003). Due to their (low) flat-rate benefit, these leaves are usually taken by mothers, even if fathers have a right to take them, as well. We are therefore not considering them as part of earner-carer oriented “dual parental leave”, even if a part of them may be reserved for fathers (as in Austria during most of our observation period). We also consider lump-sum maternity grants that are paid in connection with childbirth as protection-oriented traditional family policies. Finally, we include cash and fiscal child benefits and tax deductions for a main earner with an economically inactive or less active partner or spouse within our category of traditional family policies. These benefits are often referred to as “marriage subsidies”. These tax deductions are argued to promote female homemaking as they are granted to a (usually married or legally acknowledged heterosexual

³ We excluded paternity leave - that is days that the father is entitled to around the time of the birth of the child to either assist the mother or to take care of other children during the first time after the delivery - because these days are usually granted simultaneously with maternity/parental leave.

cohabiting) earner and a less economically active spouse or partner. We furthermore allocate child cash benefits to traditional family policies because they may reproduce pre-existing gender structures, in particular if the allowance is high (compared to a woman's average income and/or to costs of childcare) and if it increases with the number of children (Montanari 2000).

Each of our two main independent variables *Earner-carer support* and *Traditional-family support* is the net replacement rate of this family-policy after-tax transfer, measured as a percentage of an average production worker's net wage.⁴ We use the net replacement rates because they best reflect to what extent a country leans towards investment-oriented or towards traditional, protection-oriented family policies and thus supports either earner-carer or gendered family models. The benefits are calculated for a model family according to the rules stated in country legislation. The benefits are the annual net replacement rates for a family with two grown-ups, where one is working full-time and one is on leave, and two children, of which one is newborn. Taking taxation into account avoids mixing taxable and non-taxable benefits, which otherwise would bias the comparison of the benefits (Ferrarini et al. 2013). Moreover, by calculating net replacement rates for a model family these indicators also consider legislated benefit ceilings and avoid using formal replacement rates that might not be applicable to typical wage earners in case earnings ceilings take effect (Wesolowski and Ferrarini 2015).

Earner-carer support is measured by the sum of the annual net amounts of earnings-related post-natal maternity and dual parental leave benefits paid during the first year after childbirth as a percentage of an average production worker's net wage. This net replacement rate thus shows how much of an average production worker's annual net wage is replaced by the benefit/s and takes taxation into account while at the same time considering the duration of the benefit during this first year after childbirth. A shorter duration thus results in a lower replacement rate even if the formal replacement rate for one week is 100%, i.e. 100% for 6 weeks gives a lower replacement rate than 90% for 20 weeks when divided on an annual wage. To capture the full degree of earnings-relatedness, the parent on leave is assumed to have worked two years before childbirth, earning an

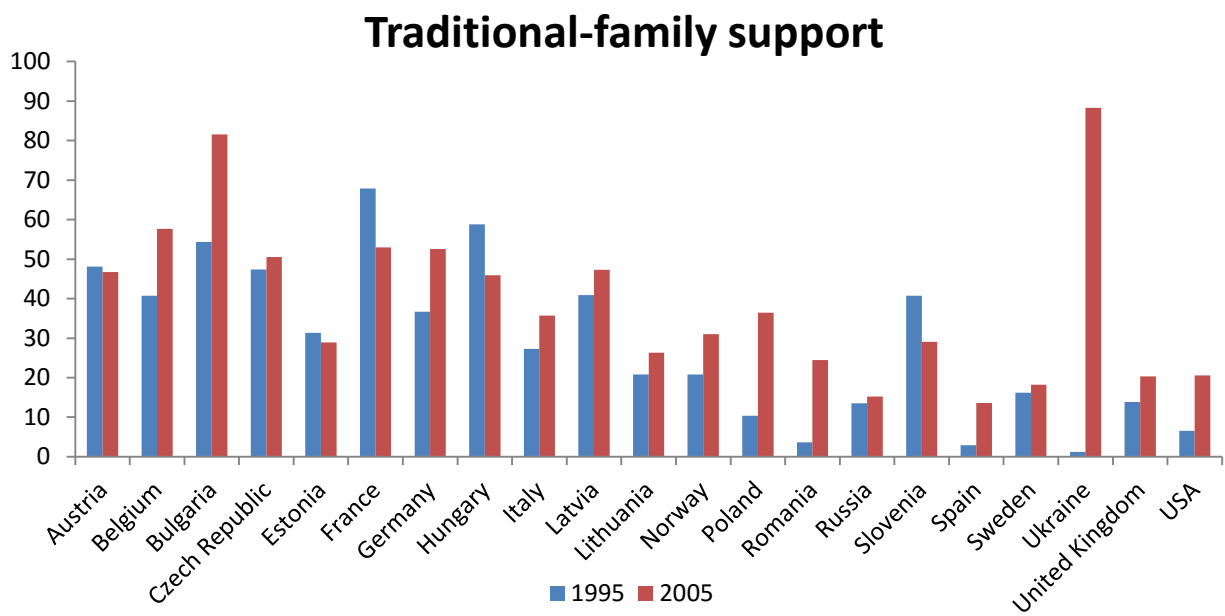
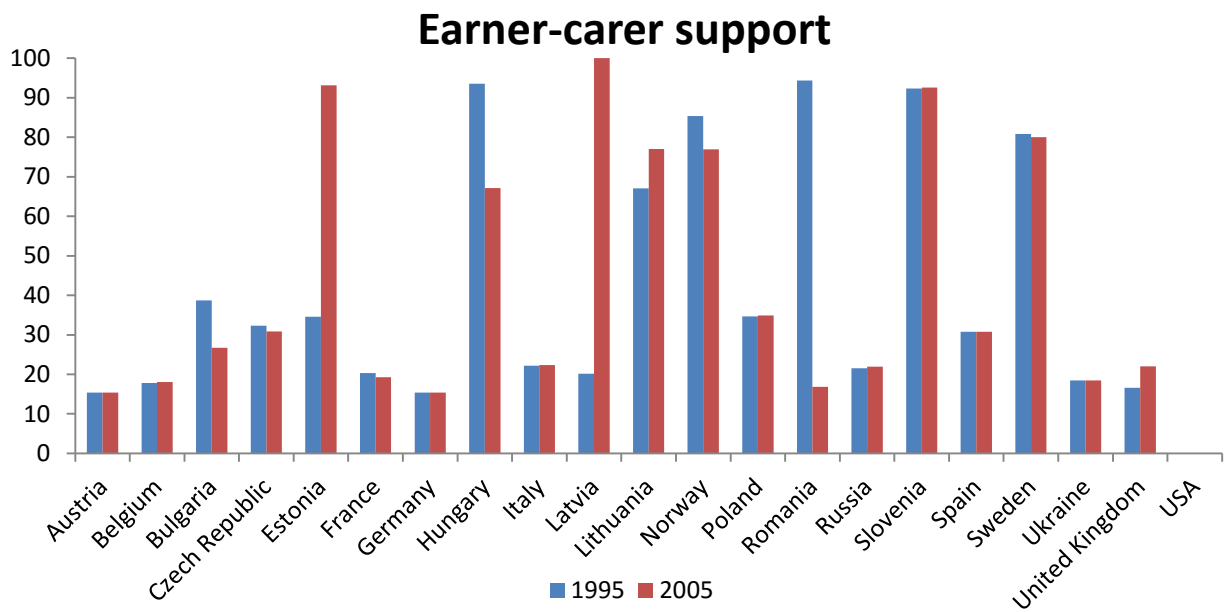
⁴ According to Gauthier (1999), one limitation of using an average production worker as the model is that we do not capture changes in coverage or in benefits directed towards low-income families. However, we capture what someone earning an average production worker's wage in every country would receive thus taking into account what a typical wage earner has the right to receive (Bäckman and Ferrarini 2010).

average production worker's wage, before spending a leave period with the newborn.

Traditional-family support is measured by benefits paid in low flat-rate amounts or as lump-sum payments, usually not related to previous work. The variable measures the annual net amount of all those benefits as a percentage of an average production worker's net wage. Here, the component of child care leave included in the variable takes into account how much of an average net wage is replaced during the first year after the termination of earnings-related parental leave, thus also taking into account the duration during this year.

These two variables are calculated for every country included in the analyses and for the years 1995, 2000, and 2005. They provide us with two separate dimensions, *Earners-carer support* and *Traditional-family support*, both measured in net replacement rates of an average production worker's annual wage after tax to be used as separate variables in analyses. In the analyses at hand, they are centered on their respective mean. Figure 1 displays the measures in the earliest period we observe (1995) and in the latest (2005). We observe very little change in either earner-carer or traditional family support in only three cases: Austria, Russia and Sweden. In the remaining cases, there was a substantial shift in either or both the level of earner-carer or traditional family support, with more stability in earner-carer support. Both increases and declines in both dimensions of support appear over this time frame.

Figure 1. Earner-carer support and traditional-family support over time in 21 countries



Individual-level data on fertility histories

Fertility histories are derived from two harmonized data sets that were constructed using the same procedures: the Harmonized Histories (Perelli-Harris, Kreyenfeld, and Kubisch 2011 and see www.nonmarital.org) and the Changing Life Course Regimes in Eastern Europe (CLiCR) (Duntava and Billingsley 2013). Both harmonized sources rely on publicly available survey data that include retrospective questions about women's childbearing. The main source for Harmonized Histories is the Generations and Gender Survey, but other sources were used as well including the Spanish Fertility Survey, The US National Survey of Family Growth, German Pairfam, and the British Household Panel Survey. From the Harmonized Histories, we use data on Austria, Belgium, France, Germany, Italy, Norway, Spain, Sweden, UK, and US. From CLiCR we have data on Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Russia, Slovenia, and Ukraine. The original sources of these data are the Family and Fertility Survey, Generations and Gender Survey, and Life in Transition Survey. The years the surveys were administered range from 2003 to 2010, along with 2012/2013 for Sweden.

All women for whom we can observe fertility histories (no missing information on birth dates if a child has been born) from the age of 16 are analyzed. For the analysis of the transition to parenthood, the sample includes 55,640 women, of which 41% entered parenthood during the observation period. The birth cohorts included are from 1950 to 1993, with 80% falling between the birth years 1965 to 1985. For the second birth transition, the sample includes 37,018 women who were observed after having a first child, of which 45% conceived a second child during the observation period. Approximately 80% of the sample falls between the birth years 1960 and 1980. Sample weights were not consistently provided in the data sources and therefore could not be used. We did not construct and use population weights in the analyses to avoid distorting standard errors. Estimated average effects, therefore, are unadjusted for how much a country should contribute to the total based on their population size.

We observe all women from the month they turn 16 until they were interviewed or nine months before their first child or second child was born to reflect conditions at the time of conception. To incorporate aggregate level information collected annually and adjust for unobserved heterogeneity across countries and years, we estimate discrete-time multilevel hazard analyses (Barber et al. 2000), which is a logistic regression that allows the

intercept to vary and the odds of a conception are conditioned on a time factor. Each observation represents a person/month and the value of variables can change on a monthly basis. These individual-level person/months are nested within country/year observations. We opted not to nest observations solely within the country because it would not account for changes over time within a country, which is particularly relevant over a time period in which there was pronounced postponement of parenthood and fluctuations in economic performance. Fixed effects for years are included as well to independently account for secular changes in fertility that may coincide with the development of family policies. The model therefore includes a random intercept estimated for each country/year to adjust for differential propensities in a conception occurring across time and space, which reflects national characteristics at that time that are unobserved such as culture (Rabe-Hesketh and Skrondal 2012). Multilevel modelling also corrects standard errors from bias caused by non-independence of observations within countries/years. The second level of the model accounts for intra-country correlation as well as fits country-level correlates, in our case *Earned-carer support* and *Traditional-family support*, whereas the first level accounts for respondents' characteristics. Odds ratios are interpreted as associations between independent variables and the outcome as averages across individuals and countries.

Multilevel models also provide the possibility to allow varying slopes for individual-level covariates across country/years. We explore the need for random slopes through comparisons of model fit (AIC/BIC). In addition, we account for any general differences in first and second conception patterns that are related to residing in a formerly Socialist country, which are known for less postponement of parenthood and a shift toward one-child families (Billingsley and Duntava 2017). We restrict the analysis to specific years in order to limit the possibility of unmeasured policy change: our analyses include the year of the policy measurement and the two years directly following the measurement. As policies are measured in 1995, 2000 and 2005, we assess women's first or second conception hazards from 1995-1997, 2000-2002 and 2005-2007. In other words, we limit the study period to nine total years. Each woman can contribute to different sets of years depending on her parity. To give an example: a woman who is childless in 1995 will be observed until 1997 or censored and if she remains childless in 2000 she will be observed again until 2002 or censored, etc. If she enters parenthood in 2001, she will contribute to the second parity transition model for the years 2001, 2002 and 2005-2007 unless censored.

Age of the respondent is categorized into five-year age groups. We include dummies to capture whether or not a respondent was still studying and their educational level if they were finished: “secondary or lower” includes less than or completed secondary school; “post-secondary” includes those who attended a higher educational institution for less than three years; “higher education” includes those who attended at least 3 or more years of university. In the analyses of second birth conceptions, we control for age at first birth and years since the first child was born instead of age. Descriptive statistics of all variables are presented in the Appendix A.

We cannot control for urban/rural residence because we do not have migration histories to know where the respondents lived before the survey. Neither can we control for labor market participation as the surveys do not provide information on work histories. We also cannot control for partnership status of the respondent because it is not available as retrospective information in all surveys. Given that the process of forming a household with a partner has been considered endogenous to childbearing (Baizán, Aassve, and Billari 2003; Lillard 1993), this may not be a large shortcoming of our data.

Results

We explored whether the effect of having lower or higher educational attainment varied across country/years by allowing the slope for either low, high or both low and high to vary. AIC/BIC scores indicate that allowing the effect of low educational level to vary improves the model fit substantially more than allowing the effect of high educational level to vary. The improvement of adding a random slope for high educational attainment at the same time as a random slope for low attainment produced a negligible increase in the fit according to AIC and lessened the fit for BIC. When we included interactions and allowed the influence of policy indicators to vary across educational groups, the best model fit also appeared for the model with a random slope for low educational attainment. The observed pattern in the fit of various models was consistent for both first and second conceptions; low educated women’s fertility behavior is unique across countries in ways for which we cannot account with our measures. Due to this finding, all models presented include a random slope for low educational attainment.

First child conceptions

Table 1 displays the estimates obtained from discrete time multi-level hazard modelling of first birth conceptions. Women with higher education have the highest odds of entering parenthood (20% higher than women with post-secondary education), followed by post-secondary educated and lower/secondary educated women. This positive gradient is largely due to the very low odds of entering parenthood while still studying and the shorter time between exiting school and having a child for women who are in prolonged education. Regarding age, the highest odds of entering parenthood are when women are age 26-30, followed by 21-25, then 31-35. The odds continue to decline for women age 16-20 and diminish considerably for women 36 and older.

At the macro-level, women who were residing in formerly Socialist countries had 63% higher odds of entering parenthood. This difference was expected given the less advanced postponement of parenthood that has followed the collapse of the Socialist regimes in many countries (Billingsley and Duntava 2017; Frejka 2008; Billingsley 2010). The policy measures reveal that more support in either type of family support contributes to lower odds of parenthood, regardless of the level of the other type of support. The effect appears slightly greater for traditional-family support (0.994 vs. 0.996), which we interpret as slightly stronger postponement or higher childlessness with more support for traditional family arrangements (see below). To understand what the odds ratio entails in real country examples: the difference in earner-career support between the UK and Sweden in 1995 was 64.4 percentage points of an average production workers wage, which amounts to 23% lower odds of having a first child in Sweden than the UK. Ukraine increased traditional family support from 1.24 to 88.3 percent of an average production workers wage from 1995 to 2005, which would entail a decrease in the odds of first conception of 27% according to our estimates.

We see a rather broad spread in the range of intercepts estimated at the country/year level, where the standard deviation around the average constant of 0.006 is 0.49. Likewise, the average odds ratio for lowest educated women is 0.84 and the standard deviation of the random slopes around this estimate is 0.33.

Table 1. Discrete time multi-level hazard model estimates for first birth conceptions

| | Odds ratios | | Standard errors |
|--------------------------------|-------------|-----|-----------------|
| Education | | | |
| In education | 0.36 | *** | 0.02 |
| Low/secondary | 0.84 | *** | 0.03 |
| Post-secondary | 1 | | |
| Higher | 1.20 | *** | 0.06 |
| Unknown | 0.38 | *** | 0.08 |
| Age | | | |
| 16-20 | 0.69 | *** | 0.02 |
| 21-25 | 1 | | |
| 26-30 | 1.18 | *** | 0.03 |
| 31-35 | 0.88 | *** | 0.03 |
| 36-40 | 0.33 | *** | 0.02 |
| 40+ | 0.05 | *** | 0.01 |
| Constant | 0.006 | *** | 0.001 |
| Country-level variables | | | |
| Formerly Socialist | 1.63 | *** | 0.14 |
| Earned-carer family support | 0.996 | * | 0.001 |
| Traditional-family support | 0.994 | ** | 0.001 |
| Number of countries | 21 | | |
| Number of observations | 2,614,227 | | |
| Number of groups | 171 | | |
| Log likelihood | -84493.2 | | |
| SD (low) | 0.33 | | |
| SD (cons) | 0.49 | | |
| AIC | 169033 | | |
| BIC | 169326 | | |

Note: results adjusted for year fixed effect; * $p < .05$. ** $p < .01$. *** $p < .001$

In order to distinguish between postponement and childlessness, age is interacted with policy support to observe in which age groups the odds of first conception decline. We interact one type of policy support at a time, while holding the other policy support constant. In Table 2, a comparison of AIC/BIC shows that the interaction of age and the level of earner-carer support improves the model fit in comparison to both the model that does not have an interaction and the model that interacts age with traditional-family support.

Table 2. Selected results from discrete time hazard models for first conception, main effects and interaction effects of age and policy support

| | Earner-carer family support | Traditional- family support |
|-------------------------|--|--|
| Level of policy support | 0.999 | 0.997 |
| Age | | |
| 16-20 | 0.648 *** | 0.681 *** |
| 21-25 | 1 | 1 |
| 26-30 | 1.173 *** | 1.177 *** |
| 31-35 | 0.880 *** | 0.871 ** |
| 36-40 | 0.324 *** | 0.319 *** |
| 40+ | 0.045 *** | 0.046 *** |
| policy* 16-20 | 0.992 *** | 0.993 *** |
| policy* 21-25 | 1 | 1 |
| policy* 26-30 | 0.999 | 0.999 |
| policy*31-35 | 0.999 | 0.993 *** |
| policy*36-40 | 0.997 | 0.990 ** |
| policy*40+ | 0.995 | 0.996 |
| Number of countries | 21 | 21 |
| Number of observations | 2,614,227 | 2,614,227 |
| Number of groups | 171 | 171 |
| Log likelihood | -84452.1 | -84466.8 |
| SD (low) | 0.30 | 0.33 |
| SD (cons) | 0.47 | 0.48 |
| AIC | 168960.3 | 168989.6 |
| BIC | 169318 | 169347.4 |

Note: results adjusted for year fixed effects, residing in a formerly socialist country at time of interview, educational enrolment and attainment, and the type of policy support not included in the interaction.

* $p < .05$. ** $p < .01$. *** $p < .001$

The interaction of age and traditional-family support also improved the model fit in comparison to no interaction if we look at the AIC, but not if we observe the BIC, which penalizes more heavily for additional parameters. Similarly, interacting age and earner-carer support slightly diminished the spread around the intercept and the random slope estimated for low education, which indicates that this model better explains variation over country/years. First, we note that only the policy influence for the very youngest women is statistically different from the policy influence of the 21-25-year-old women. Higher earner-

carer support is related to significantly lower odds of entering parenthood for very young women. The influence of traditional-family support is similar for the youngest women, but we see a decrease in odds of first conception for women over 30 that strengthens as they get older. These findings suggest that both policy types support postponement of parenthood, but higher traditional-family support appears to also be linked to childlessness if women do not enter parenthood by the time they enter their 30s.

Similarly, Table 3 provides estimates for an interaction between education and policy support. Interacting educational attainment and the two different indicators of policy support independently showed an improved model fit over a model with no interaction and over the models in which age was interacted with policy types.

Table 3. Selected results from discrete time hazard models for first conception, main effects and interaction effects of educational level and policy support

| | Earner-carer family support | | Traditional- family support | |
|-------------------------|--------------------------------|-----|--------------------------------|-----|
| Level of policy support | 0.995 | ** | 0.996 | ** |
| In education | 0.300 | *** | 0.297 | *** |
| Low/secondary | 0.719 | *** | 0.700 | *** |
| Post-secondary | 0.839 | *** | 0.826 | *** |
| Higher | 1 | | 1 | |
| policy* in education | 0.998 | | 0.992 | *** |
| policy*low/sec | 1.006 | *** | 1.003 | |
| policy*post-sec | 1.001 | | 1.000 | |
| policy*higher | 1 | | 1 | |
| Num. of countries | 21 | | 21 | |
| Num. of observations | 2,614,227 | | 2,614,227 | |
| Num. of groups | 171 | | 171 | |
| Log likelihood | -84477.6 | | -84397.1 | |
| SD (low) | 0.29 | | 0.30 | |
| SD (cons) | 0.41 | | 0.22 | |
| AIC | 169009.1 | | 168848.2 | |
| BIC | 169354.1 | | 169193.1 | |

Note: results adjusted for year fixed effects, residing in a formerly socialist country at time of interview, educational enrolment and attainment, and the type of policy support not included in the interaction.
* $p < .05$. ** $p < .01$. *** $p < .001$

The strongest model fit was found when allowing the influence of traditional-family support to vary across educational levels. The main effects show a negative association between the level of policy support of either type and first conceptions for the highest educated women. Whereas postponement was related to higher earner-carer support for other educational groups as well, this negative association disappears for the lowest educated women (considering the main effect of 0.995 and the interaction effect of 1.006 together). The lowest educated women also had a less pronounced postponement of parenthood relative to higher educated women with increased traditional-family support, but this difference was not statistically significant. Women who were still studying had notably lower odds of first conceptions as traditional-family support increased. Postponement of parenthood during this phase of the life course is strongest when traditional family arrangements are supported by the state. The variation around the average constant diminished substantially when introducing the interaction between traditional-family support and the education measure. This implies that a major source of difference across space and time in the overall propensity for first conception is how women who are still studying respond to the policy context.

Second child conceptions

Table 4 displays the estimates obtained from discrete time hazard modelling of second birth conceptions. The variance around the average effect of low education and around the intercept was substantially lower for second conceptions than first, which implies less unobserved heterogeneity for this event. Women with higher education and women with the lowest education have similar (higher) odds of conceiving a second child relative to post-secondary educated women and women still in education have the lowest odds. The highest odds of conceiving a second child are when the child is between 2-4 years old, while women with a child that is 5-9 or 10+ years old have starkly reduced odds of a second conception. Women who were 16-19 years old at the birth of the first child have the highest odds of conceiving a second child and the odds decrease with increasing age at first birth. Women who were residing in formerly Socialist countries have a significantly lower odds of conceiving a second child, which confirms low second birth rates in these countries (Billingsley and Duntava 2017; Billingsley 2010). The policy measures reveal that a higher earner-carer support contributes to higher odds of second conceptions, whereas no

association appears in relation to traditional-family support. If we consider real country examples again: The difference between the UK and Sweden in 1995 was 64.4 percentage points of an average production workers wage, which results in a 29% increase in the odds of having a second child in Sweden according to our estimates. If we consider changes over time, Estonia increased earner-carer support from 34.6 to 93.1 percent of an average production workers wage from 2000 to 2005, which yields an increase in the odds of second conception of 26%.

Table 4. Discrete time multi-level hazard model estimates for second birth conceptions

| | Odds ratios | | Standard errors |
|--------------------------------|-------------|-----|-----------------|
| Education | | | |
| In education | 0.8 | *** | 0.03 |
| Low/secondary | 1.17 | *** | 0.03 |
| Post-secondary | 1 | | |
| Higher | 1.18 | *** | 0.03 |
| Unknown | 0.70 | ** | 0.08 |
| Age of first child | | | |
| 0-1 | 1 | | |
| 2-4 | 1.14 | *** | 0.03 |
| 5-9 | 0.52 | *** | 0.02 |
| 10+ | 0.11 | *** | 0.01 |
| Age at first birth | | | |
| 16-19 | 1 | | |
| 20-24 | 0.81 | *** | 0.02 |
| 25-29 | 0.73 | *** | 0.02 |
| 30-34 | 0.57 | *** | 0.02 |
| 35+ | 0.30 | *** | 0.02 |
| Constant | 0.02 | *** | 0.002 |
| Country-level variables | | | |
| Formerly Socialist | 0.478 | *** | 0.00 |
| Earner-carer family support | 1.004 | *** | 0.00 |
| Traditional-family support | 1.001 | | 0.00 |
| Number of countries | 21 | | |
| Number of observations | 1,295,263 | | |
| Number of groups | 171 | | |
| Log likelihood | -56217.3 | | |
| SD (low) | 0.22 | | |
| SD (cons) | 0.21 | | |
| AIC | 112484.6 | | |
| BIC | 112786.4 | | |

Note: results adjusted for year fixed effects. * $p < .05$. ** $p < .01$. *** $p < .001$

We additionally assessed whether the relationship between policy support and second conceptions varied by educational level. Although BIC shows no improved model fit for interactions of either policy types, AIC indicates that the interactions provide mostly the same fit. We therefore do not display the model results and conclude that the positive effect of earner-carer support is similar across all educational levels and the null result obtained for the influence of traditional-family support is not obscuring important relationships that vary by educational level.

Discussion

This study is the first to analyze parity-specific transitions at the micro-level alongside policy measures that reflect important differences in orientations toward family arrangements of employment and care. This study is also the first to apply the social-investment approach of welfare-state research as a theoretical framework to assess the link between family policy and fertility. This approach takes account of paradigmatic changes in welfare-state and family policies that emerged since the 1990s, i.e., the period covered by our study. The changes concern in particular shifts from traditional protection-oriented family policies which view women primarily as carers and support an unequal gender division of work and care towards investment-oriented family policies that regard women and men as earners throughout their employable years, support women's and mothers' employment over their life-course and encourage men to take (more extensive) care of their children. This approach provides a framework that encompasses an employment as well as a gender-egalitarian perspective of fertility and thus unites economic as well as gender theoretical assumptions of fertility behavior. Following the social-investment approach, we distinguished between traditional family policies that adhere to gender-segregating support of mothers and social-investment oriented family policies that aim to maintain a person's employability and attachment to the labor force over her life-course, and therefore provide more gender-equal and earner-carer oriented parental support.

Contrary to our expectations, our results show that the higher support through both types of family policy is correlated with postponement of first births. But the considerations for postponement might be different: With their long-term investment-oriented perspective, earner-carer support provides incentives to establish oneself in the labor market before having a child. This is further backed by the income-related parental leave

predominant among earner-carer family policies. Postponement could be expected in contexts with high traditional-family support, as well, because this family support provides no long-term employment-related perspective and thus incurs higher opportunity costs. The usually flat-rate benefits associated with traditional family support may amplify the hesitation to have a child, at which the even lower odds ratio hints. The latter tendency is further revealed by the increasingly low probability that women will have a child at all under more traditional-family support if women have remained childless into their 30s.

The delay in parenthood as either family policy provision increased was not, however, observed for women with low educational attainment. We may have expected otherwise, since women with low or (post-)secondary education are found to face greater employment insecurity than women with high education (Kreyenfeld, Andersson, and Pailhé 2012) and generally greater difficulties to found a family (Jalovaara et al. 2017). However, earner-carer family policies are assumed to level out educational differences in employment opportunities (Korpi, Ferrarini, and Englund 2013), which should also lead to similar childbearing behavior among educational groups. In the case of earner-carer support, the lack of postponement found for low educated women may be interpreted as evidence that women who do not expect higher earnings in the coming years or who foresee periods of unemployment and insecure employment ahead of them simply do not have an incentive to postpone. Lack of employment histories and income development in our data prevented us from further examining the link between family policy orientation, educational attainment and childbearing. The fact that this finding is mirrored for traditional-family support, however, may indicate that women with low educational levels are simply not responsive to the policy setting when it comes to the time in their life when they enter parenthood due to, e.g., their specific opportunity structures or norms.

A final finding related to entering parenthood was that postponement was most pronounced for women who were studying in contexts of higher traditional-family support. This is in contrast to the finding that more earner-carer support was equally related to postponement for women who were studying and those who had attained a high educational level. In other words, neither policy settings seem to provide sufficient support or an environment conducive to have children while studying, but a tradeoff between pursuing more education and starting a family is more pronounced when traditional family arrangements are supported by the state. The lack of a long-term perspective that stretches

through education, childbearing, and employment limits the usefulness of traditional family policy to a finite and immediate moment in time. The uncertainties this group of individuals face may be the least assuaged by increased traditional support. Specifically, if we consider the first years of parenthood as a social risk in relation to future employment and income prospects that family policies are to mitigate, two aspects may explain the resistance to entering parenthood in strongly traditional family policy contexts during this life stage. First, countries whose family policies are more oriented towards a social-investment support are also more inclined to have flexible educational systems in which employment and studying periods can be combined, and they also offer more generous financial support to students to maintain themselves (e.g. Sweden, Finland, Norway). Second, even though lack of data prevented us from including indicators of public childcare for young children in our analysis, countries that cling to traditional family policies usually do not have a well-developed public childcare system for children under three, but they rather offer long child care leaves with low flat-rate benefits, as, e.g., Austria or Germany during our observation years.

Our results also show that higher support through investment-oriented policies (earner-carer support) is positively correlated with second births, pointing to a stronger trend of family expansion in countries with higher earner-carer support. Unlike the transition to parenthood, the influence of earner-carer support does not seem to vary across women with differing educational attainment. That family expansion (second child conception) is positively linked to higher earner-carer support, while traditional-family support is not, corroborates past findings by Billingsley and Ferrarini (2014). This may be due to the fact that traditional-family support may encourage women to reduce their labor force participation by taking the long leaves that this support offers (e.g., child care leave until the child's third birthday). Such leaves have a dampening effect on subsequent employment (Mandel and Semyonov 2005). It may well be that women abstain from having another child if family policies expose them to heightened future employment and income insecurities, as traditional family policies do. In other words, although having the possibility to stay out of the labor market for a long time looks like a generous family policy, women may increasingly judge this in light of their future employability and give more weight to these future consequences than to the long-term leave option. Such considerations may become even more prevalent in the future since more and more countries strengthen the investment-oriented features of their labor-market and social-security systems. By contrast,

in countries that opted for investment-oriented family policies—which support women to stay in the labor market, maintain the family’s financial basis, and promote the gender egalitarian division of work and care—women are less forced to choose between employment or having children, since the latter may have less severe consequences for their future than traditional family policies do. Women are therefore more likely to continue childbearing once they enter parenthood.

Do investment-oriented family policies that focus on life-long employment of women and men and thus pursue a gender equal division of work and care strategy lead to higher fertility? Our findings support this assumption to the extent that, first, there seems to be less pronounced postponement of first births, implying that there may be less childlessness in these countries, and second, that there is a higher tendency to second births in countries with earner-carer family policy support than in those with traditional family policy support. To the extent that postponement undermines overall fertility rates (mathematically or by reducing the number of potential childbearing years), our results point to a general policy-relevant issue: We find postponement of first births in countries with investment-oriented as well as in countries with traditional family policies, albeit with different strength. We assume that this is linked to the long-term judgement that women make with respect to children, employment, and the gender division of care. The reason for postponement may be different in countries with earner-carer family policies than in countries with traditional family policies, yet in either case, women choose to delay parenthood in relation to their labor market activities. Investment-oriented family policies that promote gender equality in care and life-course perspectives seem to be better equipped to reduce the fertility-related implications of this development than traditional family policies.

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Appendix A. Descriptive statistics

| Individual-level variables | Parity 0 women | | Parity 1 women | |
|-------------------------------------|-----------------|---------------|-----------------|---------------|
| | % person-months | Person-months | % person-months | Person-months |
| Age | | | | |
| 16-20 | 37 | 1011922 | | |
| 21-25 | 28 | 773603 | | |
| 26-30 | 16 | 445730 | | |
| 31-35 | 9 | 238937 | | |
| 36-40 | 6 | 159339 | | |
| 40+ | 4 | 97485 | | |
| Education | | | | |
| In education | 40 | 1082123 | 10 | 127235 |
| Low/secondary | 17 | 472988 | 28 | 369609 |
| Post-secondary | 27 | 745606 | 45 | 600650 |
| Higher | 8 | 209205 | 16 | 215620 |
| Unknown | 8 | 217094 | 1 | 18462 |
| Age of first child | | | | |
| 0-1 | | | 24 | 321280 |
| 2-4 | | | 23 | 305777 |
| 5-9 | | | 24 | 319135 |
| 10+ | | | 29 | 385384 |
| Age at first birth | | | | |
| 16-19 | | | 17 | 229716 |
| 20-24 | | | 44 | 592149 |
| 25-29 | | | 26 | 342620 |
| 30-34 | | | 10 | 133143 |
| 35+ | | | 3 | 33948 |
| <hr/> | | | | |
| Country-level variables | Mean | SD | Minimum | Maximum |
| Level of earner-carer support | -6.72 | 26.32 | -41.89 | 60.89 |
| Level of traditional-family support | -0.88 | 18.39 | -27.89 | 49.12 |