Do Family Policies Affect Births, Maternal Employment and Marital Stability?

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Abstract: This paper examines the effect of the introduction of a 1982 maternity benefit program on childbearing, maternal employment and marital stability in the former Soviet republics of Estonia, Latvia and Lithuania. The program included one year of partially paid leave and a small cash payment at birth. We use individual-level panel data on birth, employment and marital status histories and a difference-in-differences strategy to study the short- and long-term effects of the program. We find an increase in fertility rates, particularly for second births among married and older women, providing suggestive evidence of an increase in completed fertility. We find a small positive effect on overall female employment, especially among women not eligible for the benefits, who likely want to qualify. After the birth of a child, we find an increase in the length of maternity leave, but no effect on employment one to six years after the birth of a child. The program also increased marital stability for married couples after the birth of a child. Our setting enables us to examine the effect of family policies in a region with patriarchal gender norms with respect to housework, where women were the main providers of care within the household, but egalitarian gender norms with respect to the labor market, where most women participated in the labor market full-time. Patriarchal gender norms regarding housework may explain the increase in marital stability: as maternity benefits allow women to stay home with their young children longer, the conflict between women's dual roles as full-time worker and full-time mother is reduced, which may reduce conflicts within the marriage.

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The past fifty years have witnessed a remarkable expansion of government policies that support families upon the birth of a child. Minimal parental support in the 1960s and 1970s has evolved to include, in some countries, extended periods of job-protected paid leave for parents, monthly child benefits, birth bonuses and subsidized childcare. These policies are costly, amounting to an average of 2.4 percent of GDP in OECD countries in 2015,[1] but are promoted as a means to increase fertility rates, support the work-life balance of new parents and facilitate the re-entry of women into the labor force after birth. A large literature analyzing the effects of family policies has yielded largely inconsistent results, with mixed evidence on the effect of these policies on fertility rates, women's employment and career paths, and children's outcomes. Most studies assess policy effects in high-income, developed market economies with relatively egalitarian attitudes towards gender roles and the household division of labor, such as the U.S., Canada, Norway, Germany, Austria and Sweden.[2]

We add to this research by studying the effect of family policies in the Baltic countries of Estonia, Latvia and Lithuania when they were republics of the Soviet Union. This unique setting enables us to examine the effect of pronatalist policies in a middle-income region with gender norms and labor market institutions that differ markedly from most countries studied in the literature. As described in greater detail below, while the Soviet state heavily promoted female labor force participation and the equality of men and women in the workplace, gender norms remained highly patriarchal and women undertook the vast majority of housework and childcare. With few opportunities for part-time work and a second income needed in many families, women's response to fertility incentives likely differed from that of women in other countries. Our analysis of these issues highlights the potential role of gender norms in explaining, in part, the disparate effect of family policies on women's outcomes documented in the literature.

[1]OECD Family Database http://www.oecd.org/els/family/database.htm.
[2]We review this literature below.

The maternity benefit program we analyze took effect in the Baltic republics in late 1982. The program comprised a flat paid maternity leave benefit of 35 rubles per month (about 25 percent of the average female wage), paid until the child's first birthday, and extended job protection for up to 18 months. Women also received a small cash payment at birth which varied by birth parity. The main goal of the program was to increase fertility in the low-fertility republics of the western Soviet Union, but the legislation also referenced improved work-life balance for mothers as a goal of the program.

We use retrospective data on the complete birth, employment and marital status histories of women in Estonia, Latvia and Lithuania to examine the effect of the maternity benefit program on births, female employment and the stability of marriages. We implement a difference-in-differences strategy comparing the changes in these outcomes with those of five East European control countries with demographic, labor market and institutional characteristics similar to those of the Soviet Baltic republics. Importantly, we find no changes in the overall composition of mothers who give birth after the program, allowing us to identify causal effects on employment and marital stability. We identify women's eligibility for the program and test for program effects on eligible versus not-eligible women. We supplement our analysis using regional (oblast)-level data for the Soviet Union to study the effect of the reforms on other Soviet republics as well as additional outcomes such as infant mortality rates.

This paper is most closely related to Malkova (2018) which analyzed the effect of the same maternity benefit program, as studied in this paper, on short-term fertility rates and completed childbearing in the Russian republic. Using annual and monthly regional (oblast)-level data, the results indicate that the program increased fertility rates by 8.2 percent in the first twelve months after implementation, and increased period fertility by nearly 15 percent over the next ten years. Higher-order births increased, born to older mothers, strongly suggesting that completed fertility increased due to the program. This paper extends this analysis in three important ways. First, we use individual-level data for the Baltic republics, enabling us to examine the effects of the program on childbearing in other republics of the Soviet Union, to study heterogeneities in the effects by birth parity and by mother's

age, education level and marital status, and to control for mother fixed effects. Second, we analyze additional important outcomes, such as employment of all women of childbearing age, and the short-term and long-term employment and the stability of marriages of women after the birth of a child. Third, we are able to test the effect of the program on both eligible and ineligible women, providing an important placebo test for our results.

We find that the maternity benefit program increased the probability of having an additional child by 20.3 percent between 1983 and 1985 for women ages 18 to 33 who were eligible for the program. The largest effects are for second births – the critical parity for achieving the replacement level of fertility – for which the probability increased by nearly 25 percent. Fertility increased for women ages 23 to 33 but did not change among women ages 18 to 22. That second births increased and birth timing did not shift to younger ages suggests that the reform also increased completed fertility in the Baltics, in addition to the Russian republic, as demonstrated in Malkova (2018). Fertility increased across all education levels, and increased only among married women. We do not find evidence of increases in fertility among ineligible women, which serves as a placebo test. These results add to the literature on the effect of pronatalist policies on short-run and long-run fertility, which generally shows that parental leave expansions and increased benefit generosity increase short-run fertility rates and, in some cases, completed fertility (Lalive and Zweimuller 2009; Cohen et al. 2013; Gonzalez 2013; Riphahn and Wiynch 2017; Raute 2019; Sorvachev and Yakovlev 2020). The evidence is inconsistent, however, as Dahl et al. (2016) find no fertility effects of paid leave expansions in Norway.

While women increased their leave length, we find that the program had limited effects on female employment. For all eligible women, the results indicate that employment increased by 1.7 to 4.3 percent in 1983-1985. A large positive employment effect is apparent for ineligible women, possibly indicating that women joined the labor force to become eligible for benefits, although these estimates are imprecisely estimated. When we restrict the sample to eligible women who had children, we find

that they increase the length of maternity leave by 3.8 months. However, we find no evidence of employment changes one to 6 years after birth; female employment remains high with 90 percent of women employed one year after birth. This limited effect on employment may reflect the constraints faced by women in the Soviet Union: as part-time employment was virtually non-existent and wages were too low for a single earner to support a family, women had few alternatives to returning to full-time employment upon the expiration of maternity benefits. Women may have adjusted by taking jobs with greater flexibility in hours or less responsibility, but we lack data on hours or occupation to test this response.

These results add to the large body of research on the effect of family policies on female employment, careers and earnings. Even in a different institutional and cultural setting from that studied in much of the literature, we find an increase in leave length and a similarly small effect of maternity benefits on women's employment trajectories (e.g., Carneiro, Loken and Salvanes 2015; Dahl et al. 2016; Lalive and Zweimüller 2009; Rossin-Slater et al. 2013; Lalive et al. 2014; Schönberg and Ludsteck 2014). Recent comprehensive surveys of this literature conclude that the effects depend in part on policy design: shorter parental leaves can increase female employment and job continuity in the years following a birth, but lengthy leaves – generally more than one year – can have unintended consequences, negatively affecting female labor force attachment, earnings and career growth in the long run as women respond to the incentives to postpone their return to work (Kunze 2016; Olivetti and Petrongolo 2017; Rossin-Slater 2018).[3]

Finally, we find that the maternity benefit program increased marital stability among eligible women who had a child in the Baltics. Married women who gave birth between 1983 and 1985 were

[3] Recent papers in this strand of the literature include Baker and Milligan 2008; Lalive and Zweimuller 2009; Ejrnaex and Kunze 2013; Rossin-Slater, Ruhm and Waldfogel 2013; Lalive et al. 2014; Schonberg and Lusdsteck 2014; Baum and Ruhm 2016; Dahl et al. 2016; Mullerova 2017; Kluve and Schmitz 2018; Bicakova and Kaliskova 2019; Canaan 2019; Pinjas and Rau 2019; Bana, Bedard and Rossin-Slater 2020; and Corekcioglu, Francesconi and Kunze 2020.

1.4 percentage points more likely to be married a year after birth, and 3.8 percentage points more likely to be married 6 years after a birth. This marital stability result differs from marital stability effects found in the few studies that examine this outcome. Dahl et al. (2016) find no effect of parental leave expansions in Norway on the probability of marriage or divorce. In contrast, Canaan (2019) finds that generous parental leave in France decreased the probability that cohabiting couples marry while Cygan-Rehm, Kuehnle and Riphahn (2018) show that increased benefit generosity increased the probability that parents cohabit but had no effect on marriage.[4]

Why might maternity benefits increase marital stability? One mechanism is that maternity benefits improve mothers' mental health (Butifkover, Riise and Shira 2018; Bullinger 2019) which may reduce marital stress. However because mothers in all countries with maternity benefits should benefit in this way, one would expect consistent positive effects on marital stability across countries. A second mechanism is increased income due to the maternity benefits, but we rule this out for our setting because women's average net income was essentially unchanged under the maternity benefits program, as we discuss below. A third mechanism is that gender norms may play a role in the effect of maternity benefits on marital stability. By their very nature, parental leave policies intensify the household division of labor and reinforce traditional gender roles, as women historically take all, or most, of the parental leave available to parents. In countries with egalitarian attitudes towards gender roles, increased household specialization may lead to greater conflict within marriages and greater marital instability. In countries with entrenched traditional gender roles, like the Baltic republics, the opposite may occur: as paid maternity leave induces women to withdraw from the labor force and household specialization intensifies, the conflict between women's dual roles as full-time worker and full-time mother is reduced and marital conflict may be reduced as well. This idea is in the spirit of Feyrer, Sacerdote and Stern (2008) which argue that differences in gender norms in part explain

[4]An emerging literature on the effect of earmarked paternity leave on marital stability also yields mixed results; see Cools et al. 2015; Ardic and Kaimi 2018; and Olafsson and Steingrimsdottir 2020.

differences in fertility rates in developed countries, and aligns with insights into the internalization of gender norms into preferences by Bertrand (2020).

In sum, despite the growth, prevalence and cost of family policies, the estimated effects of these policies on the outcomes of parents and children are inconsistent.[5] The mixed results are partly due to differences in policy design, as the length and generosity of benefits vary widely over time and across countries. A key takeaway from our study is that factors beyond policy design may also explain the differing results observed in the literature. Our setting suggests that differences in gender norms may play a role in determining the effect of family policies on women's outcomes.[6]

I. Institutional and Demographic Setting of the Pronatalist Reform in the Baltic Republics

A. Fertility and Family Formation in the Baltic Republics and Eastern Europe

This paper uses Estonia, Latvia and Lithuania as treatment countries, affected by the1982 maternity benefit program, while five East European countries are used as controls: Bulgaria, the Czech Republic, Hungary, Poland and Romania.[7] These countries were similar to the Baltic republics on many dimensions – political, institutional, economic, demographic – and are plausible controls for the Baltic republics in the 1980s, as discussed below.

The Soviet Union annexed the three Baltic countries in 1940 and they remained Soviet republics until their independence was restored in 1991. The East European countries became satellite states of the USSR in 1945 which lasted until the fall of the Berlin Wall in 1989. All had similar economic systems in the postwar period, characterized by state ownership of enterprises, centralized wage determination, labor shortages and high female labor force participation rates. In addition, they

[5]A rich literature on the effect of parental leave on children's health, schooling, behavioral and cognitive outcomes finds generally mixed effects; see, for example Baker and Milligan 2010, 2015; Carneiro, Loken and Salvanes 2015; Dustmann and Schoenberg 2012; Heisig and Zierow 2019; Dahl et a.l 2016; Danzer and Lavy 2018; Rossin-Slater 2018; and Ginja, Jans and Karimi 2020.

[6] A third possible factor is differences in income levels: there may be less need for women to return to work in high-income countries in which a single earner can support a household, leading to longer periods out of the labor force for women in high-income countries relative to women in lower-income countries.

[7] In a similar spirit, Pop-Eleches (2010) uses the USSR Republic of Moldova as a control for Romania in his study of abortion and fertility in Romania.

shared a distinctive demographic pattern in the postwar years that differed significantly from that of Western Europe.

This demographic pattern was characterized by relatively early and near-universal marriage and childbearing (Olah and Fratczak 2004; Vassilev 1999; Wynnyczuk and Uzel 1999). In most republics of the USSR and countries of Eastern Europe, women entered marriage at an average age of 21 to 22 years, soon followed by first birth at an average age of 22-23 years. The rate of childlessness in the Soviet republics was near the biological limit of 5-10 percent, well below the rates of childlessness in West European countries (Sobotka 2011). Mean age at marriage and first birth trended downward over the 1960 to 1989 period in the region, in contrast to trends in the West in which marriage and fertility postponement increasingly became the norm. Abortion was legal in all countries except Romania (Levine and Staiger 2004) and was a common method of birth control due to limited access to modern contraceptives in the region. These demographic patterns characterized the East European countries and the western Soviet Union for most of the 1950 through 1989 period.[8]

This 'East European reproductive pattern' likely reflects the incentives created by the institutional features of the socialist system as implemented across the region, in particular the housing and labor markets. Family formation was constrained by housing shortages in most countries; due to these shortages children often continued to live with their parents well into adulthood. Priority in the allocation of apartments was given to married couples with children, increasing the incentive to marry and have a child at a relatively young age (Sobotka 2011). Women also had little economic incentive to delay marriage and childbearing in order to invest in education: because of narrow wage differentials and limited opportunities for career advancement - especially for women - the opportunity cost of early childbearing was relatively low for women.

[8] Fertility rates were higher in the less-developed Soviet republics of Central Asia and the Caucasus. David (1982), Sobotka (2011) and Frejka and Zakharov (2012) provide further details on fertility trends in formerly socialist countries in the postwar period.

B. Gender Norms and Family Policies in Eastern Europe and the Soviet Union

A unique feature of the countries we study is the conflicting nature of women's roles in the economy and within the family. The state heavily promoted the equality of women as workers and encouraged female labor force participation to facilitate the goal of rapid industrialization, both in the Soviet Union and in the East European countries in our sample. As a result, female labor force participation rates were among the highest in the world (around 80 percent) and a full-time dual-earner family model predominated in both Eastern Europe and the USSR. Women were encouraged to work by the state, but also had to work because two earners were necessary to make ends meet for most families due to the low levels and slow growth of wages. Part-time employment was nearly non-existent. As a result of these constraints, few women chose to become full-time housewives when they married or gave birth (Gal and Kligman 2000).

At the same time the state promoted female equality in the labor force, it also encouraged traditional gender roles within the home. Household chores and childrearing was considered a women's domain and women were nearly exclusively responsible for cooking, childcare and other household chores (Olah and Fratcazk 2004; Gal and Kligman 2000; Brunnbauer and Taylor 2004), resulting in the term 'dual burden' which captured the expectation that women be the equal of men as workers and the primary provider of childcare and housework (Cerami 2005). Women's dual role created lengthy work hours; time-use studies from the 1960s indicated that women in Eastern Europe worked an average of 70 hours a week in paid and unpaid work, compared with 55 hours for women in Western Europe (UNICEF 1999). Women's dual burden of work and household responsibility was made yet more difficult by the lack of modern appliances and services in the socialist countries. There was no expectation that men's behavior would change (Gal and Kligman, 2000).

The attitudes towards women's employment and role within the household were reflected in the design of family policies in the countries of the region.[9] Most social benefits were tied to labor force attachment; in particular, maternity benefits in most countries required prior employment for one year. Maternity benefits were typically a flat payment independent of the mother's salary. Fathers had no rights to leave or access to family benefits, which were paid only to mothers. Many countries of Eastern Europe adopted pronatalist policies in the years following World War II in an attempt to counteract declining fertility rates. While the duration of benefit generosity was higher in most of our control countries during our study period, in none of these countries were there any significant changes to family policies or marriage or divorce laws in the years of our analysis (1978 to 1985).

Prior to the 1982 policy change we study, maternity and child benefits were limited in the Soviet Union. Working women and students were entitled to a year of unpaid maternity leave, and received paid leave for 56 days before and 56 days after a birth. Birth payments were given as a one-time payment upon the birth of the 4th child (65 rubles), rising to 85 rubles for the 5th child, 100 rubles for the 6th child, 125 rubles for the 7th child, reaching a maximum of 250 rubles for an 11th child or above. All women received these one-time payments regardless of work status. For context, the average wage in the USSR in 1981 was 172.5 rubles (Goskomstat USSR 1988).

C. The Pronatalist Reforms in the USSR

The new maternity benefits program that included partially paid maternity leave and one-time cash birth payments was announced in a decree of the USSR Council of Ministers published in the national newspapers *Pravda* and *Izvestia* on March 31, 1981. However, the specific details of the new

[9] Family policies for these countries are described in David 1982, 1999; Brunnbauer and Taylor 1985; Debroy 1989; Nirk 1989; Klinger 1991; Baban 1999; David 1999; Vassilev 1999; Wynnyczuk and Uzel 1999; Gal and Kligman 2000; Olah and Fratczak 2004; Mullerova 2004; Muresan et al. 2008; Speder and Kamaras 2008; Hašková and Uhde 2009; Karu and Pall 2009; and Khazova 2012). See the Social Policy and Law Shared Database (https://splash-db.eu/) for a comprehensive listing of relevant laws for these countries. The only divorce law change in this region for 1978-1985 that we can identify is the 1985 Family Code in Bulgaria, which became effective July 1, 1985 and made divorce more difficult (Brunnbauer and Taylor 1985).

measures – the dates and regions of implementation – were not published until September 1981.[10] The new program provided paid maternity leave of 35 rubles per month for the child's first year, which amounted to about 25 percent of the average female wage in the Baltic Republics. The maternity leave payments took effect on November 1, 1981 in the North, Siberian and Far Eastern regions of the Russian republic, on November 1, 1982 in the rest of the Russian republic, Ukraine, Belarus, the Baltic republics, and Moldova, and on November 1, 1983 in the other Soviet republics (Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan). In addition, a flat birth payment of 50 rubles was given for the first birth and 100 rubles for the second or third births. There were no changes to the existing system of higher-order birth payments, which ranged from 65 to 250 rubles, as described previously. In addition, women could extend their maternity leave for an additional six months after the first year, but the additional months of leave were unpaid. A woman was eligible for the program if she was in paid employment for at least one year, or was a full-time student. Maternity leave was only available to mothers. For births that occurred before the start of the program, the mother received paid maternity leave for the remaining months until the child's first birthday, but did not receive the birth payment. The policy effectively ended in 1992, when the Soviet Union dissolved and hyperinflation in all FSU countries eroded the value of the maternity benefit and birth payments to effectively zero.

In our empirical strategy we exploit only the second-stage of this three-stage implementation to identify the effect of maternity benefits on childbearing, women's and children's outcomes. Women in the Baltic republics (our 'treatment' region) had advance notice of about 13 months of the start date of the program. This may raise concerns that women might delay births to take advantage of the new policy, and the women who did this could be self-selected in a way that would bias the results.

[10] See RFE-RL 158/81"Maternity Benefits for Soviet Women Are Expanded", April 10, 1981; RFE-RL 353.81 "Dates for Introduction of New Maternity Benefits Set", Sept. 8, 1981.

However, given the lack of modern contraceptives in the Soviet Union it was difficult for women to precisely control their fertility; even with modern contraceptives it is estimated that it takes three to six months for a couple to conceive when actively trying (Gonzalez 2015). Moreover, our results show no evidence of changes in the composition of mothers or that births fell just prior to the start of the program, suggesting that the advance notice of the program is unlikely to bias our results.

II. Data and Sample Selection

The principal data source is the Survey of Health, Ageing and Retirement in Europe (SHARE), a rich, multidisciplinary household panel survey of European countries that began in 2004 and now includes 27 countries. Estonia first entered SHARE in 2011 while Latvia, Lithuania, Bulgaria and Romania began in 2017; other countries entered in 2007 (Czech Rep., Poland) or 2011 (Hungary). Individuals age 50 and older (and their spouses) are surveyed, and detailed retrospective life history questions were administered in 2008-09 and 2017 (SHARELIFE). We mainly use the 2017 SHARELIFE survey, but also use the 2008 SHARELIFE surveys for the Czech Republic and Poland as retrospective life history questions were not repeated in 2017 for individuals who participated in 2008.

The 2017 SHARELIFE survey contains detailed retrospective life histories of respondents. The life histories were collected using life history calendar methods that begin with questions about easily remembered events (birth dates of children, marriage history); these dates are used to aid in dating other events such as residential history, job history and health history. While of course subject to recall error, research suggests that the life history data are reasonably reliable (Becket et al. 2001; Smith 2009; Kesternich et al. 2014; Smith 2009). The retrospective mobility data in SHARELIFE allows us to match our country-level indicators that vary by year to individuals in each year they lived in a particular country (in either the Baltics or the East European countries in our sample).We are also able to create eligibility indicators for whether a woman was eligible for the benefits in each year, based on

her employment and education history.[11] The women who are not eligible for the benefits are an important placebo group because they are not expected to be affected by the maternity benefits.

To examine outcomes, we use the retrospective SHARELIFE data to form a panel with one observation per woman per year in the period we study, which is 1978 to 1985. We select women who are age 18 to 33 in these years. We choose age 18 because the youngest women in SHARE are age 50 in 2017, or age 18 in 1985. We choose age 33 to minimize any effects from selective mortality of women in SHARE: if a woman is age 33 in 1978, then she is 72 in 2017 which is near the average of female life expectancy in our sample of countries in the study period.[12] Because we want to include the maximum amount of ages, we choose to end our analysis in 1985 with three years under the reform. Because women had children at relatively young ages in the region, restricting the sample to age 18 to 33 covers most births. In 1981, for example, 90 percent of births in the Baltics in SHARE occurs in women age 18 to 33.

We supplement our individual-level analysis with a regional (oblast)-level analysis using data for other republics of the Soviet Union. This approach allows us to estimate an overall effect on both fertility and infant mortality for all of the Soviet republics in which reforms were implemented in 1982. Data on births and infant deaths are collected from the Soviet archives and are publicly available on *Demoscope Weekly.*[13]

III. Effect of Maternity Benefits on Childbearing and Infant Mortality Using Regional Data

We start our analysis by estimating the effect of maternity benefits on childbearing and infant mortality in republics that became eligible for benefits in 1982 (early beneficiaries): Belarus, Estonia, Latvia, Lithuania, Moldova, and Ukraine. We compare these early beneficiary republics to republics

[11] See appendix A for the creation of this variable.
[12]In 1985, life expectancy was 69.4 years in Estonia, 69.3 years in Latvia and 70.5 years in Lithuania, 71.2 in Bulgaria, 69 in Hungary, 71 in Czech republic, 70.6 in Poland and 69.7 in Romania. (World Bank: https://www.google.com/publicdata/explore?ds=d5bncppjof8f9_&met_y=sp_dyn_le00_in&idim=country:ROU:PRT:SRB&hl=en&dl=en).
[13] http://www.demoscope.ru/weekly/2020/0871/index.php

that became eligible for benefits in 1983 (late beneficiaries): Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tadjikistan, Turkmenistan and Uzbekistan. For this purpose, we construct oblast-level fertility and infant mortality rates using archival data for all Soviet Union republics. We exclude the Russian republic from the analysis, because Malkova (2018) estimated the effect on childbearing of maternity benefits there.

A. Data and Descriptive Evidence

First, we construct the general fertility rate (GFR) – the annual number of births per thousand women ages 15 to 44. We use archival data that are quite reliable: birth registration was complete, and archival data were not publically available in the Soviet period. We use data on the number of births in every oblast from 1977 until 1985 and in every republic. We have obtained these data from demoscope.ru that has collected these data from the archives. For the denominator, we use the 1989 Soviet census to estimate the number of women ages 15 to 44 in each year and oblast in every country. The details for fertility rate estimation are in appendix C. Second, we construct the infant mortality rate (IMR) – the annual number of deaths of children under 1 years old per thousand births. We use archival data on the number of deaths of children under 1 years old from the demoscope.ru that has collected these data from the archives.

Figure 1, panel A shows the GFR over time in republics that became eligible in 1982. The GFR was stable and relatively flat at a level of 68 births per 1,000 women of childbearing age before 1982. The GFR jumped in 1982 and rose further in 1983 when benefits were in place for a full year. Republics that became eligible in 1983 have much higher fertility rates, which is why we do not put them on the same graph. Figure D1 shows the trend for these republics, where there is no increase in GFR before 1983. The GFR jumped in 1983 and rose further in 1984 when benefits were in place for a full year. Because of the differences across these republics, we view estimates in this section as suggestive.

Figure 1, panel B shows the IMR over time in republics that became eligible in 1982. The IMR

was going down steadily before 1982, and then continued dropping afterwards. Thus, this graph does not show evidence of an effect on IMR of maternity benefits. Republics that became eligible in 1983 have higher infant mortality rates. Figure D2 shows the trend in IMR for these republics, and there does not appear to be a change in trend around 1983.

B. Methods: Difference in Differences

We use the differential timing in implementation across the early and late beneficiary republics in a difference-in-differences framework to estimate the effect of maternity benefits on general fertility rates and infant mortality rates in the following specification,

$$R_{c,o,y} = \alpha + \gamma_{c,o} + \delta_y + \theta_1 D_{c,o} 1(78 \leq y \leq 80) + \theta_2 D_{c,o} 1(y = 82) + \theta_3 D_{c,o} 1(y = 83) + \theta_4 D_{c,o} 1(84 \leq y \leq 85) + \epsilon_{c,o,y} \quad (1)$$

where $R_{c,o,y}$ is either the general fertility rate (GFR) or the infant mortality rate (IMR) in country *c*, oblast *o* and year *y*, γ is a set of oblast fixed effects that capture time-invariant oblast level differences, δ is a set of year fixed effects that capture changes common to all oblasts, and $D_{c,o}$ equals 1 if a republic became eligible for benefits in 1982.[14] The dummy for the year before maternity benefits, $1(y = 81)$, is omitted, which normalizes the estimates for θ to 0 in 1981. The coefficient θ_1 tests for parallel trends across countries before maternity benefits. The coefficient θ_2 captures the effect of the program in early beneficiaries in the first two months; θ_3 captures this effect in the first full year. The coefficient θ_4 captures the reversion of the mean difference to its preprogram level after the late beneficiaries gained eligibility. For instance, if the late beneficiaries increased their fertility rates once they became eligible for the full year of benefits, θ_4 should be smaller in magnitude compared to θ_3.

C. Results: Effect on GFR and IMR

Column 1 in table 1 presents estimates from equation (1). The results are weighted by the population of women aged 15 to 44 in 1981 in each oblast. The standard errors are clustered at the

[14] Note that $1(78 \leq y \leq 80)$ equals 1 from 1978 to 1980, $1(y = 82)$ equals 1 in 1982, $1(y = 83)$ equals 1 in 1983, and $1(84 \leq y \leq 85)$ equals 1 in 1984 and 1985.

oblast level to allow for an arbitrary correlation structure within an oblast.

The results provide suggestive evidence that maternity benefits increased fertility rates in early beneficiary republics. Panel A shows that fertility rates rose immediately once early beneficiaries became eligible for benefits in 1982. As expected, the increase in GFR was larger when early beneficiaries were eligible for the entire year (1983) than for part of the year (1982) of benefits. Estimates in table 1 (column 1) imply that GFR jumped by 2.5 and 8.3 births per 1,000 women of childbearing age in 1982 and 1983. This represents a 3.6 and 12.1 percent increase over a pretreatment mean of 69 in early beneficiaries. The difference between the GFR of early and late beneficiaries reverts to the preprogram mean due to an increase in fertility rates in late beneficiaries when they became eligible for the full year of benefits in 1984. This is evidenced by the fact that estimates for 1984 and 1985 are smaller in magnitude than estimates for 1983 and are not statistically different from zero. These results are consistent with those in Malkova (2018) that estimates a short-run increase in fertility of 8.2 percent in Russia. Thus, this program not only increased fertility rates in Russia, but also in all eastern republics.

The results show no evidence of an effect of maternity benefits on infant mortality rates. Coefficients in panel B are all small and insignificant displaying no substantial difference in infant mortality rates across the early and late beneficiary republics either during the years when only the early beneficiaries were eligible, or when also the late beneficiaries became eligible.

An important caveat to the IMR analysis is that it can measure both the causal effect of maternity benefits and the effect of the change in the composition of the types of parents who have children after the policy due to the increase in fertility rates. In analysis in the following sections of the paper, using individual-level SHARE data, we do not find meaningful changes in the composition of births after maternity benefits. As a result, the lack of an effect on IMR is likely a result of a lack of a causal effect of maternity benefits on this outcome.

D. Results: Heterogeneous Responses in Urban and Rural Areas

The presence of data on the number of births in urban and rural areas separately allows us to test whether rural or urban areas experienced the largest increases in childbearing. On one hand, a greater fertility rate increase in rural areas could be due to lower opportunity costs and fewer housing size constraints. Women in rural areas typically had lower wages, making the benefit a higher fraction of their salary. Women in rural areas typically had larger housing, allowing them more housing space to accommodate another child. On the other hand, a smaller fertility rate increase in rural areas could be due to potential lower eligibility rates due to lower labor force attachment, and higher fertility rates, which may make additional childbearing unlikely. The child birth credits were introduced for first, second, and third children, while birth credits for higher parity children remained unchanged. Finally, we also test whether the lack of an effect on infant mortality rate masks differential effects in urban relative to rural areas.

We estimate the differential effect of maternity benefits in rural and urban areas in early beneficiary republics within a difference-in-differences framework

$$R_{c,o,u,y} = \alpha + \gamma_{c,o,u} + \delta_{c,o,y} + \pi_1 Urb_{c,o} 1(78 \leq y \leq 80) + \pi_2 Urb_{c,o} 1(y = 82) + \pi_3 Urb_{c,o} 1(y = 83) + \pi_4 urb_{c,o} 1(84 \leq y \leq 85) + \epsilon_{c,o,y} \quad (2)$$

Where $R_{c,o,u,y}$ is the GFR or IMR in country *c*, oblast *o*, in year *y*, in an area of type *u* (urban or rural), $Urb_{c,o}$ equals 1 for an urban and 0 for a rural area, $\gamma_{c,o,y}$ are oblast fixed effects, and oblast by urbanicity fixed effects capturing time-invariant differences between rural and urban fertility patterns within each oblast, $\delta_{c,o,y}$ are year fixed effects, and oblast by year fixed effects capturing changes of unobserved covariates in each oblast. The coefficient π_1 tests for parallel pre-trends among urban and rural areas. Coefficients π_2, π_3 and π_4 test for differences in responses among urban and rural areas once maternity benefits start.

We find no evidence of differences in responses in both the GFR and the IMR among urban and rural areas. Column 2 of table 1 shows estimates from equation (2). Coefficients once everyone is eligible (on years 1982 to 1985) are small and not statistically significant (panels A and B). This finding for GFR is in contrast to those in Malkova (2018) who finds that fertility rates in Soviet Russia went up by more in oblasts with a greater share of rural residents. However, we study a different set of republics, and Malkova (2018) did not have data on the number of births separately in urban and rural areas.

IV. Effect on childbearing using SHARE survey data

Next, we use individual-level survey data from SHARE to analyze the effect of maternity benefits on childbearing and employment outcomes. Using individual-level data allows us to perform detailed heterogeneity analysis and to analyze detailed employment outcomes for which we do not have data at the aggregated level.

We compare outcomes in the Baltic republics to those in our Eastern European control countries (Poland, Hungary, Bulgaria, the Czech Republic and Romania). The summary statistics from our SHARE sample affirm that the demographic and labor market characteristics of the treatment and control countries were similar. Table 2 shows the characteristics of women ages 18 to 33 before maternity benefits started (1978 to 1981). We find generally high labor force participation rates, similar probabilities of having a child in a given year, and similar ages at birth. The share of college graduates is higher in the Soviet Union republics, and the overall marriage rate is lower. Most women were married at the time of birth. The biggest difference is that maternity leave policies are more generous in most East European republics in our sample, except for in Romania.

A. Methods

We compare childbearing outcomes of women in the Soviet Union republics to those in the East European countries before and after the introduction of maternity benefits,

$$HK_{i,c,y} = \alpha + \delta_y + \gamma_c + \eta_k + \gamma_c * \eta_k + \sum_{t=1978}^{1981} \theta_t * S_c * 1(y = t) + \sum_{t=1983}^{1985} \pi_t * S_c * 1(y = t) + X_i + Z_{c,y} + \epsilon_{i,c,y} \quad (3)$$

where $HK_{i,c,y}$ is equal to 1 if woman *i* had a child in year y, δ_y are year fixed effects, γ_c are country fixed effects, η_k are number of previous children fixed effects, and $\gamma_c * \eta_k$ are interactions of country and number of previous children fixed effects which control for the number of existing children within each country, S_c equals 1 for a Soviet Union republic (Estonia, Latvia, and Lithuania), and 0 for an East European country (Bulgaria, the Czech Republic, Hungary, Poland and Romania), X_i are individual controls such as birth year fixed effects, marital status fixed effects (equal 1 if married, 0 if unmarried), number of years of education fixed effects, and dummies for the number of children ages 0 to 5, ages 6 to 12, and ages 13 to 17, $Z_{c,y}$ are annual co-variates at the country level such as real GDP per capita in 2011 US$, production of electro energy (milliards kilowatt-hours), number of students in higher education, number of doctors per 10,000 people, number of hospital beds per 10,000 people, and the share of the population living in urban areas. These country-level co-variates test whether the change in fertility rates was due to other coincidental economic shocks across countries.

We perform the analysis with and without mother fixed effects, and results are consistent. While the most empirically demanding, the mother fixed effects approach allows us to control for unobserved variables that do not change over time. Our estimates are similar with and without mother fixed effects, indicating that our control variables capture the unobserved individual characteristics well. To gain precision, we perform most of the analysis without mother fixed effects, due to the sample size limitations.

The coefficients π_{1983} to π_{1985} capture the effect of the program on childbearing in the Soviet Union republics 1 to 3 years after implementation. The point estimates, θ, test whether fertility rates were on parallel trends before the start of the benefits. After presenting results in a generalized difference in differences framework, we summarize our results in a difference-in-differences

specification. The dummies for years 1983 to 1985 are replaced with one dummy that measures the average effect of maternity benefits over 3 years maternity benefits have been in place.[15]

We also pursue an alternative strategy, where our goal is to estimate the effect of the replacement rate of benefits (benefits divided by average female wages in each country) on fertility rates. For this purpose, we construct a time-series of the replacement rate at the country level. We normalize benefits to be zero before the maternity benefits program and in eastern European countries that did not experience expansions in maternity benefits in the early 1980s as the Soviet republics did. The benefits include the child credit and the maternity benefits that were introduced after the reform. We calculate the replacement rate as: (Monthly paid leave payment of 35 rubles * 10 months of receipt + Child credit that differs by parity)/(Average female monthly wage that differs by education group * 12 months). The replacement rate differs by country due to the variation in average wages, by parity due to variation in the child credit, and by year and education group due to the annual change in wages within each education group. See appendix B for the creation of this variable.

We use the following regression specification,

$$HK_{i,c,y} = \alpha + \delta_y + \gamma_c + \eta_k + \gamma_c * \eta_k + \beta RepRate_{c,y} + X_i + Z_{c,y} + \epsilon_{i,c,y} \quad (4)$$

where all variables are defined as in equation (3), and $RepRate_{c,y}$ is the replacement rate of maternity benefits (maternity benefits/average female wage) in country *c* and year *y*. Note that $RepRate_{c,y}$ varies at the year, country, parity, and education group level. In order to control for the endogeneity of the replacement rate we instrument for it using a dummy that equals to 1 in 1982 and after in the Soviet republics, and that equals 0 in all years in the Eastern European countries. The assumptions for this identification strategy are similar to those in our difference in differences

[15] The period from 1978 to 1981 is omitted. We also include a dummy for 1982, because benefits were in place for part of the year then, but do not present these coefficients.

specification, and require parallel trends in outcomes before maternity benefits in the Soviet and Eastern European republics.[16]

B. Results: Effects on Childbearing

Figure 2 displays estimates from equation (3), which represent the covariate-adjusted differences in the probability of having a child between women the Baltics and eastern European republics compared to the difference in 1982.[17] Table 3 presents difference in differences estimates that summarize those in figure 2, while gradually adding controls.[18] Column 1 represents results while controlling for country, number of children, and year fixed effects; column 2 adds individual-level co-variates such as birth year, marital status (1 if married, 0 if not married), and years of education fixed effects; column 3 adds dummies for the number of children ages 0 to 5, ages 6 to 12, and ages 13 to 17; column 4 adds covariates at the country and year level such as real GDP per capita in 2011 US$, production of electro energy (milliards kilowatt-hours), number of students, number of doctors per 10,000 people, number of hospital beds per 10,000 people, and the share of the population living in urban areas. The similarity of coefficients across columns 1 to 4 show that results are robust to gradually adding controls.[19] The standard errors are clustered at the current number of children, year, and country level to allow for an arbitrary correlation structure at this level.

There is no difference in trends in the probability of having a child in the Baltic and eastern European countries four years before maternity benefits among eligible women. In results for all women (panel A), and eligible women (panel B), the point estimates for years 1978 to 1981 are

[16] We test this assumption using the generalized difference in differences specification in the next section.
[17] Figure 2 presents estimates without the country-level co-variates $Z_{c,y}$, because we do not have data on these co-variates in years 1978 and 1979 for Eastern European republics. We also perform this analysis after adding these co-variates, but starting the sample from 1980, and our coefficients on years 1980 to 1985 are nearly identical, suggesting that the addition of these co-variates does not affect our estimation results.
[18] Unlike figure 2 that starts in 1978, Table 3 sample ranges from 1980 to 1985, because we do not have covariates in 1978 and 1979. Thus, the omitted pre-period includes years 1980 and 1981.
[19] Results are robust to adding controls for all other analyses in the paper.

individually indistinguishable from zero and follow a flat trend. These results confirm descriptive evidence that eastern European countries are good controls for the Baltic soviet republics.

Maternity benefits increased childbearing among eligible women. Across all women, childbearing rose in 1983 (figure 2, panel A), which was the first year when the Baltic republics were eligible for the full year of benefits. As expected, this increase is entirely due to an increase among eligible women (figure 2, panel B). Table 3 (panel A.2, column 4) shows that the probability of having a child among eligible women from 1983 to 1985 rose by 2.45 percentage points, which is a 20.3 percent increase over a pre-treatment mean of 12.1. The percent increase in childbearing is larger than found in analysis using oblast level data on GFR. First, the individual-level analysis focuses on women ages 18 to 33, who are the most likely to have children and respond to the policy. Second, individual-level analysis can focus on eligible women, who are the ones we expect to respond to the policy. On the other hand, oblast-level analysis uses the GFR which is the number of births per 1,000 women ages 15 to 44, which we expect to lead to smaller percent increases in childbearing due to a broader set of women included in its denominator.

We do not find evidence that maternity benefits increased childbearing among ineligible women, which is an important placebo test. For these women, coefficients before maternity benefits (years 1978 to 1981) are negative and on an upward trend (figure 2, panel C), suggesting differential pre-trends among the Baltic republics and East European countries. However, this trend in coefficients reverses after benefits start in 1983, where coefficients are negative in 1983 to 1985. Taking the average of coefficients from 1983 to 1985, leads to the conclusion that childbearing went down by 6.4 percentage points among ineligible individuals. However, the difference in differences coefficients in table 3 (panel A.3, column 4) indicate no effect on childbearing, evidenced by a coefficient that is very close to zero and not statistically significant. The difference in conclusions based on figure 3 (panel C) and table 3 (panel A.3) is likely due to a difference in pre-trends, where the table results may be biased

toward zero. A consistent conclusion does emerge from these results – we find no evidence of an increase in childbearing among ineligible mothers.

The increase in childbearing among eligible women is robust to the inclusion of mother fixed effects. Including mother fixed effects is beneficial, because it allows us to control for unobservable characteristics of women that are fixed across time. Panel B of table 3 presents coefficients, where we include mother fixed effects. These coefficients are roughly similar in magnitude to the ones without mother fixed effects, leading to similar conclusions of an increase in childbearing among only eligible women. Because the mother fixed effects specification is more demanding, and we have a limited number of observations, the standard errors go up, and not all of our coefficients are statistically significant, which is in contrast to results without mother fixed effects (panel A). Because of the robustness of our coefficients to inclusion of mother fixed effects, and sample size limitations, the rest of the paper presents coefficients from models that do not include mother fixed effects.

The increase in childbearing among eligible women is robust to an alternative identification strategy, using equation (3), where our independent variable is the benefit replacement rate – benefit as a share of average wages. As the benefit replacement rates rises from 0 to 100 percent, the probability of having a child goes up by 11.7 (table 4, panel B, column 4) percentage points among eligible women. Considering that the average replacement rate of the benefits was about 23.5 percent in 1984 in the Baltics, this leads us to estimate the overall effect of the policy at a 2.7 (11.7*0.235) percentage point increase in the probability of having a child, which is similar to our estimate in table 3.

C. Results: Heterogeneity of Increases in Childbearing

What types of women increased childbearing most? Access to individual-level data allows us to exploit the heterogeneity of our results by maternal characteristics. We compare fertility responses of mothers by their previous number of children (excluding the child born in the year of observation), education groups, marital status and age groups.

Analysis by previous number of children and by age groups tests if completed childbearing went

up. If childbearing increases are the highest for women with no previous children, this may suggest a shift in timing of births, but not an increase in completed childbearing, because childlessness was low in the Baltic republics. If childbearing increases are the highest for women with one or more previous children, this may suggest an increase in completed childbearing, as women have children they would not otherwise have had. An increase in childbearing among younger women may indicate a shift in timing of births, but no increase in completed childbearing. However, an increase in childbearing among older women, may suggest an increase in additional births, which would increase completed childbearing.

Maternity benefits increased both first and second parity births, with the largest increases in second parity births. Panel A of table 5 shows that among women with no previous children, the probability of having a first child goes up by a statistically insignificant 2 percentage points, representing a 14 percent increase, over the pre-treatment mean. This result indicates at a potential shift in the timing of first births. Among women with one child, the probability of having a second child goes up by 3.7 percentage points, representing a 23.8 percent increase over the pre-treatment mean, where this coefficient is statistically significant at the 10 percent level. This result indicates at a potential increase in completed childbearing. However, there is no change in the probability of having third and higher parity births among women with two or more children.

Maternity benefits increased births among women ages 23 to 33, but not among women ages 18 to 22. Panel D of table 5 shows that among women who are ages 23 to 27 the probability of having a child goes up by a statistically significant 4.5 percentage points, representing a 26.8 percent increase. Among women who are ages 28 to 33 the probability of having a child goes up by 1.9 percentage points representing a 24.6 percent increase, though not statistically significant. The increase in childbearing among older women provides evidence of an increase in completed childbearing. However, there is no change in the probability of having a child among women who are 18 to 22 years old. This may be due to the fact that some of these women are still continuing their educations. But,

table 5 shows that their overall probability of childbearing is similar to other ages, so a lack of a response may indicate less scope to shift childbearing to earlier ages.

Whether more or less educated women increase childbearing the most is ambiguous. Less educated women may increase fertility more because of lower opportunity costs, or more resource constraints. The average wage for less educated women is lower than for more educated women, leading to higher benefit replacement rates. However, the more compressed wage distribution resulted in relatively small differences in replacement rates: it was 23.6 percent for women with less than high school, and 19.7 percent for women who completed college. More educated women may increase fertility more because they have lower fertility rates and are less likely to have higher parity births. While the same amount of paid leave was available to everyone, the reform introduced child credits only for first, second, and third births.[20]

We find that childbearing increased across the entire education spectrum. Panel B of table 5 shows that the largest increase is among women who completed college, but women with secondary and less than high school education also experienced substantial increases.

We find that childbearing only increased among married mothers. Panel C of table 5 shows that the entire increase in childbearing is due to married women; we find no evidence of a response among unmarried women. This result is likely due to the infrequency of single motherhood in our countries in the 1980s, and limited support of maternity benefits, given that a single mother could not rely on her partner's income.

D. Effect of Maternity Benefits on the Composition of Births

How have maternity benefits affected the composition of women who gave birth? In table 6, we restrict our sample to women who had children, and use individual characteristics as dependent variables in a difference in differences version of equation (3). Panel A shows very small and

[20] Child credits for fourth and higher parity births existed before, and the reform did not change those amounts.

statistically insignificant changes in the individual characteristics of mothers who had children; we found no changes in years of education, college completion, marital status, and age. These results indicate that while childbearing went up, on average, similar mothers were having these children after the reform as before the reform. This result is relevant for the next sections (V and VI), where we concentrate on employment and marital stability outcomes of women who had children. The finding that there was no change in the composition of mothers allows us to interpret effects found on female employment and marital stability as directly due to maternity benefits, and not due to the change in the composition of mothers.

To test further whether completed fertility went up, we examined the age of mothers at birth by the number of previous children. If a woman has her first child earlier (previous number of children equals to 0), this would indicate a change in timing, because most women had at least one child. If a woman has her second child later (previous number of children equals to 1), this would indicate an increase in completed fertility, because women may have second children they would not have otherwise had. We find that the age at the first birth goes down by 4.4 months, which is not statistically significant. We also find that the age of second birth goes up by a statistically significant 8 months. Thus, we find both that first births happened sooner, and that second births happened later, pointing to an increase in completed fertility.

V. Effect on labor market outcomes using SHARE data

Next, we examine whether maternity benefits affected female employment. First, we examine employment responses among all women. Second, we examine responses among women who had children, such as maternity leave length and employment one to six years after birth.

A. Effect on overall employment of women

Figure 3 presents the generalized difference in differences coefficients from equation (3) for all (panel A), eligible (panel B), and ineligible (panel C) women, where the sample and specification are directly comparable to figure 2. Table 7 summarizes the coefficients in figure 3 in a difference in

differences specification. In figure 3, there does not appear to be a difference in trends in employment among all (panel A) and eligible (panel B) women before maternity benefits between Soviet and eastern European countries. After maternity benefits, among eligible women, coefficients are positive, rising in magnitude, but not statistically significant. On average, employment went up by an insignificant 1.4 percentage points (table 7, panel A.2, column 4) without mother fixed effects, and by a statistically significant 3.6 percentage points (table 7, panel B.2, column 4) with mother fixed effects. Given that before maternity benefits 84.7 percent of women in our sample were working, either specification yields small changes in employment: 1.7 percent increase without mother fixed effects, and 4.3 percent increase with mother fixed effects. The small increase in employment among eligible women may be due to the desire to maintain eligibility for maternity benefits.

Panel C of figure 3 displays evidence of non-parallel trends in employment among ineligible women before maternity benefits between soviet and eastern European countries, where coefficients are positive and are on a downward trend. Starting from 1983, coefficients are positive, but not statistically significant. Employment among ineligible women rises by 9.7 percentage points in 1985, representing a substantial 38.4 percent increase, over a pre-treatment employment rate of 25.2 percent. However, table 7 summarizes these coefficients as near zero and not statistically significant without mother fixed effects (table 7, panel A.3, column 4); specifications with mother fixed effects show a 5 percentage points increase (table 7, panel B.3, column 4). Thus, we do not find evidence of a decrease in employment among ineligible women, and some evidence of potentially substantial increases in employment. The increase in employment among ineligible women may be due to their desire to become eligible for the benefits, in the event they have children.

B. Effect on leave taking and employment after birth

Next, we examine the effect of maternity benefits on leave taking and employment behavior of eligible women who had children. Potential selection of women into having children after maternity

benefits is an important concern with this analysis, because changes in employment may be due to both the direct effect of maternity benefits and the change in the composition of mothers. This concern is important to address in this context, because we find substantial increases in childbearing in the previous section. We do not find evidence of the change in the average composition of mothers in table 6, when looking at years of education, college completion, marital status, and age.[21] This provides some evidence that, on average, women who gave birth after maternity benefits were similar to women who gave birth before. Another strategy is to examine heterogeneous effects on employment by different groups of mothers. The change in the composition of mothers is unlikely influencing our estimated effects on employment, if maternity benefits similarly affect the employment behavior of women who did and did not experience increases in childbearing. We do not find much heterogeneity by maternal characteristics in employment outcomes, which provides evidence that our findings are not driven by changes in the composition of women.

Table 8 presents difference in differences results from equation (3), where we compare women who had children before and after maternity benefits in the Baltics to women in our eastern European control countries. We find that leave length went up by 3.75 months. Before the reform, women in the Baltics took 11.1 months of leave, so just one month shy of the job protected 12 months. Two months of that leave was fully paid, while the remaining months were unpaid. The result of an increase in leave length is consistent with previous literature.

We do not find evidence that eligible women changed their employment one to 6 years after birth. Employment rates remain high among eligible women who have children: 90 percent are employed 1 year after birth, and 96.3 percent are employed 6 years after birth. Table 8 shows small and statistically insignificant coefficients that point to no effects on employment among women who had children. We do not track women for longer than 6 years due to the collapse of the Soviet Union in 1991/1992,

[21] These results are discussed in section IV.D.

which likely had effects on female employment. As a result, we do not want to include any observations on female employment outcomes after the collapse. Our last year when women gave birth in the sample is 1985, thus if we observe them 6 years after birth, it brings us to their outcomes in 1991, which is right before the collapse.

We find no evidence of heterogeneity in maternal characteristics. This supports that the lack of an employment effect is not due to changes in the composition of mothers.

VI. Effect on Marital Stability Using SHARE data

Did maternity benefits affect marital stability of families who had children? Potentially, the extra time at home with children may relieve maternal stress and may lead to more stability in marriages. We found that maternity benefits increased leave from an average of 11 months before the reform by 3.75 months after the reform (see section V.B).

Moreover, changes in income may relieve stress among both fathers and mothers and may lead to more stability in marriages. We find that over the period of their leave women lose similar amounts of income, from lost wages, both before and after maternity benefits.[22] Before maternity benefits, women lost 1260 rubles of earnings during their 11 month leave, while receiving fully paid leave for 2 months after birth.[23] After maternity benefits, women lost less in earnings during their first 11 months of leave due to receiving a monthly 35 ruble transfer for 9 months, and a 50 or 100 ruble transfer for the birth of the first or second and third child. During the additional 3.75 month duration of leave, they lost their earnings for those months, and received 35 rubles for one month until their child turned one. Summing up, after maternity benefits, women lost 1335 in earnings.[24] Thus, the extra time at home is the likely mechanism behind effects on marital stability.

[22] However, if households are liquidity constrained, then maternity benefits allow households to receive income earlier (during leave), which may relieve short-term stress.
[23] Average wage in the Baltics among women was 140 rubles in 1981. Lost earnings: 140*9=1260 rubles.
[24] If took 11 months of leave, mothers of second children lose: 1260-35*9-100=845 rubles. If took an additional 3.75 months of leave, mothers lose: 140*3.75-35=490. Thus, after maternity benefits mothers of second children lose: 845+490=1335 rubles.

A. Short and long-run effect on marital stability

We estimate effects on marital stability for women who were married while they gave birth, and examine their marital status 1 to 6 years after birth.[25] Figure 4 presents generalized difference in differences coefficients for the probability of being married 1 year after birth for eligible women who were married at the time of birth. Before maternity benefits, there is a downward trend in coefficients, indicating a non-parallel trend. However, this trend reverses with a marked jump in the coefficient in 1983. Married women who gave birth in 1983 are 2 percentage points more likely to be married one year after birth, representing a 2 percent increase, over a mean of 99.2 percent.

We find that marital stability increases 1 and 6 years after birth, represented by an increased probability of being married, and a decreased probability of being divorced. Table 9 provides the difference in differences coefficients for the probability of being married 1 and 6 years after birth, and for the probability of being divorced 6 years after birth. Married women who gave birth between 1983 and 1985 are 3.8 percentage points more likely to be married 6 years after birth, representing a 4.2 percent increase, over a pre-treatment mean of 92.1. In terms of divorce, these women are 4.1 percentage points less likely to be divorced 6 years after birth, representing a 47.5 percent decrease, over a pre-treatment mean of 8.7.

B. Heterogeneity of increases in marital stability

Are these increases in marital stability heterogeneous by maternal characteristics? Table 10 presents the effect on being married 1 and 6 years after birth separately by the previous number of children (panel A), education groups (panel B), and age groups (panel C). We find that marital stability only increases 1 year after birth for women who have their first child; 6 years after birth, marital stability increases among both women who have first and third and higher parity children, but not among women who are having second children. We find that marital stability both 1 and 6 years after

[25] Similarly to analysis in section V.B on employment outcomes of women after birth, we only examine marital status 6 years after birth, because we do not want to examine marital status after the Soviet Union collapse.

birth increases across all educational groups. We find that marital stability 1 year after birth increases for women who gave birth while they were 18 to 22, and 23 to 33 years old; 6 years after birth, marital stability increases among women who gave birth while they were 23 to 33 years old.

Can we interpret these increases in marital stability as a direct effect of maternity benefits, or are they also due to changes in the composition of mothers? We did not find evidence of changes in the average characteristics of mothers after maternity benefits (see table 6), which supports that the marital stability results are a result of a direct effect of maternity benefits. However, potentially families with the highest marital stability decided to have children as a result of maternity benefits. Families with no children likely have less information about their marital stability, than families with children, because they have no knowledge of how they would handle children. Thus, if we observe changes in marital stability for families who have their first child, it is less likely that the decision to have that child was influenced by marital stability, than the decision to have a second or a higher order child. Indeed, we find increases in marital stability among families who are having their first child (table 10, panel A).

There may be other unobservable characteristics that induced women to have children, and are also correlated with marital stability. If families who did not experience changes in childbearing, as shown in the heterogeneity analysis in section IV.C, experience changes in marital stability, this provides evidence of a direct effect of maternity benefits on marital stability. Women who were having third and higher parity births did not experience an increase in childbearing, but they experienced an increase in marital stability 6 years after birth (table A, panel A).[26] Women who were 18 to 22 at childbirth did not experience an increase in childbearing, but they experienced an increase in marital stability 1 year after birth.

[26] The coefficient is similar in magnitude as for women having first births, but it is not statistically significant, due to a smaller sample size of women who have third and higher parity births.

VI. Conclusion

The introduction of a maternity benefit program in the Soviet Union in 1982 was an important milestone in a society in which women shouldered the dual burden of full-time employment and household work. The reform achieved its intended goal of raising fertility rates in the low-fertility Baltic republics and eased the work-life balance of new mothers by enabling a substantial extension of time at home after a birth. The intensification of the household division of labor due to the reform may have enhanced marital stability by reducing the conflict between women's dual roles as worker and homemaker. The unique setting we study highlights the potential role of gender norms in determining the effect of maternity leave on women's outcomes and is a promising area for further research.

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Table 1. Effect of Maternity Benefits on GFR and IMR: Oblast-level Soviet Union

A. Dependent Variable: General Fertility Rate

Sample	(1) **All Soviet Union Republics**	*Sample*	(2) **Urban and Rural for Early Beneficiaries**
Before Program		*Before Program*	
(1978 to 1980) x Early	-0.329	(1978 to 1980) x Urban	-0.0282
	[0.741]		[0.757]
After Early Beneficiaries Eligible		*After Everyone Eligible*	
(1982) x Early	2.499	(1982) x Urban	-0.902
	[0.693]***		[0.622]
(1983) x Early	8.347	(1983) x Urban	-1.042
	[0.709]***		[0.843]
After Everyone Eligible			
(1984 to 1985) x Early	2.593	(1984 to 1985) x Urban	-1.631
	[2.150]		[1.336]
Pre-treatment Mean	68.95		62.01

B. Dependent Variable: Infant Mortality Rate

Sample	(1) **All Soviet Union Republics**	*Sample*	(2) **Urban and Rural for Early Beneficiaries**
Before Program		*Before Program*	
(1978 to 1980) x Early	-1.022	(1978 to 1980) x Urban	0.776
	[0.842]		[0.795]
After Early Beneficiaries Eligible		*After Everyone Eligible*	
(1982) x Early	1.231	(1982) x Urban	0.250
	[0.854]		[0.787]
(1983) x Early	0.445	(1983) x Urban	-0.0484
	[0.836]		[1.039]
After Everyone Eligible			
(1984 to 1985) x Early	0.957	(1984 to 1985) x Urban	-0.747
	[1.001]		[0.994]
Pre-treatment Mean	17.65		16.52
Observations	752		608
Oblasts	94		41

Notes: Column 1 shows interactions of grouped year and early beneficiary republic dummies using equation (1), representing the difference in GFR (panel A) or IMR (panel B) between the early and late beneficiary republics in grouped years relative to the difference in 1981. The coefficient on year 1982 (1983) corresponds to the effect when benefits were in place in early beneficiaries for two months (full year). The unit of observation is oblast by year. Column 2 shows interactions of grouped year and urban dummies using equation (2) in early beneficiary republics, representing the differences in GFR or IMR between urban and rural areas relative to the difference in 1981. Estimates for 1981 are normalized to zero, because they are omitted. Standard errors clustered at the oblast-level are in brackets. Regressions are weighted by the number of women ages 15 to 44 living in an oblast in 1980. Statistically significant at ***0.01, **0.05, *0.10. Sources: archival data from demoscope.ru, 1989 Soviet Union census.

Table 2. Characteristics of Women by Country in SHARE: 1978 to 1981

	(1)	(2)	(3)	(4)	(5)	(6)
	Employed (%)	**Gave Birth (%)**	**Age at First Birth**	**Years of Education**	**Married (%)**	**Number of Observations**
A. All Women Ages 18 to 33						
Soviet Union Republic						
Estonia	84.5	12.0	23.5	12.7	64.5	5702
Latvia	84.5	10.4	23.9	12.2	63.0	2064
Lithuania	82.2	11.6	23.7	12.3	62.9	2416
Eastern European						
Bulgaria	80.9	9.6	22.3	11.2	78.6	2324
Czech Rep	88.8	11.7	22.8	12.2	80.0	6078
Hungary	89.2	9.9	22.6	10.8	83.0	2212
Poland	75.0	14.2	23.2	11.2	73.0	6411
Romania	68.8	13.4	21.8	9.7	75.2	2716

B. Women Ages 18 to 33 Who Gave Birth in Given Year

	Married (%)	**Age**	**Years of Education**	**Maternity Leave Length (Months)**	**Number of Observations**
Soviet Union Republic					
Estonia	88.2	25.2	12.551	10.6	684
Latvia	92.6	25.0	12.056	9.3	215
Lithuania	92.2	24.8	12.057	10.8	281
Eastern European					
Bulgaria	96.4	24.0	10.628	21.4	222
Czech Rep	96.1	25.5	12.161	24.0	711
Hungary	97.7	24.9	10.505	27.1	218
Poland	96.6	25.4	10.91	13.5	912
Romania	94.2	23.8	9.284	5.9	365

Notes: This table presents descriptive statistics of our sample of analysis using equations (3) and (4) separately by country, where Soviet Union republics experienced reforms in maternity benefits, while the eastern European countries did not. Sources: SHARE.

Table 3. Effect of Maternity Benefits on Childbearing: Soviet vs. Eastern Europe

	(1)	(2)	(3)	(4)
	A. Had a Child: No mother fixed effects			
	1. All			
Post	0.0185	0.018	0.0183	0.0207
	[0.00629]***	[0.00704]**	[0.00699]***	[0.00980]**
# Observations	39505	39463	39463	39463
Dep Var Mean	0.121	0.121	0.121	0.121
	2. Eligible			
Post	0.0212	0.0231	0.0236	0.0246
	[0.00645]***	[0.00711]***	[0.00708]***	[0.0101]**
# Observations	35016	34986	34986	34986
Dep Var Mean	0.121	0.121	0.121	0.121
	3. Not Eligible			
Post	-0.00643	-0.0161	-0.0169	0.00398
	[0.0258]	[0.0259]	[0.0259]	[0.0351]
# Observations	4483	4471	4471	4471
Dep Var Mean	0.132	0.133	0.133	0.133
	B. Had a Child: Mother fixed effects			
	1. All			
Post	0.0391	0.0321	0.023	0.028
	[0.0226]*	[0.0199]	[0.0191]	[0.0191]
# Observations	38957	38957	38957	38957
	2. Eligible			
Post	0.0392	0.0331	0.0253	0.0332
	[0.0224]*	[0.0195]*	[0.0186]	[0.0182]*
# Observations	34386	34386	34386	34386
	3. Not Eligible			
Post	0.0277	0.0172	-0.00295	0.0096
	[0.0473]	[0.0467]	[0.0480]	[0.0505]
# Observations	4019	4019	4019	4019

Notes: These coefficients present difference in differences coefficients that summarize results from equation (3), representing the difference in the probability of having a child between women who lived in Soviet and eastern European countries from 1983 to 1985 relative to the difference from 1978 to 1981. Panel A does not include mother fixed effects, while panel B includes mother fixed effects. Column 1 includes country, number of previous children, country by previous number of children, and year fixed effects; column 2 adds birth year, marital status, and years of education fixed effects; column 3 adds dummies for the number of children ages 0 to 5, ages 6 to 12, and ages 13 to 17; column 4 adds yearly country-level real GDP per capita in 2011 US$, production of electro energy (milliards kilowatt-hours), number of students, number of doctors per 10,000 people, number of hospital beds per 10,000 people, and the share of the population living in urban areas. The standard errors are clustered at the previous number of children, year, and country level. Sources: SHARE, and Soviet demographic yearbooks.

Table 4. Effect of Maternity Benefits on Childbearing: Benefit Replacement

	(1)	(2)	(3)	(4)
Dependent Variable: Had a Child				
	A. All			
Benefit/Wage	0.106	0.0897	0.0912	0.0891
	[0.0376]***	[0.0402]**	[0.0399]**	[0.0731]
# Observations	32570	32528	32528	32528
	B. Eligible			
Benefit/Wage	0.128	0.124	0.127	0.117
	[0.0382]***	[0.0404]***	[0.0402]***	[0.0735]
# Observations	28585	28555	28555	28555
	C. Not Eligible			
Benefit/Wage	-0.115	-0.177	-0.186	-0.141
	[0.140]	[0.139]	[0.139]	[0.262]
# Observations	3981	3969	3969	3969

Notes: These coefficients present estimates of β from equation (4), representing the effect of increasing the maternity benefit replacement rate from 0 to 100 percent on the probability of having a child. See notes for table 3. Sources: SHARE, demographic yearbooks, archival data on average female wages.

Table 5. Heterogeneous Effects of Maternity Benefits on Childbearing

	(1)	(2)	(3)	(4)	(5)	(6)
	A. Number of previous children			*B. Education*		
	0	**1**	**2**	**< High School**	**Secondary**	**Higher**
Post	0.0198	0.0367	0.00181	0.0258	0.0179	0.0441
	[0.0156]	[0.0183]*	[0.0133]	[0.0244]	[0.0127]	[0.0230]*
# Observations	12385	9465	10987	6911	21635	6326
Dep Var Mean	0.137	0.154	0.0642	0.139	0.129	0.094
	C. Marital Status			*D. Age*		
	Unmarried	**Married**		**18-22**	**23-27**	**28-33**
Post	0.00771	0.0247		-0.00871	0.0445	0.0193
	[0.00751]	[0.0133]*		[0.0218]	[0.0195]**	[0.0145]
# Observations	9180	25688		7768	11098	16114
Dep Var Mean	0.0366	0.167		0.13	0.166	0.0782

Notes: These coefficients represent difference in differences coefficients including all covariates as in table 3 (column 4), where the dependent variable is whether you had a child. Panel A presents results separately by the previous number of children at the time of observation; panel B by education groups, panel C by marital status, and panel D by age groups. Model 4 coefficients are presented. See notes for table 3.

Table 6. Effect of Maternity Benefits on the Composition of Mothers

	(1)	(2)	(3)	(4)
	A. Eligible Women who Had Children			
Dependent Variable	**Years of Education**	**Completed College**	**Married**	**Age**
Post	-0.146	0.00511	-0.0226	-0.00939
	[0.190]	[0.0190]	[0.0176]	[0.186]
# Observations	3998	4002	4015	4015
Dep Var Mean	12.26	0.204	0.893	24.97
	B. Age of Mothers By Previous Number of Children			
Number of Children	**0**	**1**	**2**	
Post	-0.365	0.669	-0.894	
	[0.228]	[0.279]**	[0.557]	
# Observations	1778	1612	515	
Dep Var Mean	23.09	25.98	28.26	

Notes: These coefficients present difference in differences coefficients, including all covariates, as in table 3 (column 4), but for different dependent variables, and only for women who had children. The dependent variables are different in every column: years of education in column 1, whether completed college in column 2, whether married in column 3, and age in column 4. See notes for table 3.

Table 7. Effect of Maternity Benefits on Employment

	(1)	(2)	(3)	(4)
	A. Employed: No mother fixed effects			
	1. All			
Post	0.00251	0.0213	0.0222	0.0161
	[0.00770]	[0.0111]*	[0.0114]*	[0.0142]
# Observations	39505	39463	39463	39463
Dep Var Mean	0.847	0.847	0.847	0.847
	2. Eligible			
Post	-0.00172	0.0148	0.0141	0.014
	[0.00721]	[0.0126]	[0.0121]	[0.0143]
# Observations	35016	34986	34986	34986
Dep Var Mean	0.883	0.882	0.882	0.882
	3. Not Eligible			
Post	0.0285	0.0278	0.0271	0.00856
	[0.0390]	[0.0374]	[0.0373]	[0.0518]
# Observations	4483	4471	4471	4471
Dep Var Mean	0.257	0.252	0.252	0.252
	B. Employed: Mother fixed effects			
	1. All			
Post	0.033	0.0311	0.0238	0.0174
	[0.0218]	[0.0192]	[0.0160]	[0.0166]
# Observations	38957	38957	38957	38957
	2. Eligible			
Post	0.0408	0.0389	0.0321	0.036
	[0.0250]	[0.0217]*	[0.0174]*	[0.0173]**
# Observations	34386	34386	34386	34386
	3. Not Eligible			
Post	0.115	0.115	0.103	0.0502
	[0.0598]*	[0.0598]*	[0.0623]*	[0.0763]
# Observations	4019	4019	4019	4019

Notes: These coefficients present difference in differences coefficients that summarize results from equation (3), representing the difference in the probability of employment between women who lived in Soviet and eastern European countries from 1983 to 1985 relative to the difference from 1978 to 1981. See notes for table 3.

Table 8. Effect of Maternity Benefits on Leave Length and Employment after Birth

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Employment After Birth					
Dependent Variable	**Leave Length (Months)**	**1 Year After**	**2 Years After**	**3 Years After**	**4 Years After**	**5 Years After**	**6 Years After**
Post	3.752	-0.0374	-0.0131	-0.00962	-0.00727	-0.00635	0.0153
	[1.043]***	[0.0293]	[0.0256]	[0.0245]	[0.0206]	[0.0264]	[0.0245]
# Observations	3754	4010	4010	4010	4010	4010	4010
Dep Var Mean	11.1	0.9	0.922	0.944	0.948	0.952	0.963

Notes: These coefficients present difference in differences coefficients, including all covariates, as in table 3 (column 4), but for different dependent variables, and only for women who had children. The dependent variables are different in every column: maternity leave length in months in column 1, employment (0 if does not work, and 1 if works) 1 to 6 years after birth in columns 2 to 7 respectively. See notes for table 3.

Table 9. Effect of Maternity Benefits on Marital Stability after Birth

	(1)	(2)	(3)
	Married		Divorced
Dependent Variable	**1 Year After Birth**	**6 Years After Birth**	**6 Years After Birth**
Post	0.0141	0.0383	-0.0414
	[0.00554]**	[0.0196]*	[0.0210]**
# Observations	3762	3762	3762
Dep Var Mean	0.992	0.921	0.0871

Notes: These coefficients present difference in differences coefficients, including all covariates, as in table 3 (column 4), but for different dependent variables, and only for women who had children and who were married in the year of birth. The dependent variables differ by column: married 1 year after birth in column 1, married 6 years after birth in column 2, and divorced 6 years after birth in column 3. See notes for table 3.

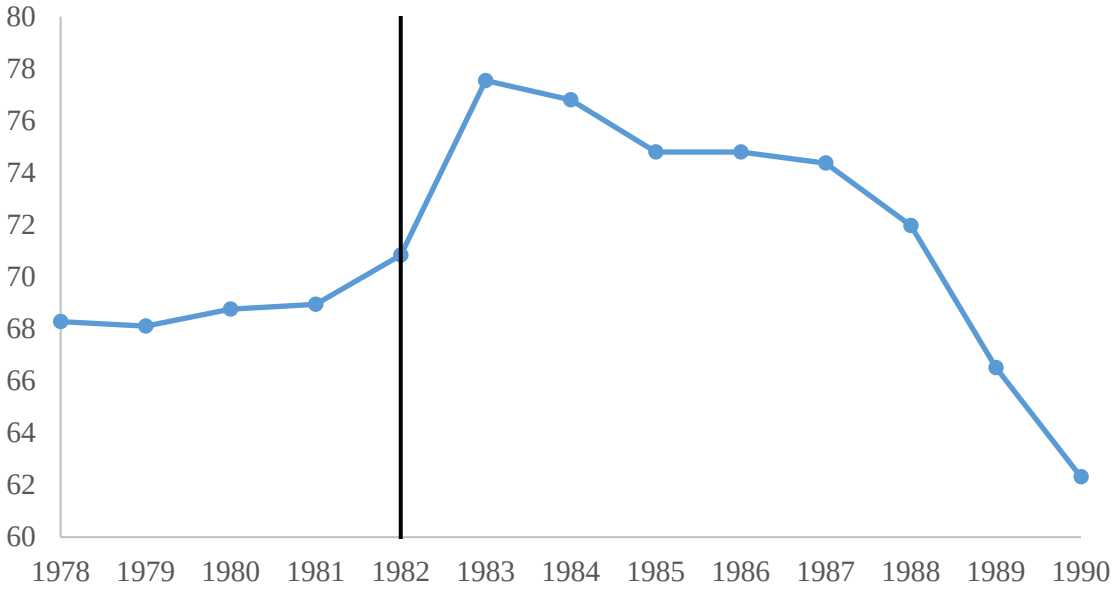
Table 10. Heterogeneous Effects of Maternity Benefits on Marital Stability after Birth

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	**Married 1 Year After Birth**			**Married 6 Years After Birth**		
	A. Number of children					
	0	**1**	**2**	**0**	**1**	**2**
Post	0.0223	0.00641	-0.00123	0.0682	-0.00791	0.063
	[0.0111]*	[0.00400]	[0.0191]	[0.0220]**	[0.0354]	[0.0475]
# Observations	1620	1549	497	1620	1549	497
Dep Var Mean	0.991	0.99	1	0.906	0.941	0.9
	B. Education					
	< High School	**Secondary**	**Higher**	**< High School**	**Secondary**	**Higher**
Post	0.0306	0.0153	0.0325	0.0393	0.0579	0.0704
	[0.0241]	[0.00594]*	[0.0231]	[0.0719]	[0.0243]*	[0.0496]
# Observations	702	2378	665	702	2378	665
Dep Var Mean	1	0.988	1	0.95	0.91	0.962
	C. Age					
	18-22	**23-27**	**28-33**	**18-22**	**23-27**	**28-33**
Post	0.0199	0.00738	0.0192	-0.0308	0.0477	0.0911
	[0.0125]	[0.00533]	[0.0114]*	[0.0388]	[0.0239]*	[0.0370]*
# Observations	917	1686	1148	917	1686	1148
Dep Var Mean	0.985	1	0.985	0.912	0.953	0.877

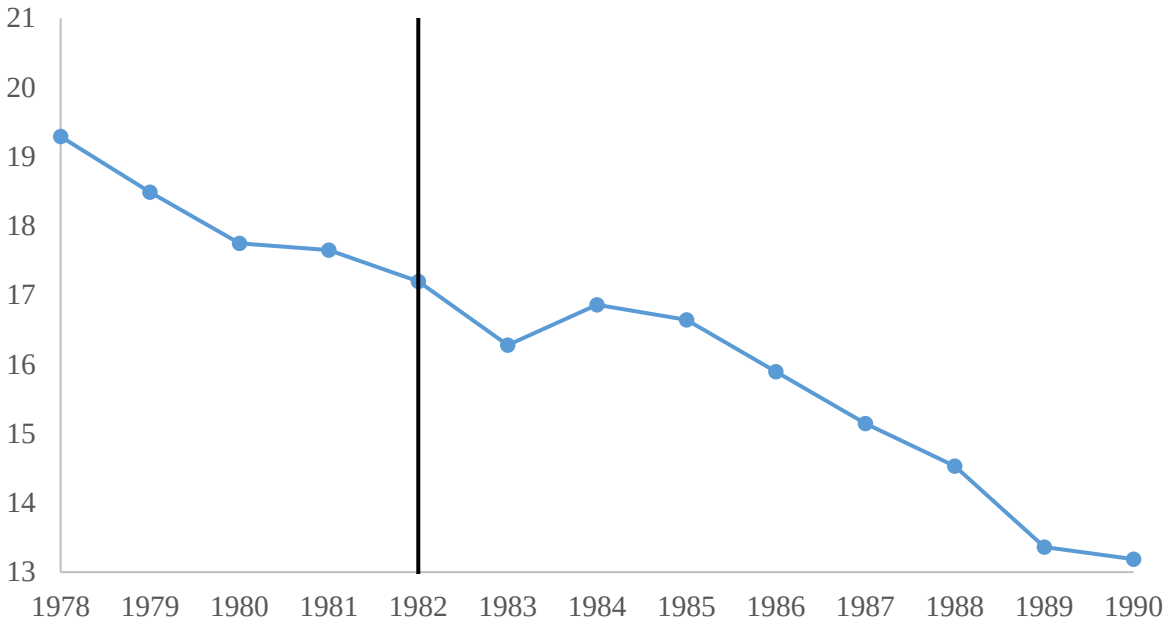
Notes: These coefficients present regressions as in table 9, but for different groups of women. Dependent variables differ across columns: married 1 year after birth in columns 1 to 3, and married 6 years after birth in columns 4 to 6. Panel A presents results separately by the previous number of children at the time of observation; panel B by education groups, and panel C by age groups. See notes for table 9.

Figure 1. General Fertility Rate and Infant Mortality Rate in Early Beneficiary Republics

A. General Fertility Rate



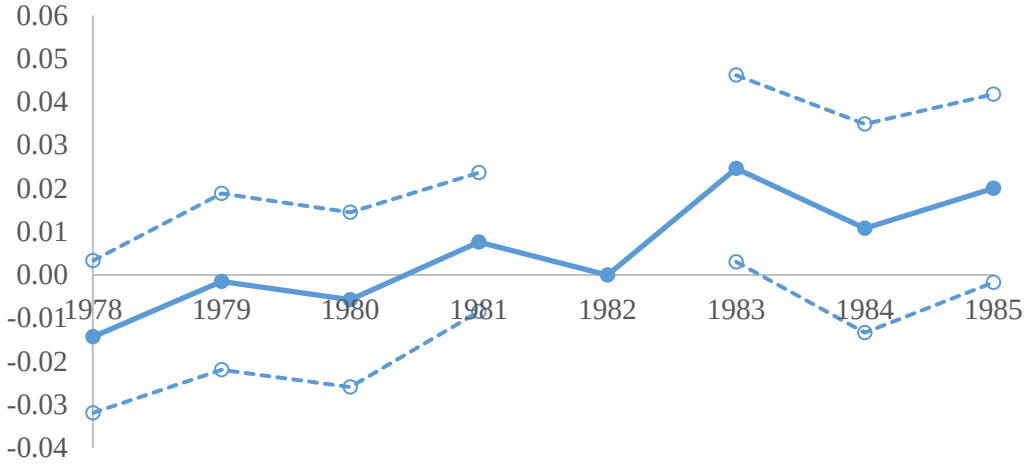
B. Infant Mortality Rate



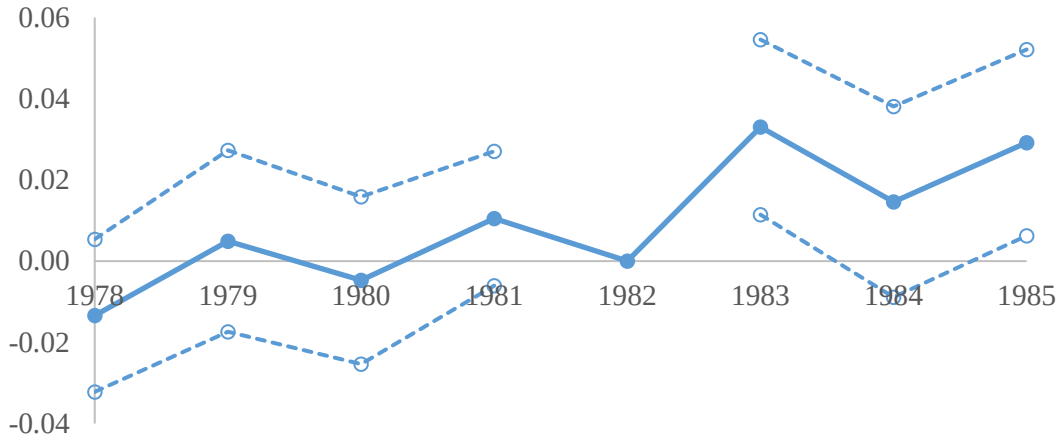
Notes: The figure plots the evolution of the general fertility rate (GFR) in panel A, and the infant mortality rate (IMR) panel B in early beneficiary Soviet Union republics who became eligible for maternity benefits in 1982 (Belarus, Estonia, Latvia, Lithuania, Moldova, and Ukraine). The GFR is the number of live births per thousand women ages 15 to 44, and the IMR is the number of deaths before age 1 among all live births. Sources: archival data from demoscope.ru, and the 1989 Soviet Union census.

Figure 2. Effect of Maternity Benefits on Childbearing: Soviet vs. Eastern European

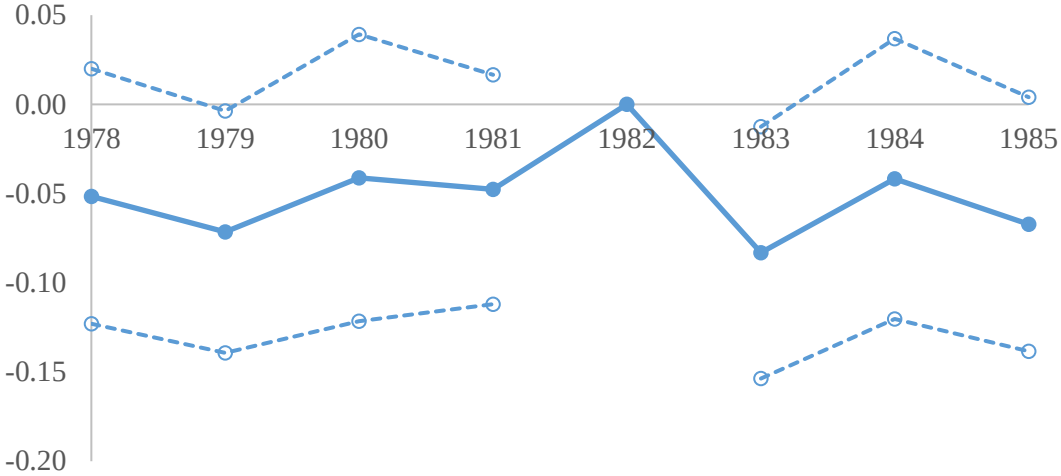
A. All Women Ages 18 to 33



B. Eligible Women Ages 18 to 33



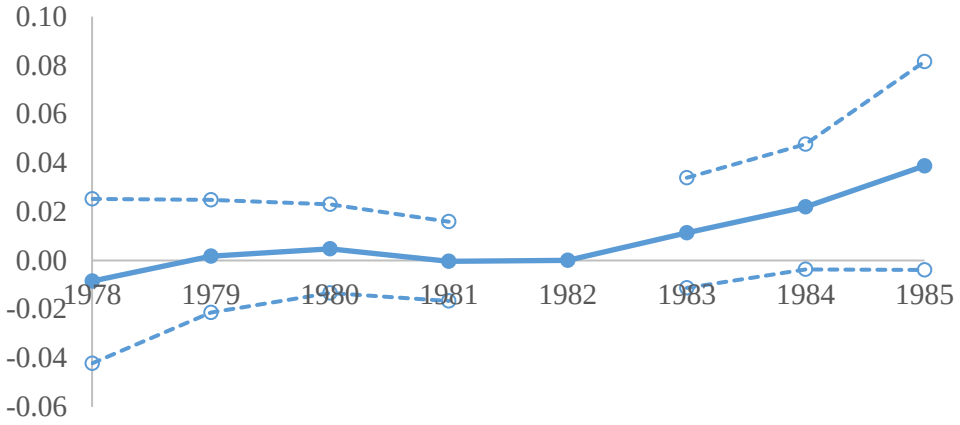
C. Ineligible Women Ages 18 to 33



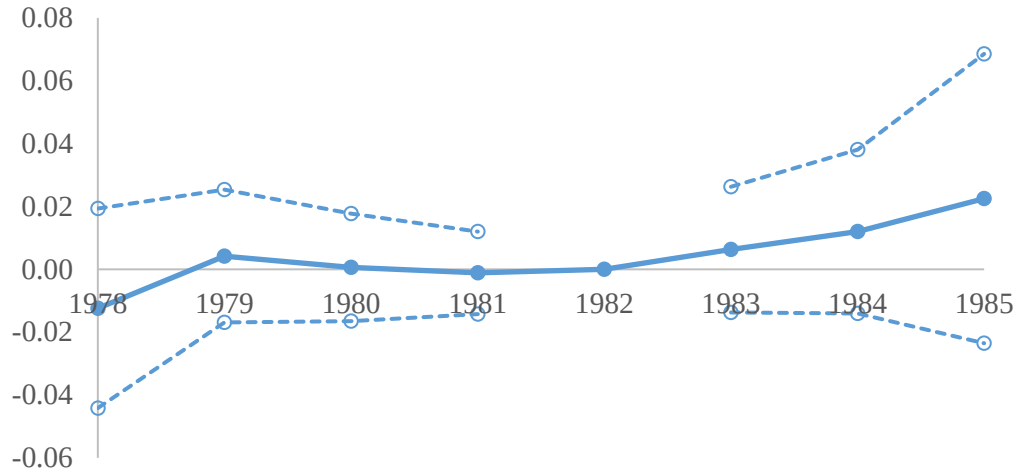
Notes: These coefficients present the difference in the probability of having a child among women ages 18 to 33 between Soviet Union republics (Estonia, Latvia, and Lithuania) and eastern European countries (Bulgaria, the Czech republic, Hungary, Poland, and Romania) in each year relative to the difference in 1982. I present θ and π from equation (3), but without country by year co-variates. Dashed lines construct 95-percent, point-wise confidence intervals. Sources: SHARE.

Figure 3. Effect of Maternity Benefits on Employment: Soviet vs. Eastern European

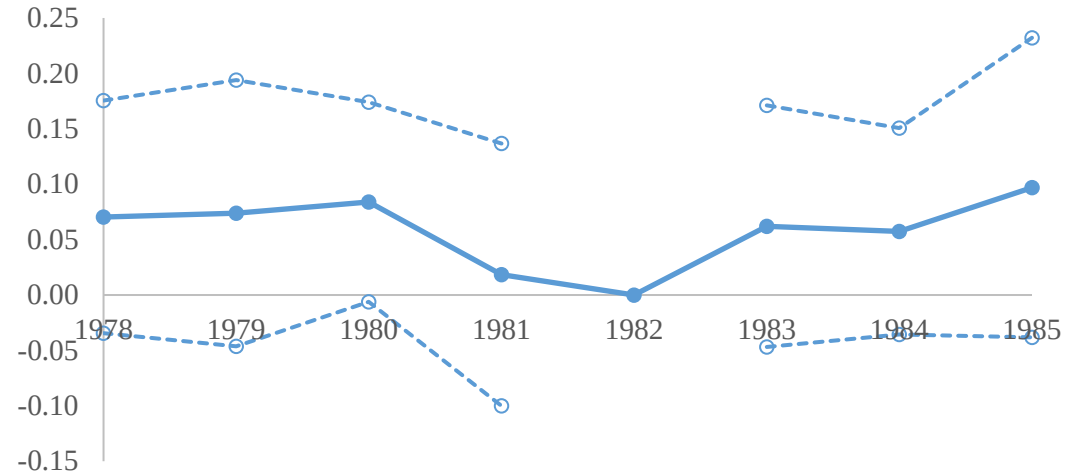
A. All Women Ages 18 to 33



B. Eligible Women Ages 18 to 33

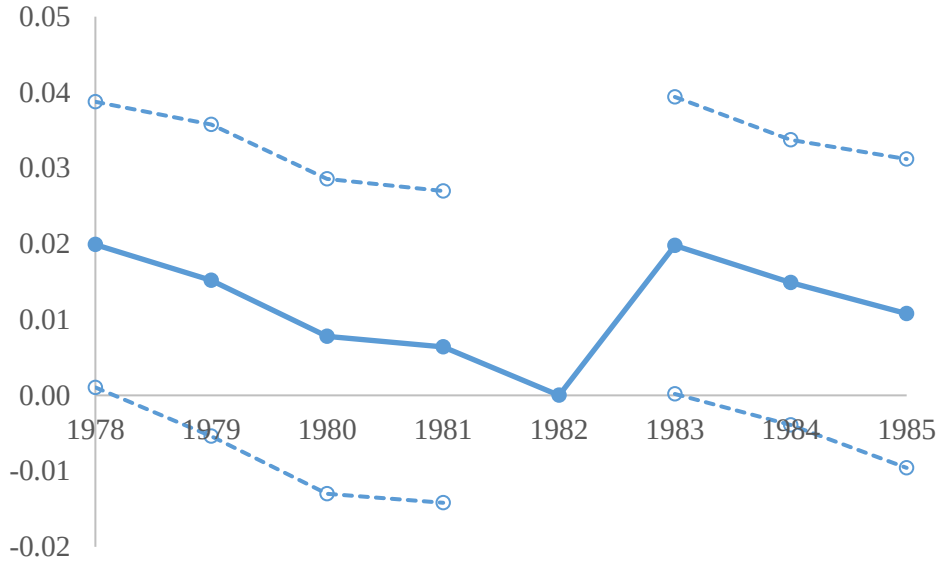


C. Ineligible Women Ages 18 to 33



Notes: These coefficients present the difference in the probability of employment among women ages 18 to 33 between Soviet Union republics and eastern European countries in each year relative to the difference in 1982. I present θ and π from equation (3), but without country by year co-variates. Dashed lines construct 95-percent, point-wise confidence intervals. Sources: SHARE.

Figure 4. Effect of Maternity Benefits on Marital Stability of Eligible Mothers One Year after Birth



Notes: These coefficients present the difference in the probability of being married one year after birth, among women ages 18 to 33 who had children while married, between Soviet Union republics and eastern European countries in each year relative to the difference in 1982. I present θ and π from equation (3), but only for women who had children and without country by year co-variates. Dashed lines construct 95-percent, point-wise confidence intervals. Sources: SHARE.

APPENDIX A

Eligibility for Maternity Benefits and Child Credit Creation in SHARE

We create an eligibility indicator using our data. The information we use is: working status, whether in education, and whether had a child.

A person is listed as eligible if:

1. Worked last year and worked this year if did not have a child this year: needed to have worked for a year, so even if didn't work this year
2. Did not work this year, but had a child last year and was eligible last year.
3. Enrolled in any schooling this year.

A person is listed as not eligible if:

1. Did not work last year, as long as did not have a child last year and was not eligible last year.
2. Did not work this year and did not have a child this year, so long as did not have a child last year and was not eligible last year.

APPENDIX B
Replacement Rate of Maternity and Child Benefits Creation

First, we create the benefits variable. For every month of birth, we calculate the benefits that are expected. This is different for countries that became eligible for benefits in 1982 and those that became eligible for 1983. Until October of 1981, we set maternity benefits and bonuses equal to 0. There were other bonuses (birth credits) for fourth and higher order births that did not change over the time period, and for simplicity we set those to zero.

Appendix table B1 presents maternity benefits and child credits in countries that became eligible for benefits in 1982 and 1983 separately over time. The payment amounts and rules for benefit receipt were identical, so the only difference between the details of payments in countries that became eligible in 1982 and 1983 is the timing of the start of benefit receipt.

In countries that became eligible in 1982 (1983), births in August and after were eligible for the full maternity benefit of 10 months at 35 rubles per month (350 rubles). Even though benefits went into effect in November of 1982 (1983), women could receive them for the remaining months until a child turned one. Full-replacement maternity benefits for two months after birth already existed, so the new benefits were paid out 3 to 12 months after birth. Thus, if a child was born in August, a woman received the first payment of partially paid parental leave in November. Births before August of 1982 (1983) were progressively eligible for fewer months of parental leave benefits: those born in July of 1982 (1983) were eligible for 9 months (315 rubles), while those born in November of 1981 (1982) were eligible for 1 month (35 rubles). Births before November 1981 (1982) were not eligible for any benefits.

Child credits were paid out once at the birth of the child, and equaled to 50 rubles for first birth and 100 rubles for the second birth. I denote them as B in appendix table B1. Thus, in countries that became eligible in 1982 (1983), the child credit equaled to 0 rubles before November, 1982 (1983), and the full amount starting from November, 1982 (1983).

For data where we have month of birth (DHS, GGS, FFS), we merge these benefits amounts by months of birth for women who had a birth, and merge averages over each year for women who did not have births. For data where we do not have month of birth (SHARE), we merge benefits averaged for each year to years of birth.

Second, we construct average female wages from 1980 until 1990. Data on wages by gender were not published in the Soviet Union. Instead, we have collected archival data on average female wages in each republic by education. We have constructed wages for three educational categories that are available in all surveys: (1) incomplete secondary and less, (2) general secondary, specialized secondary and incomplete higher, (3) completed higher education. These data are taken from large surveys conducted in 1981, 1984 and 1989. We have interpolated the data for the years for which we do not have data.

The wage data are tabulations for each republic by wage intervals and education levels of women. For each education level, the data include the share of women in each wage interval. We calculate the midpoint of each wage interval, and calculate average female wages within each

educational category by taking a weighted average of midpoints of wage intervals. The educational categories present include: completed higher, incomplete higher, specialized secondary, general secondary, incomplete secondary, primary, and less than primary. We group these wage intervals to be consistent across all our surveys. To group these, we use the share of women in each educational group from 1979 and 1989 in order to provide weights of women in each educational category.

Archival Sources:

The titles of these documents are “Tables for *Republic* of data of a one-time survey of income of families of workers over September of *Year*”. These data are available for all republics, and years 1981, 1984 and 1989.

Table B1. Maternity and Child Benefits by Month and Country of Birth

		Benefits Start Nov, 1982		Benefits Start Nov, 1983	
Year	**Months**	**Bonus**	**Maternity**	**Bonus**	**Maternity**
≤1980	All	0	0	0	0
1981	Jan to Oct	0	0	0	0
1981	Nov	0	35	0	0
1981	Dec	0	70	0	0
1982	Jan	0	105	0	0
1982	Feb	0	140	0	0
1982	Mar	0	175	0	0
1982	Apr	0	210	0	0
1982	May	0	245	0	0
1982	Jun	0	280	0	0
1982	Jul	0	315	0	0
1982	Aug	0	350	0	0
1982	Sep	0	350	0	0
1982	Oct	0	350	0	0
1982	Nov	B	350	0	35
1982	Dec	B	350	0	70
1983	Jan	B	350	0	105
1983	Feb	B	350	0	140
1983	Mar	B	350	0	175
1983	Apr	B	350	0	210
1983	May	B	350	0	245
1983	Jun	B	350	0	280
1983	Jul	B	350	0	315
1983	Aug	B	350	0	350
1983	Sep	B	350	0	350
1983	Oct	B	350	0	350
1983	Nov	B	350	B	350
1983	Dec	B	350	B	350
≥1984	all	B	350	B	350

Notes: B is 50 rubles for first births and 100 rubles for second and third births.

Table B2. Archival Sources of Wage Data

Country	Year	Source
Ukraine	1981	RGAE f. 1562 op. 64 d. 2453
	1984	RGAE f. 1562 op. 67 d. 2589
	1989	RGAE f. 1562 op. 68 d. 5278
Belarus	1981	RGAE f. 1562 op. 64 d. 2455
	1984	RGAE f. 1562 op. 67 d. 2590
	1989	RGAE f. 1562 op. 68 d. 5279
Uzbekistan	1981	RGAE f. 1562 op. 64 d. 2457
	1984	RGAE f. 1562 op. 67 d. 2591
	1989	RGAE f. 1562 op. 68 d. 5280
Kazakhstan	1981	RGAE f. 1562 op. 64 d. 2459
	1984	RGAE f. 1562 op. 67 d. 2592
	1989	RGAE f. 1562 op. 68 d. 5312
Georgia	1981	RGAE f. 1562 op. 64 d. 2461
	1984	RGAE f. 1562, op. 67, f. 2593
	1989	RGAE f. 1562 op. 68 d. 5281
Azerbaijan	1981	RGAE f. 1562 op. 64 d. 2462
	1984	RGAE f. 1562 op. 67 d. 2594
	1989	RGAE f. 1562 op. 68 d. 5282
Lithuania	1981	RGAE f. 1562 op. 64 d. 2463
	1984	RGAE f. 1562 op. 67 d. 2595
	1989	RGAE f. 1562 op. 68 d. 5283
Moldova	1981	RGAE f. 1562 op. 64 d. 2465
	1984	RGAE f. 1562 op. 67 d. 2596
	1989	RGAE f. 1562 op. 68 d. 5284
Latvia	1981	RGAE f. 1562 op. 64 d. 2467
	1984	RGAE f. 1562 op. 67 d. 2597
	1989	RGAE f. 1562 op. 68 d. 5285
Kyrgyzstan	1981	RGAE f. 1562 op. 64 d. 2469
	1984	RGAE f. 1562 op. 67 d. 2598
	1989	RGAE f. 1562 op. 68 d. 5286
Tajikistan	1981	RGAE f. 1562 op. 64 d. 2471
	1984	RGAE f. 1562 op. 67 d. 2599
	1989	RGAE f. 1562 op. 68 d. 5287
Armenia	1981	RGAE f. 1562 op. 64 d. 2473
	1984	RGAE f. 1562 op. 67 d. 2600
	1989	RGAE f. 1562 op. 68 d. 5288
Turkmenistan	1981	RGAE f. 1562 op. 64 d. 2475
	1984	RGAE f. 1562 op. 67 d. 2601
	1989	RGAE f. 1562 op. 68 d. 5289
Estonia	1981	RGAE f. 1562 op. 64 d. 2477

1984	RGAE f. 1562 op. 67 d. 2602
1989	RGAE f. 1562 op. 68 d. 5290

APPENDIX C
Estimation of Oblast-Level Fertility Rates

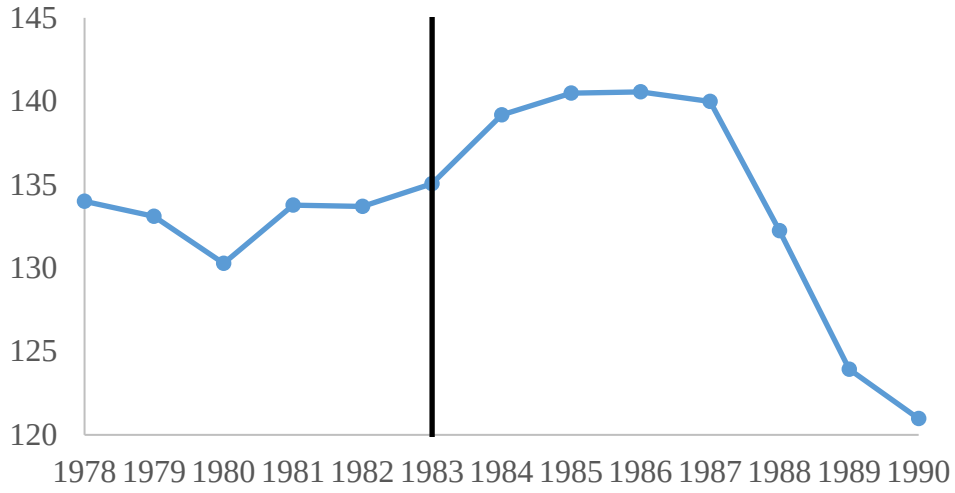
To estimate fertility rates, it is important to have information on the number of women of childbearing age. Information on the age structure of the population by region is only published in the decennial censuses. The 1989 census data is the closest to the year of maternity benefits expansion, and should be the least affected by misclassification error due to mortality and emigration. Only individuals who have not died or moved out of the country appear in the census. The 1989 census data provide counts of men and women in one year age groups by region of residence as of January, 1989. I estimate birth year of the woman using her *age* in 1989 as 1989-*age*-1, because the census took place between January 12 and January 19 in 1989. This calculation will only understate the birth year of women born between January 1st and January 11th. I use these data to backward-estimate the number of women each year (from 1977 to 1985) who are of childbearing age – ages 15 to 44. For instance, the number of women who are age 15 to 44 in 1979 is the same as the number of women who are age 25 to 54 in 1989.

My main outcome of interest is the General Fertility Rate (GFR) which is the number of births per thousand women of childbearing age. I estimate GFR in year *y* and region *o* and country *c* as the number of children born in year *y* (except those who were still born), in oblast *o* as recorded in archival data (accessed at demoscope.ru) per thousand women aged from 15 to 44 in year *y*, and living in oblast *o* in 1989 as recorded in the 1989 census.

$$GFR_{y,c,o} = \frac{Number\ of\ Births_{y,c,o} * 1000}{Number\ of\ Women\ Age\ 15\ to\ 44_{y,c,o}\ from\ 1989\ Census}$$

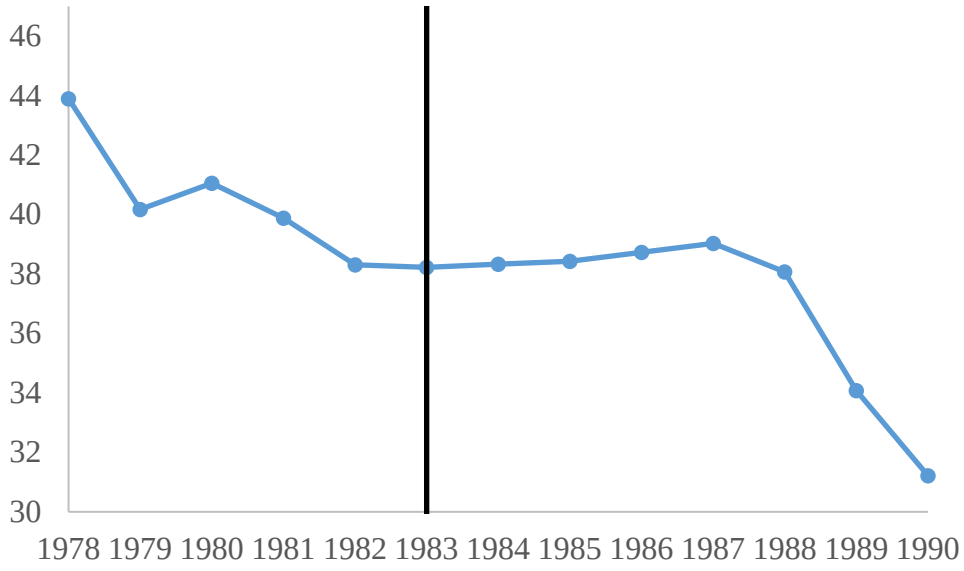
APPENDIX D
Tables and Figures

Figure D1. General Fertility Rate in Late Beneficiary Soviet Union Republics



Notes: The figure presents the evolution of the general fertility rate in late beneficiary Soviet Union republics, who became eligible for maternity benefits in 1983. These republics include: Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tadjikistan, Turkmenistan, and Uzbekistan. Sources: archival data from demoscope.ru.

Figure D2. Infant Mortality Rate in Late Beneficiary Soviet Union Republics



Notes: The figure presents the evolution of the infant mortality rate in the late beneficiary Soviet Union republics. Sources: archival data from demoscope.ru.