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The Effect of Fertility on Maternal Labour Market Outcomes

IV Evidence from Romania

by

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Abstract

This study investigates the effect of fertility on maternal labour market outcomes. For this purpose, we use four waves of Romanian census data from IPUMS International. We exploit the unique history of Romania's abortion legislation, instrumenting fertility with the 1966 abortion ban and the 1990 abortion legalisation in two separate IV models. The findings suggest that increasing fertility reduces the probability of maternal labour force participation and employment. We also find evidence that maternal labour supply is more sensitive to fertility at the extensive margin and that more highly educated mothers are more responsive to fertility than those mothers with no more than primary education.

Keywords: Romania, instrumental variables, maternal labour supply, fertility, abortion

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1. Introduction

That female fertility has an impact on various economic outcomes, maternal labour supply being one of them, is well established (Schultz, 2007; Bertrand, 2011). Women with children tend to both work and earn less compared to women without children (Browning, 1992; Bertrand, 2011), one reason being that having children often leads to career interruptions (Leung, Groes & Santaeulalia-Llopis, 2016). Some researchers also believe these career interruptions attributable to childbearing to be accountable for part of the gender wage gap (Fuchs, 1989; Neumark & Korenman, 1992), suggesting that the size of the effect of fertility on maternal labour market outcomes is an important determinant for wage inequality. In 2019, the labour force participation rate of the world female population over the age of 15 was merely 48 percent (World Bank, 2019a), as compared to 75 percent for males (World Bank, 2019b). Clearly, fertility still plays a role in decisions regarding maternal labour market activities. Understanding why female labour market activities differ from male labour market activities can improve our understanding of potential sources of gender inequality, and how to design policies to reduce this gap. In regard to this, economists are interested in the quantitative contribution of various determinants of female labour supply, fertility being one of them (Cristia, 2008). These findings should have practical importance for decreasing the gender wage gap, as well as combatting the unequal share of unpaid household work.

Leaving women out of the labour force or out of employment is proven by many to be a loss to the economy (Luci, 2009; Löfström, 2009). For example, in terms of forgone tax revenue for the government, loss of labour and use of human capital. One risk with young women staying at home with children is that they do not enter the labour market later in life if there is persistence in labour supply (Bloom, Canning, Fink & Finlay, 2009). This implies that there could be long term effects of fertility on labour market outcomes. But working women also have an important role as role models for children and participating in the labour market could empower women through greater economic independence (Kabeer, 2005).

This study aims to investigate the causal effect of fertility on maternal labour market outcomes by exploiting abortion policy changes in Romania. In 1966, abortions were banned, and in 1990 legalised again. We use these policy changes in two separate models. Furthermore, the study

aims to gain further insight into whether different groups of people react to an increase in fertility differently. Firstly, we estimate separate effects for the extensive and the intensive margin of fertility on maternal labour market outcomes in order to explore the heterogeneous effects on mothers who are giving birth to their first child and mothers who are giving birth to an additional child. Secondly, socioeconomic factors are commonly known to be reasons for seeking abortion, hence affecting fertility (Biggs, Gould & Foster, 2013). Therefore, to gain understanding of potential differences between socioeconomic groups, we examine the effect of fertility on less and more highly educated mothers separately. To overcome the problem with endogeneity in the relationship between fertility and maternal labour supply, an exogenous source of variation in fertility is needed. To this end, we use an instrumental variables (IV) design, instrumenting fertility with the abortion policy changes in 1966 and 1990.

This study contributes to both the literature on fertility and particularly to the literature on maternal labour market decisions. Specifically, this study contributes to the scarce literature on the effects of fertility at the extensive margin. To our knowledge, our analysis is the first to study fertility and labour market outcomes of women using Romanian data and an IV design. We also differentiate our study from others by including both a regressive and a progressive abortion policy change in our analysis, attempting to gain a broader understanding of the context in which the study is set. This is in contrast to other studies, which have looked at one of these policy changes only, for example Pop-Eleches (2006) and Mitrut and Wolff (2011). Additionally, to our knowledge these reforms have previously only been exploited for investigating the effect of fertility on the next generation. Instead, we shed light on the effects of fertility on mothers in Romania's unique abortion context.

The remainder of this paper is organised as follows. The background is presented in section 2, followed by theory in section 3. Section 4 presents a literature review. Sections 5 and 6 present the data, variables and methodology. Results are presented in section 7. Our 2SLS estimates suggest that increasing fertility has a negative effect on labour supply at the extensive margin, by reducing the probability of maternal labour force participation and employment. Further, our findings suggest that the effects are driven by more highly educated women, and that the effects on labour supply are more sensitive at the extensive margin of fertility. Section 8 offers an analysis and discussion of the results. Section 9 concludes.

2. Background

Starting in 1957, Romania had one of the most liberal abortion policies in the world. Abortion was legal and provided at no cost by the state health care system in the first trimester of a pregnancy (Pop-Eleches, 2006). It was one of the most commonly used methods for fertility control, resulting in one of the highest abortion rates in the world. In 1965, there were five abortions for every live birth in Romania (World Bank, 1992).

On October 1st 1966, communist leader Ceaușescu unexpectedly issued Decree 770 with the objective to increase Romania's population, declaring abortions and contraceptives illegal immediately (World Bank, 1992; Pop-Eleches, 2006; Flister, 2013). This was one of the most restrictive abortion laws in the world (Mitrut & Wolff, 2011). There were only a few exemptions for which abortions were not criminalised: women whose life was threatened, whose foetuses were malformed, who were pregnant through rape or incest, women over the age of 45 and women who had already had four children (Pop-Eleches, 2006). In 1985, this was raised to five children (Johnson, Horga & Andronache, 1996). Additionally, monetary incentives to reward high fertility in the form of family allowances were introduced (World Bank, 1992). Following the policy change, the abortion rate had fallen to 0.3 abortions for every live birth in 1967 (Berelson, 1979). As a result, Romania experienced an immediate and large hike in births, with an increase in the total fertility rate from 1.9 to 3.7 children per woman between 1966 and 1967 (Pop-Eleches, 2006). This effect could be attributed to both the regressive abortion policy and the pro-natalist policies that accompanied the abortion reform.

In December 1989, the Romanian Revolution took place, ending in Ceaușescu's execution on December 25th. Immediately following this, the provisional government abolished Decree 770. On their first day in power on the 26th, they announced contraception legal again, and a few days later, on January 1st 1990, lifted the ban on abortion, declaring abortion in the first trimester legal again (Hord, David, Donnay & Wolf, 1991). However, no immediate policy changes regarding maternity leave or child allowances came into effect after the end of the communist era (Mitrut & Wolff, 2011). Following the legalisation, the total fertility rate decreased from 2.2 in 1989 to 1.83 in 1990 (United Nations Department of Economic and Social Affairs, 2019) and the abortion rate had increased again to three abortions for every live birth (World Bank, 1992).

3. Theory

Access to abortion affects women's economic outcomes, mainly through lowering fertility. Improved access to abortion leads to lower fertility rates due to an increase in abortion rates, whereas restricting access typically leads to a decrease in abortion rates (Haas-Wilson, 1996; Gober, 1997; Ananat, Gruber & Levine, 2007). In turn, fertility can affect maternal labour market outcomes through various mechanisms. One possible pathway is that a decrease in fertility frees up resources such as time and energy from childcare (Bloom et al., 2009) that can be spent working in the labour market, pursuing on the job training or searching for work. Through this mechanism, a reduction in fertility could lead to better paid positions and greater economic security, through its effect on both the intensive and extensive margin of labour supply. For example, reduced fertility could lead to more hours spent working, which increases experience and in turn positively affects labour market payoffs (Rosenzweig & Schultz, 1985). Also, if home childcare is believed to be better than commercial childcare, then an increase in fertility could affect labour market outcomes through mothers' decision to stay at home with their children (Angrist, Lavy & Schlosser, 2010). On the other hand, an increase in fertility could also lead to parents working longer hours in order to meet the increased demand for resources associated with an increase in family size (Angrist, Lavy & Schlosser, 2010). Another way that abortion access may influence women's labour market outcomes is through its effect on women's ability to control their fertility. Access to abortion increases women's fertility control, which may empower women in their households and improve their opportunity to control their economic situation, for example by increasing their access to resources. Further, abortion access has the potential to change women's expectations about their own fertility control. In turn, this could affect decisions about education, careers and family planning (Oreffice, 2007).

Becker (1965) presents a theory of the allocation of time, recognising that some activities, such as cooking or childcare, should be seen as household production. Individuals allocate their time between market work and leisure, where some of the time spent on leisure is in fact spent on household production. This idea developed into the theory of new home economics, where hours are allocated between market work, household work and leisure. Within a household, the participation in each of these activities will differ between household members because of specialisation, enabling gains from increasing returns to investments from raising productivity

(Becker, 1991). If the household has enough resources, household work such as childcare or cleaning can be purchased in the market and free up time for market work or leisure.

Gronau's (1977) extended model of time-use incorporates the effect of children on the allocation of time. Children are known to be associated with an increase in mothers' household work. Researchers acknowledge that this is at least partly done at the cost of market work (Gronau, 1986). The theory predicts that an increase in, or introduction of, children reallocates time to child-related activities, both as household work and leisure. The profitability of household work determines how the effect of children divides time between work in the household and in the market. As women often earn less than men, an increase in the number of children typically results in the mother reducing her time working in the market, or for non-labour market participants, their leisure, and increasing her time allocated to household work (Gronau, 1986). Robinson (1987) discusses the theory of economies of scale in family size and household work. The theory predicts that the first child has a significantly larger impact on hours required for childcare compared to additional children, with hours required per child falling for each additional child. This time requirement applies to both working and non-working mothers. With more time spent on household work, mothers spend less time on market work. There are large fixed time costs associated with having a first child, but once these costs are covered, the time costs rise less than proportionately with each new child. Hence, according to the theory of economies of scale in family size, maternal labour supply should be more responsive to fertility at the extensive margin than at the intensive margin.

Additionally, Hill and Stafford (1974) and Leibowitz (1975) find that household work per child tends to increase with the mother's level of education, implying that the labour supply of more highly educated women is more sensitive to having children. Francesconi (2002) further points to the relationship between earnings ability and preference for fertility. When a woman has a comparative advantage in market work, or high earnings profile, the opportunity cost of having a child is higher than for those with lower wages. The model predicts that higher wages enhance the consequences of fertility on labour supply, such that those with a comparative advantage in market work have the lowest marginal utility of children.

The demand and supply of children, as the determinants of fertility, have been studied by economists and social scientists since Malthus. The demand for fertility is driven by parental preferences for family size and is constrained by financial restrictions such as income and child-related costs (Willis, 1973; Rosenzweig & Evenson, 1977). The theory behind fertility supply

is based on the idea that fertility is biologically determined, and household resources need to be allocated towards limiting the supply. When the cost of limiting fertility supply rises, for example when access to abortion is restricted, a woman's fertility may not meet her preferences or expectations in terms of number of children (Rosenzweig & Schultz, 1985). If abortion and contraceptives are banned, means to limit fertility supply decreases substantially and as a consequence the costs rise, leaving fewer women with the option to avoid pregnancy. In this framework, an unanticipated birth can be thought of as a supply shock and is likely to have a negative effect on fertility demand, resulting in fewer births expected. An increase in fertility raises the marginal utility of consumption goods relative to that of children, which in turn increases returns to labour market activities. Although, if children are a complement to home time, returns to staying at home will also rise with an unanticipated increase in fertility (Rosenzweig & Schultz, 1985).

4. Literature Review

The association between fertility and maternal labour market outcomes is well. Early findings stemmed from two strands of the literature: one treating fertility as exogenous to labour supply (see for example Rosenzweig & Wolpin, 1980; Carliner, Robinson & Tomes, 1980; Ermisch, 1989), and the other one treating fertility as endogenous (see for example Becker & Lewis, 1973; Willis, 1973). When fertility is treated as exogenous, it is determined outside the model whereas when fertility is treated as endogenous, it is determined jointly within the model (Angrist & Pischke, 2008). While the literature treating fertility as exogenous typically finds a negative relationship between fertility and maternal labour supply (Gronau, 1973; Heckman, 1974), the literature treating fertility as endogenous sometimes finds no effects (Fleisher & Rhodes, 1979; Cramer, 1980) and sometimes even positive effects (Cain & Dooley, 1976; Hout, 1978). Today, it is well established that many factors affect both fertility and labour supply, which complicates causal inference. To this end, researchers often turn to natural experiments and exploit variables creating variation in fertility, unrelated to labour supply. One of the most commonly used methods in the more recent literature is to instrument fertility in order to overcome endogeneity problems.

For example, Angrist and Evans (1998) use parental preferences for a mixed sibling sex composition in families with two or more children as an instrument for fertility. They rely on the assumption that the sex mix of children is as good as random, and that parents of same sex siblings are significantly more likely to have an additional child. The authors use data from the United States on women aged 21 to 50 and find a small negative effect of fertility on maternal labour supply that vanishes in the long run. Further, their results suggest that labour market consequences for poor females or females with no college education are likely to be more severe. Similarly, Bloom et al. (2009) also find a negative effect of fertility on maternal labour supply. Rather than sibling sex composition, they use abortion legislations as an instrument for fertility in order to estimate the effect on maternal labour force participation. To this end, they use data on women aged 20 to 44, across 97 countries over the period from 1960 to 2000. Their instrument constitutes an abortion index, classifying current legal reasons for abortion. They find that each birth reduces a woman's total years of work by 1.9 years. The authors state that the decline in fertility resulting from the transition to more liberal abortion laws commonly averages approximately four births per woman. Hence, a reduction in fertility of this size

corresponds to an increase in female labour market supply by about eight years, equivalent to 18 percent of a woman's working life.

Agüero and Marks (2011) use infertility as an instrument for fertility in a study on women aged 20 to 44 across 26 developing countries. Their instrument allows them to study effects at both the intensive and extensive margin. However, they do not find evidence that fertility affects the likelihood of work or its intensity. Yet, they do find that fertility affects the type of work a woman engages in, and in particular, they find that as an effect of having children, younger women and mothers in poorer countries are less likely to participate in the paid labour force. Further, the authors split the sample on mothers having less than primary education and those having more than primary education. Their 2SLS results contradict the theory, suggesting that labour supply of more educated mothers is not more responsive to fertility. Children do not appear to have a causal effect on labour force behaviour of more educated mothers. Cristia (2008) also investigates the effect of fertility at the extensive margin on maternal labour supply, exploiting as a natural experiment the variation in treatment success among women who seek help to become pregnant. He uses data on women in the United States aged 15 to 44, interviewed in six waves from 1973 through 2002. He finds that the effect of having a first child younger than one year has a large negative impact on maternal labour force participation in the short run, reducing maternal employment by 26 percentage points.

Lundborg, Plug and Rasmussen (2017) find only modestly negative effects at the intensive margin of fertility on female labour market outcomes in the short run, while their findings suggest effects to be larger and more long-lasting at the extensive margin. They use IVF treatment success as an instrument for fertility when investigating the effect on various female labour market outcomes in the short, medium and long run, using register data from Denmark. They find evidence of negative consequences of fertility on female labour market outcomes. The authors point out that Denmark has one of the most liberal maternity leave arrangements in the world, thus their estimates should be considered conservative. When proxying earnings potential by education, pre-treatment earnings and age-at-treatment, they find that labour market outcomes of women with higher earnings potential are more sensitive to fertility. On the other hand, when they split the sample on having college education, they find no impact on the effect of fertility on annual earnings. The authors attribute this to the relatively low returns to education in Denmark.

Additionally, Pop-Eleches (2006) investigates the effect of the 1966 abortion ban in Romania on socioeconomic outcomes of children using a difference design. He compares educational and labour outcomes of children born before and after the ban and finds that children born after the abortion ban attained more years of schooling and greater labour market success. He attributes this finding to the fact that the relative number of children born to urban, educated women increased after the ban. When controlling for background characteristics his results suggest that children born after the ban had worse educational and labour outcomes as adults. Mitrut and Wolff (2011) instead study the effect of the 1990 Romanian abortion legalisation on child health outcomes and abandonment, using a difference-in-difference design. They find that the probability of low birth weight is slightly higher for children born after abortion was legalised, and that the number of abandoned children decreased after the lift of the abortion ban.

5. Data and Variables

5.1. Data

We used cross-sectional individual-level census data from IPUMS (Integrated Public Use Microdata Series) International for Romania from the years 1977, 1992, 2002 and 2011, where the samples are randomly drawn from population censuses. IPUMS is a collaboration between the University of Minnesota, National Statistical Offices, international data archives and other international organisations, providing publicly available census data (Minnesota Population Center, 2020). The surveys used in our analysis cover 10% of households, with approximately 2 million individual respondents for each survey year. We utilised the fact that parental observations can be linked to an individual in the case that a respondent still lives at home. Hence, we were able to link children born in the specific time periods of our analysis to their mothers and observe the mothers' characteristics and outcomes at the time of the survey, through the responses of both the mother and the child to the survey. However, the observations were linked to the "social mother" rather than the biological mother (IPUMS International, 2020). This introduced a small discrepancy between recorded fertility and motherhood. About 1.7 percent of the women in the full sample are recorded as mothers but have no recorded births, possibly reflecting that not all mothers are biological. The information on the children, namely the birth month and birth year, were used to create the instruments. The remaining variables for the analysis were drawn from the mother's observation. Women who gave birth in 1967 were surveyed either in 1977, in 1992, in 2002 or in 2011, up until 44 years after having given birth. Women who gave birth in 1990 were surveyed either in 1992, in 2002 or in 2011, up until 21 years after having given birth. Because the data used for the analysis is cross-sectional, we cannot separate short term from long term effects. Hence, the estimated effects are an average of the total effect across these time periods. We dropped observations of mothers over the age of 60 to exclude the majority of those women who retired at the legal female retirement age of 61 (European Commission, 2020). This is to ensure that the results for the labour market outcomes are not driven by women who are outside the labour force because of retirement. The age of mothers at the time they were surveyed ranges from 16 to 60.

Custom in Romania is that children typically only move out when they get married and therefore often live with their parents longer than for example in the United States. In our sample 35 percent of respondents live at least with their mother, which provides a sufficient

sample size. Especially males and those who pursue higher education tend to live at home for longer. Thus, the sample used in the analysis might include relatively more observations of mothers to more educated children or sons (Pop-Eleches, 2006). It could be that more educated children are more likely to have more highly educated mothers. When looking at children born in 1967 and surveyed in 1992 and children born in 1990 and surveyed in 2011, the percentage of more highly educated mothers to both high and less educated children is about 33 percent. Thus, this speaks against our sample being skewed towards more highly educated mothers. Although, this number is only for those children and mothers that can be linked by the child still living at home. Since we cannot examine the full sample because we cannot observe mothers whose children do not live at home, we cannot rule out that such bias exists. As predicted by theory, the labour supply of more educated mothers may be more sensitive to fertility than the labour supply of less educated mothers. Hence, if such selection exists, our estimates could potentially overestimate the effect of fertility on maternal labour market outcomes.

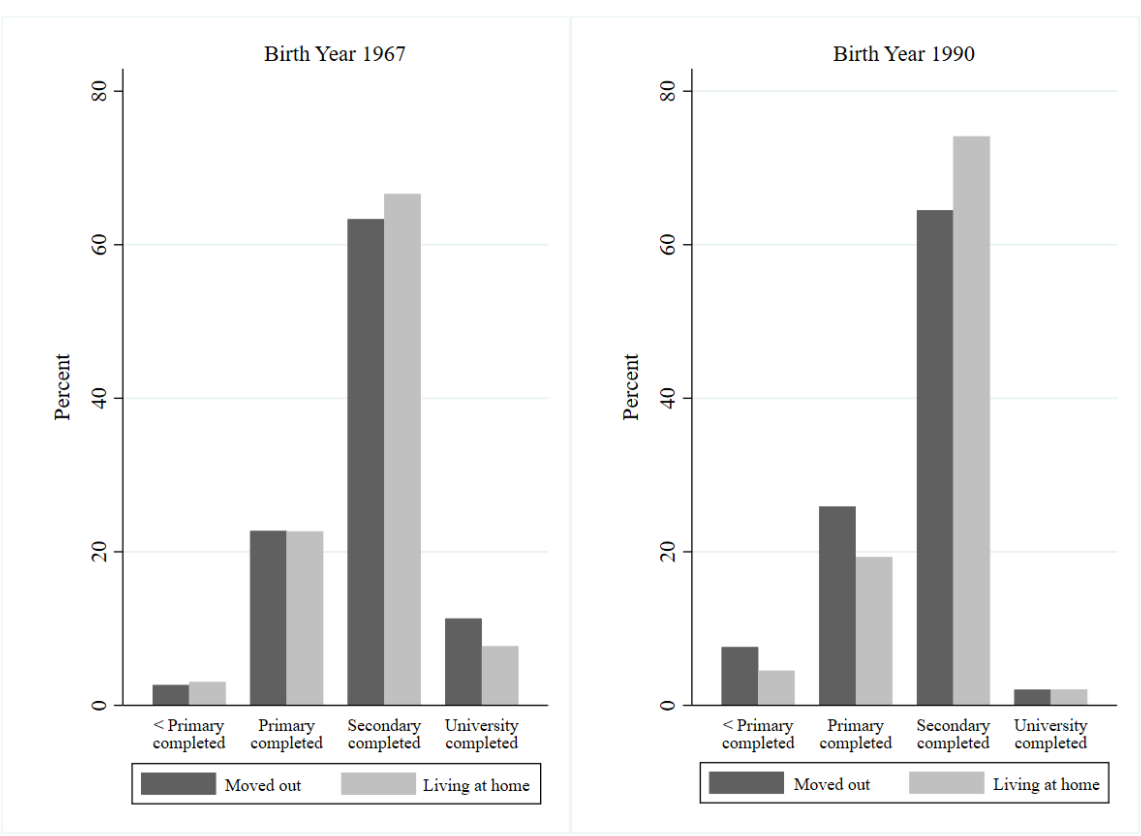

Figure 1: Educational attainment of children who have moved out and who live at home

To examine whether this is a problem for the analysis, we present the educational attainment of children born in 1967 and 1990 in figure 1. The figure describes the educational attainment of

those having moved out and those living at home at the time of the surveys separately. The first graph depicts that no major differences in educational attainment exist between the two groups of individuals born in 1967, based on observations from all survey years except 1977 when individuals were too young to have completed primary school. This suggests that restricting the sample to those living at home does not appear to be problematic for the analysis. The second graph displays the educational attainment for those born in 1990, only including observations from the survey year 2011. The individuals born in 1990 observed in the surveys in 1992 and 2002 are at this time too young to have completed primary education regardless of whether they live at home or not. Because of this fact we exclude these observations from the second graph. Again, no major differences between those born in 1990 living at home and those born in 1990 who have moved out are observed, suggesting that the restricted sample can be used for the subsequent analysis.

Similarly, we check whether the sex composition between those living at home and those who have moved out differs.

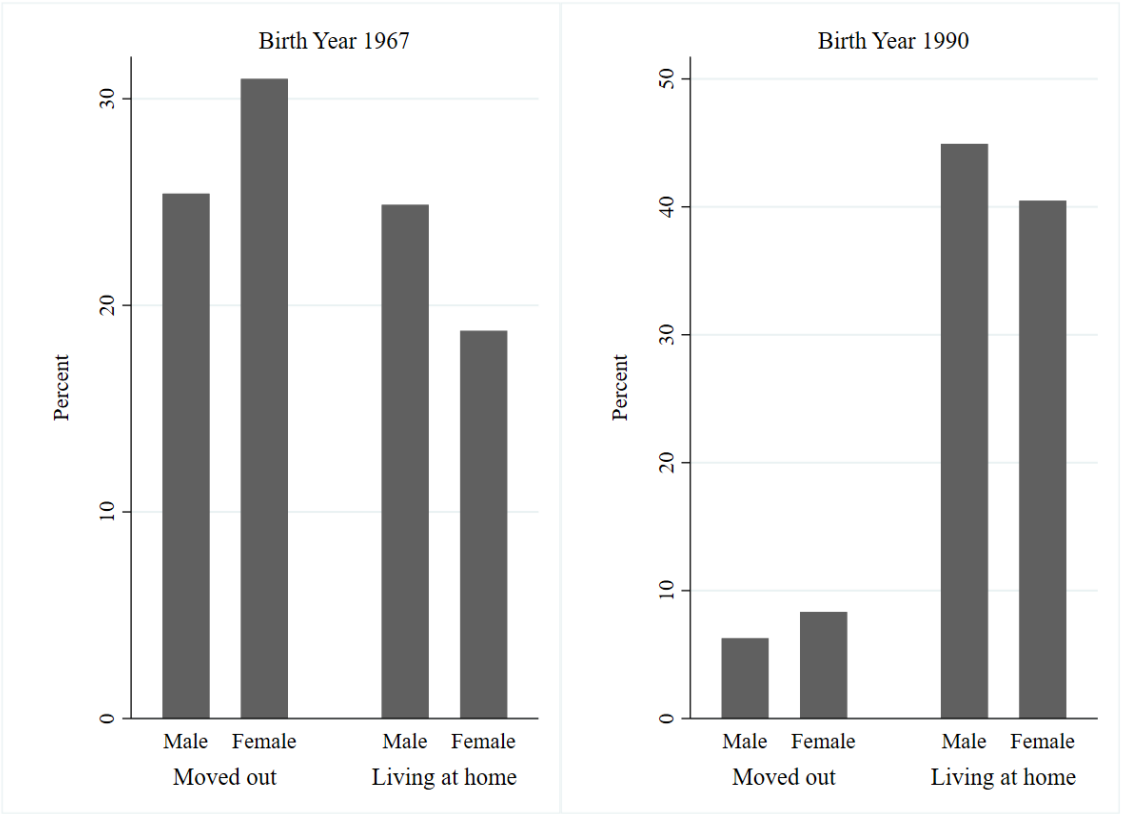

Figure 2: Sex composition of children who have moved out and who live at home

Figure 2 displays the comparison based on observations from all four survey years. Both for those born in 1967 and 1990, we see some evidence that more sons live at home than daughters. However, Angrist and Evans (1998) argue that the sex of children is as good as random, and therefore we believe that the sex of the child is not associated to the mother's characteristics. Hence, these small differences in sex composition should not be problematic for the sample used for the analysis.

5.2. Variables

For the analysis, we look only at limited time periods around the time each policy change came into effect. This is consistent with the time frame used in Pop-Eleches' (2006) analysis of the abortion ban in 1966. Further, the narrow time period supports the underlying assumption of the analysis that the women who gave birth before the policy changes and the women who gave birth after the policy changes do not differ in their unobserved characteristics. Before the ban, abortions were legal within the first trimester (Pop-Eleches, 2006), indicating that children born until June 1967 were likely "wanted" because those pregnancies could have been legally terminated before the ban was introduced. Hence, only children born from June 1967 on could not have been aborted and might or might not have been "wanted" or planned. We specify the first instrument as 1 if a woman gave birth to a child between June and October 1967, and 0 if a woman gave birth to a child between January and May 1967.

Table 1 reports the descriptive statistics for the variables included in the analysis of the first policy change. Post-ban birth is a dummy variable taking on 1 if giving birth to a child between June and October 1967, and 0 if giving birth to a child between January and May 1967. The mean of 0.676 indicates that more mothers gave birth in the later period, when they could not have had an abortion. The labour force participation dummy takes on 1 if the woman is in the labour force as employed or unemployed at the time of the survey, and 0 if not, and has a mean of 0.500. This indicates that the share of women in our sample that are in the labour force is equally as high as the share of women in our sample that are not in the labour force. The employment status dummy variable takes on 1 if a woman is employed and 0 if unemployed. The mean of 0.979 indicates that almost all women in the labour force in our sample are employed. However, this variable does not capture the extent to which one works. To gain further insight into this composition we also look at hours worked as a separate dependent variable. This variable is represented by the total hours worked in one's main occupation per

week. The variable ranges from 3 to 84, with a mean of about 36 hours. This indicates that most women work close to full time. Although this is based only on 542 observations, this is close to the mean of about 39 hours of the total approximately 700,000 observations available for this variable for mothers in our sample. The observations of the labour market outcomes differ because not all questions were asked in each survey round. These three variables are commonly used in the literature on labour market outcomes (see for example Choi, Joesch & Lundberg, 2008; Drydakis, 2014; Lundborg, Plug & Rasmussen, 2017; Card, Kluve & Weber, 2018), and allow us to investigate both the intensive and extensive margin of labour supply.

Table 1: Descriptive statistics (abortion ban, 1967)

Variable	**Obs.**	**Mean**	**Std. Dev.**	**Min.**	**Max.**
Post-ban birth	49,837	0.676	0.468	0	1
Labour force participation	16,764	0.500	0.500	0	1
Employment status	8,385	0.979	0.142	0	1
Hours worked	542	36.113	12.482	3	84
Fertility	49,837	3.111	1.805	0	25
Age at first birth	49,837	24.115	4.967	15	49
Educational attainment	49,837	1.708	0.842	1	4
Urban	49,837	0.468	0.499	0	1
Water supply	49,837	0.374	0.484	0	1
Square meters per person	49,837	10.123	5.242	0.5	112.333

The variable of interest, fertility, is proxied by the number of children ever born to a woman. It ranges from 0 to 25 with a mean of about 3 children. We believe that the observed zeros could be partly due to data errors, and partly due to that some mothers are social mothers rather than biological mothers, hence reporting not having given birth to a child, yet, being a mother to a child born between January and October 1967. Even if the mother is not biological, she is still exposed to motherhood. Thus, we chose to keep the observations with zero as recorded fertility in our sample as we expect motherhood to have a similar effect on labour market outcomes as fertility, unless childbearing in itself has a separate effect. Having zero recorded births but being a mother applies to 1 percent of the sample regarding the first policy change, and 2.2 percent of the sample regarding the second policy change. In an attempt to control for the impact social mothers could have on our estimates, we present the results of the regressions without the

mothers with zero recorded births in table 18 in the appendix and find no major differences to our main results.

Several control variables are included in the analysis in order to control for observable characteristics and household characteristics. Age at first birth is constructed by subtracting the age of the oldest own child in the household from the mother's age. This ranges from -24 to 51 years, however this is obviously unrealistic. We cannot think of a plausible explanation for this other than potentially incorrectly recorded ages and we keep only mothers who had their first child between the ages 15 and 49. Those outside this age range constitutes 0.8 percent of this group. The age cut is motivated by the female reproductive age, usually ranging from 15 to 49 (WHO, 2006) and also coincides with the first year of observations for labour market outcomes in our data, starting at age 15. This way, we achieve a more realistic age range, with a mean of about 24 years. Educational attainment ranges from 1 to 4 where 1 indicates less than primary completed, 2 indicates primary completed, 3 indicates secondary completed and 4 indicates university completed. A mean of 1.708 shows that on average, mothers who gave birth between January and October 1967 did not have more than primary education. Urban is a dummy taking on 1 if living in an urban area and 0 if living in a rural area, with a mean of 0.468. Water supply is a dummy taking on 1 if the household has piped water and 0 otherwise, with a mean of 0.374. Square meters per person is calculated by dividing the living area of the household in square meters by the number of people living in the household, ranging from 0.5 to 112.333 square meters per person with a mean of 10.123m^2.

Water supply and square meters per person are used as proxies to control for socioeconomic status. As we observe that only about 37 percent of households have piped water, this difference could potentially explain socioeconomic variation. Further, square meters per person differs largely, potentially capturing the existence of socioeconomic differences within the sample. These control variables, among others, are also utilised by Pop-Eleches (2006) to control for household socioeconomic status. As he suggests, including these variables can also partially control for heterogeneous policy responses across groups. Further, Francesconi (2002) suggests that female work behaviour in close connection to giving birth may be linked to household wealth, which could be reflected in household characteristics such as living area and water supply. In the absence of information on wealth at time of birth we control for wealth at the time of survey. Additionally, to control for demographic factors such as age at first birth, education and urban status are standard in literature examining fertility and labour market

outcomes (see for example Bloom et al., 2009; Leung, Groes & Santaeulalia-Llopis, 2016; Lundborg, Plug & Rasmussen, 2017).

We use a similar framework for the second policy change as for the first policy change. Women could have chosen to terminate their pregnancy of children born from June 1990 on as they were not past the first trimester in January 1990. Women giving birth before June 1990 did not have the option to terminate the pregnancy. Thus, we specify the second instrument as 1 if a woman gave birth to a child between June and October 1990, and 0 if a woman gave birth to a child between January and May 1990. Hence, the instrument is always 1 if affected by the policy change, although the direction of the effect is opposite between the two policy changes.

Table 2: Descriptive statistics (abortion legalisation, 1990)

Variable	**Obs.**	**Mean**	**Std. Dev.**	**Min.**	**Max.**
Post-legalisation birth	58,849	0.448	0.492	0	1
Labour force participation	58,849	0.658	0.474	0	1
Employment status	38,725	0.928	0.259	0	1
Hours worked	21,505	39.406	10.457	0	90
Fertility	58,849	2.501	1.807	0	17
Age at first birth	58,849	22.544	4.369	15	49
Educational attainment	58,849	2.548	0.718	1	4
Urban	58,849	0.535	0.499	0	1
Water supply	58,849	0.583	0.493	0	1
Square meters per person	58,849	10.835	6.500	0.5	166.667

Table 2 reports the descriptive statistics for the variables included in the analysis of the second policy change. Post-legalisation birth is a dummy variable taking on 1 if giving birth to a child between June and October 1990, and 0 if giving birth to a child between January and May 1990. The mean of 0.448, indicates that more mothers gave birth in the earlier period, when they could not have had an abortion. The labour force participation dummy has a mean of 0.658. This indicates that a larger share of women in our sample are in the labour force, than are not in the labour force, compared to the time of the first policy change. The employment status dummy has a mean of 0.928, indicating that again almost all women in the labour force in our sample are employed. Hours worked ranges from 0 to 90 and has a mean of about 39 hours. This is

slightly higher than for the first policy change. Fertility ranges from 0 to 17, with a mean of approximately 2.5 children. Age at first birth ranges from -1 to 58 years, but again we have restricted the variable to range from 15 to 49. Those outside this age range constitutes 0.6 percent of this group. The mean of age at first birth is now about 23 years. Educational attainment again ranges from 1 to 4, with 4 being the highest completed education. It has a mean of 2.548. The dummy for urban has a mean of 0.535, while the dummy for water supply has a mean of 0.583. Square meters per person ranges from 0.5 to 166.667 and has a mean of 10.835 m^2.

We want to establish that the women who gave birth right before the abortion policy changes affected their option to terminate a pregnancy do not differ in their observed characteristics to those women who gave birth right after this point. This is especially important as the regime introduced incentives to increase fertility in conjunction with the abortion ban. Thus, it could be that these incentives attracted women to get pregnant who are different to those getting pregnant before the ban and incentives were introduced. To do so, we perform a two-sample t-test with unequal variances of the control variables for each policy change separately, presented in tables 3 and 4 in the appendix. Table 3 reports the results for the variables included in the regressions for the abortion ban. While age at first birth is not statistically significant, suggesting that no difference exists between the two groups, all remaining variables report a statistically significant difference in means. This suggests that some differences exist between those groups. To understand whether the statistical significance is meaningful in magnitude, Cohen (1988) suggests investigating the effect size of the differences in the mean comparisons. To evaluate the differences between the groups, we therefore obtain a number for Cohen's d. An effect size of below 0.2 is considered to indicate that the practical significance of the difference is small (Cohen, 1988). The values we obtain for Cohen's d range from 0.094 to 0.154. Hence, we consider these differences to be small enough to not be a problem for the analysis. Table 4 reports the results for the variables included in the regressions for the abortion legalisation. Age at first birth is not statistically significant, suggesting that no difference exists between the two groups. However, the difference in means for the remaining four control variables are statistically significant again. The values of Cohen's d obtained range from 0.018 to 0.041, again suggesting that the differences are of little practical significance.

6. Methodology

6.1. Research Design

To examine whether fertility has an effect on maternal labour market outcomes, we use abortion legislation changes as instruments for fertility in an IV design. The concern for potential endogeneity problems in studies on behavioural responses to changes in fertility motivates the choice of the research design (Rosenzweig & Schultz, 1985; Browning, 1992). We expect an ordinary least squares (OLS) estimation to result in inconsistent and biased estimates (Verbeek, 2017), as there likely exist unobserved factors that affect both fertility and labour market outcomes we expect fertility to be correlated with the error term. Thus, we rely on an IV design to produce unbiased estimates under the assumption that an endogeneity issue exists (Wooldridge, 2009), estimating the local average treatment effect for each 2SLS regression (Imbens & Angrist, 1994). In case of heterogeneous responses in the sample group, and the abortion reforms in fact only affects the fertility of a particular group of the sample, we then measure the average effect of fertility on maternal labour market outcomes of this specific subgroup only, rather than the average response of the sample (Imbens & Angrist, 1994). For example, women with more than five children consistently had access to abortions over the whole period, hence, their fertility should not have been affected by the policy changes. Then, the effect obtained would be only for those women who were not exempt from the law. Due to data limitations, the women who were exempt from the law could not be identified as we do not observe the birth years for potential siblings, needed to determine at which year a woman had a certain number of children. Thus, also women with more than five children are part of the sample. We find that approximately 8.1 percent of women who gave birth between January and October 1967 had more than five children at the time they were surveyed, while this applies to approximately 6.5 percent of women who gave birth between January and October 1990. While we cannot exclude those women who had more than five children at the time of the reform, in an attempt to partly control for this, we exclude those women with more than five children at the time they were surveyed. However, these groups need not be the same. The results are presented in table 19 in the appendix. We find slightly smaller but relatively similar estimates of the effect of fertility on maternal labour force participation and employment status.

The research design is based on the idea that changes in access to abortion may influence the number of unwanted or unplanned children (Mitrut & Wolff, 2011), providing exogenous

variation in fertility. It relies on the underlying assumption that the women who gave birth right before the abortion ban in 1966 and the abortion legalisation in 1990 affected the option to terminate a pregnancy, are not different in their unobserved characteristics to those women who gave birth right after the effects of the abortion policy changes influenced the possibility to terminate a pregnancy. Further, for causal interpretation of the results, the IV assumptions must be fulfilled. First, the independence assumption requires that the abortion reforms are as good as randomly assigned. One potential threat to this assumption would be if the abortion reforms were endogenous and a reaction to social or political influence that affected both fertility and maternal labour market outcomes (Bloom et al., 2009). However, both policy changes came into effect swiftly and unexpectedly to citizens in Romania, and the exact timing of the reforms were random (Pop-Eleches, 2006; Mitrut & Wolff, 2011). Second, the exclusion restriction states that that the only reason for any relation between labour market outcomes and the abortion reforms is the effect that the abortion reforms have on fertility. Similar to other researchers using abortion legislations as instruments for fertility (see for example Angrist & Evans, 1996; Ananat, Gruber, Levine & Staiger, 2006; Bloom et al., 2009), we believe that it is reasonable that this assumption holds. Third, the IV design relies on the existence of a first stage, which implies that there is a significant effect of the abortion reforms on fertility (Angrist & Pischke, 2008). Common practice in the literature is to accept a first stage F-value of at least 10 when evaluating the support for this assumption (Stock, Wright & Yogo, 2002). The first stage F-value obtained for the first instrument, the abortion ban, is 12.75, and for the second instrument, the abortion legalisation, is 87.71. Thus, both F-values are above 10, supporting that this assumption holds. Last, the monotonicity assumption states that while the treatment effect can differ between individuals, everyone who is affected by the abortion reforms should be affected in the same direction. For the first policy change, the introduction of a ban of abortions, we expect fertility to increase. It seems unlikely that fertility would decrease for anyone as a result of the abortion ban. Similarly, for the second policy change, the legalisation of abortion, we expect fertility to decrease and it seems unlikely that anyone would expect increased fertility as a result of the reform. In the case that these assumptions hold, the coefficient of interest will represent the causal local average treatment effect for those exposed to the abortion reforms (Imbens & Angrist, 1994).

To gain further insight into the effect of fertility on labour supply, we split the sample on fertility margins and educational attainment. As the first additional analysis, we attempt to distinguish between women's labour market responses to exogenous variation in fertility at the extensive

margin and the intensive margin. Our objective is to investigate whether the effect of fertility on maternal labour market outcomes is greater at the extensive margin than at the intensive margin, as suggested by theories of household production, economies of scale and child quality (Lundborg, Plug & Rasmussen, 2017). To estimate these effects separately we split the sample into two groups. The women included in the first group gave birth to their first child at the time of the policy changes, 1967 and 1990 respectively, and represent the extensive margin of fertility. Those women who had an additional birth in 1967 or 1990, meaning that they already had at least one child, represent the intensive margin of fertility. This separately identifies the labour market effects of having a first child as opposed to labour market effects of having additional children. The second additional analysis aims to examine whether the effects of fertility on labour market outcomes differ between less and more highly educated mothers. We follow Agüero and Marks (2011) and define the first subgroup as those with no more than primary education completed, and the second as those with more than primary education. The objective of this extended analysis is to investigate whether the labour supply of more highly educated women is more sensitive to fertility, as suggested by Hill and Stafford (1974) and Leibowitz (1975).

Additionally, to check the robustness of the model, we perform a placebo test based on placebo policy changes. For the abortion ban, a placebo instrument one year prior to the actual abortion ban was introduced, is generated. We specify the first instrument as 1 if a woman gave birth to a child between June and October 1966, and 0 if a woman gave birth to a child between January and May 1966. For the second placebo reform, we specify the instrument as 1 if a woman gave birth to a child between June and October 1989, and 0 if a woman gave birth to a child between January and May 1989. In this setting, we expect to see that fertility instrumented by the placebo policy changes has no effect on labour market outcomes.

6.2. Empirical Framework

The first stage regresses the instrument on the variable of interest. In this case, the reform is regressed on fertility. The reform here represents either the abortion ban in 1966 or the abortion legalisation in 1990, depending on the policy of interest in each regression. Equation (1) describes the first stage regressions,

$$Fertility_i = \alpha_1 + \beta_1 reform_{ij} + \gamma_1 X_i + \delta_{1i} + \varepsilon_i \quad (1)$$

where subscript i denotes individual, and subscript j=[1, 2] where 1 is the abortion ban and 2 is the abortion legalisation. The dependent variable is female fertility, the coefficient on the instrument, β_1, is the coefficient of interest. X_i is a set of control variables including age at first birth, educational attainment, an urban dummy, water supply and square meters per person and δ_{1i} is regional fixed effects to capture differences across regions that are fixed over time. The regional fixed effects consist of eight region dummies. ε_i is the error term that contains unobservable factors that can be linked to fertility, the reform, or both.

The reduced form regresses the instrument directly on the outcome variables. In this case, the reform is regressed on three different labour market outcomes. The following equation (2) describes the reduced form regressions,

$$Labour\ market\ outcome_{ik} = \alpha_2 + \beta_2 reform_{ij} + \gamma_2 X_i + \delta_{2i} + \varepsilon_i \quad (2)$$

where subscript i denotes individual, subscript j is the policy change and k=[1, 2, 3] is labour market outcomes, where 1 is labour force participation, 2 is employment status and 3 is hours worked. The dependent variables are individual labour market outcomes, the coefficient on the instrument, β_2, is the coefficient of interest, X_i is a set of control variables and δ_{2i} is regional fixed effects. ε_i is the error term that contains unobservable factors that can be related to labour market outcomes, the reform, or both.

The OLS model regresses the variable of interest directly on the outcome variables. In this case, regressing fertility on three different labour market outcomes. Equations (3) and (4) describe the OLS specifications,

$$Labour\ market\ outcome_{ik} = \alpha_3 + \beta_3 fertility_i + \varepsilon_i \quad (3)$$

$$Labour\ market\ outcome_{ik} = \alpha_4 + \beta_4 fertility_i + \gamma_4 X_i + \delta_{4i} + \varepsilon_i \quad (4)$$

where subscript i denotes individual, subscript j is the policy change and k is labour market outcome. The dependent variable is individual labour market outcome, the coefficient on fertility, β, is the coefficient of interest and ε_i is the error term that contains unobservable factors that can be linked to fertility, labour market outcome, or both. Additionally, in equation (4), X_i is a set of control variables and δ_{4i} is regional fixed effects.

The IV 2SLS model regresses the instrumented variable of interest on the outcome variables. Here, fertility instrumented by the reform is regressed on three different labour market outcomes. Equations (5) and (6) describe the 2SLS specifications,

$$Labour\ market\ outcome_{ik} = \alpha_5 + \beta_5 fertility_i + \varepsilon_i \quad (5)$$

$$Labour\ market\ outcome_{ik} = \alpha_6 + \beta_6 fertility_i + \gamma_6 X_i + \delta_{6i} + \varepsilon_i \quad (6)$$

where subscript i denotes individual, subscript j is the policy change and k is labour market outcome. Again, the individual labour market outcome is the dependent variable, and the coefficient on fertility, β, is the coefficient of interest. ε_i is the error term that contains unobservable factors that can be related to fertility, labour market outcome, or both. Additionally, in equation (6), X_i is a set of control variables and δ_{6i} is regional fixed effects. Equation (6) is our preferred specification.

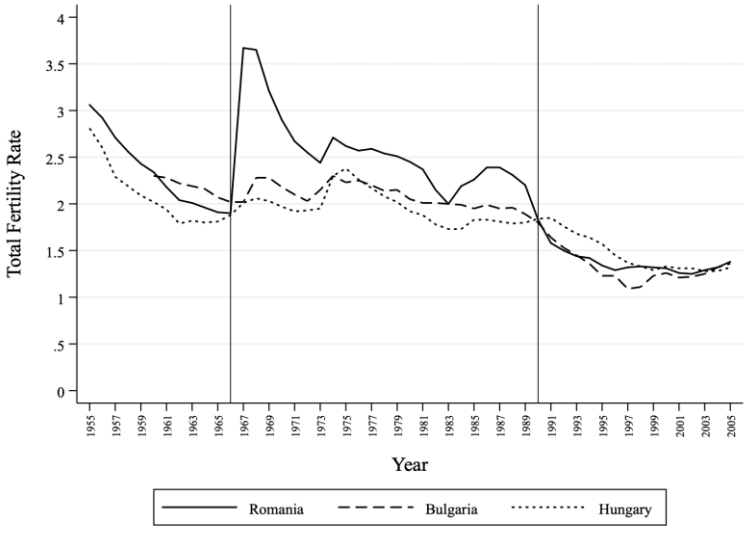

Figure 3: Total fertility rates in Romania, Bulgaria and Hungary, 1955-2005

Data source: United Nations Department of Economic and Social Affairs (2019).

Figure 3 displays the total fertility rates in Romania and Hungary from 1955 to 2005 and in Bulgaria from 1960 to 2005. The figure is based on data on average national fertility rates, exhibiting aggregate country level rates. The two policy changes in Romania are indicated by the two vertical lines at 1966 and 1990. The first line represents the abortion ban in October 1966 while the second line represents the abortion legalisation in January 1990. An immediate increase in the total fertility rate can be observed in Romania after 1966, as abortion and

contraception were banned. From the year 1966 to the year 1967, the total fertility rate almost doubled, increasing from 1.9 to 3.7. This is also reflected in the rate of abortions, with 5 abortions for every live birth in 1965 (World Bank, 1992), and only 0.3 abortions for every live birth in 1967 (Berelson, 1979). In the years following the ban, the total fertility rate gradually decreased. In 1990, abortion was legalised again, and the total fertility rate in Romania decreased from 2.2 in 1989 to 1.83 in 1990 (United Nations Department of Economic and Social Affairs, 2019). The observed decline in the total fertility rate in Romania in the years prior to the legalisation could be caused by an increase in illegal abortions. One concern raised by Mitrut and Wolff (2011) regarding the validity of the research design is that the observed decline in fertility rates after 1990 could reflect a general decline in demand for children due to the changing social and political environment rather than the abortion legalisation. The total fertility rate in Romania is compared to that of Hungary and Bulgaria. These neighbouring countries were also part of the Eastern Block up until 1989 and had similar fertility levels as Romania prior to 1966. As can be observed for Romania, the drop after 1990 closely follows that of Bulgaria, potentially indicating that the concern about the drop not being due to the abortion legalisation is valid. However, the drop observed in Hungary after 1990 is not as steep as in Romania, suggesting that the sharp decline seen in Romania does not necessarily correspond to the general trend in the geographic area. This observation mitigates the concern that the drop is due to other reasons than the abortion reform. Mitrut and Wolff (2011) also raise the concern that the drop in fertility is due to the abolition of Ceaușescu's pro-reproductive policies. However, they argue that this is unlikely to be the case, as no immediate policy changes regarding maternity leave or child allowances came into effect after the fall of the communist regime.

7. Results

7.1. Reduced Form and First Stage Results

Table 5 in the appendix reports the first stage regression estimates in column (1) and the reduced form regression estimates in columns (2)-(4), based on equation (1) and (2) respectively, for the abortion ban. The coefficient on post-ban birth in the first stage is statistically significant at the 1 percent level, suggesting that having been affected by the abortion ban in 1967 resulted in a decrease in fertility by 0.056 children. The F-statistic of 12.75 in column (1) refers to the result when testing whether the instrument is equal to zero. The reduced form coefficients on the post-ban birth are statistically insignificant across all labour market outcomes.

Table 6 in the appendix reports the first stage regression estimates in column (1) and the reduced form regression estimates in columns (2)-(4), again based on equation (1) and (2) respectively, but now for the abortion legalisation. The coefficient on the post-legalisation birth in the first stage is statistically significant at the 1 percent level, implying that having been affected by the abortion legalisation in 1990 resulted in a decrease in fertility by 0.125 children. The F-statistic based on the first stage regression is 87.71. The reduced form coefficient on the post-legalisation birth is statistically significant at the 1 percent level when regressing on labour force participation. The coefficient suggests that the probability of labour force participation increased by 1 percentage point when legalising abortion. Column (3) implies that the probability of being employed increased by 0.5 percentage points when giving birth in the post-legalisation period compared to when giving birth before abortions were legalised, with the coefficient being statistically significant at the 5 percent level. The coefficient on post-legalisation birth in the regression on hours worked is statistically insignificant.

7.2. Main Results

Table 7 reports the OLS and 2SLS regression results for labour force participation for the first policy change. The regressions are based on equations (3)-(4) and (5)-(6) respectively, showing the results with and without control variables and region fixed effects. Columns (1) and (2) show the OLS regression results, used as a comparison to the 2SLS results in columns (3) and (4). While the 2SLS regression estimate of fertility including control variables and fixed effects is not statistically significant, the specification without control variables is. The specification

in column (3) is significant at the 10 percent level, suggesting that increasing fertility by one child increases the probability of labour force participation by 13.8 percentage points. This is contradicting the results obtained from the OLS regressions, indicating a statistically significant negative effect of fertility on labour force participation.

Table 7: OLS & 2SLS regressions on labour force participation (abortion ban, 1967)

	(1) OLS	(2) OLS	(3) IV 2SLS	(4) IV 2SLS
Fertility	-0.010***	-0.009***	0.138*	-5.324
	(0.002)	(0.002)	(0.079)	(97.797)
Age at first birth		-0.019***		0.035
		(0.001)		(0.997)
Educational		0.080***		-1.905
attainment		(0.005)		(36.538)
Urban		-0.104***		-0.866
		(0.011)		(14.024)
Water supply		-0.020*		-1.763
		(0.012)		(32.072)
Square meters per		-0.003***		-0.295
person		(0.001)		(5.379)
Constant	0.527***	1.051***	0.111	26.306
	(0.008)	(0.027)	(0.224)	(464.794)
Observations	16,764	16,764	16,764	16,764
R-squared	0.001	0.068		
Region FE	NO	YES	NO	YES

Robust standard errors in parentheses

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

Table 8 reports the OLS and 2SLS regression results for employment status for the abortion ban. The OLS regression results as well as the 2SLS regression results are statistically insignificant. Table 9 reports the OLS and 2SLS regression results for hours worked for the abortion ban. As for the results for employment status, both the OLS and 2SLS results are statistically insignificant. The insignificant results for hours worked could be due to the small sample sizes in these regressions. Hence, no conclusions can be drawn from these results.

Table 8: OLS & 2SLS regressions on employment status (abortion ban, 1967)

	(1) OLS	(2) OLS	(3) IV 2SLS	(4) IV 2SLS
Fertility	0.001	0.000	0.012	0.049
	(0.001)	(0.001)	(0.023)	(0.320)
Age at first birth		0.001***		0.000
		(0.000)		(0.006)
Educational attainment		0.003		0.020
		(0.002)		(0.113)
Urban		-0.022***		-0.014
		(0.006)		(0.052)
Water supply		0.002		0.018
		(0.006)		(0.102)
Square meters per person		0.000		0.003
		(0.000)		(0.019)
Constant	0.975***	0.953***	0.945***	0.733
	(0.003)	(0.012)	(0.063)	(1.446)
Observations	8,385	8,385	8,385	8,385
R-squared	0.000	0.007		
Region FE	NO	YES	NO	YES

Robust standard errors in parentheses

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

Table 9: OLS & 2SLS regressions on hours worked (abortion ban, 1967)

	(1) OLS	(2) OLS	(3) IV 2SLS	(4) IV 2SLS
Fertility	-0.311	-0.078	-8.059	-9.177
	(0.387)	(0.401)	(9.608)	(11.287)
Age at first birth		-0.413*		-0.230
		(0.238)		(0.402)
Educational attainment		0.261		-3.495
		(0.772)		(4.721)
Urban		0.365		0.096
		(1.910)		(2.661)
Water supply		4.078**		1.699
		(1.917)		(3.787)
Square meters per person		0.001		-0.138
		(0.071)		(0.197)
Constant	36.947***	43.523***	57.703**	78.194*
	(1.103)	(5.926)	(25.714)	(43.888)
Observations	542	542	542	542
R-squared	0.001	0.067		
Region FE	NO	YES	NO	YES

Robust standard errors in parentheses

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

Columns (1) and (3) of table 10 show the regression results for the OLS and 2SLS specifications without any control variables or fixed effects. Both regression estimates are statistically significant at the 1 percent level and suggest a negative relationship between fertility and labour force participation. The 2SLS specification suggests a larger negative effect. Similarly, there is also a larger negative effect with the 2SLS estimation than the OLS estimation when looking at the specifications with controls and fixed effects. The OLS regression is significant at the 1 percent level and implies a reduction in the probability of participating in the labour force of 2.8 percentage points for an increase in fertility of one child. The 2SLS regression instead suggests that increasing fertility by one child reduces the probability of labour force participation by 8.2 percentage points, statistically significant at the 1 percent level. The IV model produces a larger estimated effect than the OLS model. This could possibly be explained by measurement errors reducing the OLS estimate, while the instrumented IV regression corrects for this and produces a larger estimate (Bloom et al., 2009). Additionally, the effect of the regression in column (4) is smaller than that in column (3), suggesting that some of the effect of fertility on labour force participation is absorbed by the control variables in the specification.

Table 10: OLS & 2SLS regressions on labour force participation (abortion legalisation, 1990)

	(1) OLS	(2) OLS	(3) IV 2SLS	(4) IV 2SLS
Fertility	-0.052***	-0.028***	-0.104***	-0.082***
	(0.001)	(0.001)	(0.026)	(0.030)
Age at first birth		0.001**		0.003***
		(0.000)		(0.001)
Educational attainment		0.153***		0.113***
		(0.003)		(0.022)
Urban		-0.024***		-0.045***
		(0.005)		(0.013)
Water supply		0.076***		0.079***
		(0.005)		(0.006)
Square meters per person		0.001***		-0.002
		(0.000)		(0.002)
Constant	0.788***	0.353***	0.918***	0.613***
	(0.003)	(0.013)	(0.064)	(0.146)
Observations	58,849	58,849	58,849	58,849
R-squared	0.039	0.111		0.077
Region FE	NO	YES	NO	YES

Robust standard errors in parentheses

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

Table 11 reports the OLS and 2SLS regression results on employment status for the abortion legalisation.

Table 11: OLS & 2SLS regressions on employment status (abortion legalisation, 1990)

	(1) OLS	(2) OLS	(3) IV 2SLS	(4) IV 2SLS
Fertility	0.006***	0.008***	-0.040**	-0.042*
	(0.001)	(0.001)	(0.019)	(0.022)
Age at first birth		0.003***		0.005***
		(0.000)		(0.001)
Educational attainment		0.015***		-0.017
		(0.002)		(0.014)
Urban		-0.053***		-0.077***
		(0.004)		(0.011)
Water supply		0.024***		0.028***
		(0.004)		(0.005)
Square meters per person		0.001***		-0.001
		(0.000)		(0.001)
Constant	0.913***	0.797***	1.018***	1.022***
	(0.002)	(0.009)	(0.043)	(0.099)
Observations	38,725	38,725	38,725	38,725
R-squared	0.001	0.014		
Survey Year FE	NO	YES	NO	YES
Region FE	NO	YES	NO	YES

Robust standard errors in parentheses

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

While the OLS estimate in column (1) is statistically significant at the 1 percent level and suggests a positive effect of fertility on employment status, the 2SLS estimate in column (3) is statistically significant at the 5 percent level and instead suggests a negative effect of fertility on employment status. These contradictory findings also holds for the specifications including controls and fixed effects, where the OLS regression is significant at the 1 percent level, indicating a positive effect of fertility on employment status, while the 2SLS regression is statistically significant at the 10 percent level and indicates a negative effect of fertility on employment status. The preferred specification in column (4) suggests that increasing fertility by one child decreases the probability of being employed by 4.2 percentage points. Again, this larger effect produced by the IV model compared to that produced by the OLS model could potentially be explained by the IV model's correction for measurement errors.

Table 12: OLS & 2SLS regressions on hours worked (abortion legalisation, 1990)

	(1) OLS	(2) OLS	(3) IV 2SLS	(4) IV 2SLS
Fertility	-0.825***	-0.416***	0.053	0.184
	(0.048)	(0.054)	(1.307)	(1.489)
Age at first birth		-0.052***		-0.073
		(0.017)		(0.056)
Educational attainment		0.739***		1.111
		(0.124)		(0.928)
Urban		2.616***		2.920***
		(0.185)		(0.775)
Water supply		0.231		0.309
		(0.208)		(0.284)
Square meters per person		-0.008		0.019
		(0.010)		(0.068)
Constant	41.389***	37.499***	39.279***	34.763***
	(0.129)	(0.529)	(3.142)	(6.803)
Observations	21,505	21,505	21,505	21,505
R-squared	0.016	0.044		0.038
Region FE	NO	YES	NO	YES

Robust standard errors in parentheses

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

Table 12 reports the OLS and 2SLS regression results for hours worked for the second policy change. Both OLS specifications are statistically significant at the 1 percent level, indicating negative effects of fertility on hours worked. However, no inference can be drawn from the 2SLS results as they are statistically insignificant.

7.3. Additional Results

While our main results were focused on the average effect of fertility, to gain more detailed insight, we now turn to investigating the 2SLS estimates of the effect of fertility on labour market outcomes for specific subgroups. Based on equation (6), table 13 in the appendix reports the regression results for the abortion ban split on the extensive and intensive margin of fertility. Columns (1), (3) and (5) display the effects of the extensive margin of fertility on labour market outcomes. Columns (2), (4) and (6) show the estimates of the intensive margin of fertility on labour market outcomes. The regression results suggest that having a first child increases the probability of being in the labour force by 49.5 percentage points, statistically significant at the 1 percent level. All remaining estimates are insignificant.

Based on equation (6), table 14 in the appendix reports the regression results for the abortion legalisation split on the extensive and intensive margin of fertility. Columns (1), (3) and (5) show the estimates of the extensive margin of fertility on labour market outcomes. Columns (2), (4) and (6) show the estimates of the intensive margin of fertility on labour market outcomes. We find no significant effect at either the extensive or the intensive margin of fertility on labour force participation. While the estimate for employment status is not significant at the intensive margin, at the extensive margin the estimate is significant at the 5 percent level. Contradictory to our previous findings, the estimate suggests that fertility has a positive effect on employment. The coefficient suggests that an increase in fertility at the extensive margin increases the probability of being employed by 7.7 percentage points. Again, we obtain no significant result at the intensive margin of fertility on hours worked. However, the effect of fertility at the extensive margin is significant at the 1 percent level, with the estimate suggesting that an increase in fertility decreases weekly hours worked by approximately 7 hours.

Based on equation (6), table 15 in the appendix reports the regression results for the abortion ban split on high and low educational attainment, where columns (1), (3) and (5) depict the estimates of the effects on labour market outcomes for the less educated subgroup and columns (2), (4) and (6) show the estimates of labour market outcomes for the more highly educated subgroup. We obtain no significant results, similarly to the main results on the full sample in tables 7-9. It is noteworthy that the coefficient on fertility for hours worked for the more highly educated subgroup is based only on 87 observations, and this could potentially be a source of the insignificant result.

Based on equation (6), table 16 in the appendix reports the regression results for the abortion legalisation split on high and low educational attainment, where columns (1), (3) and (5) show the estimates of labour market outcomes for the less educated subgroup and columns (2), (4) and (6) show the estimates of labour market outcomes for the more highly educated subgroup. Similar to the main results in tables 10-12, we find significant results for labour force participation and employment status. Our sample split shows that the effect in the main regressions are mainly driven by the more highly educated subgroup. The effect of fertility on the probability of labour force participation goes from a decrease of 8.2 percentage points for the full sample, to a decrease of 11.8 percentage points for the more highly educated subgroup. Both of these coefficients are statistically significant at the 1 percent level. The effect of fertility on the probability of employment goes from a decrease of 4.2 percentage points for the full

sample, statistically significant at the 10 percent level, to a decrease of 6.8 percentage points, statistically significant at the 5 percent level. Hence, when splitting the sample, we uncover a larger effect of fertility on labour force participation and employment status for the more highly educated group. Further, we find that no conclusions can be drawn about the effect of fertility on labour market outcomes for the less educated subgroup.

7.4. Placebo Test

The results of the placebo test, based on equation (6), are presented in table 17 in the appendix, with columns (1)-(3) referring to the first placebo reform one year before the actual abortion ban and columns (4)-(6) referring to the second placebo reform one year before the actual abortion legalisation. The coefficients of interest on fertility are not significant in either of the specifications across all labour market outcomes. If fertility would have had a significant effect on the outcomes in the placebo specifications this would have suggested that the model is faulty. Hence, these findings support the robustness of our model.

8. Analysis and Discussion

Our results are based on data collected at various time points after the mothers gave birth. Mothers who gave birth in 1967 were surveyed 10 to 44 years later, while mothers who gave birth in 1990 were surveyed 2 to 21 years later. As we do not have panel data, our estimates are an average of the total effect throughout the whole time period and we cannot separate short term effects from long term effects. While the effects likely differ at the short and long term horizon, we do believe that our average estimates carry some value for understanding how female labour market outcomes are affected by fertility. Mothers' labour market outcomes are likely more affected by childcare when the child is young, and lack of work experience at the longer time horizon. Losing out on work experience from not participating in the labour force when taking care of a young child could hinder possibilities to re-enter the labour market, career advancements and wages.

A limitation of the study is the lack of significance of the estimates for the first policy change, that does not allow for comparison between the estimates obtained for the first and the second policy change. The insignificant results obtained for the first policy change suggest that fertility had no statistically significant effect on maternal labour market outcomes in our main regressions for mothers giving birth in 1967, while the results for the second policy change suggest it did have a significant effect on mothers giving birth in 1990. This could reflect the increasing importance of a working life for women in the 1990s as compared to in the 1960s. Our findings suggest that policies promoting fertility control will be of increasing importance as gender equality progresses and women to a larger extent take part in the labour market. Such policies could have important implications also for those women who will never experience an unanticipated pregnancy, as knowing that abortion is a possibility might affect labour market behaviour. Additionally, reducing fertility is known to be an important facilitator for economic growth and development (Angrist, Lavy & Schlosser, 2010).

Our estimates for the labour market outcomes suggest that either children and mothers' home time are complements and therefore returns to staying at home will rise with an additional birth as suggested by Rosenzweig and Schultz (1985), or home childcare is less expensive or believed to be better than commercial childcare and hence mothers stay at home with their children, as suggested by Angrist, Lavy and Schlosser (2010). Both of these explanations are supported by

our findings that increasing fertility reduces the probability of employment and labour force participation for mothers. These findings are in line with those of Angrist and Evans (1998), Cristia (2008), Bloom et al. (2009) and Lundborg, Plug and Rasmussen (2017), but contradicts those of Agüero and Marks (2011) who find no effect of fertility on labour force participation or work intensity. However, our analysis falls short of determining which mechanism is at play. It could be both of the above suggested explanations, one of them or neither of them. These findings of fertility reducing the probability of labour force participation and employment suggest that mothers spend less time in the labour market, consistent with the theory of new home economics, naturally leading to less work experience. If labour market experience largely affects earnings, we expect women with higher fertility to have lower wages, and variation in fertility to at least partially explain wage differences both between women and between women and men (Rosenzweig & Schultz, 1985).

The estimations of the differential effects of the extensive and intensive margin of fertility on maternal labour market outcomes in show that the effects on labour supply are more sensitive at the extensive margin. Our analysis of the abortion ban suggests that the effect of fertility on labour force participation is driven by having a first child rather than having an additional child, while our analysis on the abortion legalisation suggests that the effect of fertility on employment and hours worked are also driven by the extensive margin of fertility. This is in line with what is predicted by theory, suggesting that the effect on labour market outcomes tends to be stronger at the extensive margin of fertility than at the intensive margin of fertility (Robinson, 1987). Women are more likely to be in the labour force and be employed but work less hours. As suggested by the theory of new home economics, the effect of fertility on labour market outcomes is that children take up resources such as time, which decreases the time women can spend in the labour market. According to the theory of economies of scale in family size, this effect is larger at the extensive margin than at the intensive margin of fertility. This could be the mechanism at play reducing hours worked. It could for example be that mothers are more likely to work part-time as a result of having their first child. Our findings differ from those of Cristia (2008), who finds large negative effects of fertility at the extensive margin on labour supply, whereas we find both negative and positive effects on labour supply at the extensive margin of fertility. Lundborg, Plug and Rasmussen (2017) find modestly negative effects at the intensive margin of fertility on labour market outcomes and large negative effects of fertility at the extensive margin, while we find no statistically significant effects at the intensive margin of fertility.

The estimates in table 16 suggest that the effects of fertility on labour market outcomes are mainly driven by the more highly educated respondents. The estimates suggest that the effect of increasing fertility on labour force participation and employment status for more highly educated mothers is larger than the effect that is obtained for the full sample, increasing by 3.6 and 2.6 percentage points respectively. This is in line with the findings of Hill and Stafford (1974) and Leibowitz (1975) who suggest that the labour supply of more highly educated women is more sensitive to fertility. However, our findings differ from those of Angrist and Evans (1998) and Agüero and Marks (2011), who find that the labour market outcomes of less educated mothers are more sensitive to the effect of fertility. This could be due to the very different settings of their studies, which covers the United States and 26 developing countries, respectively, while we look at Romania only. Our findings can potentially be explained by that more highly educated mothers in Romania to a greater extent see children and home time as complements or prefer to care for their children themselves rather than using commercial childcare. Further, more highly educated mothers might be in unions with more highly educated partners (Stevens, Owens & Schaefer, 1990; Greenwood, Guner, Kocharkov & Santos, 2016), suggesting that the household has access to higher income compared to less educated mothers in union with less educated partners. Hence, more highly educated mothers are more likely to be able to afford to stay at home with their child instead of participating in the labour market. Another reason could be that a more highly educated mother has more resources herself to be able to withdraw from the labour market than a less educated mother has. Our finding that an increase in fertility affects labour market outcomes of more highly educated women more than those of less educated women has several implications concerning both labour market and childcare policies.

In terms of the labour market, policies promoting female labour market activities and gender equality need to be improved. Among the women who gave birth around the second policy change, only about 66 percent were in the labour force at the time they were interviewed, which was an improvement compared to the women who gave birth around the first policy change, with as few as approximately 37 percent being in the labour force. This leaves room for further improvement. For example, this could be achieved by advancing terms of parental leave and job security, thus improving compatibility of family and work. Further, maternal labour market activity can be supported by improvements in access to and quality of commercial childcare. For example, an increase in subsidies for childcare could improve access, while educating more childcare workers could improve quality. As our findings suggest that maternal labour supply

is more responsive to the extensive margin of fertility, policies aimed at women having their first child should be more efficient. For example, policies promoting full-time employment also after having had a first child would help combat the negative effect we find on hours worked at the extensive margin of fertility. A combination of flexible childcare and subsidising outsourcing of household work such as cleaning and ironing could provide support for women to engage in full-time work. Additionally, our findings suggest that aiming policies at more highly educated women should also have a larger impact. For example, improving the quality of commercial childcare to a standard that would satisfy more educated women could lead to more of these women utilising commercial childcare instead of staying at home with their child and reducing market work. This needs to be accompanied by policies also supporting the labour market activities of less educated women, for example subsidising childcare to ensure greater accessibility for women with lower income.

It is reasonable to believe that the effect we find for the abortion legalisation is to some extent influenced by the historic background to the reform. Romania is unique in its swift changes in abortion legislation paired with its especially liberal use of abortion as fertility control. In 1965, there were 5 abortions for every live birth, and after a drop during the years of the ban, in 1990, it was up to 3 abortions for every live birth again (World Bank, 1992). This suggests that abortions were and continue to be widely accepted and provides a unique context for the abortion legalisation in 1990. These figures suggest that norms regarding abortions are slow to change in Romania. The results obtained in the model for the abortion legalisation are likely dependent on the change in abortion legislation from legal to illegal in 1966, as well as the underlying attitudes towards abortion. Hence, the reactions to, and therefore the effects of, the abortion legalisation are influenced by the direct or indirect exposure to the preceding abortion ban. This implies that an abortion legalisation in a different country, where people have not had access to legal abortions previously and attitudes to abortion might differ, potentially results in different estimates of the effect of fertility. This suggests that the external validity of this study is limited, as the results are likely not replicable in a different setting. However, IV studies in general tend to have low external validity (Angrist & Pischke, 2008), thus this is not a unique limitation to our particular study. On the other hand, IV studies usually have high internal validity (Imbens, 2009). As we believe that all the assumptions are sufficiently met and our instruments are strong enough, this should be the case also for our study.

Other studies such as Pop-Eleches (2006) and Mitrut and Wolff (2011) also investigate the effects of the abortion reforms in Romania. While these studies focus on child outcomes only, our study focuses on maternal outcomes. As these outcomes differ, we cannot compare the estimated effects, but the findings appear to have be both positive and negative effects for both the generation of mothers and the generation of children. For example, Pop-Eleches (2006) finds that the abortion ban had a negative effect on children's education and labour outcomes, while we find a positive effect of fertility at the extensive margin on maternal labour force participation. Mitrut and Wolff (2011) find that the abortion legalisation had both positive and negative effects for children. Similarly, we find both positive and negative effects for the mothers in terms of labour supply.

As Rosenzweig and Schultz (1985) suggest, an unanticipated birth results in a positive supply shock in fertility, which in turn should lead to a decrease in demand for births. We see potential evidence for this mechanism in figure 3. Just after the abortion ban in 1966, we observe a sharp increase in fertility, reflecting that an increasing share of women experienced a potentially unanticipated fertility supply shock as a result of the abortion ban. Already towards the end of the 1960s, fertility had started declining again. With the exception of a few fertility peaks, albeit not as high as the initial one, there is a clear downward trend in fertility during the period when abortions were illegal. This observation could reflect the decrease in demand for births following the initial supply shock. As our findings suggest that fertility does negatively affect maternal labour market outcomes, policies promoting fertility control are of great importance in order to reduce excess fertility. Among such policies is access to abortion. With policies reducing the effects of fertility on female labour market outcomes, more women have the opportunity to participate in the labour force and benefiting the economy (Luci, 2009; Löfström, 2009). Further, an improvement in female labour supply could also raise the economic returns to women's schooling, in turn incentivising education (Bloom et al., 2009).

9. Conclusion

The aim of this study was to investigate the effect of fertility on maternal labour market outcomes. To this end, we used an IV design, instrumenting fertility with the abortion policy changes in Romania in 1966 and 1990. While we did not find any significant effects of fertility on maternal labour market outcomes in our main results for the first policy change, we did find negative effects of fertility on maternal employment status and labour force participation for the second policy change. Additionally, we estimated separate effects at the extensive and intensive margin of fertility, where the extensive margin is represented by having a first child and the intensive margin is represented by having an additional child. Further, we also estimated separate effects for mothers with less and higher educational attainment. We found that the labour supply of more highly educated mothers is more responsive to changes in fertility, and that labour supply is more sensitive to fertility at the extensive margin as compared to the intensive margin. For the first policy change, we found a positive effect of fertility at the extensive margin on labour force participation. For the second policy change, we found a positive effect of fertility at the extensive margin on maternal employment, while for hours worked, we found a negative effect of fertility at the extensive margin. Our findings imply that policies promoting fertility control could improve economic outcomes of women. In order to gain further insight into the effect fertility has on maternal labour market outcomes, future research should investigate how the effect of having children on labour market outcomes is split between parents. Also, more research should be directed towards estimating the effect on labour supply of fertility at the extensive margin.

References

Agüero, J.M. & Marks, M.S. (2011). Motherhood and Female Labor Supply in the Developing. World evidence from infertility shocks. *Journal of Human Resources*, [e-journal] vol. 46, no. 4, pp. 800-826, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Ananat, E.O., Gruber, J. & Levine, P.B. (2007). Abortion Legalization and Life-cycle Fertility. *Journal of Human Resources*, [e-journal] vol. 42, no. 2, pp. 375-397, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 13 May 2020]

Ananat, E.O., Gruber, J., Levine, P.B. & Staiger, D. (2006). Abortion and Selection. *The Review of Economics and Statistics*, [e-journal] vol. 91, no. 1, pp. 124-136, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Angrist, J.D. & Evans, W.N. (1996). Schooling and Labor Market Consequences of the 1970 State Abortion Reforms, NBER working paper, no. 5406, pp. 1-51, Available online: https://www.nber.org/papers/w5406.pdf [Accessed 28 April 2020]

Angrist, J.D. & Evans W.N. (1998). Children and Their Parents' Labor Supply: Evidence from Exogenous Variation in Family Size. *American Economic Review*, [e-journal] vol. 88, no. 3, pp. 450-477, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 8 May 2020]

Angrist, J.D., Lavy, V. & Schlosser, A. (2010). Multiple Experiments for the Causal Link Between the Quantity and Quality of Children. *Journal of Labor Economics*, [e-journal] vol. 28, no. 4, pp. 773-824, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Angrist, J.D. & Pischke, J. (2008). Mostly Harmless Econometrics: An Empiricist's Companion. Princeton: Princeton University Press.

Becker, G.S. (1965). A Theory of the Allocation of Time. *The Economic Journal*, [e-journal] vol. 75, no. 299, pp. 493-517, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 13 May 2020]

Becker, G.S. (1991). A Treatise on the Family, Cambridge: Harvard University Press.

Becker, G.S. & Lewis, H.G. (1973). On the Interaction Between the Quantity and Quality of Children. *Journal of Political Economy*, [e-journal] vol. 81, no. 2, pp. 279-288, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Berelson, B. (1979). Romania's 1966 Anti-abortion Decree: The Demographic Experience of the First Decade. *Population Studies*, [e-journal] vol. 33, no. 2, pp. 209–222, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Bertrand, M. (2011). New Perspectives on Gender, in Handbook of Labor Economics, Elsevier B.V., vol. 4, pp. 1543-1590

Biggs, M.A., Gould, H. & Foster, D.G. (2013). Understanding Why Women Seek Abortions in the US. *BMC Women's Health*, [e-journal] vol. 13, no. 29, pp. 1-13, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 13 May 2020]

Bloom, D. E., Canning, D., Fink, G. & Finlay, J. E. (2009). Fertility, Female Labor Force Participation, and the Demographic Dividend. *Journal of Economic Growth*, [e-journal] vol. 14, pp. 79-101, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Browning, M. (1992). Children and Household Economic Behavior. *Journal of Economic Literature*, [e-journal] vol. 30, no. 3, pp. 1434–1475, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Cain, G.G. & Dooley, M.D. (1976). Estimation of a Model of Labor Supply, Fertility, and Wages of Married Women. *Journal of Political Economy*, [e-journal] vol. 84, no. 4, pp. 179-199, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Card, D., Kluve, J. & Weber, A. (2018). What Works? A Meta Analysis of Recent Active Labor Market Program Evaluations. *Journal of the European Economic Association*, [e-journal] vol. 16, no. 3, pp. 894-931, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Carliner, G., Robinson, C. & Tomes, N. (1980). Female Labour Supply and Fertility in Canada. *Canadian Journal of Economics*, [e-journal] vol. 13, no. 1, pp. 46-64, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 8 May 2020]

Choi, H.J., Joesch, J.M. & Lundberg, S. (2008). Sons, Daughters, Wives, and the Labour Market Outcomes of West German Men. *Labour Economics*, [e-journal] vol. 15, no. 5, pp. 795-811, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences. 2nd edn. Hillsdale, NJ: Erlbaum

Cramer, J. (1980). Fertility and Female Employment: Problems of causal direction. *American Sociological Review*, [e-journal] vol. 45, no. 2, pp. 167-190, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Cristia, J.P. (2008). The Effect of a First Child on Female Labor Supply. Evidence from women seeking fertility services. *Journal of Human Resources*, [e-journal] vol. 43, no. 3, pp. 487-510, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 13 May 2020]

Drydakis, N. (2014). Bullying at School and Labour Market Outcomes. *International Journal of Manpower*, [e-journal] vol. 35, no. 8, pp. 1185-1211, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Ermisch, J.F. (1989). Purchased Child Care, Optimal Family Size and Mother's Employment. Theory and econometric analysis. *Journal of Population Economics*, [e-journal] vol. 2, no. 2, pp. 79-102, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

European Commission. (2020). Employment, Social Affairs & Inclusion. Romania - Old-age pensions. Available online: https://ec.europa.eu/social/main.jsp?catId=1126&langId=en&intPageId=4754&fbclid=IwAR23mMqIxKRXmfUFcFozg5XnJV7ecUnaJe1KP-nJ0S705ScotGb3FmuXj80 [Accessed 18 May 2020]

Fleisher, B.M. & Rhodes, G.F. (1979). Fertility, Women's Wage Rates, and Labor Supply. *American Economic Review*, [e-journal] vol. 69, no. 1, pp. 14-24, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Flister, L.D. (2013). Socioeconomic Consequences of Romania's Abortion Ban Under Ceauşescu's Regime. *Journal of Alternative Perspectives in the Social Sciences*, [e-journal] vol. 5, no. 2, pp. 294-322, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Francesconi, M. (2002). A Joint Dynamic Model of Fertility and Work of Married Women. *Journal of Labor Economics*, [e-journal] vol. 20, no. 2, pp. 336-380, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Fuchs, V.R. (1989). Women's Quest for Economic Equality. *Journal of Economic Perspectives*, [e-journal] vol. 3, no. 1, pp. 25-41, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 14 May 2020]

Gober, P. (1997). The Role of Access in Explaining State Abortion Rates. *Social Science & Medicine*, [e-journal] vol. 44, no. 7, pp. 1003-1016, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 15 May 2020]

Greenwood, J., Guner, N., Kocharkov, G. & Santos, C. (2016). Technology and the Changing Family: A Unified Model of Marriage, Divorce, Educational Attainment, and Married Female Labor-force Participation. *American Economic Journal: Macroeconomics*, [e-journal] vol. 8, no. 1, pp. 1-41, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Gronau, R. (1973). The Intrafamily Allocation of Time: The Value of the Housewives' Time. *American Economic Review*, [e-journal] vol. 63, no. 4, pp. 634-651, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Gronau, R. (1977). Leisure, Home Production, and Work - The Theory of the Allocation of Time Revisited. *Journal of Political Economy*, [e-journal] vol. 85, no. 6, pp. 1099-1123, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 13 May 2020]

Gronau, R. (1986). Home Production - A Survey, in Handbook of Labor Economics, Amsterdam: North-Holland, vol. 1. pp. 273-304

Haas-Wilson, D. (1996). The Impact of State Abortion Restrictions on Minors' Demand for Abortions. *Journal of Human Resources*, [e-journal] vol. 32, no. 1, pp. 140-158, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 17 May 2020]

Heckman, J. (1974). Shadow Prices, Market Wages, and Labor Supply. *Econometrica*, [e-journal] vol. 42, no. 4, pp. 679-694, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Hill, C.R. & Stafford, F.P. (1974). Allocation of Time to Preschool Children and Educational Opportunity. *Journal of Human Resources*, [e-journal] vol. 9, no. 3, pp. 323-341, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 13 May 2020]

Hord, C., David, H.P., Donnay, F. & Wolf, M. (1991). Reproductive Health in Romania: Reversing the Ceausescu Legacy. *Studies in Family Planning*, [e-journal] vol. 22, no. 4, pp. 231-240, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Hout, M. (1978). The Determinants of Marital Fertility in the United States, 1968–1970: Inferences from a Dynamic Model. *Demography*, [e-journal] vol. 15, no. 2, pp. 139-159, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Imbens, G.W. (2009). Better Late than Nothing: Some Comments on Deaton (2009) and Heckmann and Urzua (2009), NBER working paper, no. 14896, pp. 1-30, Available online: https://www.nber.org/papers/w14896.pdf [Accessed 28 April 2020]

Imbens, G.W. & Angrist, J.D. (1994). Identification and Estimation of Local Average Treatment Effects, *Econometrica*, [e-journal] vol. 62, no. 2, pp. 467-475, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

IPUMS International. (2020). Frequently Asked Question, Available online: https://international.ipums.org/international-action/faq#ques44 [Accessed 28 April 2020]

Johnson, B.R., Horga, M. & Andronache, L. (1996). Women's Perspectives on Abortion in Romania. *Social Science & Medicine*, [e-journal] vol. 42, no. 4, pp. 521-530, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 13 May 2020]

Kabeer, N. (2005). Gender Equality and Women's Empowerment: A Critical Analysis of the Third Millennium Development Goal. *Gender & Development*, [e-journal] vol. 13, no. 1, pp. 13-24, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Leibowitz, A. (1975). Education and the Allocation of Women's Time, in Education, Income, and Human Behavior, NBER, pp. 171-198

Leung, M.Y.M., Groes, F. & Santaeulalia-Llopis, R. (2016). The Relationship Between Age at First Birth and Mother's Lifetime Earnings: Evidence from Danish Data. *PLoS ONE*, [e-journal] no. 11, vol. 1, pp. 1-13, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Luci, A. (2009). Female Labour Market Participation and Economic Growth. *International Journal of Innovation and Sustainable Development*, [e-journal] vol. 4, no. 2/3, pp. 97-108, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Lundborg, P., Plug, E. & Rasmussen, A. (2017). Can Women Have Children and a Career? IV evidence from IVF treatments. *American Economic Review*, [e-journal] vol. 107, no. 6, pp. 1611-1637, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Löfström, Å. (2009). Gender Equality, Economic Growth and Employment. Swedish Ministry of Integration and Gender Equality. Available online: http://www.forschungsnetzwerk.at/downloadpub/2009_12_Gender_Equality_study.pdf [Accessed 28 April 2020]

Minnesota Population Center. (2020). Integrated Public Use Microdata Series, International: Version 7.2 [Romania 1977, Romania 1992, Romania 2002, Romania 2011]. Minneapolis, MN: IPUMS

Mitrut, A. & Wolff, F.C. (2011). The Impact of Legalized Abortion on Child Health Outcomes and Abandonment. Evidence from Romania. *Journal of Health Economics*, [e-journal] vol. 30, no. 6, pp. 1219-1231, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Neumark, D. & Korenman, S. (1992). Sources of Bias in Women's Wage Equations: Results Using Sibling Data, NBER working paper, no. 4019, Available online: https://www.nber.org/papers/w4019.pdf [Accessed 16 May 2020]

Oreffice, S. (2007). Did the Legalization of Abortion Increase Women's Household Bargaining Power? Evidence from labor supply. *Review of Economics of the Household*, [e-journal] vol. 5, no. 2, pp. 181-207, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Pop-Eleches, C. (2006). The Impact of an Abortion Ban on Socioeconomic Outcomes of Children: Evidence from Romania. *Journal of Political Economy*, [e-journal] vol. 114, no. 4, pp. 744-773, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Robinson, W.C. (1987). The Time Cost of Children and Other Household Production. *Population Studies*, [e-journal] vol. 41, no. 2, pp. 313-323, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 16 May 2020]

Rosenzweig, M.R. & Evenson, R. (1977). Fertility, Schooling, and the Economic Contribution of Children of Rural India: An Econometric Analysis. *Econometrica*, [e-journal] vol. 45, no. 5, pp. 1065-1079, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Rosenzweig, M.R. & Schultz, T.P. (1985). The Demand for and Supply of Births: Fertility and its Life Cycle Consequences. *American Economic Review*, [e-journal] vol. 75, no. 5, pp. 992-1015, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Rosenzweig, M.R. & Wolpin, K.I. (1980). Life-cycle Labor Supply and Fertility: Causal inferences from household models. *Journal of Political Economy*, [e-journal] vol. 88, no. 2, pp. 328-348, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 8 May 2020]

Schultz, T.P. (2007). Population Policies, Fertility, Women's Human Capital, and Child Quality, in Handbook of Development Economics, Elsevier B.V., vol. 4, pp. 3249-3303

Stevens, G., Owens, D. & Schaefer, E.C. (1990). Education and Attractiveness in Marriage Choices. *Social Psychology Quarterly*, [e-journal] vol. 53, no. 1, pp. 62-70, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Stock, J.H., Wright, J.H. & Yogo, M. (2002). A Survey of Weak Instruments and Weak Identification in Generalized Method of Moments. *Journal of Business & Economic Statistics*, [e-journal] vol. 20, no. 4, pp. 518-529, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

United Nations Department of Economic and Social Affairs. (2019). World Fertility Data. Available online https://www.un.org/en/development/desa/population/theme/fertility/index.asp [Accessed 28 April 2020]

Verbeek, M. (2017). A Guide to Modern Econometrics. 5th edn, Hoboken: John Wiley & Sons

WHO. (2006). Reproductive Health Indicators. Guidelines for their generation, interpretation and analysis for global monitoring, Available online: http://www.ossyr.org.ar/pdf/bibliografia/2.22.pdf [Accessed 28 April 2020]

Willis, R.J. (1973). A New Approach to the Economic Theory of Fertility Behavior. *Journal of Political Economy*, [e-journal] vol. 81, no. 2, pp. 14-64, Available through: LUSEM Library website http://www.lusem.lu.se/library [Accessed 28 April 2020]

Wooldridge, J.M. (2009). Introductory Econometrics. A Modern Approach. 4th edn, Mason: South-Western

World Bank. (1992). Romania: Human Resources and the Transition to a Market Economy, Washington, DC: World Bank

World Bank. (2019a). Labor force participation rate, female (% of female population ages 15+) (modeled ILO estimate). Available online: https://data.worldbank.org/indicator/SL.TLF.CACT.FE.ZS [Accessed 8 May 2020]

World Bank. (2019b). Labor force participation rate, male (% of male population ages 15+) (modeled ILO estimate). Available online: https://data.worldbank.org/indicator/SL.TLF.CACT.MA.ZS [Accessed 14 May 2020]

Appendix

Table 3: Two-sample t test with unequal variances (abortion ban, 1967)

	Obs. Instrument = 0	Obs. Instrument = 1	Mean Instrument = 0	Mean Instrument = 1	Difference in means
Age at first birth	16123	33714	24.159	24.094	0.065
Educational attainment	16123	33714	1.645	1.738	-0.093***
Urban	16123	33714	0.416	0.493	-0.077***
Water supply	16123	33714	0.324	0.398	-0.073***
Square meters per person	16123	33714	9.79	10.283	-0.492***

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

Table 4: Two-sample t test with unequal variances (abortion legalisation, 1990)

	Obs. Instrument = 0	Obs. Instrument = 1	Mean Instrument = 0	Mean Instrument = 1	Difference in means
Age at first birth	32511	26338	22.558	22.526	0.033
Educational attainment	32511	26338	2.535	2.564	-0.029***
Urban	32511	26338	0.541	0.527	0.014***
Water supply	32511	26338	0.587	0.578	0.009**
Square meters per person	32511	26338	10.726	10.97	-0.245***

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

Table 5: First stage & reduced form (abortion ban, 1967)

	(1) Fertility	(2) Labour Force Participation	(3) Employment Status	(4) Hours Worked
Post-ban birth	-0.056***	-0.008	-0.001	-1.295
	(0.016)	(0.008)	(0.003)	(1.179)
Age at first	0.013***	-0.019***	0.001***	-0.411*
birth	(0.002)	(0.001)	(0.000)	(0.238)
Educational	-0.349***	0.083***	0.003	0.312
attainment	(0.009)	(0.005)	(0.002)	(0.772)
Urban	-0.240***	-0.102***	-0.022***	0.331
	(0.022)	(0.011)	(0.006)	(1.900)
Water supply	-0.368***	-0.016	0.002	4.145**
	(0.021)	(0.012)	(0.006)	(1.912)
Square meters	-0.101***	-0.002***	0.000	-0.004
per person	(0.002)	(0.001)	(0.000)	(0.070)
Constant	5.203***	1.010***	0.955***	44.159***
	(0.046)	(0.025)	(0.011)	(5.718)
Observations	49,837	16,764	8,385	542
R-squared	0.251	0.067	0.007	0.069
Region FE	YES	YES	YES	YES
F-statistic	12.75			

Note: Column (1) refers to the first stage regression, columns (2) – (4) refer to the reduced form regression. Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 6: First stage & reduced form (abortion legalisation, 1990)

	(1) Fertility	(2) Labour Force Participation	(3) Employment Status	(4) Hours Worked
Post-legalisation birth	-0.125***	0.010***	0.005**	-0.017
	(0.013)	(0.004)	(0.003)	(0.140)
Age at first birth	0.033***	0.000	0.004***	-0.067***
	(0.002)	(0.000)	(0.000)	(0.017)
Educational attainment	-0.729***	0.173***	0.010***	0.997***
	(0.012)	(0.003)	(0.002)	(0.120)
Urban	-0.378***	-0.014***	-0.057***	2.826***
	(0.020)	(0.005)	(0.004)	(0.184)
Water supply	0.046**	0.075***	0.024***	0.285
	(0.020)	(0.005)	(0.004)	(0.208)
Square meters per person	-0.059***	0.003***	0.001***	0.011
	(0.002)	(0.000)	(0.000)	(0.010)
Constant	4.867***	0.215***	0.832***	35.610***
	(0.046)	(0.012)	(0.008)	(0.477)
Observations	58,849	58,849	38,725	21,505
R-squared	0.208	0.102	0.012	0.041
Region FE	YES	YES	YES	YES
F-statistic	87.71			

Note: Column (1) refers to the first stage regression, columns (2) – (4) refer to the reduced form regression. Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 13: 2SLS split on extensive and intensive margin of fertility (abortion ban, 1967)

	(1) Labour Force (Extensive Margin of Fertility)	(2) Labour Force (Intensive Margin of Fertility)	(3) Employment Status (Extensive Margin of Fertility)	(4) Employment Status (Intensive Margin of Fertility)	(5) Hours Worked (Extensive Margin of Fertility)	(6) Hours Worked (Intensive Margin of Fertility)
Fertility	0.495***	-0.134	0.058	-0.024	0.551	-5.943
	(0.164)	(0.093)	(0.039)	(0.050)	(6.464)	(5.342)
Age at first birth	-0.002	-0.013**	0.002	0.003	-0.047	0.889
	(0.009)	(0.006)	(0.002)	(0.005)	(0.603)	(1.365)
Educational	0.226***	0.009	0.003	-0.019	0.676	-1.402
attainment	(0.068)	(0.037)	(0.014)	(0.023)	(2.517)	(4.650)
Urban	-0.176	-0.191***	-0.000	-0.014	-7.048	8.296**
	(0.109)	(0.037)	(0.039)	(0.020)	(6.558)	(3.786)
Water supply	0.176	-0.008	0.018	-0.003	8.842*	1.080
	(0.121)	(0.064)	(0.037)	(0.030)	(5.195)	(5.117)
Square meters	0.025**	-0.013	0.004	-0.001	-0.014	-0.713**
per person	(0.010)	(0.008)	(0.003)	(0.004)	(0.150)	(0.345)
Constant	-1.944**	1.681***	0.695***	1.066***	38.587	37.997
	(0.819)	(0.467)	(0.203)	(0.194)	(30.535)	(31.498)
Observations	894	1,978	355	902	88	19
R-squared					0.094	0.135
Region FE	YES	YES	YES	YES	YES	YES

Note: The extensive margin of fertility refers to having a first child, the intensive margin refers to having an additional child.
Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 14: 2SLS split on extensive and intensive margin of fertility (abortion legalisation, 1990)

	(1) Labour Force (Extensive Margin of Fertility)	(2) Labour Force (Intensive Margin of Fertility)	(3) Employment Status (Extensive Margin of Fertility)	(4) Employment Status (Intensive Margin of Fertility)	(5) Hours Worked (Extensive Margin of Fertility)	(6) Hours Worked (Intensive Margin of Fertility)
Fertility	0.021	-7.515	0.077**	-0.303	-6.639***	3.855
	(0.052)	(164.364)	(0.033)	(0.304)	(1.793)	(16.816)
Age at first birth	-0.009***	0.492	-0.001	0.021	0.269***	-0.438
	(0.003)	(10.719)	(0.002)	(0.017)	(0.083)	(1.307)
Educational	0.178***	-5.659	0.042***	-0.212	-1.893**	3.848
attainment	(0.025)	(127.037)	(0.013)	(0.220)	(0.776)	(12.181)
Urban	-0.055**	-2.803	-0.005	-0.204	-1.341	5.419
	(0.023)	(60.753)	(0.017)	(0.147)	(0.949)	(10.022)
Water supply	0.095***	-0.356	0.012*	0.001	-0.250	1.226
	(0.012)	(9.581)	(0.007)	(0.024)	(0.506)	(2.514)
Square meters	0.002	-0.686	0.002***	-0.020	-0.161***	0.293
per person	(0.002)	(15.132)	(0.001)	(0.021)	(0.045)	(1.098)
Constant	0.352**	39.816	0.640***	2.368	55.657***	17.746
	(0.168)	(866.219)	(0.098)	(1.514)	(5.791)	(81.082)
Observations	12,284	27,724	8,374	16,948	7,373	8,828
R-squared	0.076					
Region FE	YES	YES	YES	YES	YES	YES

Note: The extensive margin of fertility refers to having a first child, the intensive margin of fertility refers to having an additional child.

Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 15: 2SLS split on low and high education (abortion ban, 1967)

	(1) Labour Force (Low Education)	(2) Labour Force (High Education)	(3) Employment Status (Low Education)	(4) Employment Status (High Education)	(5) Hours Worked (Low Education)	(6) Hours Worked (High Education)
Fertility	-12.103	-0.233	-1.408	-0.109	-7.245	3.208
	(470.681)	(0.769)	(27.464)	(0.131)	(7.867)	(12.459)
Age at first birth	0.074	-0.040***	0.023	0.002	-0.275	-1.038
	(3.468)	(0.005)	(0.429)	(0.001)	(0.338)	(1.088)
Educational	-5.436	0.173**	-0.592	-0.016	-2.138	-2.006
attainment	(214.082)	(0.081)	(11.514)	(0.021)	(3.972)	(3.427)
Urban	-1.810	-0.036	-0.226	-0.021	-0.040	5.110*
	(66.136)	(0.043)	(3.929)	(0.019)	(2.705)	(2.802)
Water supply	-3.743	-0.046	-0.465	-0.022	2.383	0.092
	(144.579)	(0.264)	(9.063)	(0.037)	(3.406)	(2.431)
Square meters	-0.801	-0.009	-0.102	-0.003	-0.181	0.120
per person	(31.065)	(0.023)	(1.990)	(0.004)	(0.209)	(0.159)
Constant	63.503	1.713	7.923	1.312***	71.236**	55.318**
	(2,433.046)	(2.369)	(135.736)	(0.414)	(35.525)	(24.320)
Observations	12,768	3,996	6,108	2,277	455	87
R-squared						0.057
Region FE	YES	YES	YES	YES	YES	YES

Note: Low education refers to having completed no more than primary education, high education refers to having completed more than primary education.
Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 16: 2SLS split on low and high education (abortion legalisation, 1990)

	(1) Labour Force (Low Education)	(2) Labour Force (High Education)	(3) Employment Status (Low Education)	(4) Employment Status (High Education)	(5) Hours Worked (Low Education)	(6) Hours Worked (High Education)
Fertility	-0.024	-0.118***	-0.010	-0.068**	1.583	-0.696
	(0.041)	(0.041)	(0.029)	(0.032)	(2.269)	(2.112)
Age at first birth	0.003	-0.002***	0.005***	0.002***	-0.161	-0.028
	(0.002)	(0.001)	(0.002)	(0.000)	(0.162)	(0.023)
Educational	0.101**	0.146***	0.001	0.036***	3.744*	-0.852**
attainment	(0.044)	(0.009)	(0.033)	(0.005)	(1.947)	(0.352)
Urban	-0.085***	-0.002	-0.110***	-0.055***	4.745***	2.300***
	(0.019)	(0.016)	(0.020)	(0.013)	(1.641)	(0.848)
Water supply	0.087***	0.069***	0.020***	0.040***	0.544	-0.350
	(0.010)	(0.008)	(0.007)	(0.007)	(0.349)	(0.340)
Square meters	0.002	-0.002*	-0.001	-0.001	0.292	-0.025
per person	(0.005)	(0.001)	(0.003)	(0.001)	(0.271)	(0.060)
Constant	0.451*	0.638***	0.900***	0.933***	22.478*	44.053***
	(0.231)	(0.138)	(0.163)	(0.098)	(11.622)	(7.017)
Observations	25,689	33,160	13,114	25,611	6,893	14,612
R-squared	0.047	0.027	0.021			0.017
Region FE	YES	YES	YES	YES	YES	YES

Note: Low education refers to having completed no more than primary education, high education refers to having completed more than primary education.
Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 17: 2SLS with placebo reform

	(1) Labour Force	(2) Employment Status	(3) Hours Worked	(4) Labour Force	(5) Employment Status	(6) Hours Worked
Fertility	3.321	-0.502	0.844	-0.067	0.026	-0.604
	(57.982)	(43.232)	(2.743)	(0.055)	(0.039)	(2.299)
Age at first birth	-0.043	0.006	-0.358	-0.000	0.002**	-0.064
	(0.453)	(0.449)	(0.346)	(0.002)	(0.001)	(0.088)
Educational	1.235	-0.145	2.930**	0.125***	0.029	0.425
attainment	(20.176)	(12.753)	(1.403)	(0.039)	(0.025)	(1.357)
Urban	0.757	-0.222	0.921	-0.038**	-0.042***	2.786***
	(15.532)	(17.919)	(2.734)	(0.019)	(0.016)	(1.016)
Water supply	0.761	-0.017	-2.483	0.060***	0.016***	-0.013
	(13.170)	(1.907)	(2.688)	(0.006)	(0.004)	(0.480)
Square meters per	0.233	-0.036	0.036	-0.002	0.002	0.008
person	(4.120)	(3.135)	(0.202)	(0.003)	(0.002)	(0.105)
Constant	-16.160	3.476	34.658**	0.616**	0.726***	39.358***
	(299.306)	(216.923)	(17.157)	(0.267)	(0.179)	(10.332)
Observations	7,170	3,560	290	66,562	43,814	23,437
R-squared			0.064	0.088	0.000	0.045
Region FE	YES	YES	YES	YES	YES	YES

Note: Columns (1)-(3) refer to the first placebo reform in 1966, columns (4)-(6) refer to the second placebo reform in 1989.

Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 18: 2SLS excluding women with zero recorded births

	(1) Labour Force	(2) Employment Status	(3) Hours Worked	(4) Labour Force	(5) Employment Status	(6) Hours Worked
Fertility	-1.129	0.549	-9.906	-0.077***	-0.046**	0.047
	(4.393)	(6.489)	(13.764)	(0.030)	(0.022)	(1.502)
Age at first birth	-0.005	-0.010	-0.314	0.003**	0.005***	-0.066
	(0.056)	(0.133)	(0.386)	(0.001)	(0.001)	(0.059)
Educational	-0.362	0.203	-3.925	0.115***	-0.021	1.020
attainment	(1.733)	(2.361)	(5.698)	(0.023)	(0.015)	(0.966)
Urban	-0.252	0.056	0.080	-0.041***	-0.078***	2.808***
	(0.574)	(0.921)	(2.762)	(0.012)	(0.011)	(0.752)
Water supply	-0.408	0.186	1.310	0.075***	0.027***	0.325
	(1.527)	(2.155)	(4.486)	(0.006)	(0.004)	(0.310)
Square meters per	-0.066	0.033	-0.158	-0.002	-0.001	0.010
person	(0.249)	(0.388)	(0.257)	(0.002)	(0.001)	(0.069)
Constant	6.450	-1.555	83.489	0.597***	1.045***	35.368***
	(21.185)	(29.712)	(55.824)	(0.146)	(0.102)	(6.960)
Observations	16,269	8,164	530	57,546	37,913	21,171
R-squared				0.087		0.040
Region FE	YES	YES	YES	YES	YES	YES

Note: Columns (1) – (3) refer to the abortion ban (1967), columns (4) – (6) refer to the abortion legalisation (1990). All regressions are based on equation (6).
Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1

Table 19: 2SLS excluding women with more than five recorded births

	(1) Labour Force	(2) Employment Status	(3) Hours Worked	(4) Labour Force	(5) Employment Status	(6) Hours Worked
Fertility	-0.091	-0.002	-18.803	-0.064***	-0.033*	-0.160
	(0.153)	(0.084)	(22.787)	(0.024)	(0.018)	(1.233)
Age at first birth	-0.020***	0.001*	-0.114	0.001	0.003***	-0.067***
	(0.001)	(0.001)	(0.613)	(0.001)	(0.000)	(0.021)
Educational attainment	0.057	0.003	-5.719	0.149***	0.000	0.840*
	(0.041)	(0.023)	(7.527)	(0.010)	(0.007)	(0.434)
Urban	-0.108***	-0.022	0.227	-0.024***	-0.065***	2.705***
	(0.022)	(0.014)	(3.714)	(0.008)	(0.007)	(0.473)
Water supply	-0.035	0.002	1.371	0.078***	0.027***	0.200
	(0.030)	(0.015)	(5.273)	(0.006)	(0.005)	(0.231)
Square meters per person	-0.005	0.000	-0.147	-0.000	0.000	-0.001
	(0.005)	(0.003)	(0.227)	(0.001)	(0.001)	(0.034)
Constant	1.389**	0.962***	104.694	0.464***	0.943***	36.846***
	(0.574)	(0.320)	(74.472)	(0.090)	(0.066)	(4.521)
Observations	15,836	7,979	521	55,061	37,097	20,450
R-squared	0.032	0.007		0.102		0.037
Region FE	YES	YES	YES	YES	YES	YES

Note: Columns (1) – (3) refer to the abortion ban (1967), columns (4) – (6) refer to the abortion legalisation (1990). All regressions are based on equation (6).
Robust standard errors in parentheses: *** p<0.01, ** p<0.05, * p<0.1