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BUREAUCRATIC INCENTIVES AND EFFECTIVENESS OF THE ONE CHILD POLICY IN CHINA

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ABSTRACT

China's total fertility rate declined very little following implementation of the One Child Policy (OCP) in 1979/1980, but then fell sharply, by more than one-third, during the early 1990s. In this paper, we propose that strengthening bureaucratic incentives under the "One Vote Veto" (OVV) policy, which strictly prohibited career promotion for adherence failure, was necessary for more "effective" implementation of the OCP—and for its delayed impact on fertility. We use provincial variation in OVV implementation to estimate event study regression inputs needed to build actual and counterfactual sequential multi-decrement fertility life tables, finding that the policy explains 46% of China's total fertility rate decline during the 1990s, driving it below replacement level. Use of intrauterine devices (IUDs, the most prevalent form of modern contraception in China) that was "recommended" by party officials increased by 133% under the policy, a relative increase more than four times as large as the increase in "voluntary" use. Overall, our paper suggests that population policy made a larger contribution to low fertility in China than suggested by past research. More generally, our paper highlights the central role of aligning bureaucratic incentives with public policy objectives, even in a centrally-planned economy like China's.

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1 Introduction

The One Child Policy (OCP) is widely considered to be one of the most stringent public policies in modern global history (Scharping, 2013). However, China's total fertility rate declined very little following its implementation in 1979/1980 (Figure 1). Although some past research suggests that the OCP effectively reduced fertility rates (Goodkind, 2017, Zhang, 2017), the policy's rapid implementation across the entire country makes disentangling its impact from secular fertility trends difficult. If the policy were in fact effective, China's modest gradual decline in fertility throughout the 1980s implies that early enforcement was, at best, weak.[1]

By contrast, China's total fertility rate fell abruptly by more than one-third during the early 1990s, dropping below the replacement fertility rate. In this paper, we study how strengthening bureaucratic incentives (under the "One Vote Veto" policy early in the 1990s) was necessary for more "effective" implementation of the One Child Policy — and was also responsible for a delayed impact on fertility more than a decade later. Provincial and local governments are responsible for implementing central government policies like the OCP (and possess autonomy within their jurisdictions), but the central government strongly influences subordinate provincial and local officials through the cadre evaluation system — the linchpin of bureaucratic control in China (Li and Zhou, 2005, Maskin et al., 2000, Qian and Xu, 1993, Xu, 2011).[2] Dating back to the Mao era, the cadre evaluation system is a multidimensional performance evaluation system used to rank local officials according to achievement of established policy goals.[3] Importantly, performance evaluations through this system largely determine professional advancement among bureaucrats in China, and are therefore central to the career concerns of Chinese party officials

[1] During the 1970s, fertility rates declined substantially. However, a recent study (Babiarz et al., 2025) attributes only a small portion of this decrease to the "Later, Longer, Fewer" (LLF) policy, which preceded the OCP.

[2] The National Family Planning Commission (NFPC) was formally responsible for managing the OCP (including propaganda initiatives, data collection, technical support, and reporting to higher-level government authorities), and eventually also for supporting OVV. Under the leadership of Peng Peiyun (1988–1998), the NFPC emerged as one of the most powerful government agencies in China, maintaining organizational units at every level, from central ministries to rural villages and urban neighborhoods. Each administrative unit, whether a factory, a shop, a village, or a local CCP committee, had NFPC staff monitoring births. At its peak, the NFPC's extensive network of staff including roughly 10 million people (Scharping, 2013).

[3] Effective control through the cadre evaluation system has been linked to higher economic growth (Li and Zhou, 2005), greater fiscal revenue (Lü and Landry, 2014), stricter environmental standards (He et al., 2020), and greater local policy experimentation (Wang and Yang, 2025).

(Landry et al., 2018, Li and Zhou, 2005, Maskin et al., 2000, Qian and Xu, 1993, Shih et al., 2012).

The "One Vote Veto" (OVV) policy greatly strengthened cadre evaluation incentives for adherence to OCP targets, strictly prohibiting promotion within the Chinese bureaucracy for the duration of a bureaucrat's career in the event of adherence failure. For local bureaucrats failing to achieve priority targets — in our case, achievement of the population and family planning targets set by the higher levels of government (OCP targets were the only priority targets when OVV was introduced), a performance "veto" overrides any other achievements, resulting in an overall unsatisfactory performance evaluation.[4] In this way, a "veto" strictly prevents promotion, and can even lead to removal from a position — creating high-powered incentives for adherence to priority targets among bureaucrats.

We first use provincial variation in OVV implementation to estimate the policy's impact on birth hazards among Chinese women. To do so, we use birth records from the 2001 National Family Planning and Reproductive Health Survey, a large nationally representative survey containing complete histories of women's fertility and contraceptive practices. Unlike population statistics reported by local officials, the survey is less prone to misreporting of births, both because it was conducted by the central rather than the local government for internal planning purposes and because it records information covering the preceding two decades (and is therefore unrelated to the career concerns of current officials).[5] Strikingly, we find that birth hazards declined sharply by 4 percentage points, nearly 40% of the pre-policy mean, with the introduction of OVV (and no discernible pattern of pre-existing fertility trends correlated with OVV implementation), a pattern that we observe in other data sources as well (see Section 4.4). Consistent with OCP targets, these birth hazard declines are driven primarily by reductions in second and third births.

[4]Similar incentives were later applied to a wider range of policy areas (Zuo, 2015), including maintaining social stability (e.g. suppressing large-scale protests or preventing petitioners from reaching Beijing) (Lee and Zhang, 2013), combating corruption (Birney, 2014), safeguarding the environment (He et al., 2020, Tang et al., 2021), conserving energy (Zhao et al., 2014), and ensuring workplace safety (Gao, 2022).

[5]Serrato et al. (2019) show evidence that Chinese mayors manipulated other sources of locally-reported population statistics. In addition to using data not based on reports from local officials, we also show that our results are present in the 2000 Chinese Population Census and the 2005 Chinese Population Survey (Appendix Figures A1).

Next, we provide novel evidence of changes in women's contraceptive use due to the direct influence of communist party officials. Intrauterine devices (IUDs) are the most commonly-used form of modern contraception in China, and we present event-study evidence that the OVV policy increased IUD use "recommended" by party officials by 133% (and we speculate that reports of "recommended" use are under-counts). This increase is more than four times the relative increase in "voluntary" IUD use (which rose by about 30% under the policy). Changes in other observed forms of contraception did not contribute to the decline in fertility, but there was also an increase in induced abortion.

Finally, we use our event study estimates to produce actual and counterfactual sequential multi-decrement fertility life tables, deriving decrements in the total fertility rate attributable to the OVV policy over time (following Babiarz et al. (2025)). China's total fertility rate declined by 0.91 births per woman between 1987 and 1999, and we calculate that roughly 46% of this decline (0.42 births per woman) is attributable to the OVV policy. This fertility decline under the OVV policy represents the first time that China's fertility rate fell below the replacement level.

Our paper contributes to several broad areas of research. First, we make a new contribution to scholarship on population policy and fertility decline. A large literature demonstrates that family planning programs and population policy influence fertility — but the strongest evidence in this literature suggests that these programs and policies ultimately do not explain a large share of fertility decline across many environments (Gertler and Molyneaux, 1994, Miller, 2010, Miller and Babiarz, 2016, Pitt et al., 1993, Pritchett and Summers, 1994, Salehi-Isfahani et al., 2010). Some authors have argued that population policy in China stands in contrast to these findings from other countries, but the totality of evidence has not generally supported this view (Babiarz et al., 2025, Chen and Huang, 2020, Li and Shi, 2025, Zhang, 2017). Unlike this past literature, however, our paper suggests that the One Child Policy is in fact central in explaining fertility decline during China's recent history, pushing Chinese fertility below the replacement rate — albeit not when it was first introduced, but rather when it was implemented more forcefully under the OVV policy more than a decade later.

Second, our paper also contributes to a large literature on bureaucratic incentives (Athey and Roberts, 2001, Bandiera et al., 2007, Besley et al., 2022, Burgess et al., 2010, Dipoppa and

Gulzar, 2024, Dixit, 2002, Gibbons and Murphy, 1992, Holmstrom and Ricart I Costa, 1986, Luo et al., 2020, Rasul and Rogger, 2018). This includes a body of work focused specifically on incentives among communist party officials within the Chinese government (Chen et al., 2005, Gong et al., 2024, Li and Zhou, 2005, Martinez-Bravo et al., 2022, Maskin et al., 2000, Xu, 2011). Our findings highlight the central role of aligning bureaucratic incentives with public policy goals, even in an otherwise centrally-planned environment like China's, and even within the cadre evaluation system.

This paper is organized as follows. Section 2 provides background information on birth control policies in China as well as on the OVV policy; Section 3 describes our data and estimation frameworks; Section 4 presents our results; and Section 5 concludes.

2 Institutional Background

2.1 Birth Control Policies in China

China's national population control policies date back to the early 1970s, when the central government launched a family planning initiative known as the "Later, Longer, Fewer" (LLF) campaign (Babiarz et al., 2025, Chen and Huang, 2020).[6] As its name suggests, it aimed to slow population growth by requiring minimum marriage ages and birth intervals as well as a lifetime maximum number of children (Greenhalgh, 2008, White, 2006). Local governments established special family planning offices to enforce the policy, providing benefits to those who complied with it and also pressuring or sanctioning those who did not. During the late 1970s, LLF targets became increasingly stringent, ultimately culminating in the One Child Policy in 1979/1980 (Riley et al., 2004).[7] The One Child Policy was then in effect until 2015, when China's central government raised the allowable number of children per couple to two (He et al., 2023, Zeng and

[6]There were two earlier birth planning campaigns, conducted between 1954 and 1958 and between 1961 and 1966, but these were modest in scale, targeted at urban areas, and had less stringent enforcement (Scharping, 2013, Wang, 2012).

[7]The one child rule was strictly enforced for urban residents. However, in rural areas, it was unpopular and difficult to enforce. Starting in 1984, rural couples in most provinces were allowed a second child if their first was a girl. In six northwestern provinces, all rural couples could have a second child regardless of the first child's sex. Ethnic minorities were permitted to have two or more children (Hesketh et al., 2005).

Hesketh, 2016).

In principle, households violating the One Child Policy faced serious consequences, including fines, loss of social benefits, and prohibition of job promotion (or even demotion) (Li and Shi, 2025). In some cases, women who exceeded the birth quota were forced to have abortions or forcibly sterilized (Aird, 1990, Banister, 1987, Greenhalgh, 1986). However, enforcement of the One Child Policy varied in practice over time. For example, enforcement was relaxed during the mid-1980s, particularly in rural areas where opposition to the policy was strong, especially among families with only one female child. To address concerns about potential social unrest, between 1984 and 1985, the government temporarily allowed rural families with a daughter to have a second child (Ebenstein, 2010, Wang, 2012, Zhang, 2001). For a short period, this also created a perception among local bureaucrats that the central government placed less emphasis on the policy, leading in part to a temporary increase in birth rates between 1984 and 1986 (Greenhalgh, 1986).

2.2 The One-Vote Veto Policy

Since the Mao era, the Chinese government's primary instrument of bureaucratic control has been the cadre evaluation system (Li and Zhou, 2005, Maskin et al., 2000, Qian and Xu, 1993, Xu, 2011). The cadre evaluation system is a multidimensional performance evaluation system used to rank local officials according to achievement of established policy goals. These evaluations are, in turn, the primary determinant of professional advancement among bureaucrats in China. Although specific evaluation targets vary across types of government officials and geographic areas, they generally focus on central government priorities such as economic growth and social stability (and compliance with the One Child Policy). Empirical evidence shows that this centralized system of personnel management has been effective in promoting economic growth (Li and Zhou, 2005), increasing tax revenues (Lü and Landry, 2014), implementing stricter environmental standards (He et al., 2020), and encouraging greater effort in policy experimentation (Wang and Yang, 2025).

The OVV policy greatly strengthened cadre evaluation system incentives for adherence to explicit "top-priority" targets, strictly prohibiting career advancement for adherence failure (Edin,

2003). When it was introduced, the only top-priority OVV targets were One Child Policy targets (CCP Central Committee and State Council, 1991).[8] If a local jurisdiction failed to meet birth control targets under the policy, this failure triggered a "veto" on the performance evaluations of officials in that jurisdiction. This veto overrides any positive achievements in other areas of the cadre evaluation system, resulting in an overall unsatisfactory performance rating. Officials with unsatisfactory ratings cannot in turn be promoted, and they also face the possibility of removal from their position altogether.[9]

As with many implementation-focused policies, OVV was initially introduced and developed through local government experimentation before it was embraced by central government authorities. Specifically, it was first conceived and introduced in the Changde prefecture of Hunan province across five counties in 1982, and within a year, all other counties in Changde prefecture had adopted it. By 1988, the Changde government viewed OVV as successful, documenting its experience in a formal report to the Hunan provincial government. The Hunan provincial government then endorsed OVV, subsequently implementing it across the province. Several other provinces, including Hebei, Liaoning, Jiangxi, and Shandong then followed, also adopting OVV before 1990.

At a 1991 central government meeting on family planning, party officials emphasized the importance of population control, and Premier Li Peng specifically highlighted the accountability of local government officials. Following the release of a central government report based on this meeting, other provinces revised their policies on enforcement of the One Child Policy, gradually adopting OVV, albeit at varying points in time. Appendix Figure A2 shows the timing of provincial-level OVV adoption across China (across 30 mainland Chinese provinces, excluding Tibet, which never adopted the OVV policy (National Population and Family Planning Commission, 2001)). We note that the timing of OVV adoption did not follow a clear geographic pattern

[8] After OCP targets, OVV was next applied to public safety, but this was done by national mandate and was therefore implemented at the same time across China (and hence did not vary by province).

[9] Cases of OVV enforcement, both performance vetoes and removals from office, were widely covered by the Chinese media and reflected in administrative records – see for example "Hunan Province Implements 'One-Vote Veto' for Family Planning in Five Cases," *Hunan Daily*, October 23, 2003; "Henan Zhoukou Conducts Special Investigation on Officials Violating Birth Control Policies: 18,712 Officials Disciplined," *Sina News*, April 9, 2004; and "Report on the Implementation of the Population and Family Planning Law and Provincial Regulations," *Wenzhou Municipal People's Congress*, November 10, 2010.

(and we test directly for a relationship between fertility trends and the timing of OVV adoption in Section 4.1).

Figure 1 shows that more widespread implementation of the OVV policy during the early 1990s coincided with a sharp decline in China's total fertility rate (TFR). Throughout most of the 1980s, China's TFR was relatively stable and consistently above 2.5 children per woman despite the OCP. However, as OVV was implemented across provinces during the early 1990s, China's TFR declined rapidly, dropping below replacement fertility.[10] By the end of the 1990s, the TFR had fallen to about 1.6 children per woman, plateauing at that rate for almost two decades.

3 Data and Estimation

3.1 Data

We use two primary sources of data in our analyses. First, we compiled provincial-level OVV implementation dates using government documents contained in official archival publications (Appendix Table A1). These documents, and in some cases their summaries, are published in provincial gazetteers, provincial chronicles of major events, provincial yearbooks, and the Family Planning Yearbook of China (e.g. National Population and Family Planning Commission, 1992).

Second, we use the 2001 National Family Planning and Reproductive Health Survey. The National Family Planning Commission (NFPC) conducts this survey approximately twice per decade to assess demographic and reproductive behavior in China and to formulate population policy.[11] The 2001 nationally representative survey of women ages 15-49 uses a stratified sam-

[10] The replacement fertility rate is the fertility rate needed for a population to exactly reproduce itself from one generation to the next (without migration). Generally, this rate is roughly 2.1 children per woman in many higher-income countries, although it varies with a population's mortality rates (Craig et al., 1994, Smallwood and Chamberlain, 2005).

[11] The NFPC was renamed the National Population and Family Planning Commission in 2003 and was then dissolved and replaced in March 2013 by the National Health and Family Planning Commission (NHFPC). In March 2018, the NHFPC was also dissolved, and its functions were integrated into the National Health Commission. To date, this survey has been conducted in 1982, 1988, 1992, 1997, 2001, 2006, 2017, 2019, and 2022.

pling method, selecting 1,141 communities and including roughly 45,000 women.[12] For each woman interviewed, the survey collects complete pregnancy history information, including the end date and outcome of each sampled woman's pregnancies.

With this pregnancy history data, we construct a retrospective sample of more than 55,000 pregnancies and more than 42,000 live births between 1983 and 2001.[13] In addition to information about past pregnancies and births, the survey also contains detailed information about women's contraceptive use — and for the two most common forms of modern contraception in China, IUDs and female sterilization (Peng, 1997), it also includes an explicit measure of whether or not contraceptive use was the choice of a woman and her family, or was instead "recommended" by others (including government officials). Although survey respondents may report "recommended" use as voluntary, we also consider this distinction to reflect the extent of effort and influence of local party officials. Appendix Table A2 and Appendix Figure A3 report descriptive statistics from our sample, and Appendix Figure A4 shows the distribution of women's age when the OVV policy was implemented in their province of residence.

3.2 Birth Hazard Estimation

We first estimate the effect of the OVV policy on individual women's fertility hazards. To do so, we exploit the staggered implementation of the OVV policy across provinces. Specifically, stratifying by maternal parity (first, second, third, and fourth or above), we use a generalized difference-in-differences (DiD) event study framework to estimate:

$$Birth_{ipt} = \sum_{k \neq -1} \beta^k D^k_{pt} + X_i\gamma + \mu_p + \nu_t + \varepsilon_{ipt} \tag{1}$$

where $Birth_{ipt}$ is an indicator for whether or not woman i in province p gave birth in calendar year

[12] In the 2001 survey, 337 counties were randomly selected from all 31 provinces in China. From these counties, 3-4 townships were then randomly sampled, and one community was randomly selected from each of these townships, covering 1,041 communities nationwide. All women ages 15-49 living in the selected communities were included in the sample.

[13] This is consistent with Chen et al. (2013), who show that the induced abortion ratio (defined as the ratio of the number of induced abortions to the number of pregnancies) in China in 1990 among women ages 15 and above in the 1992 Chinese Children's Survey is roughly 20%.

t; k denotes event year (relative to the year of OVV implementation in woman i's province, defined as event year 0); D_{pt}^{k} are event year dummy variables for the kth year before/after province p adopted the OVV policy; X_i is a vector of individual characteristics for woman i (highest level of education, age at first marriage, and ethnicity); and μ_p and ν_t are province and calendar-year fixed effects, respectively. We cluster our standard errors at the provincial level. To address concerns about traditional two-way fixed effects (TWFE) estimation with heterogeneous treatment effects and staggered treatment timing, we use the approach proposed by Cengiz et al. (2019) (and also report results using alternative approaches proposed by Borusyak et al. (2024), Callaway and Sant'Anna (2021), De Chaisemartin and d'Haultfoeuille (2024), and Sun and Abraham (2021)). Our primary coefficients of interest (β^k) measure the dynamic effect of the OVV policy on birth hazards over time, before and after its implementation. The lead terms $\beta^k(k < 0)$ allow us to test for the presence of pre-existing birth hazard trends correlated with OVV implementation timing.

To explore the mechanisms underlying changes in birth hazards, we also re-estimate Equation (1), replacing $Birth_{ipt}$ with other outcomes including induced abortion, pregnancy, and contraceptive use (by type, and also degree of consent for IUD use and female sterilization).

3.3 Regression-Adjusted Life Table Construction

Stratifying by 5-year maternal age groups and parity (simultaneously), we then re-estimate Equation (1), using these equations to generate regression-adjusted predictions to construct sequential multi-decrement fertility life tables for each event year (following Van Hook and Altman (2013) and Babiarz et al. (2025)). These fertility life tables allow us to quantify the effect of the OVV policy on China's TFR using the logic and identifying assumptions of Equation (1). Specifically, we use regression predictions to obtain birth hazards (q_x), from which we then derive survival functions (l_x) and maternal age-by-parity birth rates (d_x). Summing values of d_x across each row of the life table yields age-specific fertility rates (ASFRs), and the sum of these

ASFRs yields the TFR.[14]

4 Results

4.1 Birth Hazards

Figure 2 and Appendix Table A3 show event study estimates of $\widehat{\beta^k}$ from Equation (1) for birth hazards (the omitted event year is year -1). Our primary estimates use the TWFE approach proposed by Cengiz et al. (2019), but we also show that our results are generally similar when using alternative approaches as well. Prior to OVV, we find little evidence of differential fertility trends correlated with the timing of the policy. All $\widehat{\beta^k}$ estimates for $k < 0$ are close to zero and statistically insignificant (and jointly insignificant as well, F-test p-value = 0.583). These results are consistent with our assumption that the timing of provincial-level OVV adoption is orthogonal to pre-existing fertility trends.

By contrast, after the adoption of OVV, birth hazards declined immediately and rapidly. Pooling across all parities, Figure 2 shows that these birth hazard reductions are statistically significant for all event years following OVV implementation (except for the initial year in which the policy was adopted). By the final event period, the birth hazard reduction was 4.0 percentage points, a decline of nearly 40% relative to the pre-policy mean.[15]

Appendix Figure A5 also reports estimates from Equation (1) separately by birth parity.[16] One might expect these reductions to be present for second- and higher-parity births (births to which the One Child Policy applies), but not first births.[17] Consistent with these expectations, estimates for first births are generally small and statistically insignificant. By contrast, there are then large and significant declines in second and third births of 11.5 and 7.1 percentage points,

[14] Summing d_x values down each column of the life table also yields parity-specific fertility rates, and the sum of these parity-specific fertility rates is then also the TFR.

[15] Mean birth hazard prior to OVV: 10.2%; coefficient estimate for event year 8: -0.040; $-0.040/0.102 = 39.2\%$ decline.

[16] See Appendix Table A4 for details.

[17] There could, in principle, be reductions in first births as well if women anticipating fewer total children chose to have their only child later in life than they otherwise would have had the first of multiple children.

respectively, by the final event year, representing reductions of 86.5% and 102.9% relative to their means prior to OVV.[18] Fourth and higher-parity births do not change following OVV implementation, presumably both because there are few of them, and also because the subset of families choosing to violate One Child Policy restrictions to such a large extent may be insensitive penalties imposed by the policy (Li and Zhang, 2006).

4.2 Induced Abortion, Pregnancy, and Contraceptive Use

To investigate what changes in reproductive behavior led to the reductions in births shown in Figure 2, we then use a similar empirical framework to study changes in induced abortion, pregnancies, and women's use of modern contraceptives under OVV.

Figure 3 Panel A and Appendix Table A5 first present these results for induced abortion. One potential reason for the decline in birth hazards that we find in Figure 2 could be an increase in induced abortion (Liu et al., 2019). In general, these estimates are small and statistically insignificant following the introduction of OVV. Although not coincident with the timing of the decrease in births in Figure 2, induced abortion does rise by 0.6 percentage points by the final event year, a relative increase of 31.6%.[19]

Given that the timing of this increase in induced abortion does not closely coincide with the reduction in births, women were presumably preventing pregnancies at higher rates as well. Consistent with this interpretation, Panel B then shows a statistically significant decline in the number of pregnancies that closely coincides with the OVV policy. The magnitude of this reduction in pregnancies is also sizable, a decline of about 33.3% relative to the mean prior to OVV.[20] This decline in pregnancies can largely account for the reduction in births under OVV shown in

[18] Mean birth hazards for second and third births prior to OVV: 13.3% and 6.9%; coefficient estimates for our final event time indicator (event year 8: 11.5 and 7.1 percentage points; $11.5/13.3 = 86.5\%$ and $7.1/6.9 = 102.9\%$).

[19] Mean probability of induced abortion prior to OVV: 1.9%; coefficient estimate for event year 8: 0.6 percentage points; $0.6/1.9 = 31.6\%$.

[20] Mean probability of pregnancy prior to OVV: 10.8%; coefficient estimate for event year 8: 3.6 percentage points; $3.6/10.8 = 33.3\%$.

Figure 2.[21]

To study more precisely what changes in contraceptive use led to this reduction in pregnancies, Figure 3 Panels C and D then present results for female sterilization and IUD use, which are the most prevalent forms of modern contraception in China (Peng, 1997).[22] Panel C shows that female sterilization generally did not change for three years after OVV, and then interestingly, declined afterwards — and so cannot account for the decline in pregnancies or births.[23] By contrast, Panel D shows an immediate, persistent, and statistically significant increase in IUD use under OVV, with estimates reaching about 0.7 percentage points by the final event period (Appendix Figures A6 and A7 show these results separately by maternal parity). This is an increase of 50% relative to the mean rate of IUD use prior to OVV.[24]

Finally, given that the OVV policy strengthened incentives for bureaucrats to comply with the One Child Policy, we directly consider the role of actions by government officials in this large increase in IUD use. Figure 4 shows separate event study estimates for IUD use chosen voluntarily by women and their families (Panel A) and for IUD use "recommended" by party officials (Panel B).[25] We also speculate that some women may have reported "recommended" use as "voluntary," although we are unable to provide direct evidence of this possibility. The panels in the figure show that there were similar absolute increases in both "voluntary" and "rec-

[21] Because Births = Pregnancies − Abortions − Others, then $\frac{\text{dBirths}}{\text{dOVV}} = \frac{\text{dPregnancies}}{\text{dOVV}} - \frac{\text{dAbortions}}{\text{dOVV}} - \frac{\text{dOthers}}{\text{dOVV}}$. Assume that the number of women-year observations, NT, is constant across event years. Dividing both sides of the equation by NT yields $\frac{\text{d}(\text{Births}/NT)}{\text{dOVV}} = \frac{\text{d}(\text{Pregnancies}/NT)}{\text{dOVV}} - \frac{\text{d}(\text{Abortions}/NT)}{\text{dOVV}} - \frac{\text{d}(\text{Others}/NT)}{\text{dOVV}}$, meaning that our estimate of the effect of OVV on birth hazards can be decomposed into the effect of OVV on the hazard of pregnancies ending in live birth minus the effect of OVV on abortion hazards, and also minus the effect of OVV on the hazard of a pregnancies not ending in live birth. By the final event year, we estimate that OVV reduced the number of births by 0.040 per woman per year and the number of pregnancies by 0.036 per woman per year, implying that the decline in pregnancies due to OVV explains 90% (0.036/0.040) of the reduction in births due to OVV.

[22] Our data shows that among women ages 15-49 in 2001, 32.9% used IUDs and 27.1% had undergone sterilization (see Appendix Figure A3).

[23] During the early 1980s, China began requiring women to have IUDs implanted after their first birth and to be sterilized after their second birth. These requirements, along with our estimates suggesting that OVV significantly reduced the number of second births (Appendix Figure A5 Panel B) may explain the eventual decline in female sterilizations after OVV.

[24] Mean probability of IUD use prior to OVV: 1.4%; coefficient estimate for event year 8: 0.7 percentage points; $0.7/1.4 = 50\%$.

[25] Also see Appendix Table A6. Appendix Figure A8 shows event study estimates for female sterilization, separately by "voluntary" and "recommended" sterilization, suggesting that the two are also similar in absolute magnitude.

ommended" IUD use under OVV (although the increase in "voluntary" use was not statistically significant for most event years). Because "recommended" use was much less common prior to OVV, however, the relative increase in "recommended" use is markedly larger — an increase of about 133%, more than four times the 30% relative increase in "voluntary" use.[26] More generally, these results are consistent with the interpretation that substantially stronger bureaucratic incentives under the OVV policy led to greater effort by Chinese government officials to enforce the OCP.

4.3 Total Fertility Rate (TFR) Estimation

Finally, we use event study regressions stratified by maternal age and parity to generate the regression-adjusted birth hazard predictions needed to build sequential multi-decrement fertility life tables, from which we then derive decrements in the TFR over time due to the OVV policy (Appendix Table A7 shows these calculations in detail).

Appendix Figure A9 presents these results, with TFR declines that generally match the pattern of birth hazards over time in Figure 2 and Appendix Figure A5. To convert these event year TFR estimates to calendar time, we match each provincial event year to its corresponding calendar year, weight each provincial calendar year estimate by the provincial female population in our survey data, and compute a weighted average for the corresponding Chinese population. Figure 5 shows these results, both for the actual TFR and the counterfactual TFR without the OVV policy (generated using regression predictions with OVV indicators set to 1 and 0). China's TFR declined by 0.91 births per woman between 1987 and 1999, and we calculate that about 46% of this decline (0.42 births per woman) is attributable to the OVV policy.[27] The panels of Appendix Figure A10 show comparable figures for actual and counterfactual (i.e., without OVV) age-specific fertility rates (ASFRs), suggesting that the TFR reductions in Figure 5 are largely

[26] Mean probability of "recommended" IUD use prior to OVV: 0.3%; coefficient estimate for event year 8: 0.4 percentage points; $0.4/0.3 = 133\%$. Mean probability of "voluntary" IUD use prior to OVV: 1.0%; coefficient estimate for event year 8: 0.3 percentage points; $0.3/1.0 = 30\%$.

[27] Our survey suggests that China's TFR fell by $2.52 - 1.60 = 0.91$ births between 1987 and 1999, and our estimates imply that OVV led to a TFR decline of 0.42 births; $0.42/0.91 = 46\%$. The decline in the counterfactual TFR around 1990 may reflect comprehensive policy efforts at all levels of government to curb population growth (not just at the provincial level).

driven by reductions in ASFRs among women ages 20-24 and 25-29.[28]

4.4 Alternative Interpretations, Robustness, and Data Quality Comparisons

In this section, we consider alternative explanations for our results, assess their robustness, and also explore the quality of the data that we use in our analyses. First, given that there was variation in the fines that provincial governments imposed on households violating the One Child Policy, we investigate if the magnitude of fines was related to OVV implementation. Estimating Equation (1) for above-quota provincial birth fine rates (measured in years of household income following Ebenstein (2010)), Appendix Figure A12 shows little evidence that fines changed following OVV implementation. Second, we assess the sensitivity of our results to controlling for provincial characteristics (GDP per capita, fraction of population urban, health care facilities per capita, and the under-5 mortality rate) and for region-year fixed effects. Appendix Figure A13 Panels A and B report these results, showing that the resulting birth hazard estimates are very similar to those presented in Figure 2.

Third, we conduct a falsification exercise by randomizing the timing of OVV implementation across provinces. Specifically, for each province, we randomly assign a false year of OVV implementation between 1988 and 2000 (the first and last years of OVV in our sample), excluding each province's actual year of implementation. Repeating this reassignment and then re-estimating a variant of Equation (1) 1,000 times,[29] Appendix Figure A14 shows the empirical probability density function of the resulting estimates, which is centered around zero.[30] The vertical red line represents our actual estimate for the effect of the OVV policy (-0.016), which falls below the 5th percentile of the empirical distribution of false estimates (allowing us to reject the hypothesis that the actual treatment effect is statistically equivalent to the expectation of the false estimates

[28] Following Babiarz et al. (2025), we also estimate discrete-time hazard models to predict the implied density functions of maternal age at childbirth with and without OVV policy across different parities. Appendix Figure A11 presents these results; across all parities, maternal age at childbirth with and without the policy are not significantly different, so we do not perform a quantum-tempo decomposition to separate OVV fertility effects into timing effects and effects on completed fertility (Bongaarts and Feeney, 1998).

[29] Specifically, we estimate the equation: $Birth_{ipt} = \theta OVV_{pt} + X_i\gamma + \mu_p + \nu_t + \varepsilon_{ipt}$, where OVV_{pt} is a dummy variable that equals 1 if province p had the OVV policy in a randomly assigned year t.

[30] All estimates shown in the figure were calculated using the `stackedev` command in Stata, which is available from the SSC archive.

at the 1% significance level).

Fourth, although Figure 2 suggests that OVV implementation is not correlated with pre-existing fertility trends, we consider how well-powered our assessment of this possibility is (following Roth (2022)). To do so, we first establish the magnitude of the minimum linear pre-OVV trend that we are powered to detect. As Appendix Figure A15 shows, with 80% power, we can detect a small negative linear trend of -0.002 percentage points or greater with our event study model. Using this pre-trend slope to form a counterfactual scenario, we calculate that by event year 8, the resulting bias in our estimate in Figure 2 would at most be 0.017 percentage points, which is substantially smaller in magnitude than our actual point estimate (-0.040 percentage points).[31] Beyond considering the possibility of linear pre-trends, we also consider non-linear pre-trends following Rambachan and Roth (2023), estimating bounds on the size of the deviation from the parallel trends assumption that are still consistent with our results. As Appendix Figure A16 shows, we find that our fertility results are robust to deviations up to the same size as the largest deviation observed in the pre-OVV period.[32]

Finally, we make comparisons between our sample and other independent sources of data to investigate its representativeness and quality. Specifically, we use the 2000 Population Census and 2005 Population Survey ("Mini-Census") to conduct event study analyses of births analogous to our birth hazard estimation in Figure 2.[33] Appendix Figure A1 presents results from these exercises, showing that we find similar patterns of births to those in Figure 2 using these

[31] We can reject biases that fall within the baseline confidence interval with power of at least 99.8%, and we can reject downward biases exceeding the magnitude of our baseline point estimate with 100% power.

[32] This procedure is formalized by imposing that the post-treatment violation of parallel trends be no more than a constant multiple of the maximum violation of parallel trends observed in the pre-treatment period ($\overline{M}$). For example, $\overline{M} = 1$ imposes that the post-treatment violation of parallel trends not be larger than the worst pre-treatment violation of parallel trends (accounting for statistical and identification uncertainty in our event study estimates). Appendix Figure A16 Panel A shows 90% confidence intervals for the coefficient in event year 8 under various assumptions of $M \in [0, 1.2]$, and Appendix Figure A16 Panel B shows 95% confidence intervals. Panels C and D show analogous results for all post-treatment periods together.

[33] The 2000 Population Census has been criticized for under-reporting newborns (unregistered children), which could result in an inaccurately low count of children (Zhang and Zhao, 2006, Zhang and Cui, 2003). However, unregistered children generally "reappear" when they reach school age (around six years of age) (Goodkind, 2004), making comparisons between our data and the 2000 Population Census reasonable, although not for the right tail of the distribution of children's year of birth. To our knowledge, there is less concern about under-reporting of newborns in the 2005 Population Survey.

alternative data sources.[34]

5 Conclusion

Empirical research to date largely suggests that population policies around the world do not explain a majority of the global fertility decline (Miller and Babiarz, 2016, Pritchett and Summers, 1994). Although population policy in China is often considered to be an outlier in global experience (Goodkind, 2017, Scharping, 2013, Zhang, 2017), evidence on its role in China's fertility decline has not generally supported this view (Babiarz et al., 2025, Chen and Huang, 2020, Li and Shi, 2025, Zhang, 2017). By contrast, in this paper, we show that strengthening bureaucratic incentives under China's "One Vote Veto" (OVV) policy led to substantially greater adherence to the One Child Policy — and in turn, a delayed impact on fertility explaining about half of China's fertility decline during the 1990s, pushing Chinese fertility below the replacement rate.

China's cadre evaluation system famously rewards bureaucrats for the achievement of policy goals. However, we show that even under this long-standing system of bureaucratic performance management and control (dating back to early in the Mao era), the incentives of public officials may not be tightly aligned with policy objectives. Specifically, by strictly prohibiting promotion within the Chinese bureaucracy for failure to achieve priority policy targets (One Child Policy targets were the first), we present direct evidence that the OVV policy markedly increased bureaucratic effort to reduce fertility. Using novel data on whether or not women's use of contraceptives was "voluntary" or "recommended" by party officials, our results suggest that the OVV policy increased the use of the most prevalent form of modern contraception in China (IUDs)

[34] Using each dataset, we aggregate these data to construct (i) province-year counts of births (based on children's observed ages) and (ii) province-year counts of childbearing-age women (ages 15–49) for years 1983 to 2000. Assuming no mortality or migration, we then divide province-year birth counts by province-year counts of childbearing-age women to obtain province-year fertility rates. With these fertility rate measures, we then estimate event study regressions: $y_{pt} = \sum_{k \neq 1} \beta^k D^k_{pt} + X_p \gamma + \mu_p + \nu_t + \varepsilon_{pt}$, where y is the fertility rate in province p and year t; D^k_{pt} are event year dummies for the kth year before or after province p adopted the OVV policy; X_p is a vector of provincial characteristics (including GDP per capita, the fraction of the population in urban areas, health care facilities per capita, and the under-five mortality rate); and μ_p and ν_t are province and calendar-year fixed effects (respectively). We cluster standard errors at the provincial level and follow the approach proposed by Cengiz et al. (2019).

"recommended" by party officials by 133%, an increase more than four times as large as the increase in "voluntary" use.

Chinese policymakers now confront the challenge of persistent low fertility rates, far below-replacement fertility, and accompanying population decline. Although relaxing the One Child Policy has not reversed this trend, our research suggests that population policy may have made a larger contribution to the very low fertility in China than suggested by past research.

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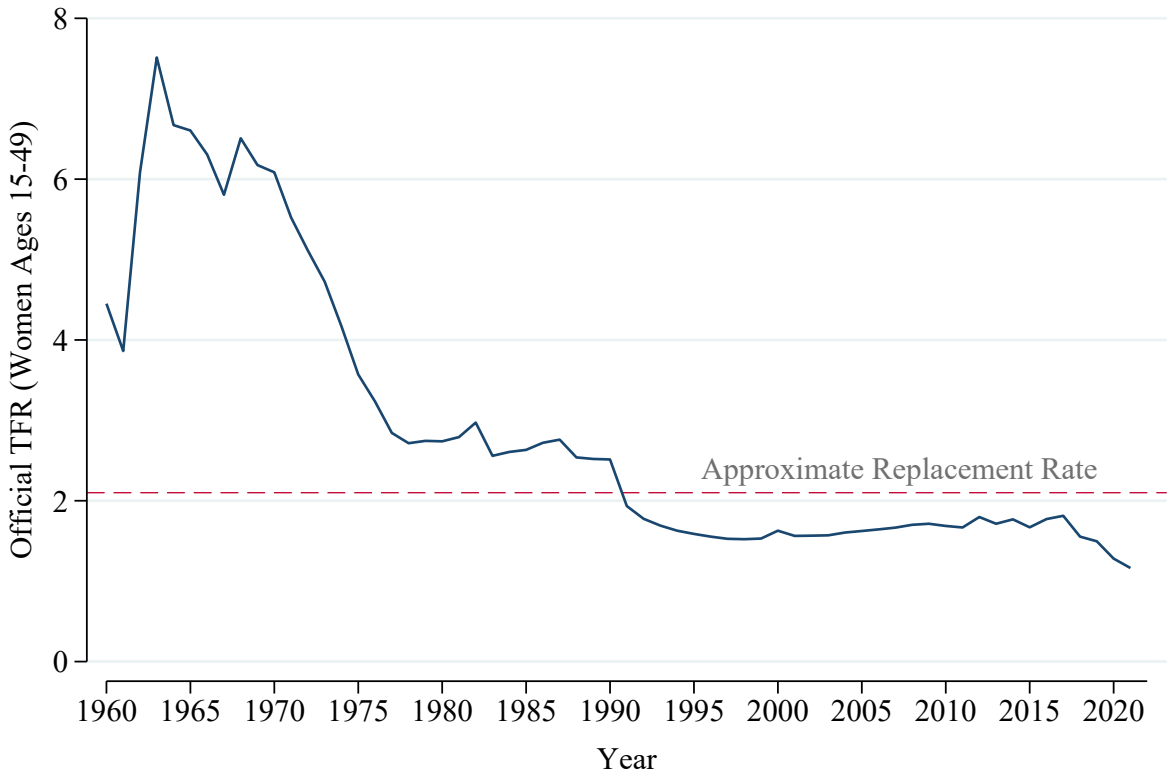
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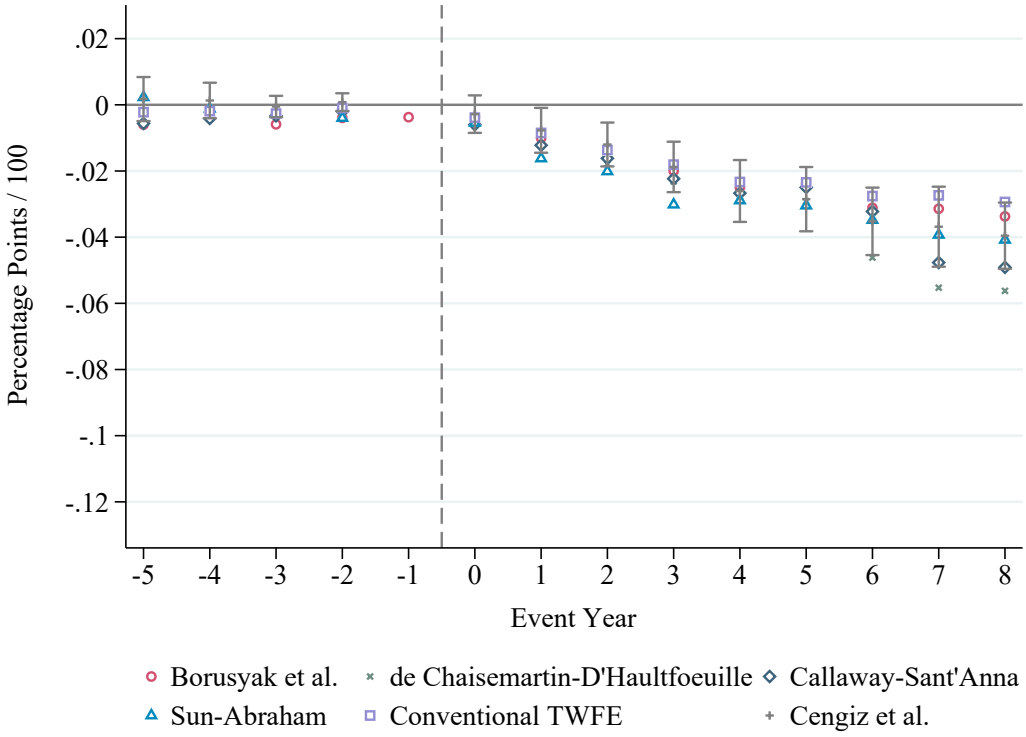
Figures and tables

Figure 1: China's Total Fertility Rate, 1960-2001



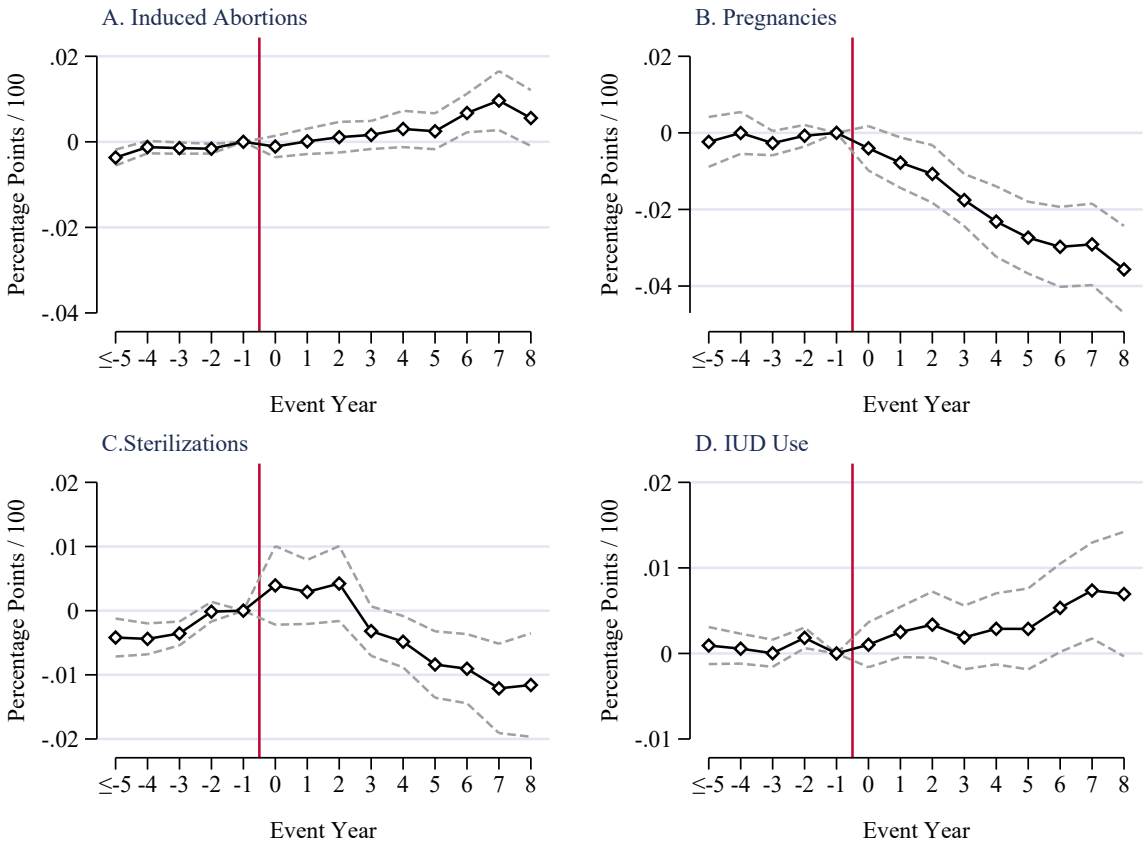
Notes: The figure shows China's total fertility rate (TFR) sourced from the United Nations Population Division. The replacement rate is the fertility rate needed for a population to exactly reproduce itself from one generation to the next (without migration). Generally, this rate is roughly 2.1 children per woman in many higher-income countries, although it varies with a population's mortality rates (Craig et al., 1994, Smallwood and Chamberlain, 2005).

Figure 2: Birth Hazard Event-Study Estimates Relative to the Introduction of the "One Vote Veto" (OVV) Policy in China



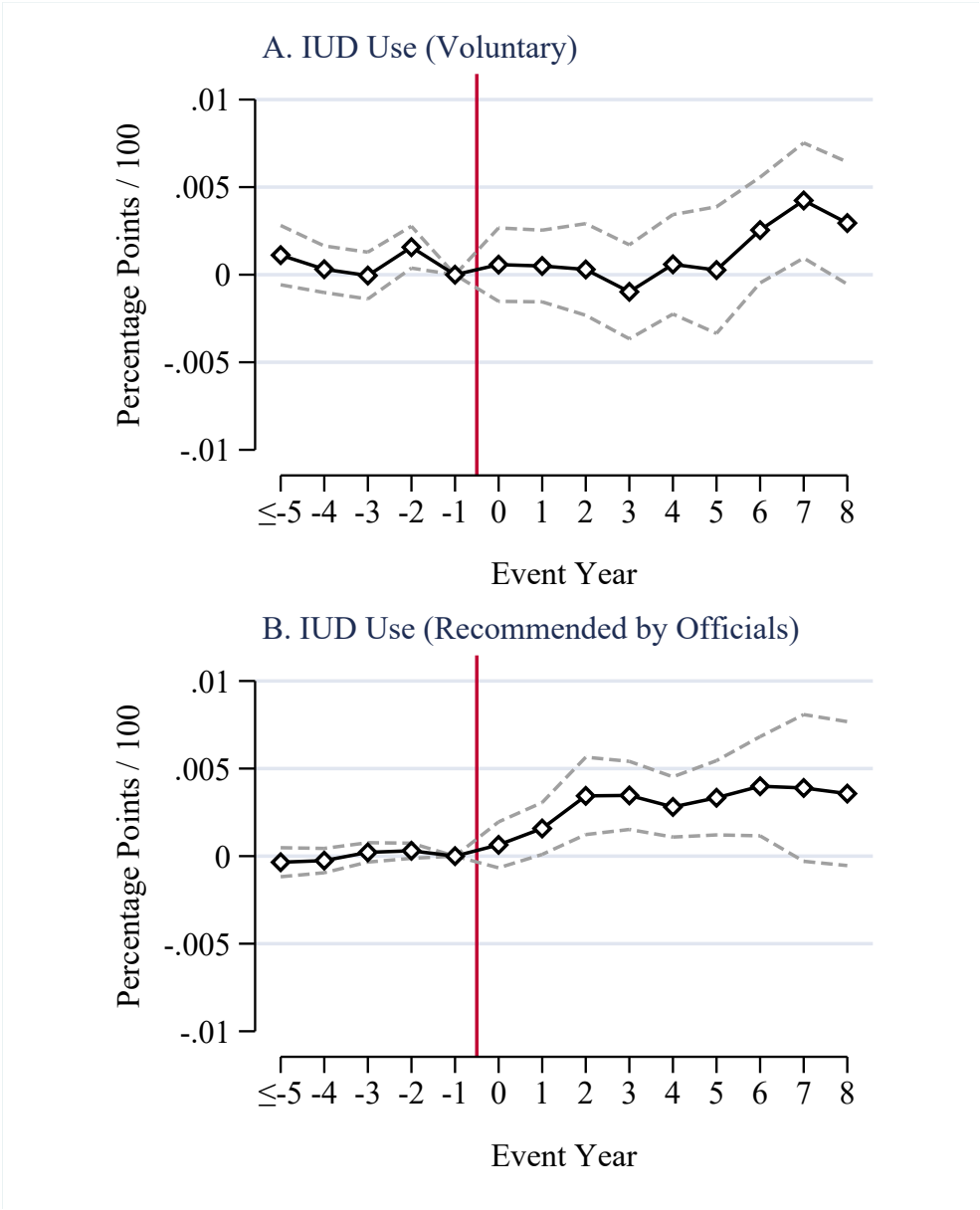
Notes: The figure shows DiD estimates from Equation (1) for birth hazards (pre-policy mean = 0.102) using six different estimators: a dynamic version of the TWFE model, estimated using OLS (in purple with square markers); Cengiz et al. (2019) (in gray with plus markers); Sun and Abraham (2021) (in light blue with triangle markers); Callaway and Sant'Anna (2021) (in dark blue with diamond markers); De Chaisemartin and d'Haultfoeuille (2024) (in green with cross markers); and Borusyak et al. (2024) (in red with circle markers). It also shows the 95% confidence intervals from our main specification, or the Cengiz et al. (2019) approach. Standard errors are clustered by province. The outcome variable is the occurrence of a live birth. The sample used includes women ages 15-49 in 2001, and their births between years 1983 and 2001. The vertical dashed line represents the time of OVV policy implementation. Data: 2001 National Family Planning and Reproductive Health Survey.

Figure 3: Event Study Estimates Relative to the Introduction of the "One Vote Veto" (OVV) Policy in China for Induced Abortions, Pregnancies, Female Sterilizations, and Intrauterine Device (IUD) Use



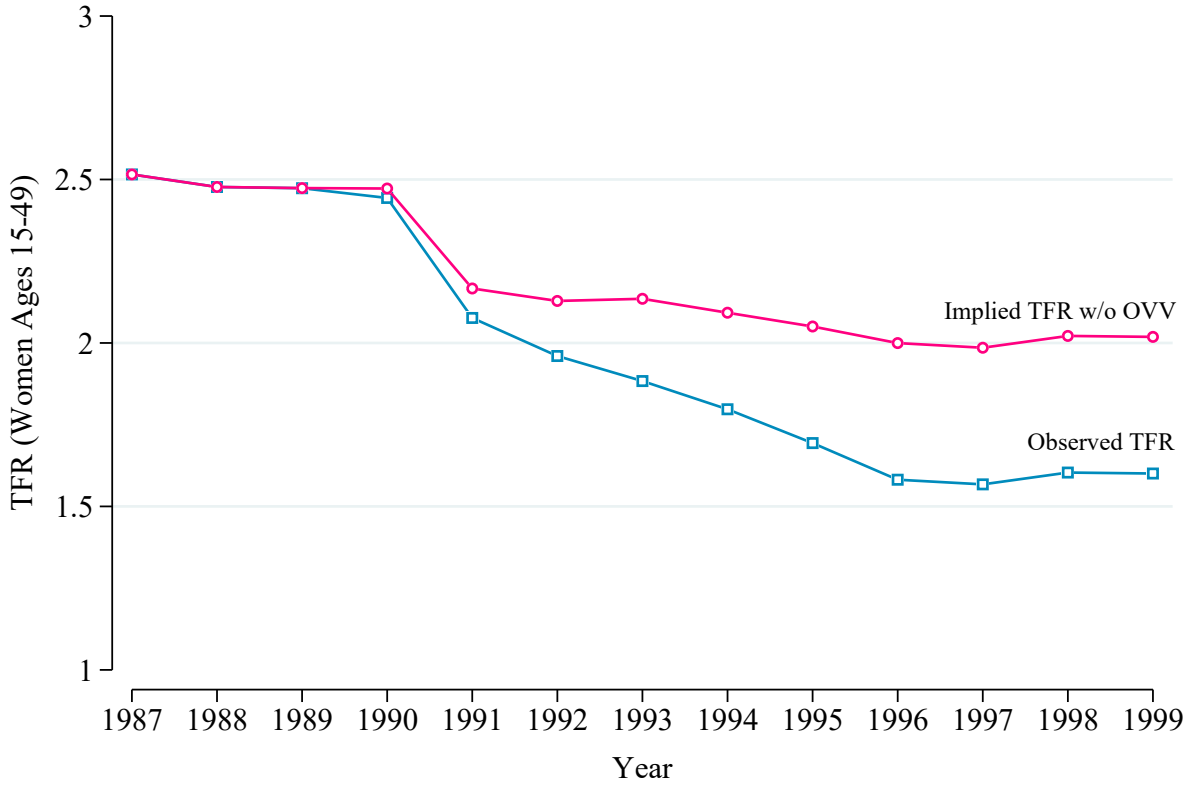
Notes: The figure shows estimates and 95% confidence intervals from Equation (1) for four different outcomes (induced abortions, pregnancies, female sterilizations, and use of intrauterine devices (IUDs)) using the Cengiz et al. (2019) approach. Standard errors are clustered by province. The sample used includes women ages 15-49 in 2001, and their induced abortion, pregnancy, sterilization, and IUD use between years 1983 and 2001. The vertical dashed line represents the time of OVV policy implementation. Data: 2001 National Family Planning and Reproductive Health Survey.

Figure 4: Event Study Estimates Relative to the Introduction of the "One Vote Veto" (OVV) Policy in China for Intrauterine Device (IUD) Use By Voluntary Use and Use "Recommended" by Officials



Notes: The figure shows estimates and 95% confidence intervals from Equation (1) for use of intrauterine devices (IUDs), separately for voluntary use by women and their families and for use "recommended" by Communist party officials using the Cengiz et al. (2019) approach. Standard errors are clustered by province. The sample used includes women ages 15-49 in 2001, and their use of IUD between years 1983 and 2001. The vertical dashed line represents the time of OVV policy implementation. Data: 2001 National Family Planning and Reproductive Health Survey.

Figure 5: Actual and Counterfactual Sequential Multi-Decrement Total Fertility Rate (TFR) Estimates for China, with and without the "One Vote Veto" (OVV) Policy, 1987-1999



Notes: The figure shows the observed total fertility rate (TFR) (in blue with square markers) and the counterfactual TFR (in pink with circle markers), calculated by subtracting the policy-driven change in TFR implied by estimates in Section 4.3 from observed TFR in each event year. Data: 2001 National Family Planning and Reproductive Health Survey.

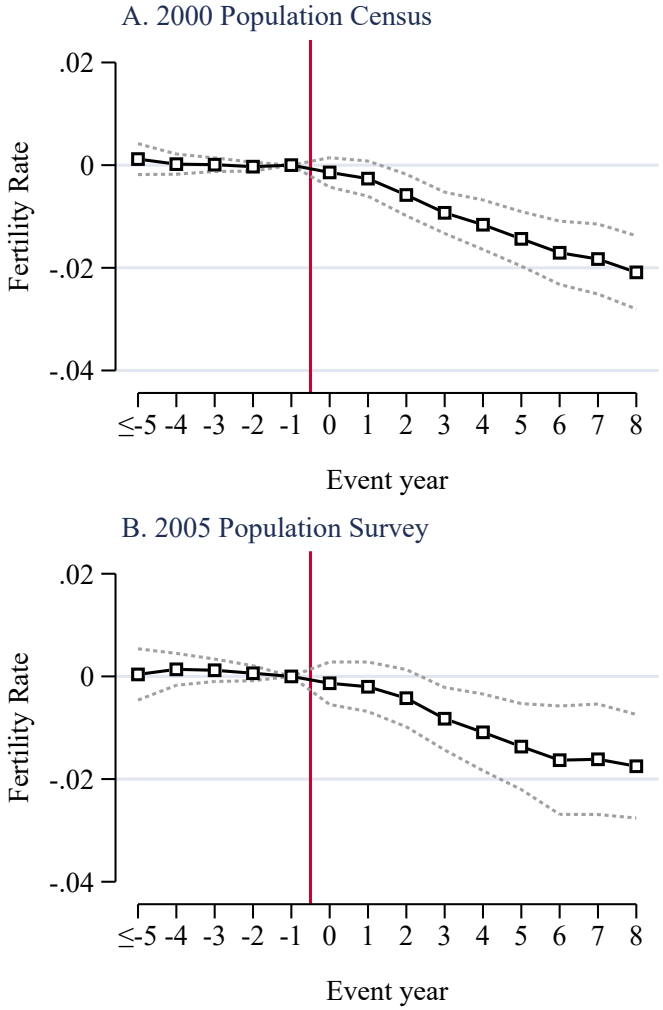
Online Appendix

Bureaucratic Incentives and Effectiveness of the One Child Policy in China

April 23, 2025

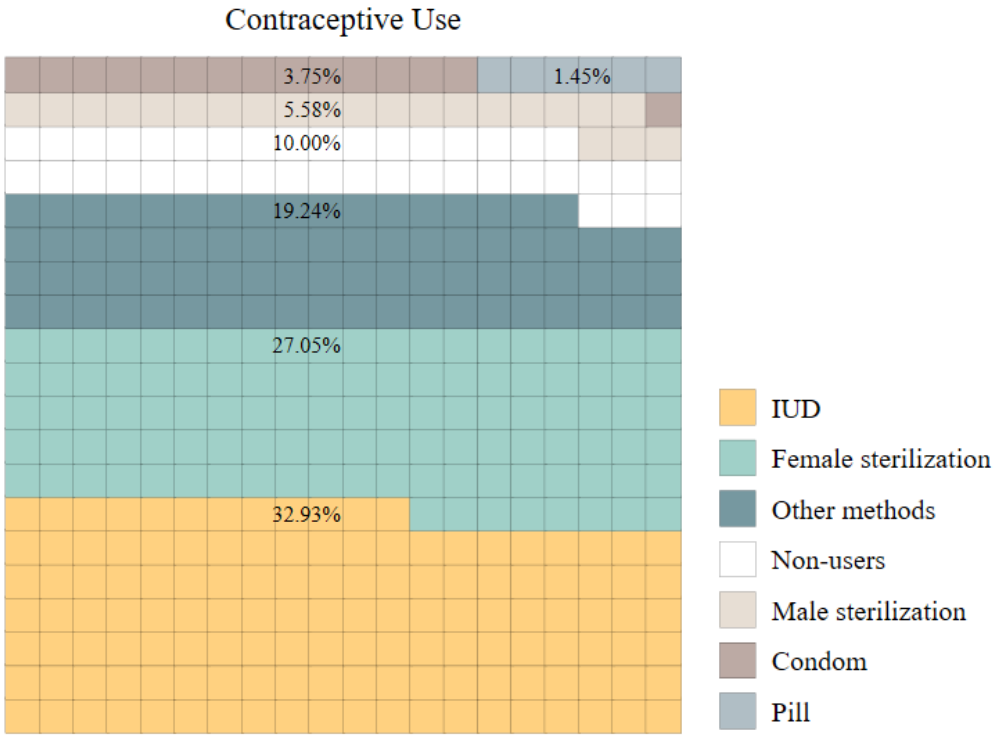
Additional Figures and Tables

Figure A1: Fertility Rate Event Study Estimates Relative to the Introduction of the "One Vote Veto" (OVV) Policy in China Using Alternative Data Sources



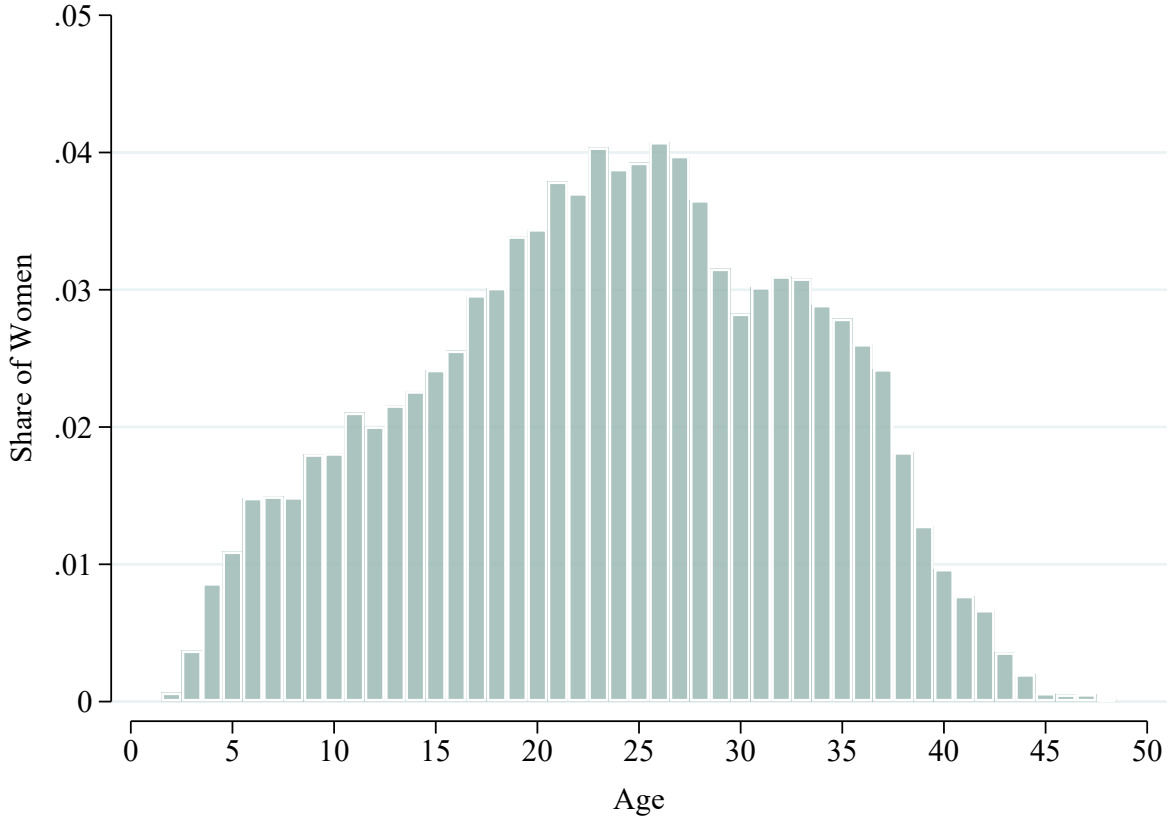
Notes: Using the 2000 Population Census and 2005 Population Survey ("Mini-Census"), we aggregate each dataset to construct (i) province-year counts of births (based on children's observed ages) and (ii) province-year counts of childbearing-age women (ages 15–49) for years 1983 to 2000. Assuming no mortality or migration, we then divide province-year birth counts by province-year counts of childbearing-age women to obtain province-year fertility rates. With these fertility rate measures, we then estimate event-study regressions: $y_{pt} = \sum_{k \neq 1} \beta^k D^k_{pt} + X_p \gamma + \mu_p + \nu_t + \varepsilon_{pt}$, where y is the fertility rate in province p and year t; D^k_{pt} are event year dummies for the kth year before or after province p adopted the OVV policy; X_p is a vector of provincial characteristics (including GDP per capita, the fraction of the population in urban areas, health care facilities per capita, and the under-five mortality rate); and μ_p and ν_t are province and calendar-year fixed effects (respectively). The figure shows estimates and 95% confidence intervals from the equation. We cluster standard errors at the provincial level and follow the approach proposed by Cengiz et al. (2019).

Figure A3: Contraceptive Prevalence by Type, 2001



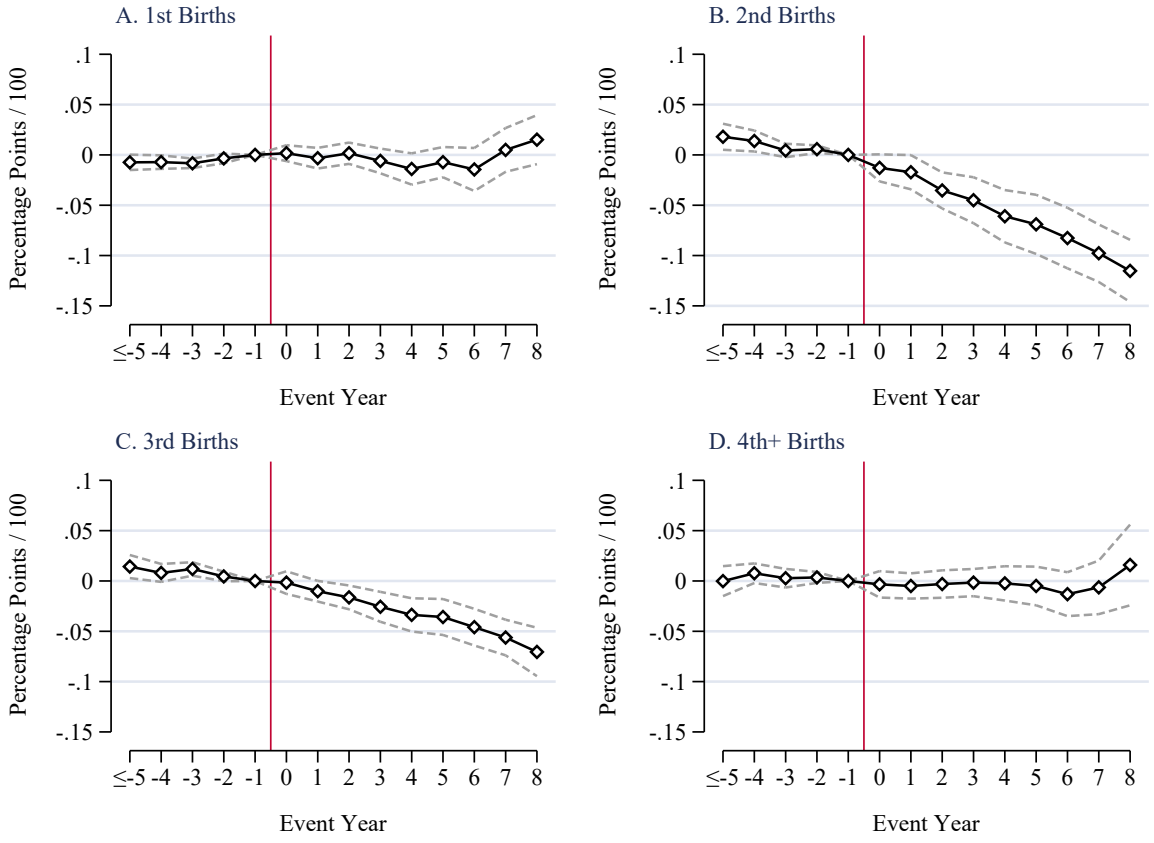
Notes: The figure shows modern contraceptive use by type among women ages 15-49 years, along with their husbands, in the 2001 National Family Planning and Reproductive Health Survey.

Figure A4: The Distribution of Women's Age at "One Vote Veto" (OVV) Policy Implementation



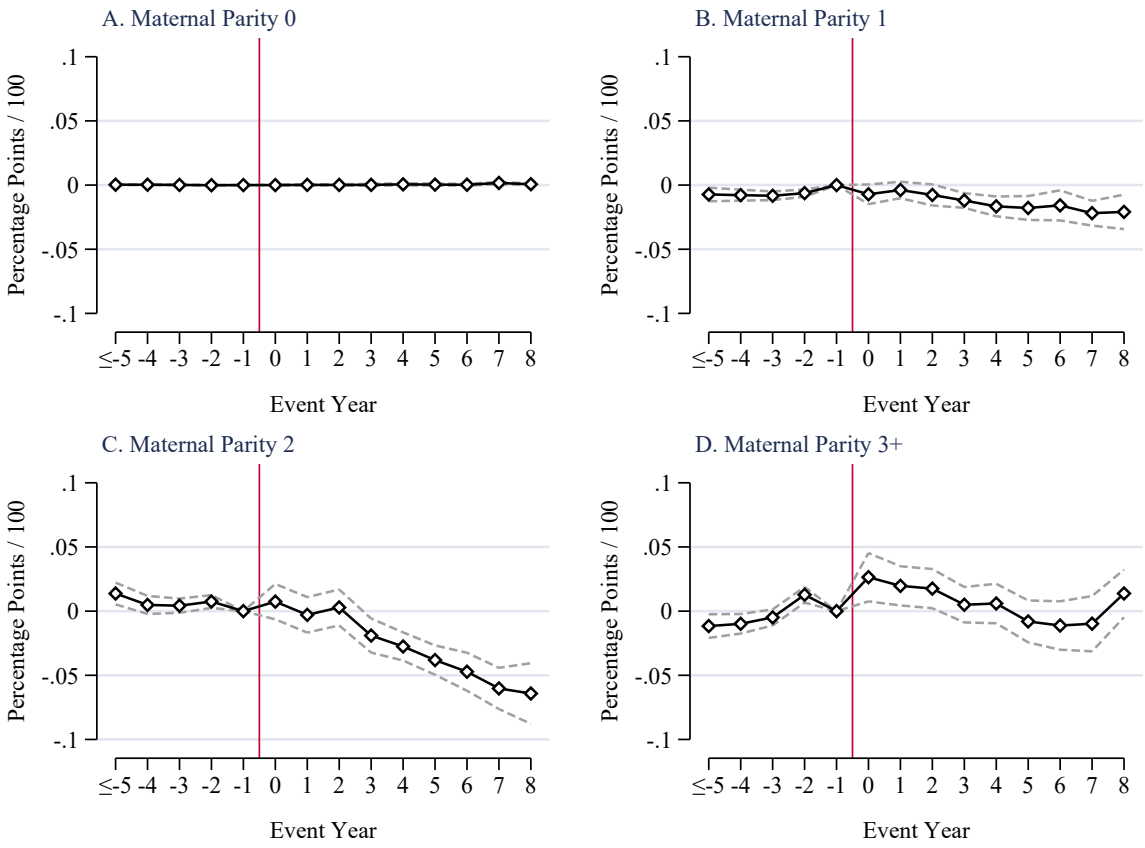
Notes: The figure shows the distribution of ages at which OVV was implemented among women ages 15-49 years in the 2001 National Family Planning and Reproductive Health Survey.

Figure A5: Event Study Estimates Relative to the Introduction of the "One Vote Veto" (OVV) Policy in China for Parity Progression by Birth Parity



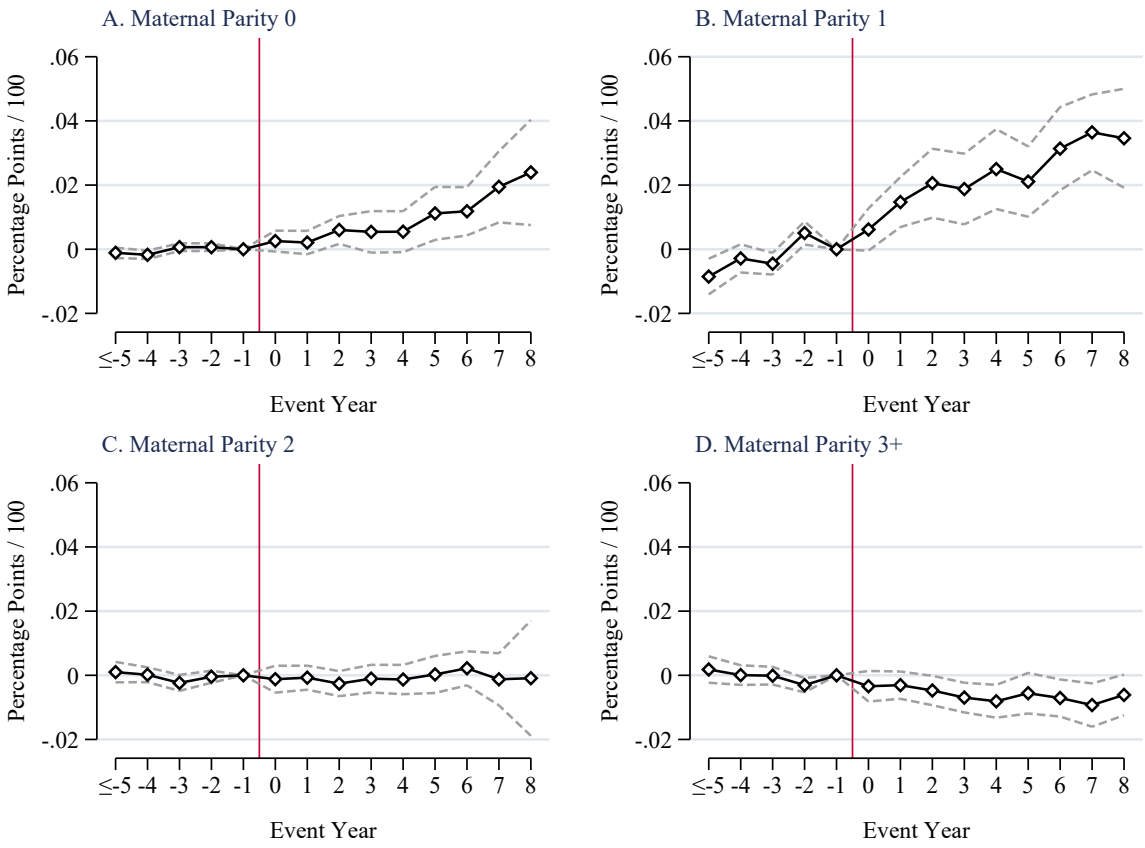
Notes: The figure shows DiD estimates and 95% confidence intervals from Equation (1) using the Cengiz et al. (2019) approach. Standard errors are clustered by province. The sample used includes women ages 15-49 in 2001, and their births between years 1983 and 2001. The red vertical line represents the time of OVV policy implementation. Data: 2001 National Family Planning and Reproductive Health Survey.

Figure A6: Event Study Estimates Relative to the Introduction of the "One Vote Veto" (OVV) Policy in China for Female Sterilizations by Maternal Parity



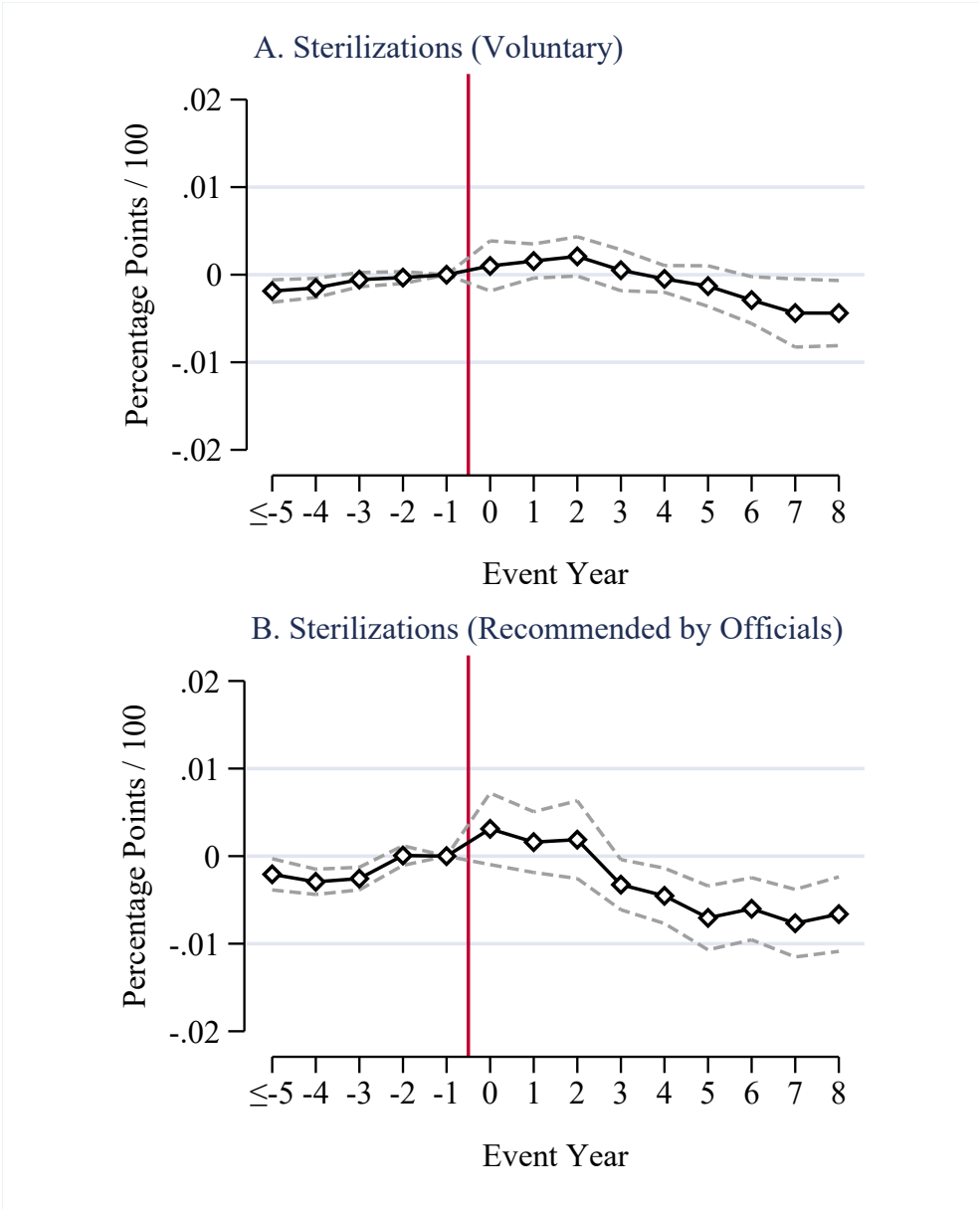
Notes: The figure shows DiD estimates and 95% confidence intervals from Equation (1) using the Cengiz et al. (2019) approach. Standard errors are clustered by province. The sample used includes women ages 15-49 in 2001, and their sterilizations between years 1983 and 2001. The red vertical line represents the time of OVV policy implementation. Data: 2001 National Family Planning and Reproductive Health Survey.

Figure A7: Event Study Estimates Relative to the Introduction of the "One Vote Veto" (OVV) Policy in China for Intrauterine Devices (IUD) Use by Maternal Parity



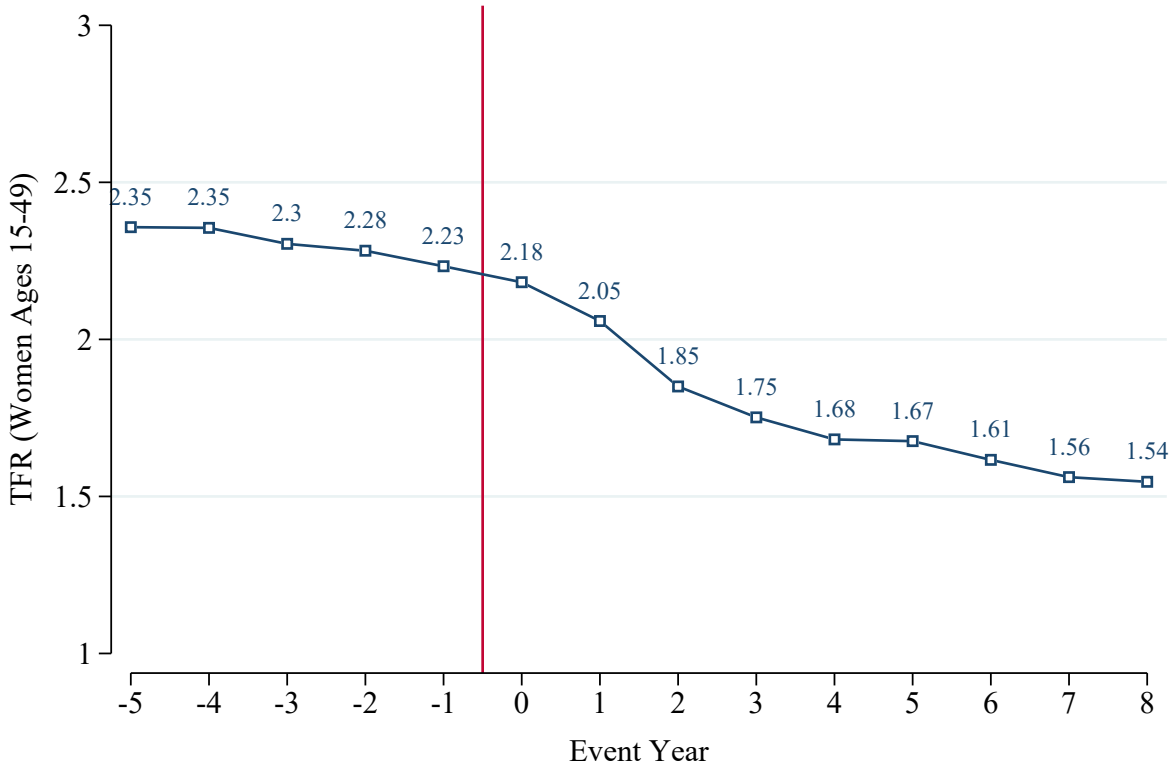
Notes: The figure shows DiD estimates and 95% confidence intervals from Equation (1) using the Cengiz et al. (2019) approach. Standard errors are clustered by province. The sample used includes women ages 15-49 in 2001, and their use of IUD between years 1983 and 2001. The red vertical line represents the time of OVV policy implementation. Data: 2001 National Family Planning and Reproductive Health Survey.

Figure A8: Event Study Estimates Relative to the Introduction of the "One Vote Veto" (OVV) Policy in China for Female Sterilizations By Voluntary Use and Use "Recommended" by Officials



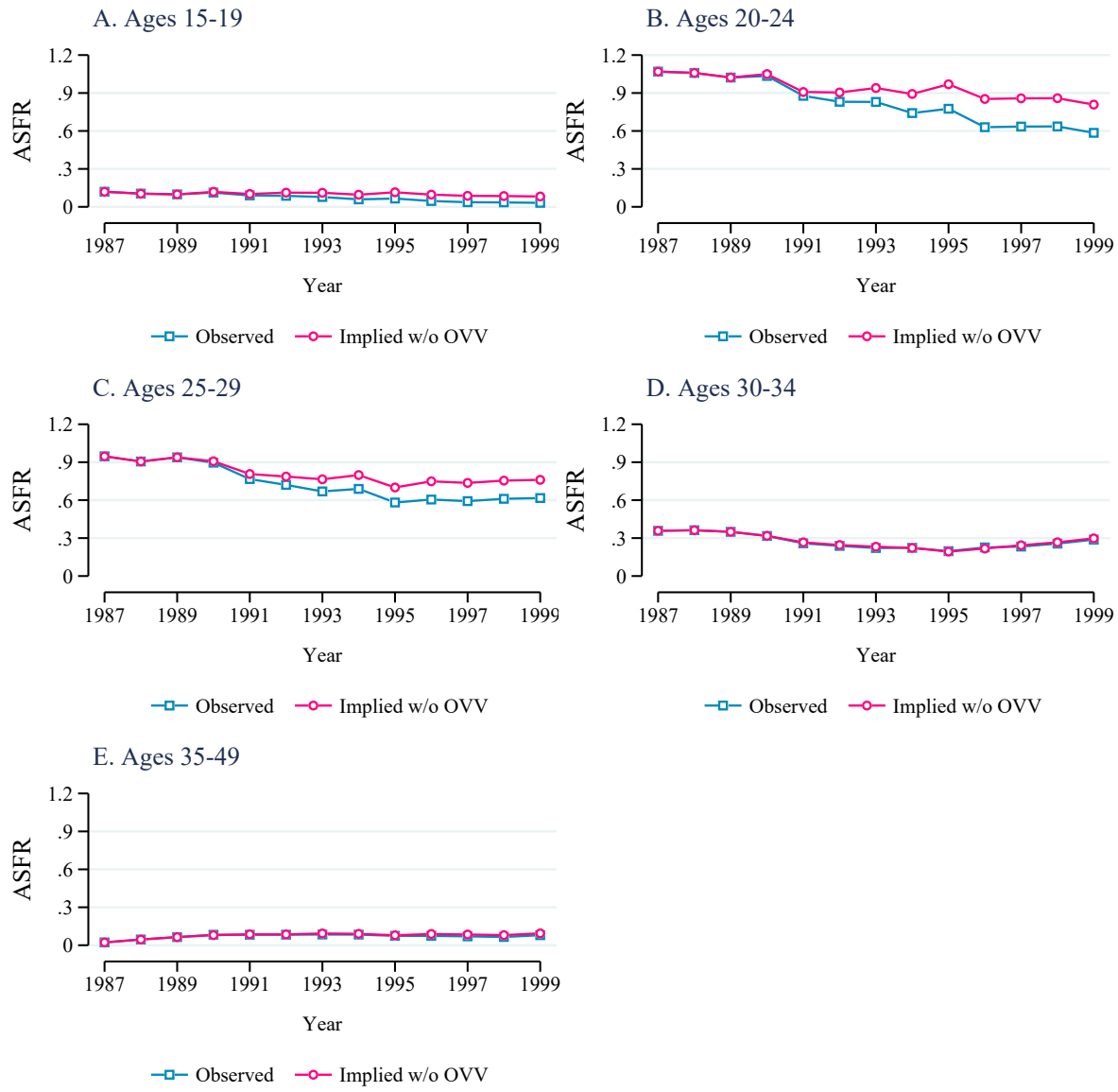
Notes:The figure shows DiD estimates and 95% confidence intervals from Equation (1) using the Cengiz et al. (2019) approach. Standard errors are clustered by province. The sample used includes women ages 15-49 in 2001, and their sterilizations between years 1983 and 2001. The red vertical line represents the time of OVV policy implementation. Data: 2001 National Family Planning and Reproductive Health Survey.

Figure A9: The OVV Policy and the Total Fertility Rate (TFR) by Event Year



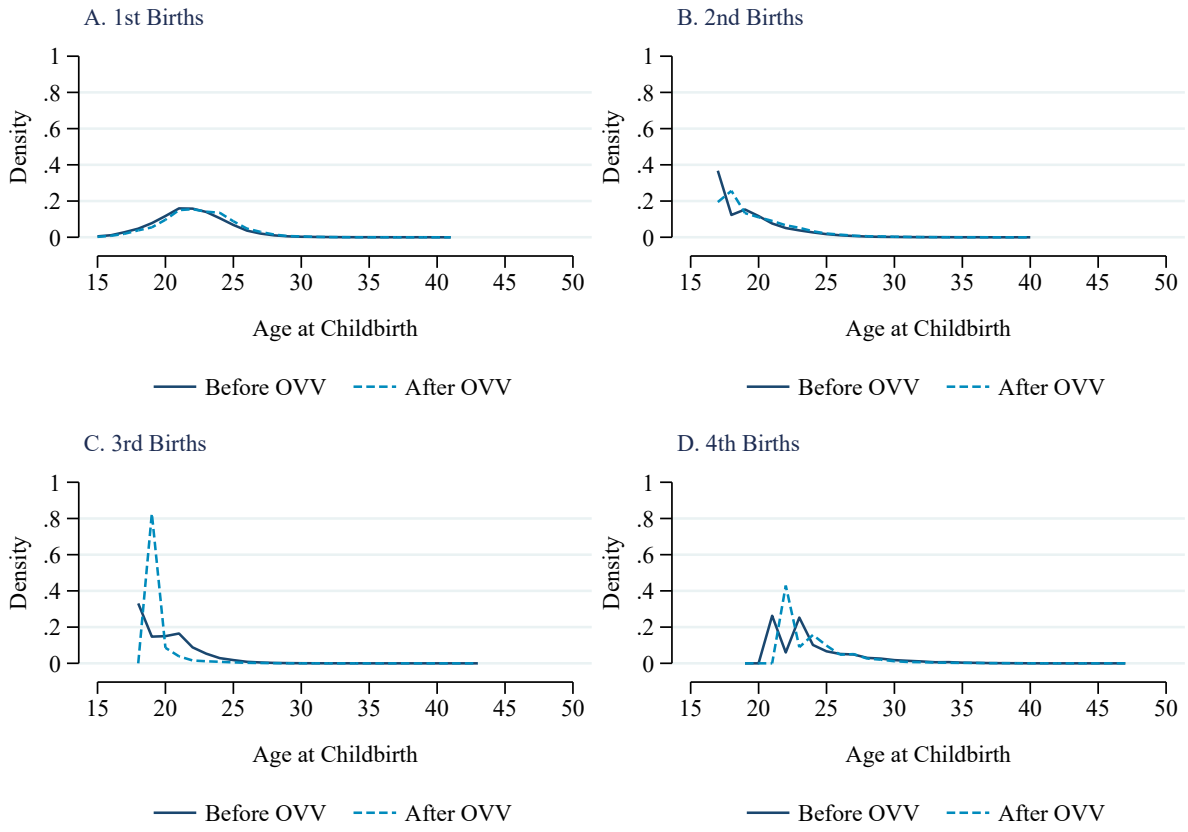
Notes: The figure shows the total fertility rate (TFR) for each event year, derived from fertility life tables constructed using microdata from the 2001 National Family Planning and Reproductive Health Survey. The red vertical line represents the time of OVV policy implementation. For more details, see Subsection 3.3.

Figure A10: Actual and Counterfactual Sequential Multi-Decrement Age-Specific Fertility Rate (ASFR) Estimates for China, with and without the "One Vote Veto" (OVV) Policy, 1987-1999



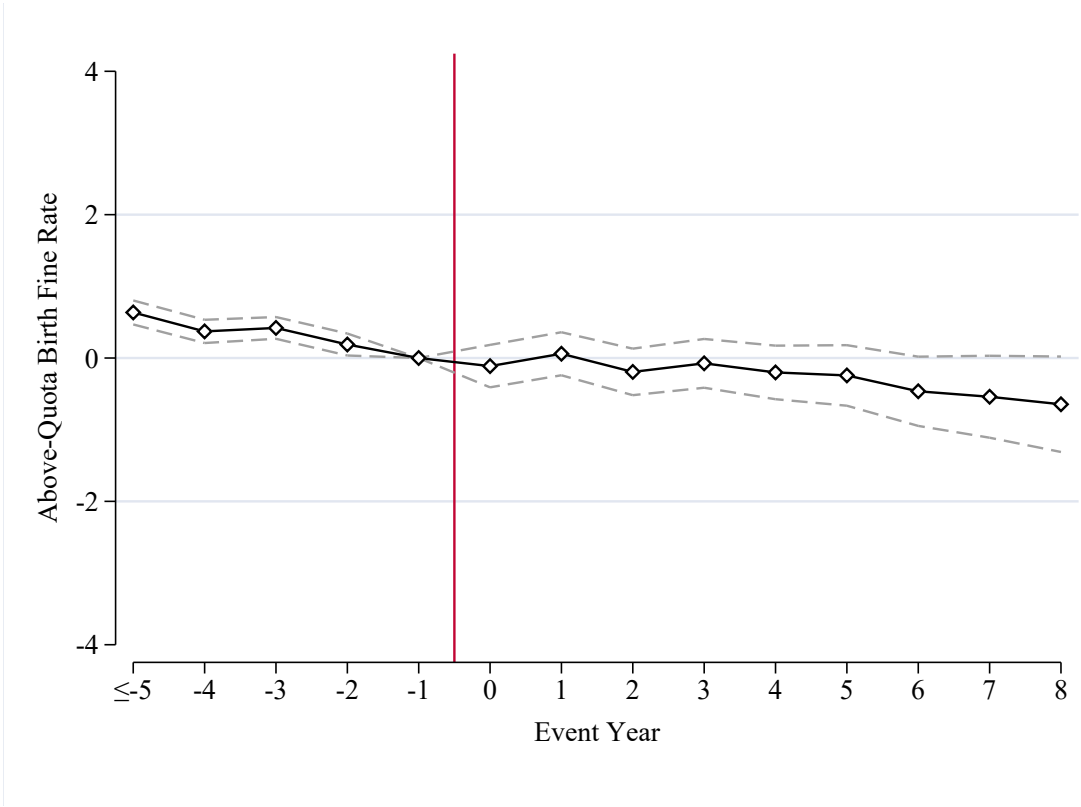
Notes: The figure shows the observed age-specific fertility rate (ASFR) (in blue with square markers) and the counterfactual ASFR (in pink with circle markers), calculated by subtracting the policy-driven change in TFR implied by estimates in Section 4.3 from observed ASFR in each event year. Data: 2001 National Family Planning and Reproductive Health Survey.

Figure A11: The "One Vote Veto" (OVV) Policy and Age at Childbirth by Birth Parity



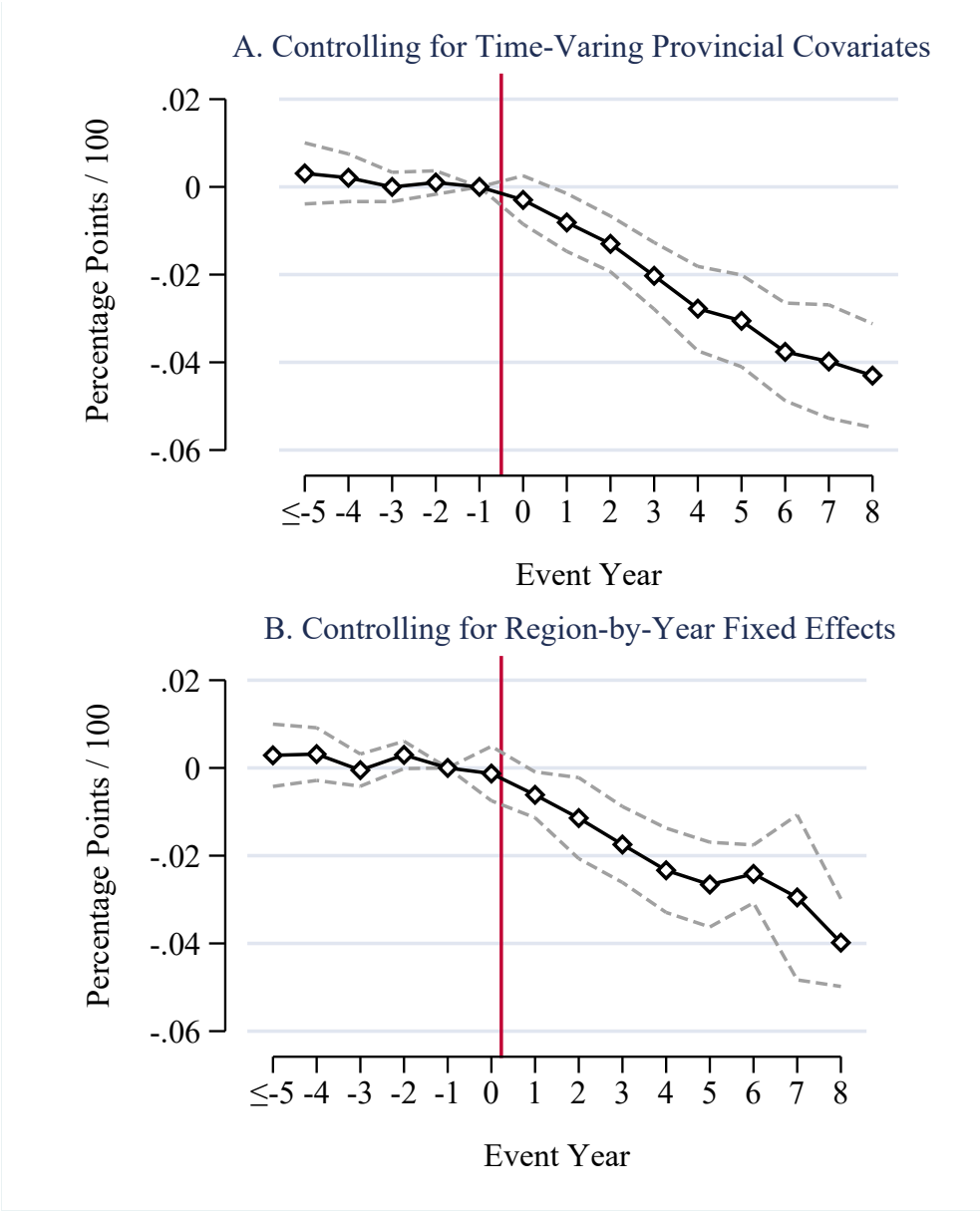
Notes: This figure shows the implied density functions of maternal age at childbirth across different parities. In each panel, we analyze a sample of women-years, limited to mothers who are at risk of, and eventually achieve, a higher parity within the sample period. We estimate a discrete-time hazard model using a probit specification in which the dependent variable is whether or not a woman advances in parity. The independent variables include an OVV policy indicator, age dummies, and their interactions. Using the model estimates, we first predict the likelihood of childbirth at each age, both with and without OVV. Then, we apply a single decrement life table approach to map changes in age-specific childbirth hazards, allowing us to predict shifts in the distribution of age at childbirth. Data: 2001 National Family Planning and Reproductive Health Survey.

Figure A12: OVV Policy Timing and OCP Fine Rates



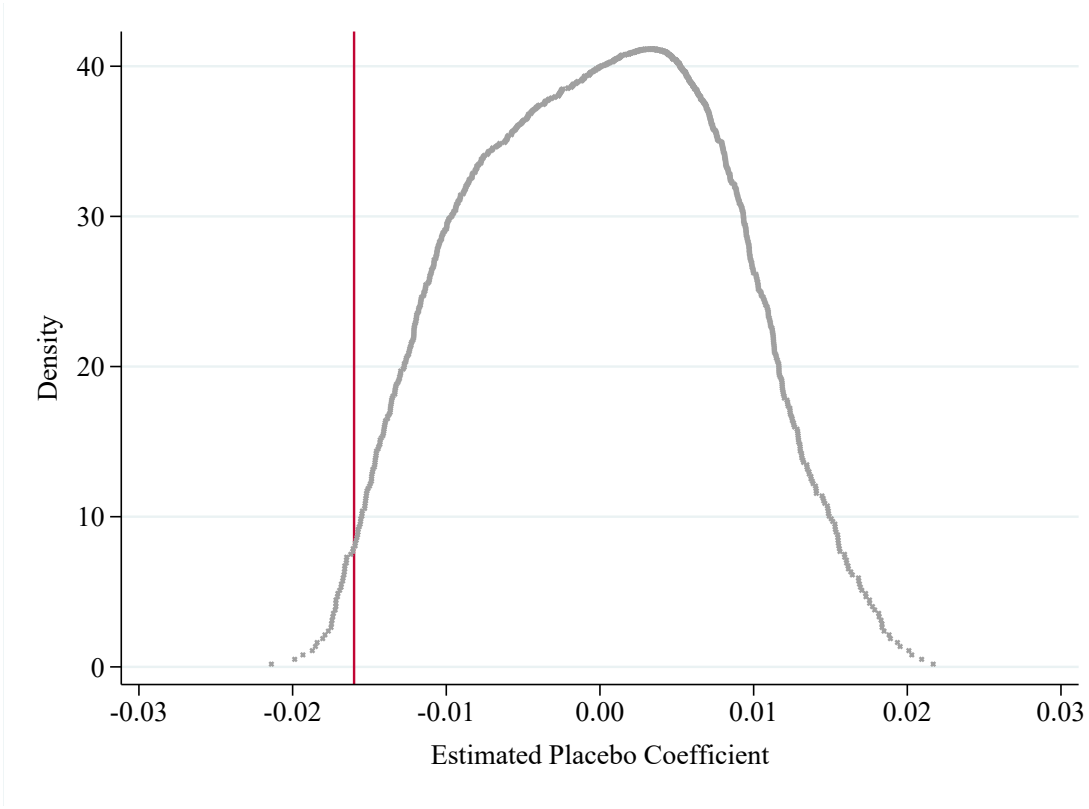
Notes: The figure shows DiD estimates and 95% confidence intervals from Equation (1) for provincial above-quota birth fine rates (in years of household income) using the Cengiz et al. (2019) approach. The province-year panel of fine rates from 1979 to 2001 is taken from Ebenstein (2010). Standard errors are clustered by province. The red vertical line represents the time of OVV policy implementation. Data: 2001 National Family Planning and Reproductive Health Survey.

Figure A13: Birth Hazard Event Study Estimates Relative to the Introduction of the OVV Policy in China, Controlling for Time-Varying Provincial Covariates or Region-by-Year Fixed Effects



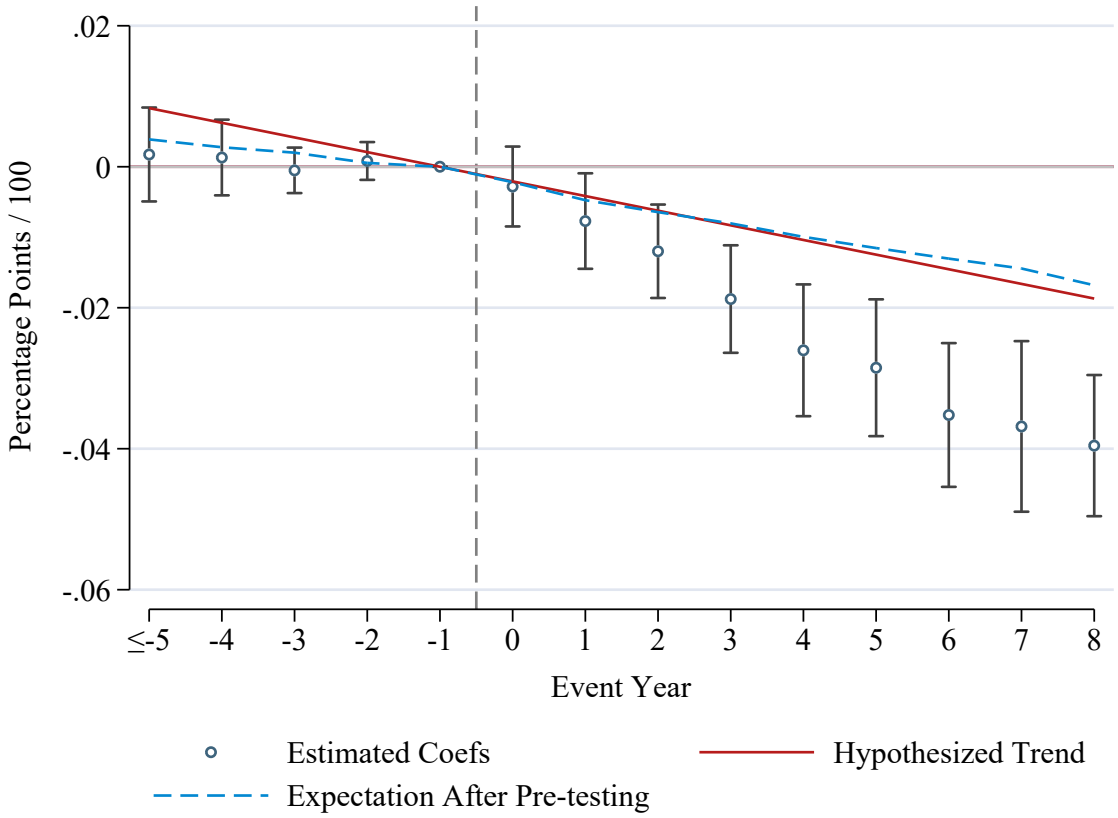
Notes: The figure shows DiD estimates and 95% confidence intervals from Equation (1) for birth hazards using the Cengiz et al. (2019) approach. The regression in Panel A also controls for time-varying provincial covariates (GDP per capita, the fraction of the population in urban areas, health care facilities per capita, and the under-five mortality rate), and the regression in Panel B also controls for region-by-year fixed effects (these regions, six in total, are traditionally used to group Chinese provinces with similar geographic features, dialects, or history). Standard errors are clustered by province. The sample used includes women ages 15-49 in 2001, and their births between years 1983 and 2001. The vertical dashed line represents the time of OVV policy implementation. Data: 2001 National Family Planning and Reproductive Health Survey, New China 60 Years Statistics Compilation, China Population Statistics Yearbook.

Figure A14: Distribution of Placebo Estimates



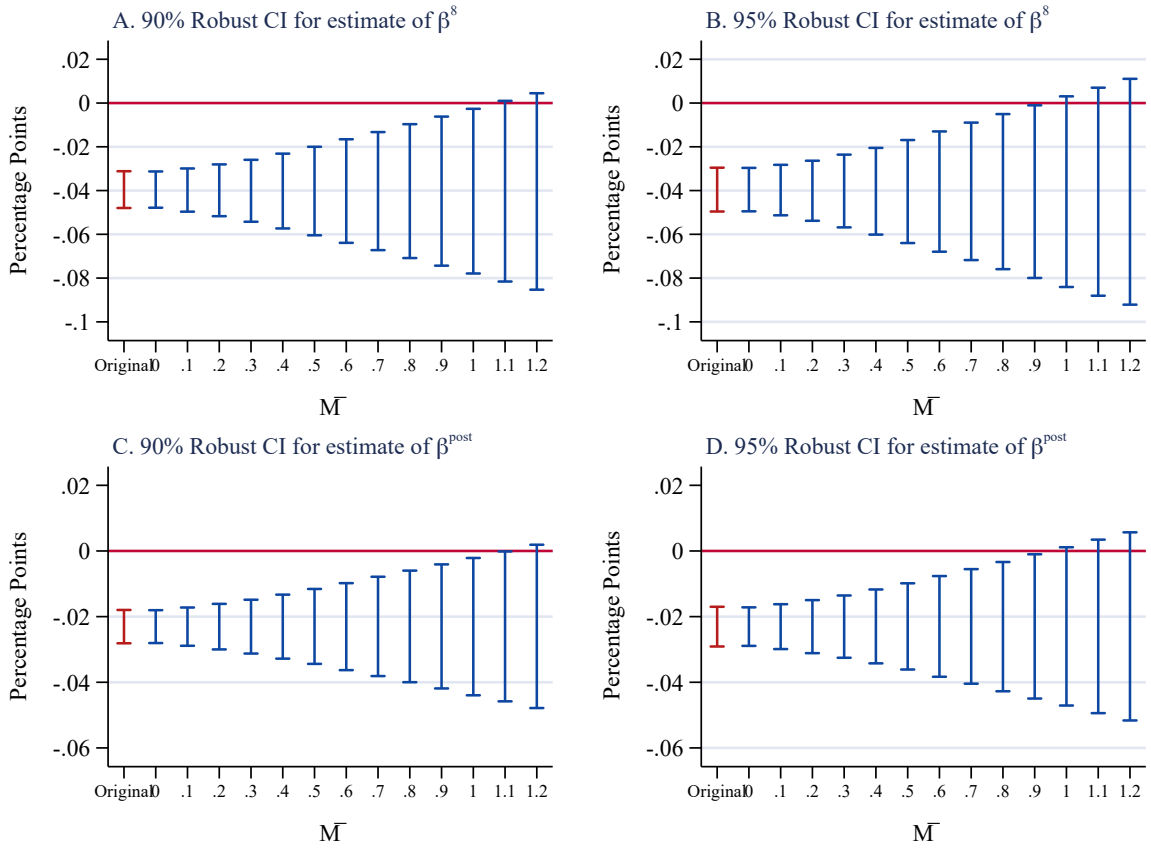
Notes: The figure shows the empirical probability density function of estimates for randomized false OVV implementation dates. In each of 1000 iterations, a random OVV implementation year other than the true implementation year is generated between 1988 and 2000 (the actual range in our sample). We then estimate a "static" difference-in-differences model using these "false" OVV dates and estimate the following equation: $Birth_{ipt} = \theta OVV_{pt} + X_i\gamma + \mu_p + \nu_t + \varepsilon_{ipt}$. The vertical red line represents the estimate for true OVV policy, which equals -0.016. All estimates are calculated using the `stackedev` command in Stata, which is available from the SSC archive.

Figure A15: Robustness of Birth Hazard Event-Study Estimates Relative to the Introduction of the "One Vote Veto" (OVV) Policy in China to Linear Pre-Trends (Roth, 2022)



Notes: The figure shows the pre-trend test proposed by Roth (2022). The estimated coefficients, as well as the 95% confidence intervals around them, are based on the Cengiz et al. (2019) approach. The analysis suggests that we can detect a negative linear trend of a magnitude -0.00207777 (the slope of the red line) or greater (in absolute terms) with 80% power. The blue dashed line represents the expected value of the coefficients, conditional on passing the pre-trend test under the hypothesized trend.

Figure A16: Robustness of Birth Hazard Event-Study Estimates Relative to the Introduction of the "One Vote Veto" (OVV) Policy in China to Non-Linear Pre-Trends (Rambachan and Roth, 2023)



Notes: The red band ("Original") is the confidence interval (90% or 95%) of the DiD estimates using the Cengiz et al. (2019) approach. The blue bands are the robust confidence intervals for the Rambachan and Roth (2023) relative magnitude-based bounds. These vary with the x-axis — $\overline{M}$ — which designates factors of the maximum pre-treatment violation of parallel trends. Thus, a confidence interval that does not intersect 0 when $\overline{M} = 1$ indicates that when we allow any parallel trend violation in the post-period to be as large as the maximum pre-treatment violation, the confidence intervals for the bounded treatment effect do not include zero.

Table A2: Summary Statistics

	Overall	Pre-OVV	Post-OVV
Time-varying variables			
Live birth	0.078	0.102	0.054
1st birth	0.107	0.106	0.107
2nd birth	0.088	0.133	0.052
3rd birth	0.037	0.069	0.016
4th+ birth	0.029	0.053	0.013
Pregnancy	0.091	0.108	0.074
Induced abortion	0.018	0.019	0.017
Sterilization	0.016	0.018	0.015
IUD (all)	0.021	0.014	0.028
IUD of one's own choice	0.013	0.010	0.017
IUD recommended by officials	0.006	0.003	0.009
Time-invariant variables			
Years of education	7.062	-	-
Ethnic minority	0.093	-	-

Notes: The means for time-varying variables are calculated among woman-years used in our analysis, and means for time-invariant variables are calculated among woman used in our analysis. Sample includes women ages 15-49 in 2001. Data: 2001 National Family Planning and Reproductive Health Survey.

Table A3: Birth Hazard Event-Study Estimates Relative to the Introduction of the "One Vote Veto" (OVV) Policy in China

	Dependent variable: Birth					
	Cengiz et al. (2019)	Borusyak et al. (2021)	Callaway and Sant'Anna (2021)	de Chaisemartin and D'Haultfoeuille (2022)	Sun and Abraham (2020)	Conventional TWFE
$\leq$ Pre 5	0.002	-0.006**	-0.006	0.002	0.002***	-0.002
	(0.003)	(0.003)	(0.006)	(0.012)	(0.000)	(0.007)
Pre 4	0.001	-0.004	-0.004	-0.002	-0.001***	-0.002
	(0.003)	(0.004)	(0.007)	(0.008)	(0.000)	(0.006)
Pre 3	-0.001	-0.006	-0.003	-0.002	-0.003***	-0.003
	(0.002)	(0.006)	(0.004)	(0.004)	(0.000)	(0.004)
Pre 2	(0.001)	-0.004	-0.002	-0.001	-0.004***	-0.001
	(0.001)	(0.007)	(0.004)	(0.003)	(0.000)	(0.003)
Pre 1 (omitted)	-	-0.004	-	-	-	-
	-	(0.009)	-	-	-	-
Post 0	-0.003	-0.004	-0.006	-0.005	-0.005***	-0.004
	(0.003)	(0.002)	(0.004)	(0.004)	(0.000)	(0.002)
Post 1	-0.008**	-0.010***	-0.012***	-0.012**	-0.016***	-0.008**
	(0.003)	(0.003)	(0.005)	(0.005)	(0.000)	(0.003)
Post 2	-0.012***	-0.015***	-0.016***	-0.018***	-0.020***	-0.014***
	(0.003)	(0.003)	(0.005)	(0.006)	(0.000)	(0.003)
Post 3	-0.019***	-0.020***	-0.022***	-0.023***	-0.030***	-0.018***
	(0.004)	(0.003)	(0.006)	(0.008)	(0.000)	(0.004)
Post 4	-0.026***	-0.025***	-0.027***	-0.029***	-0.029***	-0.023***
	(0.005)	(0.004)	(0.007)	(0.010)	(0.000)	(0.005)
Post 5	-0.029***	-0.024***	-0.025***	-0.029***	-0.030***	-0.023***
	(0.005)	(0.004)	(0.007)	(0.011)	(0.000)	(0.006)
Post 6	-0.035***	-0.031***	-0.032***	-0.046***	-0.035***	-0.028***
	(0.005)	(0.004)	(0.010)	(0.014)	(0.000)	(0.007)
Post 7	-0.037***	-0.031***	-0.048***	-0.055**	-0.039***	-0.027***
	(0.006)	(0.003)	(0.009)	(0.028)	(0.000)	(0.008)
Post 8	-0.040***	-0.034***	-0.049***	-0.056	-0.041***	-0.029***
	(0.005)	(0.004)	(0.008)	(0.037)	(0.000)	(0.009)
R-squared	0.013	-	-	-	0.017	0.016
Observations	1,453,625	475,860	445,830	606,164	500,848	500,848

Notes: The table shows DiD estimates from Equation (1) for birth hazards (pre-policy mean = 0.102) using six different estimators: a dynamic version of the TWFE model, estimated using OLS; Cengiz et al. (2019); Sun and Abraham (2021); Callaway and Sant'Anna (2021); De Chaisemartin and d'Haultfoeuille (2024); and Borusyak et al. (2024). Standard errors clustered by province are shown in parentheses. * denotes statistical significance at the 10% level, ** at the 5% level, *** at the 1% level. The sample used includes women ages 15-49 in 2001, and their births between years 1983 and 2001. Data: 2001 National Family Planning and Reproductive Health Survey.

Table A4: Birth Hazard Event-Study Estimates Relative to the Introduction of the "One Vote Veto" (OVV) Policy in China by Parity

	Dependent variable: Birth			
	1st	2nd	3rd	4th+
≤Pre 5	-0.007*	0.018***	0.014**	-0.000
	(0.004)	(0.007)	(0.006)	(0.008)
Pre 4	-0.007**	0.014**	0.008*	0.008
	(0.003)	(0.005)	(0.005)	(0.005)
Pre 3	-0.008***	0.004	0.012***	0.003
	(0.002)	(0.003)	(0.003)	(0.005)
Pre 2	-0.003	0.006***	0.005*	0.004
	(0.002)	(0.002)	(0.002)	(0.003)
Pre 1 (omitted)	-	-	-	-
	-	-	-	-
Post 0	0.002	-0.013*	-0.002	-0.003
	(0.004)	(0.007)	(0.006)	(0.007)
Post 1	-0.003	-0.017**	-0.010*	-0.005
	(0.005)	(0.009)	(0.005)	(0.006)
Post 2	0.002	-0.035***	-0.016***	-0.003
	(0.005)	(0.009)	(0.006)	(0.007)
Post 3	-0.006	-0.045***	-0.026***	-0.002
	(0.006)	(0.012)	(0.008)	(0.007)
Post 4	-0.014*	-0.061***	-0.034***	-0.002
	(0.008)	(0.013)	(0.008)	(0.009)
Post 5	-0.007	-0.069***	-0.036***	-0.005
	(0.008)	(0.015)	(0.009)	(0.010)
Post 6	-0.014	-0.083***	-0.046***	-0.013
	(0.011)	(0.015)	(0.009)	(0.011)
Post 7	0.005	-0.098***	-0.056***	-0.006
	(0.011)	(0.014)	(0.009)	(0.013)
Post 8	0.015	-0.115***	-0.071***	0.016
	(0.012)	(0.016)	(0.012)	(0.020)
R-squared		0.044		
Observations		1,453,542		

Notes: The table shows DiD estimates from Equation (1) for birth hazards by maternal parity using the Cengiz et al. (2019) approach. The sample used includes women ages 15-49 in 2001, and their births between years 1983 and 2001. Standard errors clustered by province are shown in parentheses. * denotes statistical significance at the 10% level, ** at the 5% level, *** at the 1% level. Data: 2001 National Family Planning and Reproductive Health Survey.

Table A5: Event Study Estimates Relative to the Introduction of the "One Vote Veto" (OVV) Policy in China for Induced Abortions, Pregnancies, Female Sterilizations, and Intrauterine Device (IUD) Use

	Dependent variable			
	Induced abortion	Pregnancy	Sterilization	IUD
≤Pre 5	-0.004***	-0.002	-0.004***	0.001
	(0.001)	(0.003)	(0.001)	(0.001)
Pre 4	-0.001*	-0.000	-0.004***	0.001
	(0.001)	(0.003)	(0.001)	(0.001)
Pre 3	-0.001**	-0.003*	-0.004***	0.000
	(0.001)	(0.002)	(0.001)	(0.001)
Pre 2	-0.002***	-0.001	-0.000	0.002***
	(0.001)	(0.001)	(0.001)	(0.001)
Pre 1 (omitted)	-	-	-	
	-	-	-	
Post 0	-0.001	-0.004	0.004	0.001
	(0.001)	(0.003)	(0.003)	(0.001)
Post 1	0.000	-0.008**	0.003	0.003*
	(0.002)	(0.003)	(0.003)	(0.001)
Post 2	0.001	-0.011***	0.004	0.003*
	(0.002)	(0.004)	(0.003)	(0.002)
Post 3	0.002	-0.018***	-0.003	0.002
	(0.002)	(0.003)	(0.002)	(0.002)
Post 4	0.003	-0.023***	-0.005**	0.003
	(0.002)	(0.005)	(0.002)	(0.002)
Post 5	0.002	-0.027***	-0.008***	0.003
	(0.002)	(0.005)	(0.003)	(0.002)
Post 6	0.007***	-0.030***	-0.009***	0.005**
	(0.002)	(0.005)	(0.003)	(0.003)
Post 7	0.010***	-0.029***	-0.012***	0.007**
	(0.003)	(0.005)	(0.004)	(0.003)
Post 8	0.006*	-0.036***	-0.012***	0.007*
	(0.003)	(0.006)	(0.004)	(0.004)
R-squared	0.007	0.009	0.010	0.007
Observations	1,453,625	1,453,625	1,677,743	1,677,743

Notes: The table shows estimates from Equation (1) for four different outcomes (induced abortions, pregnancies, female sterilizations, and use of intrauterine devices (IUDs)) using the Cengiz et al. (2019) approach. The sample used includes women ages 15-49 in 2001, and their induced abortion, pregnancy, sterilization, and use of IUD between years 1983 and 2001. Standard errors clustered by province are shown in parentheses. * denotes statistical significance at the 10% level, ** at the 5% level, *** at the 1% level. Data: 2001 National Family Planning and Reproductive Health Survey.

Table A6: Event Study Estimates Relative to the Introduction of the "One Vote Veto" (OVV) Policy in China for Intrauterine Device (IUD) Use By Voluntary Use and Use "Recommended" by Officials

	Dependent variable	
	IUD (voluntary)	IUD ("recommended" by officials)
≤Pre 5	0.001	-0.000
	(0.001)	(0.000)
Pre 4	0.000	-0.000
	(0.001)	(0.000)
Pre 3	-0.000	0.000
	(0.001)	(0.000)
Pre 2	0.002**	0.000
	(0.001)	(0.000)
Pre 1 (omitted)	-	-
	-	-
Post 0	0.001	0.001
	(0.001)	(0.001)
Post 1	0.000	0.002**
	(0.001)	(0.001)
Post 2	0.000	0.003***
	(0.001)	(0.001)
Post 3	-0.001	0.003***
	(0.001)	(0.001)
Post 4	0.001	0.003***
	(0.001)	(0.001)
Post 5	0.000	0.003***
	(0.002)	(0.001)
Post 6	0.003*	0.004***
	(0.002)	(0.001)
Post 7	0.004**	0.004*
	(0.002)	(0.002)
Post 8	0.003*	0.004*
	(0.002)	(0.002)
R-squared	0.006	0.002
Observations	1,677,743	1,677,743

Notes: The figure shows estimates from Equation (1) for use of intrauterine devices (IUDs), separately for voluntary use by women and their families and for use "recommended" by Communist party officials using the Cengiz et al. (2019) approach. Sample includes women ages 15-49 in 2001, and their use of IUD between years 1983 and 2001. Standard errors clustered by province are shown in parentheses. * denotes statistical significance at the 10% level, ** at the 5% level, *** at the 1% level. Data: 2001 National Family Planning and Reproductive Health Survey.

Table A7: Fertility Life Tables by Event Year
Event Year -5

	Hazard Function q_x				Survival Function l_x				Probability of Birth d_x				Fertility
Age	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Rates
15	0.013	0.112	0.085	0.000	1.000	0.000	0.000	0.000	0.013	0.001	0.000	0.000	0.014
16	0.013	0.112	0.085	0.000	0.987	0.012	0.001	0.000	0.013	0.002	0.000	0.000	0.015
17	0.013	0.113	0.084	0.000	0.974	0.023	0.003	0.000	0.013	0.003	0.000	0.000	0.017
18	0.013	0.113	0.084	0.000	0.961	0.033	0.006	0.001	0.013	0.004	0.001	0.000	0.018
19	0.014	0.112	0.083	0.000	0.948	0.041	0.009	0.001	0.013	0.005	0.001	0.000	0.019
20	0.172	0.189	0.109	0.084	0.935	0.049	0.014	0.002	0.161	0.024	0.003	0.000	0.189
21	0.173	0.188	0.108	0.083	0.774	0.186	0.035	0.005	0.134	0.048	0.006	0.001	0.188
22	0.174	0.191	0.107	0.083	0.640	0.272	0.077	0.010	0.111	0.063	0.012	0.001	0.187
23	0.174	0.197	0.108	0.085	0.529	0.320	0.128	0.021	0.092	0.072	0.018	0.003	0.184
24	0.176	0.202	0.108	0.085	0.437	0.340	0.182	0.036	0.077	0.076	0.024	0.004	0.181
25	0.390	0.187	0.099	0.078	0.360	0.341	0.235	0.056	0.141	0.077	0.027	0.005	0.250
26	0.392	0.190	0.101	0.078	0.219	0.405	0.284	0.077	0.086	0.085	0.033	0.007	0.212
27	0.397	0.193	0.101	0.077	0.133	0.405	0.337	0.103	0.053	0.083	0.038	0.009	0.184
28	0.407	0.193	0.101	0.077	0.080	0.375	0.381	0.132	0.033	0.075	0.042	0.012	0.162
29	0.418	0.191	0.101	0.078	0.048	0.332	0.414	0.163	0.020	0.065	0.045	0.014	0.145
30	0.260	0.116	0.051	0.049	0.028	0.287	0.435	0.193	0.007	0.034	0.023	0.010	0.074
31	0.266	0.118	0.049	0.048	0.021	0.260	0.446	0.206	0.005	0.031	0.022	0.010	0.069
32	0.274	0.122	0.046	0.048	0.015	0.235	0.454	0.218	0.004	0.029	0.022	0.011	0.066
33	0.283	0.124	0.044	0.048	0.011	0.210	0.461	0.229	0.003	0.026	0.021	0.012	0.062
34	0.288	0.123	0.042	0.047	0.008	0.187	0.467	0.238	0.002	0.023	0.020	0.012	0.057
35	0.088	0.035	0.012	0.023	0.006	0.166	0.470	0.246	0.000	0.006	0.006	0.006	0.018
36	0.086	0.032	0.012	0.021	0.005	0.161	0.470	0.246	0.000	0.005	0.005	0.005	0.016
37	0.084	0.025	0.009	0.018	0.005	0.156	0.470	0.246	0.000	0.004	0.004	0.004	0.013
38	0.078	0.016	0.006	0.016	0.004	0.153	0.469	0.247	0.000	0.002	0.003	0.004	0.010
39	0.066	0.008	0.003	0.017	0.004	0.150	0.469	0.245	0.000	0.001	0.002	0.004	0.007
40	0.000	0.000	0.000	0.000	0.004	0.150	0.468	0.243	0.000	0.000	0.000	0.000	0.000
41	0.000	0.000	0.000	0.000	0.004	0.150	0.468	0.243	0.000	0.000	0.000	0.000	0.000
42	0.000	0.000	0.000	0.000	0.004	0.150	0.468	0.243	0.000	0.000	0.000	0.000	0.000
43	0.000	0.000	0.000	0.000	0.004	0.150	0.468	0.243	0.000	0.000	0.000	0.000	0.000
44	0.000	0.000	0.000	0.000	0.004	0.150	0.468	0.243	0.000	0.000	0.000	0.000	0.000
45	0.000	0.000	0.000	0.000	0.004	0.150	0.468	0.243	0.000	0.000	0.000	0.000	0.000
46	0.000	0.000	0.000	0.000	0.004	0.150	0.468	0.243	0.000	0.000	0.000	0.000	0.000
47	0.000	0.000	0.000	0.000	0.004	0.150	0.468	0.243	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.000	0.000	0.004	0.150	0.468	0.243	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.004	0.150	0.468	0.243	0.000	0.000	0.000	0.000	0.000
									0.996	0.847	0.378	0.136	2.357

Event Year -4

	Hazard Function q_x				Survival Function l_x				Probability of Birth d_x				Fertility
Age	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Rates
15	0.017	0.219	0.356	0.000	1.000	0.000	0.000	0.000	0.017	0.002	0.000	0.000	0.019
16	0.017	0.215	0.350	0.000	0.983	0.015	0.002	0.000	0.017	0.005	0.001	0.000	0.023
17	0.017	0.213	0.351	0.000	0.966	0.027	0.005	0.002	0.017	0.008	0.003	0.000	0.027
18	0.018	0.214	0.345	0.000	0.950	0.036	0.010	0.005	0.017	0.009	0.005	0.000	0.031
19	0.018	0.221	0.349	0.000	0.933	0.043	0.014	0.010	0.017	0.011	0.007	0.000	0.035
20	0.184	0.190	0.094	0.089	0.916	0.049	0.019	0.017	0.168	0.025	0.003	0.002	0.198
21	0.186	0.192	0.094	0.087	0.748	0.192	0.041	0.018	0.139	0.050	0.006	0.002	0.198
22	0.183	0.190	0.095	0.088	0.609	0.281	0.085	0.022	0.112	0.064	0.011	0.002	0.189
23	0.185	0.188	0.092	0.085	0.497	0.328	0.138	0.031	0.092	0.070	0.016	0.003	0.181
24	0.186	0.187	0.095	0.090	0.405	0.350	0.192	0.044	0.075	0.072	0.022	0.005	0.174
25	0.370	0.188	0.091	0.067	0.330	0.353	0.243	0.060	0.122	0.078	0.026	0.005	0.230
26	0.377	0.176	0.082	0.063	0.208	0.397	0.295	0.081	0.078	0.077	0.027	0.006	0.189
27	0.376	0.181	0.086	0.065	0.129	0.399	0.345	0.103	0.049	0.077	0.033	0.008	0.166
28	0.379	0.183	0.080	0.059	0.081	0.370	0.389	0.128	0.031	0.070	0.034	0.009	0.144
29	0.389	0.191	0.086	0.062	0.050	0.331	0.425	0.153	0.020	0.065	0.039	0.011	0.134
30	0.197	0.116	0.044	0.053	0.031	0.285	0.451	0.182	0.006	0.033	0.021	0.010	0.070
31	0.204	0.126	0.047	0.055	0.025	0.258	0.463	0.192	0.005	0.033	0.022	0.011	0.072
32	0.210	0.135	0.050	0.059	0.020	0.230	0.474	0.204	0.004	0.031	0.024	0.013	0.073
33	0.212	0.136	0.049	0.058	0.015	0.203	0.481	0.215	0.003	0.028	0.024	0.013	0.069
34	0.218	0.127	0.043	0.052	0.012	0.178	0.484	0.226	0.003	0.023	0.021	0.012	0.059
35	0.172	0.038	0.010	0.030	0.010	0.158	0.486	0.235	0.002	0.006	0.005	0.007	0.020
36	0.172	0.033	0.008	0.026	0.008	0.154	0.487	0.233	0.001	0.005	0.004	0.006	0.016
37	0.174	0.032	0.007	0.026	0.007	0.150	0.488	0.230	0.001	0.005	0.004	0.006	0.016
38	0.176	0.027	0.006	0.021	0.005	0.146	0.490	0.228	0.001	0.004	0.003	0.005	0.012
39	0.175	0.019	0.004	0.020	0.004	0.143	0.491	0.226	0.001	0.003	0.002	0.004	0.010
40	0.000	0.000	0.000	0.000	0.004	0.141	0.491	0.224	0.000	0.000	0.000	0.000	0.000
41	0.000	0.000	0.000	0.000	0.004	0.141	0.491	0.224	0.000	0.000	0.000	0.000	0.000
42	0.000	0.000	0.000	0.000	0.004	0.141	0.491	0.224	0.000	0.000	0.000	0.000	0.000
43	0.000	0.000	0.000	0.000	0.004	0.141	0.491	0.224	0.000	0.000	0.000	0.000	0.000
44	0.000	0.000	0.000	0.000	0.004	0.141	0.491	0.224	0.000	0.000	0.000	0.000	0.000
45	0.000	0.000	0.000	0.000	0.004	0.141	0.491	0.224	0.000	0.000	0.000	0.000	0.000
46	0.000	0.000	0.000	0.000	0.004	0.141	0.491	0.224	0.000	0.000	0.000	0.000	0.000
47	0.000	0.000	0.000	0.000	0.004	0.141	0.491	0.224	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.000	0.000	0.004	0.141	0.491	0.224	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.004	0.141	0.491	0.224	0.000	0.000	0.000	0.000	0.000
									0.996	0.855	0.364	0.140	2.355

Event Year -3

	Hazard Function q_x				Survival Function l_x				Probability of Birth d_x				Fertility
Age	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Rates
15	0.014	0.114	0.000	0.000	1.000	0.000	0.000	0.000	0.014	0.001	0.000	0.000	0.015
16	0.015	0.117	0.000	0.000	0.986	0.013	0.001	0.000	0.014	0.002	0.000	0.000	0.017
17	0.015	0.113	0.000	0.000	0.971	0.026	0.003	0.000	0.014	0.004	0.000	0.000	0.018
18	0.015	0.113	0.000	0.000	0.957	0.036	0.007	0.000	0.014	0.005	0.000	0.000	0.019
19	0.015	0.112	0.000	0.000	0.943	0.046	0.012	0.000	0.014	0.006	0.000	0.000	0.020
20	0.184	0.193	0.102	0.112	0.928	0.054	0.018	0.000	0.171	0.027	0.003	0.000	0.201
21	0.182	0.186	0.097	0.110	0.757	0.198	0.042	0.003	0.138	0.050	0.006	0.001	0.195
22	0.184	0.188	0.099	0.109	0.619	0.286	0.085	0.009	0.114	0.064	0.012	0.002	0.192
23	0.180	0.185	0.098	0.109	0.505	0.336	0.138	0.019	0.091	0.070	0.017	0.003	0.182
24	0.184	0.184	0.097	0.107	0.414	0.357	0.191	0.033	0.076	0.073	0.022	0.005	0.175
25	0.357	0.160	0.084	0.064	0.338	0.360	0.242	0.050	0.121	0.067	0.023	0.004	0.215
26	0.353	0.162	0.080	0.061	0.217	0.414	0.286	0.069	0.077	0.073	0.026	0.005	0.181
27	0.362	0.152	0.072	0.056	0.140	0.417	0.333	0.090	0.051	0.067	0.027	0.006	0.151
28	0.361	0.157	0.075	0.058	0.090	0.401	0.374	0.111	0.032	0.065	0.030	0.007	0.135
29	0.365	0.159	0.073	0.054	0.057	0.368	0.409	0.134	0.021	0.060	0.032	0.008	0.121
30	0.220	0.102	0.048	0.040	0.036	0.328	0.437	0.158	0.008	0.034	0.022	0.007	0.071
31	0.215	0.114	0.056	0.047	0.028	0.302	0.450	0.173	0.006	0.035	0.026	0.009	0.076
32	0.223	0.125	0.060	0.050	0.022	0.274	0.458	0.190	0.005	0.035	0.028	0.010	0.078
33	0.227	0.132	0.062	0.052	0.017	0.244	0.464	0.208	0.004	0.032	0.030	0.012	0.078
34	0.227	0.130	0.061	0.051	0.013	0.216	0.467	0.226	0.003	0.028	0.029	0.012	0.073
35	0.084	0.057	0.016	0.019	0.010	0.190	0.466	0.243	0.001	0.011	0.008	0.005	0.024
36	0.086	0.054	0.014	0.017	0.009	0.180	0.470	0.246	0.001	0.010	0.007	0.004	0.022
37	0.087	0.045	0.010	0.015	0.009	0.171	0.473	0.248	0.001	0.008	0.005	0.004	0.017
38	0.088	0.044	0.010	0.014	0.008	0.164	0.476	0.250	0.001	0.007	0.005	0.003	0.016
39	0.091	0.037	0.008	0.011	0.007	0.158	0.478	0.251	0.001	0.006	0.004	0.003	0.013
40	0.000	0.000	0.000	0.000	0.007	0.153	0.480	0.252	0.000	0.000	0.000	0.000	0.000
41	0.000	0.000	0.000	0.000	0.007	0.153	0.480	0.252	0.000	0.000	0.000	0.000	0.000
42	0.000	0.000	0.000	0.000	0.007	0.153	0.480	0.252	0.000	0.000	0.000	0.000	0.000
43	0.000	0.000	0.000	0.000	0.007	0.153	0.480	0.252	0.000	0.000	0.000	0.000	0.000
44	0.000	0.000	0.000	0.000	0.007	0.153	0.480	0.252	0.000	0.000	0.000	0.000	0.000
45	0.000	0.000	0.000	0.000	0.007	0.153	0.480	0.252	0.000	0.000	0.000	0.000	0.000
46	0.000	0.000	0.000	0.000	0.007	0.153	0.480	0.252	0.000	0.000	0.000	0.000	0.000
47	0.000	0.000	0.000	0.000	0.007	0.153	0.480	0.252	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.000	0.000	0.007	0.153	0.480	0.252	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.007	0.153	0.480	0.252	0.000	0.000	0.000	0.000	0.000
									0.993	0.841	0.361	0.109	2.304

Event Year -2

	Hazard Function q_x				Survival Function l_x				Probability of Birth d_x				Fertility
Age	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Rates
15	0.012	0.182	0.000	0.000	1.000	0.000	0.000	0.000	0.012	0.001	0.000	0.000	0.013
16	0.012	0.184	0.000	0.000	0.988	0.011	0.001	0.000	0.012	0.003	0.000	0.000	0.015
17	0.012	0.188	0.000	0.000	0.976	0.019	0.004	0.000	0.012	0.005	0.000	0.000	0.017
18	0.012	0.182	0.000	0.000	0.964	0.027	0.009	0.000	0.012	0.006	0.000	0.000	0.018
19	0.012	0.182	0.000	0.000	0.952	0.033	0.015	0.000	0.012	0.007	0.000	0.000	0.019
20	0.182	0.174	0.093	0.085	0.941	0.037	0.022	0.000	0.171	0.021	0.003	0.000	0.196
21	0.185	0.180	0.093	0.082	0.769	0.187	0.040	0.003	0.142	0.047	0.006	0.000	0.195
22	0.184	0.174	0.090	0.081	0.627	0.283	0.081	0.008	0.115	0.059	0.010	0.001	0.185
23	0.185	0.176	0.090	0.080	0.512	0.339	0.130	0.017	0.095	0.068	0.015	0.002	0.179
24	0.182	0.172	0.090	0.080	0.417	0.366	0.183	0.030	0.076	0.070	0.020	0.003	0.168
25	0.367	0.174	0.091	0.062	0.342	0.372	0.233	0.047	0.125	0.076	0.025	0.004	0.229
26	0.362	0.170	0.092	0.064	0.216	0.422	0.284	0.067	0.078	0.078	0.030	0.005	0.191
27	0.362	0.170	0.087	0.061	0.138	0.422	0.333	0.092	0.050	0.076	0.032	0.007	0.164
28	0.370	0.159	0.079	0.057	0.088	0.396	0.376	0.117	0.033	0.066	0.032	0.008	0.138
29	0.369	0.164	0.081	0.059	0.055	0.363	0.410	0.142	0.020	0.061	0.035	0.009	0.126
30	0.245	0.106	0.031	0.038	0.035	0.322	0.435	0.168	0.009	0.035	0.014	0.007	0.064
31	0.252	0.112	0.033	0.040	0.026	0.296	0.456	0.175	0.007	0.034	0.016	0.007	0.063
32	0.247	0.126	0.040	0.046	0.020	0.269	0.474	0.184	0.005	0.034	0.019	0.009	0.068
33	0.258	0.138	0.042	0.049	0.015	0.240	0.489	0.194	0.004	0.033	0.021	0.010	0.068
34	0.262	0.143	0.043	0.052	0.011	0.210	0.501	0.205	0.003	0.030	0.022	0.011	0.067
35	0.090	0.056	0.014	0.016	0.008	0.183	0.509	0.216	0.001	0.010	0.007	0.004	0.022
36	0.091	0.048	0.012	0.014	0.007	0.173	0.512	0.220	0.001	0.008	0.006	0.003	0.018
37	0.092	0.044	0.010	0.012	0.007	0.166	0.514	0.223	0.001	0.007	0.005	0.003	0.016
38	0.093	0.035	0.007	0.010	0.006	0.159	0.517	0.225	0.001	0.006	0.004	0.002	0.012
39	0.093	0.035	0.007	0.010	0.006	0.154	0.519	0.226	0.001	0.005	0.004	0.002	0.012
40	0.000	0.000	0.005	0.006	0.005	0.149	0.521	0.228	0.000	0.000	0.003	0.001	0.004
41	0.000	0.000	0.005	0.005	0.005	0.149	0.518	0.229	0.000	0.000	0.003	0.001	0.004
42	0.000	0.000	0.004	0.006	0.005	0.149	0.515	0.231	0.000	0.000	0.002	0.001	0.003
43	0.000	0.000	0.003	0.011	0.005	0.149	0.513	0.231	0.000	0.000	0.002	0.003	0.004
44	0.000	0.000	0.001	0.010	0.005	0.149	0.512	0.230	0.000	0.000	0.001	0.002	0.003
45	0.000	0.000	0.000	0.000	0.005	0.149	0.511	0.229	0.000	0.000	0.000	0.000	0.000
46	0.000	0.000	0.000	0.000	0.005	0.149	0.511	0.229	0.000	0.000	0.000	0.000	0.000
47	0.000	0.000	0.000	0.000	0.005	0.149	0.511	0.229	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.000	0.000	0.005	0.149	0.511	0.229	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.005	0.149	0.511	0.229	0.000	0.000	0.000	0.000	0.000
									0.995	0.846	0.335	0.106	2.282

Event Year -1

	Hazard Function q_x				Survival Function l_x				Probability of Birth d_x				Fertility
Age	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Rates
15	0.014	0.140	0.000	0.000	1.000	0.000	0.000	0.000	0.014	0.001	0.000	0.000	0.015
16	0.014	0.152	0.000	0.000	0.986	0.013	0.001	0.000	0.014	0.003	0.000	0.000	0.017
17	0.014	0.153	0.000	0.000	0.972	0.024	0.004	0.000	0.014	0.005	0.000	0.000	0.019
18	0.015	0.157	0.000	0.000	0.958	0.033	0.009	0.000	0.014	0.006	0.000	0.000	0.020
19	0.015	0.151	0.000	0.000	0.944	0.041	0.015	0.000	0.014	0.007	0.000	0.000	0.021
20	0.190	0.180	0.101	0.083	0.930	0.048	0.022	0.000	0.177	0.025	0.003	0.000	0.205
21	0.195	0.180	0.098	0.082	0.753	0.200	0.043	0.003	0.147	0.049	0.007	0.001	0.203
22	0.197	0.185	0.098	0.079	0.606	0.298	0.086	0.009	0.120	0.066	0.012	0.001	0.198
23	0.194	0.180	0.095	0.078	0.487	0.351	0.140	0.020	0.095	0.072	0.017	0.002	0.185
24	0.197	0.181	0.095	0.078	0.392	0.374	0.195	0.034	0.077	0.075	0.022	0.004	0.178
25	0.344	0.159	0.075	0.062	0.315	0.377	0.247	0.053	0.108	0.069	0.021	0.004	0.202
26	0.346	0.160	0.074	0.061	0.207	0.417	0.295	0.070	0.071	0.072	0.025	0.005	0.173
27	0.347	0.155	0.074	0.064	0.135	0.416	0.342	0.090	0.047	0.068	0.028	0.007	0.149
28	0.343	0.155	0.071	0.060	0.088	0.395	0.383	0.111	0.030	0.063	0.029	0.008	0.130
29	0.352	0.146	0.063	0.057	0.058	0.361	0.417	0.133	0.020	0.054	0.028	0.008	0.111
30	0.255	0.095	0.029	0.035	0.038	0.328	0.443	0.153	0.010	0.032	0.013	0.006	0.060
31	0.257	0.099	0.029	0.033	0.028	0.306	0.461	0.160	0.007	0.031	0.014	0.006	0.057
32	0.265	0.104	0.031	0.034	0.021	0.283	0.478	0.169	0.006	0.030	0.015	0.006	0.056
33	0.261	0.117	0.037	0.040	0.015	0.258	0.492	0.178	0.004	0.030	0.019	0.007	0.061
34	0.270	0.127	0.040	0.041	0.011	0.232	0.504	0.189	0.003	0.030	0.020	0.008	0.061
35	0.116	0.044	0.016	0.016	0.008	0.205	0.513	0.202	0.001	0.009	0.008	0.003	0.021
36	0.116	0.043	0.016	0.015	0.007	0.197	0.514	0.207	0.001	0.008	0.008	0.003	0.021
37	0.118	0.037	0.012	0.013	0.006	0.190	0.514	0.211	0.001	0.007	0.006	0.003	0.017
38	0.122	0.033	0.010	0.012	0.006	0.183	0.515	0.215	0.001	0.006	0.005	0.003	0.015
39	0.123	0.027	0.007	0.010	0.005	0.178	0.515	0.218	0.001	0.005	0.004	0.002	0.011
40	0.000	0.014	0.008	0.000	0.004	0.174	0.516	0.219	0.000	0.002	0.004	0.000	0.007
41	0.000	0.013	0.007	0.000	0.004	0.171	0.515	0.223	0.000	0.002	0.003	0.000	0.006
42	0.000	0.011	0.007	0.000	0.004	0.169	0.514	0.227	0.000	0.002	0.003	0.000	0.005
43	0.000	0.006	0.005	0.000	0.004	0.167	0.512	0.230	0.000	0.001	0.003	0.000	0.004
44	0.000	0.003	0.005	0.000	0.004	0.166	0.510	0.233	0.000	0.001	0.003	0.000	0.003
45	0.000	0.000	0.000	0.000	0.004	0.166	0.508	0.236	0.000	0.000	0.000	0.000	0.000
46	0.000	0.000	0.000	0.000	0.004	0.166	0.508	0.236	0.000	0.000	0.000	0.000	0.000
47	0.000	0.000	0.000	0.000	0.004	0.166	0.508	0.236	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.000	0.000	0.004	0.166	0.508	0.236	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.004	0.166	0.508	0.236	0.000	0.000	0.000	0.000	0.000
									0.996	0.830	0.322	0.086	2.233

Event Year 0

	Hazard Function q_x				Survival Function l_x				Probability of Birth d_x				Fertility
Age	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Rates
15	0.014	0.162	0.100	0.000	1.000	0.000	0.000	0.000	0.014	0.001	0.000	0.000	0.015
16	0.014	0.161	0.100	0.000	0.986	0.013	0.001	0.000	0.014	0.003	0.000	0.000	0.018
17	0.015	0.174	0.106	0.000	0.972	0.024	0.004	0.000	0.014	0.005	0.001	0.000	0.020
18	0.015	0.177	0.107	0.000	0.957	0.033	0.009	0.001	0.014	0.007	0.001	0.000	0.023
19	0.015	0.182	0.109	0.000	0.943	0.040	0.015	0.002	0.014	0.009	0.002	0.000	0.025
20	0.184	0.180	0.082	0.062	0.929	0.046	0.021	0.004	0.171	0.024	0.003	0.000	0.198
21	0.184	0.179	0.082	0.063	0.757	0.194	0.042	0.007	0.139	0.047	0.005	0.001	0.192
22	0.186	0.178	0.080	0.062	0.618	0.286	0.084	0.012	0.115	0.061	0.009	0.001	0.186
23	0.188	0.184	0.081	0.061	0.503	0.339	0.136	0.020	0.095	0.071	0.014	0.002	0.181
24	0.187	0.180	0.081	0.062	0.409	0.363	0.193	0.032	0.076	0.072	0.018	0.003	0.169
25	0.389	0.164	0.084	0.053	0.332	0.367	0.247	0.048	0.129	0.071	0.024	0.003	0.227
26	0.383	0.159	0.083	0.051	0.203	0.425	0.294	0.068	0.078	0.074	0.027	0.004	0.183
27	0.385	0.157	0.082	0.051	0.125	0.429	0.340	0.092	0.048	0.071	0.031	0.005	0.156
28	0.382	0.152	0.079	0.051	0.077	0.406	0.381	0.117	0.029	0.064	0.032	0.007	0.133
29	0.383	0.155	0.077	0.050	0.048	0.371	0.413	0.143	0.018	0.059	0.034	0.008	0.119
30	0.174	0.076	0.031	0.028	0.029	0.331	0.437	0.169	0.005	0.025	0.014	0.005	0.049
31	0.178	0.082	0.033	0.029	0.024	0.311	0.449	0.178	0.004	0.026	0.015	0.005	0.050
32	0.182	0.085	0.033	0.029	0.020	0.289	0.459	0.187	0.004	0.025	0.015	0.006	0.050
33	0.186	0.087	0.033	0.029	0.016	0.268	0.469	0.197	0.003	0.023	0.016	0.006	0.048
34	0.184	0.099	0.039	0.032	0.013	0.248	0.476	0.207	0.002	0.025	0.019	0.007	0.053
35	0.099	0.029	0.017	0.015	0.011	0.226	0.482	0.219	0.001	0.006	0.008	0.003	0.019
36	0.098	0.029	0.017	0.015	0.010	0.220	0.480	0.224	0.001	0.006	0.008	0.003	0.019
37	0.096	0.027	0.015	0.014	0.009	0.215	0.478	0.229	0.001	0.006	0.007	0.003	0.017
38	0.097	0.022	0.012	0.012	0.008	0.210	0.477	0.233	0.001	0.005	0.006	0.003	0.014
39	0.098	0.020	0.010	0.011	0.007	0.206	0.475	0.236	0.001	0.004	0.005	0.003	0.012
40	0.000	0.000	0.000	0.003	0.007	0.203	0.475	0.238	0.000	0.000	0.000	0.001	0.001
41	0.000	0.000	0.000	0.003	0.007	0.203	0.475	0.237	0.000	0.000	0.000	0.001	0.001
42	0.000	0.000	0.000	0.003	0.007	0.203	0.475	0.237	0.000	0.000	0.000	0.001	0.001
43	0.000	0.000	0.000	0.003	0.007	0.203	0.475	0.236	0.000	0.000	0.000	0.001	0.001
44	0.000	0.000	0.000	0.004	0.007	0.203	0.475	0.235	0.000	0.000	0.000	0.001	0.001
45	0.000	0.000	0.000	0.000	0.007	0.203	0.475	0.234	0.000	0.000	0.000	0.000	0.000
46	0.000	0.000	0.000	0.000	0.007	0.203	0.475	0.234	0.000	0.000	0.000	0.000	0.000
47	0.000	0.000	0.000	0.000	0.007	0.203	0.475	0.234	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.000	0.000	0.007	0.203	0.475	0.234	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.007	0.203	0.475	0.234	0.000	0.000	0.000	0.000	0.000
									0.993	0.791	0.316	0.082	2.182

Event Year 1

	Hazard Function q_x				Survival Function l_x				Probability of Birth d_x				Fertility
Age	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Rates
15	0.012	0.101	0.000	0.000	1.000	0.000	0.000	0.000	0.012	0.001	0.000	0.000	0.013
16	0.012	0.098	0.000	0.000	0.988	0.012	0.001	0.000	0.012	0.002	0.000	0.000	0.014
17	0.012	0.099	0.000	0.000	0.976	0.022	0.002	0.000	0.012	0.003	0.000	0.000	0.015
18	0.013	0.107	0.000	0.000	0.964	0.031	0.005	0.000	0.012	0.004	0.000	0.000	0.016
19	0.013	0.110	0.000	0.000	0.951	0.040	0.009	0.000	0.012	0.005	0.000	0.000	0.017
20	0.175	0.158	0.086	0.051	0.939	0.047	0.014	0.000	0.165	0.020	0.002	0.000	0.187
21	0.176	0.153	0.082	0.049	0.774	0.191	0.033	0.002	0.136	0.040	0.004	0.000	0.180
22	0.176	0.152	0.082	0.049	0.638	0.288	0.068	0.006	0.112	0.052	0.008	0.000	0.173
23	0.177	0.150	0.080	0.049	0.526	0.348	0.112	0.013	0.093	0.059	0.011	0.001	0.165
24	0.179	0.156	0.082	0.048	0.432	0.382	0.160	0.024	0.078	0.066	0.016	0.002	0.161
25	0.356	0.146	0.066	0.049	0.355	0.394	0.210	0.038	0.126	0.066	0.016	0.002	0.211
26	0.357	0.147	0.066	0.048	0.229	0.453	0.261	0.052	0.082	0.073	0.019	0.003	0.177
27	0.352	0.142	0.064	0.047	0.147	0.462	0.314	0.068	0.052	0.069	0.022	0.004	0.147
28	0.353	0.138	0.063	0.046	0.095	0.445	0.361	0.087	0.034	0.064	0.025	0.005	0.127
29	0.349	0.134	0.061	0.046	0.062	0.415	0.400	0.107	0.022	0.057	0.026	0.006	0.110
30	0.197	0.079	0.025	0.025	0.040	0.379	0.431	0.128	0.008	0.030	0.011	0.003	0.052
31	0.205	0.080	0.023	0.024	0.032	0.357	0.450	0.135	0.007	0.029	0.011	0.003	0.049
32	0.210	0.086	0.025	0.024	0.026	0.335	0.468	0.143	0.005	0.029	0.012	0.004	0.050
33	0.215	0.089	0.025	0.024	0.020	0.311	0.485	0.151	0.004	0.028	0.012	0.004	0.048
34	0.218	0.090	0.025	0.024	0.016	0.288	0.500	0.160	0.003	0.026	0.013	0.004	0.046
35	0.052	0.046	0.009	0.010	0.012	0.265	0.513	0.169	0.001	0.012	0.004	0.002	0.019
36	0.054	0.048	0.009	0.010	0.012	0.254	0.521	0.172	0.001	0.012	0.005	0.002	0.019
37	0.054	0.048	0.009	0.010	0.011	0.242	0.529	0.174	0.001	0.012	0.005	0.002	0.019
38	0.053	0.044	0.008	0.010	0.011	0.231	0.536	0.177	0.001	0.010	0.004	0.002	0.017
39	0.053	0.036	0.006	0.008	0.010	0.222	0.541	0.180	0.001	0.008	0.003	0.001	0.013
40	0.000	0.008	0.002	0.002	0.009	0.214	0.546	0.182	0.000	0.002	0.001	0.000	0.003
41	0.000	0.006	0.002	0.002	0.009	0.212	0.546	0.183	0.000	0.001	0.001	0.000	0.003
42	0.000	0.006	0.002	0.002	0.009	0.211	0.547	0.183	0.000	0.001	0.001	0.000	0.002
43	0.000	0.005	0.001	0.001	0.009	0.210	0.547	0.184	0.000	0.001	0.001	0.000	0.002
44	0.000	0.004	0.002	0.001	0.009	0.209	0.547	0.185	0.000	0.001	0.001	0.000	0.002
45	0.000	0.000	0.000	0.000	0.009	0.208	0.547	0.185	0.000	0.000	0.000	0.000	0.000
46	0.000	0.000	0.000	0.000	0.009	0.208	0.547	0.185	0.000	0.000	0.000	0.000	0.000
47	0.000	0.000	0.000	0.000	0.009	0.208	0.547	0.185	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.000	0.000	0.009	0.208	0.547	0.185	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.009	0.208	0.547	0.185	0.000	0.000	0.000	0.000	0.000
									0.991	0.783	0.235	0.050	2.059

Event Year 2

	Hazard Function q_x				Survival Function l_x				Probability of Birth d_x				Fertility
Age	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Rates
15	0.011	0.049	0.298	0.000	1.000	0.000	0.000	0.000	0.011	0.000	0.000	0.000	0.011
16	0.011	0.052	0.307	0.000	0.989	0.011	0.000	0.000	0.011	0.001	0.000	0.000	0.012
17	0.011	0.052	0.306	0.000	0.978	0.021	0.001	0.000	0.011	0.001	0.000	0.000	0.013
18	0.011	0.051	0.302	0.000	0.967	0.030	0.002	0.001	0.011	0.002	0.001	0.000	0.014
19	0.012	0.056	0.320	0.000	0.956	0.039	0.003	0.002	0.011	0.003	0.001	0.000	0.015
20	0.172	0.134	0.080	0.126	0.945	0.048	0.004	0.003	0.163	0.017	0.001	0.000	0.181
21	0.175	0.135	0.080	0.127	0.783	0.193	0.020	0.003	0.137	0.035	0.003	0.001	0.176
22	0.176	0.131	0.077	0.122	0.646	0.294	0.053	0.006	0.113	0.046	0.006	0.001	0.166
23	0.175	0.130	0.076	0.124	0.533	0.362	0.093	0.011	0.093	0.053	0.009	0.002	0.157
24	0.178	0.131	0.076	0.122	0.439	0.402	0.137	0.018	0.078	0.058	0.013	0.003	0.151
25	0.359	0.111	0.047	0.026	0.361	0.422	0.182	0.027	0.130	0.054	0.010	0.001	0.194
26	0.355	0.107	0.045	0.026	0.232	0.498	0.226	0.036	0.082	0.058	0.012	0.001	0.152
27	0.358	0.108	0.045	0.026	0.150	0.522	0.272	0.047	0.054	0.059	0.014	0.001	0.128
28	0.351	0.104	0.045	0.025	0.096	0.517	0.318	0.059	0.034	0.056	0.015	0.002	0.106
29	0.354	0.101	0.043	0.025	0.062	0.495	0.358	0.073	0.022	0.051	0.016	0.002	0.092
30	0.207	0.071	0.013	0.018	0.040	0.466	0.393	0.087	0.008	0.033	0.005	0.002	0.049
31	0.206	0.072	0.013	0.018	0.032	0.441	0.421	0.091	0.007	0.032	0.006	0.002	0.046
32	0.213	0.073	0.012	0.017	0.025	0.415	0.447	0.095	0.005	0.030	0.006	0.002	0.043
33	0.218	0.077	0.013	0.017	0.020	0.391	0.472	0.099	0.004	0.030	0.006	0.002	0.043
34	0.223	0.078	0.013	0.017	0.016	0.364	0.496	0.104	0.003	0.029	0.006	0.002	0.040
35	0.053	0.018	0.004	0.009	0.012	0.339	0.518	0.109	0.001	0.006	0.002	0.001	0.010
36	0.054	0.021	0.005	0.011	0.011	0.334	0.522	0.110	0.001	0.007	0.003	0.001	0.011
37	0.056	0.022	0.005	0.011	0.011	0.327	0.526	0.111	0.001	0.007	0.003	0.001	0.012
38	0.056	0.022	0.005	0.011	0.010	0.321	0.530	0.113	0.001	0.007	0.003	0.001	0.012
39	0.056	0.021	0.005	0.011	0.010	0.315	0.535	0.114	0.001	0.007	0.003	0.001	0.011
40	0.000	0.000	0.002	0.003	0.009	0.308	0.538	0.116	0.000	0.000	0.001	0.000	0.001
41	0.000	0.000	0.002	0.003	0.009	0.308	0.537	0.116	0.000	0.000	0.001	0.000	0.001
42	0.000	0.000	0.001	0.002	0.009	0.308	0.537	0.117	0.000	0.000	0.001	0.000	0.001
43	0.000	0.000	0.001	0.002	0.009	0.308	0.536	0.117	0.000	0.000	0.001	0.000	0.001
44	0.000	0.000	0.001	0.002	0.009	0.308	0.536	0.117	0.000	0.000	0.000	0.000	0.001
45	0.000	0.000	0.000	0.000	0.009	0.308	0.535	0.118	0.000	0.000	0.000	0.000	0.000
46	0.000	0.000	0.000	0.000	0.009	0.308	0.535	0.118	0.000	0.000	0.000	0.000	0.000
47	0.000	0.000	0.000	0.000	0.009	0.308	0.535	0.118	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.000	0.000	0.009	0.308	0.535	0.118	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.009	0.308	0.535	0.118	0.000	0.000	0.000	0.000	0.000
									0.991	0.682	0.147	0.030	1.850

Event Year 3

	Hazard Function q_x				Survival Function l_x				Probability of Birth d_x				Fertility
Age	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Rates
15	0.007	0.049	0.000	0.000	1.000	0.000	0.000	0.000	0.007	0.000	0.000	0.000	0.007
16	0.007	0.051	0.000	0.000	0.993	0.007	0.000	0.000	0.007	0.001	0.000	0.000	0.008
17	0.007	0.054	0.000	0.000	0.986	0.013	0.001	0.000	0.007	0.001	0.000	0.000	0.008
18	0.007	0.055	0.000	0.000	0.979	0.020	0.002	0.000	0.007	0.001	0.000	0.000	0.009
19	0.008	0.054	0.000	0.000	0.971	0.026	0.003	0.000	0.007	0.002	0.000	0.000	0.009
20	0.158	0.096	0.056	0.000	0.964	0.032	0.004	0.000	0.153	0.010	0.001	0.000	0.164
21	0.161	0.099	0.057	0.000	0.811	0.174	0.014	0.001	0.131	0.024	0.002	0.000	0.156
22	0.165	0.100	0.057	0.000	0.680	0.281	0.037	0.002	0.112	0.034	0.003	0.000	0.149
23	0.165	0.097	0.055	0.000	0.568	0.359	0.067	0.005	0.094	0.039	0.005	0.000	0.138
24	0.164	0.097	0.057	0.000	0.475	0.414	0.102	0.010	0.078	0.044	0.007	0.000	0.129
25	0.329	0.095	0.036	0.042	0.397	0.448	0.139	0.017	0.130	0.049	0.006	0.001	0.186
26	0.332	0.098	0.035	0.042	0.266	0.529	0.182	0.022	0.088	0.056	0.007	0.001	0.153
27	0.331	0.095	0.034	0.042	0.178	0.561	0.231	0.028	0.059	0.056	0.009	0.001	0.125
28	0.331	0.095	0.034	0.042	0.119	0.564	0.278	0.036	0.039	0.056	0.011	0.002	0.107
29	0.327	0.093	0.034	0.040	0.080	0.548	0.323	0.045	0.026	0.052	0.012	0.002	0.092
30	0.155	0.068	0.017	0.019	0.054	0.522	0.363	0.054	0.008	0.036	0.006	0.001	0.052
31	0.151	0.070	0.018	0.020	0.045	0.494	0.393	0.060	0.007	0.035	0.008	0.001	0.050
32	0.155	0.071	0.017	0.020	0.038	0.466	0.420	0.066	0.006	0.033	0.008	0.001	0.048
33	0.161	0.071	0.016	0.018	0.032	0.439	0.445	0.072	0.005	0.031	0.008	0.001	0.045
34	0.164	0.075	0.017	0.018	0.027	0.413	0.469	0.078	0.004	0.031	0.008	0.001	0.045
35	0.057	0.020	0.003	0.006	0.023	0.386	0.492	0.085	0.001	0.008	0.001	0.000	0.011
36	0.058	0.020	0.003	0.006	0.021	0.380	0.499	0.086	0.001	0.008	0.002	0.000	0.011
37	0.057	0.023	0.004	0.006	0.020	0.373	0.505	0.087	0.001	0.009	0.002	0.001	0.012
38	0.060	0.024	0.003	0.006	0.019	0.366	0.512	0.088	0.001	0.009	0.002	0.001	0.012
39	0.060	0.025	0.004	0.007	0.018	0.358	0.519	0.089	0.001	0.009	0.002	0.001	0.013
40	0.000	0.004	0.002	0.001	0.017	0.350	0.526	0.091	0.000	0.002	0.001	0.000	0.003
41	0.000	0.004	0.002	0.001	0.017	0.349	0.526	0.092	0.000	0.001	0.001	0.000	0.003
42	0.000	0.004	0.002	0.001	0.017	0.347	0.526	0.093	0.000	0.001	0.001	0.000	0.003
43	0.000	0.003	0.002	0.001	0.017	0.346	0.527	0.094	0.000	0.001	0.001	0.000	0.002
44	0.000	0.003	0.002	0.001	0.017	0.345	0.527	0.095	0.000	0.001	0.001	0.000	0.002
45	0.000	0.000	0.000	0.000	0.017	0.344	0.527	0.096	0.000	0.000	0.000	0.000	0.000
46	0.000	0.000	0.000	0.000	0.017	0.344	0.527	0.096	0.000	0.000	0.000	0.000	0.000
47	0.000	0.000	0.000	0.000	0.017	0.344	0.527	0.096	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.000	0.000	0.017	0.344	0.527	0.096	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.017	0.344	0.527	0.096	0.000	0.000	0.000	0.000	0.000
									0.983	0.639	0.112	0.017	1.752

Event Year 4

	Hazard Function q_x				Survival Function l_x				Probability of Birth d_x				Fertility
Age	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Rates
15	0.006	0.029	0.000	0.000	1.000	0.000	0.000	0.000	0.006	0.000	0.000	0.000	0.006
16	0.006	0.029	0.000	0.000	0.994	0.006	0.000	0.000	0.006	0.000	0.000	0.000	0.006
17	0.006	0.030	0.000	0.000	0.989	0.011	0.000	0.000	0.006	0.000	0.000	0.000	0.006
18	0.006	0.032	0.000	0.000	0.983	0.016	0.001	0.000	0.006	0.001	0.000	0.000	0.006
19	0.006	0.032	0.000	0.000	0.977	0.022	0.001	0.000	0.006	0.001	0.000	0.000	0.007
20	0.145	0.073	0.037	0.093	0.971	0.027	0.002	0.000	0.141	0.007	0.000	0.000	0.148
21	0.149	0.077	0.039	0.097	0.830	0.161	0.009	0.000	0.124	0.017	0.001	0.000	0.142
22	0.152	0.080	0.039	0.098	0.706	0.267	0.025	0.001	0.107	0.026	0.002	0.000	0.135
23	0.154	0.081	0.039	0.096	0.599	0.349	0.050	0.002	0.092	0.032	0.003	0.000	0.127
24	0.155	0.080	0.038	0.095	0.506	0.409	0.079	0.004	0.078	0.036	0.004	0.001	0.119
25	0.321	0.085	0.026	0.041	0.428	0.452	0.111	0.008	0.138	0.044	0.004	0.000	0.186
26	0.323	0.086	0.027	0.042	0.290	0.545	0.152	0.011	0.094	0.051	0.005	0.001	0.150
27	0.327	0.088	0.027	0.041	0.197	0.588	0.198	0.015	0.064	0.055	0.006	0.001	0.126
28	0.322	0.085	0.026	0.040	0.132	0.598	0.247	0.020	0.043	0.052	0.007	0.001	0.103
29	0.327	0.086	0.026	0.040	0.090	0.588	0.292	0.026	0.029	0.052	0.008	0.001	0.091
30	0.232	0.061	0.016	0.018	0.060	0.565	0.336	0.033	0.014	0.035	0.006	0.001	0.055
31	0.234	0.060	0.016	0.019	0.046	0.545	0.365	0.038	0.011	0.033	0.006	0.001	0.051
32	0.231	0.063	0.017	0.021	0.036	0.522	0.392	0.043	0.008	0.033	0.007	0.001	0.049
33	0.235	0.064	0.016	0.020	0.027	0.497	0.419	0.049	0.006	0.032	0.007	0.001	0.047
34	0.238	0.064	0.015	0.017	0.021	0.472	0.443	0.055	0.005	0.031	0.007	0.001	0.043
35	0.068	0.017	0.005	0.007	0.016	0.446	0.467	0.061	0.001	0.007	0.002	0.000	0.011
36	0.071	0.017	0.005	0.007	0.015	0.440	0.472	0.063	0.001	0.007	0.002	0.000	0.011
37	0.072	0.017	0.005	0.007	0.014	0.434	0.477	0.065	0.001	0.007	0.002	0.000	0.011
38	0.072	0.019	0.005	0.008	0.013	0.427	0.482	0.067	0.001	0.008	0.003	0.001	0.012
39	0.075	0.019	0.005	0.008	0.012	0.420	0.488	0.069	0.001	0.008	0.003	0.001	0.012
40	0.000	0.007	0.003	0.003	0.011	0.413	0.493	0.071	0.000	0.003	0.001	0.000	0.004
41	0.000	0.007	0.003	0.003	0.011	0.410	0.495	0.072	0.000	0.003	0.001	0.000	0.005
42	0.000	0.007	0.003	0.003	0.011	0.407	0.496	0.073	0.000	0.003	0.001	0.000	0.004
43	0.000	0.007	0.003	0.003	0.011	0.405	0.497	0.074	0.000	0.003	0.001	0.000	0.005
44	0.000	0.008	0.002	0.002	0.011	0.402	0.499	0.075	0.000	0.003	0.001	0.000	0.004
45	0.000	0.000	0.000	0.000	0.011	0.399	0.501	0.076	0.000	0.000	0.000	0.000	0.000
46	0.000	0.000	0.000	0.000	0.011	0.399	0.501	0.076	0.000	0.000	0.000	0.000	0.000
47	0.000	0.000	0.000	0.000	0.011	0.399	0.501	0.076	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.000	0.000	0.011	0.399	0.501	0.076	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.011	0.399	0.501	0.076	0.000	0.000	0.000	0.000	0.000
									0.989	0.590	0.089	0.013	1.682

Event Year 5

	Hazard Function q_x				Survival Function l_x				Probability of Birth d_x				Fertility
Age	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Rates
15	0.008	0.164	0.000	0.000	1.000	0.000	0.000	0.000	0.008	0.001	0.000	0.000	0.008
16	0.008	0.167	0.000	0.000	0.992	0.007	0.001	0.000	0.008	0.002	0.000	0.000	0.010
17	0.008	0.169	0.000	0.000	0.984	0.013	0.003	0.000	0.008	0.003	0.000	0.000	0.011
18	0.008	0.176	0.000	0.000	0.976	0.018	0.005	0.000	0.008	0.004	0.000	0.000	0.012
19	0.008	0.180	0.000	0.000	0.968	0.022	0.009	0.000	0.008	0.005	0.000	0.000	0.013
20	0.144	0.071	0.058	0.000	0.960	0.026	0.014	0.000	0.138	0.007	0.001	0.000	0.146
21	0.144	0.070	0.057	0.000	0.822	0.157	0.020	0.001	0.119	0.015	0.002	0.000	0.135
22	0.147	0.075	0.060	0.000	0.704	0.260	0.033	0.003	0.104	0.023	0.003	0.000	0.130
23	0.151	0.077	0.060	0.000	0.600	0.340	0.054	0.005	0.090	0.030	0.004	0.000	0.124
24	0.152	0.079	0.060	0.000	0.510	0.401	0.080	0.009	0.078	0.035	0.006	0.000	0.118
25	0.344	0.067	0.028	0.035	0.432	0.444	0.108	0.015	0.149	0.035	0.004	0.001	0.188
26	0.345	0.069	0.028	0.036	0.283	0.558	0.140	0.018	0.098	0.042	0.005	0.001	0.145
27	0.346	0.069	0.029	0.037	0.186	0.614	0.177	0.022	0.064	0.045	0.006	0.001	0.116
28	0.348	0.072	0.029	0.037	0.121	0.633	0.216	0.027	0.042	0.047	0.007	0.001	0.097
29	0.342	0.069	0.029	0.036	0.079	0.629	0.256	0.033	0.027	0.044	0.008	0.001	0.081
30	0.182	0.077	0.013	0.017	0.052	0.611	0.292	0.039	0.009	0.047	0.004	0.001	0.062
31	0.177	0.073	0.013	0.017	0.043	0.574	0.335	0.043	0.008	0.042	0.005	0.001	0.055
32	0.180	0.074	0.013	0.017	0.035	0.539	0.373	0.047	0.006	0.040	0.005	0.001	0.052
33	0.179	0.077	0.014	0.020	0.029	0.506	0.408	0.051	0.005	0.039	0.006	0.001	0.051
34	0.179	0.078	0.014	0.019	0.024	0.472	0.441	0.056	0.004	0.037	0.006	0.001	0.049
35	0.075	0.019	0.003	0.006	0.019	0.439	0.471	0.061	0.001	0.008	0.001	0.000	0.011
36	0.078	0.020	0.003	0.006	0.018	0.432	0.478	0.062	0.001	0.009	0.001	0.000	0.012
37	0.081	0.020	0.003	0.006	0.017	0.425	0.486	0.063	0.001	0.009	0.001	0.000	0.012
38	0.083	0.020	0.003	0.006	0.015	0.418	0.493	0.064	0.001	0.009	0.001	0.000	0.012
39	0.083	0.023	0.003	0.006	0.014	0.411	0.500	0.065	0.001	0.009	0.002	0.000	0.012
40	0.077	0.005	0.000	0.001	0.013	0.402	0.508	0.066	0.001	0.002	0.000	0.000	0.003
41	0.077	0.006	0.000	0.001	0.012	0.401	0.510	0.066	0.001	0.002	0.000	0.000	0.003
42	0.077	0.006	0.000	0.001	0.011	0.400	0.512	0.066	0.001	0.002	0.000	0.000	0.003
43	0.077	0.006	0.000	0.001	0.010	0.398	0.515	0.066	0.001	0.002	0.000	0.000	0.003
44	0.076	0.006	0.000	0.001	0.009	0.397	0.517	0.066	0.001	0.002	0.000	0.000	0.003
45	0.000	0.000	0.000	0.000	0.009	0.395	0.519	0.066	0.000	0.000	0.000	0.000	0.000
46	0.000	0.000	0.000	0.000	0.009	0.395	0.519	0.066	0.000	0.000	0.000	0.000	0.000
47	0.000	0.000	0.000	0.000	0.009	0.395	0.519	0.066	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.000	0.000	0.009	0.395	0.519	0.066	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.009	0.395	0.519	0.066	0.000	0.000	0.000	0.000	0.000
									0.991	0.596	0.077	0.011	1.676

Event Year 6

	Hazard Function q_x				Survival Function l_x				Probability of Birth d_x				Fertility
Age	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Rates
15	0.003	0.087	0.000	0.000	1.000	0.000	0.000	0.000	0.003	0.000	0.000	0.000	0.003
16	0.003	0.087	0.000	0.000	0.997	0.003	0.000	0.000	0.003	0.000	0.000	0.000	0.004
17	0.003	0.087	0.000	0.000	0.994	0.006	0.001	0.000	0.003	0.001	0.000	0.000	0.004
18	0.003	0.093	0.000	0.000	0.990	0.008	0.001	0.000	0.003	0.001	0.000	0.000	0.004
19	0.003	0.095	0.000	0.000	0.987	0.011	0.002	0.000	0.003	0.001	0.000	0.000	0.004
20	0.136	0.055	0.067	0.000	0.984	0.013	0.003	0.000	0.133	0.004	0.000	0.000	0.138
21	0.136	0.055	0.071	0.000	0.851	0.142	0.007	0.000	0.115	0.011	0.001	0.000	0.127
22	0.135	0.054	0.067	0.000	0.735	0.246	0.017	0.001	0.100	0.016	0.002	0.000	0.117
23	0.139	0.057	0.070	0.000	0.636	0.330	0.031	0.003	0.088	0.022	0.003	0.000	0.113
24	0.141	0.059	0.070	0.000	0.547	0.397	0.050	0.006	0.077	0.026	0.004	0.000	0.107
25	0.328	0.068	0.030	0.018	0.470	0.448	0.071	0.010	0.154	0.036	0.003	0.000	0.193
26	0.329	0.066	0.030	0.018	0.316	0.567	0.104	0.013	0.104	0.041	0.004	0.000	0.149
27	0.332	0.069	0.031	0.019	0.212	0.630	0.141	0.016	0.070	0.046	0.005	0.000	0.121
28	0.330	0.068	0.032	0.019	0.142	0.654	0.182	0.021	0.047	0.046	0.007	0.000	0.100
29	0.336	0.072	0.032	0.019	0.095	0.655	0.222	0.027	0.032	0.049	0.008	0.001	0.089
30	0.232	0.073	0.008	0.007	0.063	0.638	0.262	0.035	0.015	0.047	0.002	0.000	0.064
31	0.234	0.074	0.008	0.007	0.048	0.606	0.307	0.037	0.011	0.045	0.003	0.000	0.059
32	0.231	0.070	0.007	0.006	0.037	0.572	0.350	0.039	0.009	0.040	0.003	0.000	0.052
33	0.231	0.071	0.008	0.007	0.028	0.540	0.387	0.041	0.007	0.039	0.003	0.000	0.049
34	0.230	0.075	0.009	0.008	0.022	0.508	0.423	0.044	0.005	0.038	0.004	0.000	0.047
35	0.065	0.009	0.002	0.007	0.017	0.475	0.457	0.048	0.001	0.004	0.001	0.000	0.007
36	0.067	0.009	0.002	0.006	0.016	0.472	0.461	0.048	0.001	0.004	0.001	0.000	0.007
37	0.070	0.010	0.002	0.005	0.015	0.468	0.464	0.049	0.001	0.005	0.001	0.000	0.007
38	0.072	0.010	0.002	0.005	0.014	0.465	0.468	0.050	0.001	0.005	0.001	0.000	0.007
39	0.073	0.010	0.002	0.005	0.013	0.461	0.471	0.051	0.001	0.005	0.001	0.000	0.007
40	0.000	0.015	0.001	0.000	0.012	0.458	0.475	0.051	0.000	0.007	0.000	0.000	0.007
41	0.000	0.015	0.001	0.000	0.012	0.451	0.481	0.052	0.000	0.007	0.000	0.000	0.007
42	0.000	0.016	0.001	0.000	0.012	0.444	0.487	0.052	0.000	0.007	0.000	0.000	0.007
43	0.000	0.017	0.001	0.000	0.012	0.437	0.494	0.052	0.000	0.007	0.000	0.000	0.008
44	0.000	0.017	0.001	0.000	0.012	0.430	0.501	0.053	0.000	0.007	0.000	0.000	0.008
45	0.000	0.000	0.000	0.000	0.012	0.423	0.508	0.053	0.000	0.000	0.000	0.000	0.000
46	0.000	0.000	0.000	0.000	0.012	0.423	0.508	0.053	0.000	0.000	0.000	0.000	0.000
47	0.000	0.000	0.000	0.000	0.012	0.423	0.508	0.053	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.000	0.000	0.012	0.423	0.508	0.053	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.012	0.423	0.508	0.053	0.000	0.000	0.000	0.000	0.000
									0.988	0.566	0.058	0.005	1.616

Event Year 7

	Hazard Function q_x				Survival Function l_x				Probability of Birth d_x				Fertility
Age	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Rates
15	0.004	0.000	0.000	0.000	1.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.004
16	0.004	0.000	0.000	0.000	0.996	0.004	0.000	0.000	0.004	0.000	0.000	0.000	0.004
17	0.004	0.000	0.000	0.000	0.992	0.008	0.000	0.000	0.004	0.000	0.000	0.000	0.004
18	0.004	0.000	0.000	0.000	0.987	0.013	0.000	0.000	0.004	0.000	0.000	0.000	0.004
19	0.004	0.000	0.000	0.000	0.983	0.017	0.000	0.000	0.004	0.000	0.000	0.000	0.004
20	0.130	0.044	0.041	0.000	0.978	0.022	0.000	0.000	0.128	0.004	0.000	0.000	0.131
21	0.134	0.046	0.041	0.000	0.851	0.146	0.004	0.000	0.114	0.009	0.000	0.000	0.124
22	0.133	0.048	0.044	0.000	0.736	0.251	0.013	0.000	0.098	0.014	0.001	0.000	0.113
23	0.134	0.045	0.040	0.000	0.639	0.334	0.026	0.001	0.086	0.017	0.001	0.000	0.104
24	0.138	0.049	0.044	0.000	0.553	0.403	0.041	0.003	0.076	0.022	0.002	0.000	0.100
25	0.361	0.058	0.016	0.023	0.477	0.458	0.061	0.005	0.172	0.031	0.001	0.000	0.205
26	0.364	0.059	0.016	0.022	0.304	0.599	0.091	0.006	0.111	0.038	0.002	0.000	0.151
27	0.365	0.057	0.016	0.022	0.193	0.671	0.128	0.008	0.071	0.040	0.002	0.000	0.113
28	0.365	0.059	0.016	0.023	0.123	0.701	0.166	0.010	0.045	0.042	0.003	0.000	0.091
29	0.365	0.059	0.016	0.023	0.078	0.704	0.205	0.013	0.028	0.042	0.004	0.000	0.075
30	0.224	0.079	0.007	0.009	0.049	0.690	0.244	0.016	0.011	0.055	0.002	0.000	0.068
31	0.221	0.074	0.007	0.009	0.038	0.646	0.296	0.018	0.008	0.048	0.002	0.000	0.059
32	0.222	0.076	0.007	0.009	0.030	0.606	0.343	0.020	0.007	0.046	0.002	0.000	0.056
33	0.219	0.073	0.007	0.009	0.023	0.566	0.387	0.022	0.005	0.042	0.003	0.000	0.050
34	0.218	0.073	0.007	0.009	0.018	0.530	0.426	0.024	0.004	0.039	0.003	0.000	0.046
35	0.030	0.020	0.002	0.003	0.014	0.495	0.462	0.027	0.000	0.010	0.001	0.000	0.011
36	0.031	0.020	0.002	0.003	0.014	0.485	0.471	0.028	0.000	0.010	0.001	0.000	0.011
37	0.032	0.019	0.001	0.002	0.013	0.476	0.480	0.028	0.000	0.009	0.001	0.000	0.010
38	0.035	0.020	0.001	0.002	0.013	0.467	0.488	0.029	0.000	0.009	0.001	0.000	0.010
39	0.036	0.021	0.001	0.002	0.012	0.459	0.497	0.030	0.000	0.009	0.001	0.000	0.011
40	0.000	0.000	0.000	0.001	0.012	0.450	0.506	0.030	0.000	0.000	0.000	0.000	0.000
41	0.000	0.000	0.000	0.001	0.012	0.450	0.506	0.030	0.000	0.000	0.000	0.000	0.000
42	0.000	0.000	0.000	0.001	0.012	0.450	0.506	0.030	0.000	0.000	0.000	0.000	0.000
43	0.000	0.000	0.000	0.001	0.012	0.450	0.506	0.030	0.000	0.000	0.000	0.000	0.000
44	0.000	0.000	0.000	0.001	0.012	0.450	0.506	0.030	0.000	0.000	0.000	0.000	0.000
45	0.000	0.000	0.000	0.000	0.012	0.450	0.506	0.030	0.000	0.000	0.000	0.000	0.000
46	0.000	0.000	0.000	0.000	0.012	0.450	0.506	0.030	0.000	0.000	0.000	0.000	0.000
47	0.000	0.000	0.000	0.000	0.012	0.450	0.506	0.030	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.000	0.000	0.012	0.450	0.506	0.030	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.012	0.450	0.506	0.030	0.000	0.000	0.000	0.000	0.000
									0.988	0.538	0.032	0.003	1.561

Event Year 8

	Hazard Function q_x				Survival Function l_x				Probability of Birth d_x				Fertility
Age	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Parity 1	Parity 2	Parity 3	Parity 4	Rates
15	0.004	0.000	0.000	0.005	1.000	0.000	0.000	0.000	0.004	0.000	0.000	0.000	0.004
16	0.004	0.000	0.000	0.004	0.996	0.004	0.000	0.000	0.004	0.000	0.000	0.000	0.004
17	0.004	0.000	0.000	0.004	0.993	0.007	0.000	0.000	0.004	0.000	0.000	0.000	0.004
18	0.004	0.000	0.000	0.003	0.989	0.011	0.000	0.000	0.004	0.000	0.000	0.000	0.004
19	0.004	0.000	0.000	0.004	0.985	0.015	0.000	0.000	0.004	0.000	0.000	0.000	0.004
20	0.136	0.037	0.079	0.000	0.982	0.018	0.000	0.000	0.133	0.003	0.000	0.000	0.136
21	0.140	0.037	0.078	0.000	0.848	0.148	0.003	0.000	0.119	0.008	0.001	0.000	0.127
22	0.142	0.038	0.077	0.000	0.730	0.259	0.010	0.001	0.104	0.012	0.001	0.000	0.117
23	0.143	0.040	0.085	0.000	0.626	0.351	0.021	0.002	0.089	0.016	0.002	0.000	0.108
24	0.143	0.038	0.077	0.000	0.537	0.425	0.034	0.004	0.077	0.017	0.003	0.000	0.097
25	0.334	0.043	0.023	0.024	0.460	0.484	0.048	0.008	0.154	0.024	0.001	0.000	0.180
26	0.337	0.043	0.022	0.024	0.306	0.613	0.071	0.009	0.103	0.029	0.002	0.000	0.134
27	0.338	0.044	0.022	0.023	0.203	0.687	0.098	0.011	0.069	0.032	0.002	0.000	0.104
28	0.341	0.043	0.022	0.023	0.135	0.724	0.128	0.013	0.046	0.032	0.003	0.000	0.081
29	0.345	0.045	0.022	0.026	0.089	0.738	0.157	0.015	0.031	0.034	0.004	0.000	0.069
30	0.208	0.074	0.006	0.012	0.058	0.734	0.187	0.019	0.012	0.055	0.001	0.000	0.068
31	0.209	0.078	0.006	0.011	0.046	0.692	0.241	0.020	0.010	0.054	0.002	0.000	0.066
32	0.207	0.076	0.005	0.010	0.036	0.647	0.293	0.021	0.008	0.049	0.002	0.000	0.059
33	0.207	0.076	0.006	0.011	0.029	0.606	0.341	0.023	0.006	0.046	0.002	0.000	0.055
34	0.204	0.073	0.005	0.010	0.023	0.565	0.385	0.024	0.005	0.042	0.002	0.000	0.049
35	0.116	0.018	0.006	0.003	0.018	0.528	0.425	0.026	0.002	0.010	0.002	0.000	0.014
36	0.116	0.019	0.007	0.003	0.016	0.521	0.432	0.029	0.002	0.010	0.003	0.000	0.015
37	0.116	0.020	0.007	0.003	0.014	0.513	0.439	0.032	0.002	0.010	0.003	0.000	0.015
38	0.119	0.018	0.005	0.002	0.013	0.504	0.446	0.035	0.001	0.009	0.002	0.000	0.013
39	0.125	0.019	0.005	0.002	0.011	0.496	0.453	0.037	0.001	0.010	0.002	0.000	0.013
40	0.000	0.002	0.001	0.000	0.010	0.488	0.460	0.039	0.000	0.001	0.000	0.000	0.001
41	0.000	0.002	0.001	0.000	0.010	0.487	0.461	0.039	0.000	0.001	0.000	0.000	0.001
42	0.000	0.003	0.001	0.000	0.010	0.486	0.462	0.040	0.000	0.001	0.000	0.000	0.002
43	0.000	0.003	0.001	0.000	0.010	0.484	0.463	0.040	0.000	0.001	0.000	0.000	0.002
44	0.000	0.003	0.001	0.000	0.010	0.483	0.464	0.040	0.000	0.001	0.000	0.000	0.002
45	0.000	0.000	0.000	0.004	0.010	0.481	0.465	0.041	0.000	0.000	0.000	0.000	0.000
46	0.000	0.000	0.000	0.005	0.010	0.481	0.465	0.041	0.000	0.000	0.000	0.000	0.000
47	0.000	0.000	0.000	0.005	0.010	0.481	0.465	0.040	0.000	0.000	0.000	0.000	0.000
48	0.000	0.000	0.000	0.000	0.010	0.481	0.465	0.040	0.000	0.000	0.000	0.000	0.000
49	0.000	0.000	0.000	0.000	0.010	0.481	0.465	0.040	0.000	0.000	0.000	0.000	0.000
									0.990	0.509	0.044	0.004	1.547

Notes: Table A7 summarizes life tables and implied total fertility rates for each event year (-4∼8), compiled following the method developed in Van Hook and Altman (2013) and Babiarz et al. (2025). First, regression-adjusted predicted log odds of a parity p birth are calculated for individuals in each event year and single year of age using coefficient estimates from Equation (1) (estimated separately for each parity 1∼4, results available upon request). We allow event year indicators as well as interactions with 5 year age group indicators to vary, and holding all other variables constant at values observed in the reference year (event year -1). The hazard function q_x^p describes the age pattern of risk of a parity p birth occurring at age x (conditional on that birth not having already occurred), and are calculated from predicted log odds $(\frac{\exp(\log Odds_x^p)}{1+\exp(\log Odds_x^p)})$. Because age effects are captured using five-year age-groups, q_x^p is equal across all ages within a given age group. The hazard function is then used to generate survival function l_x^p (describing the proportion of the population at risk of a birth) and the unconditional probability function d_x^p(describing the number of births expected to occur at a given age). For first births, the proportion at risk is monotonically declining, beginning at $l_{15}^1 = 1$, and diminishing with every year of age by the proportion of women who have a first birth in the previous year: $l_x^1 = l_{x-1}^1 - d_x^1$. The unconditional probability of a first birth is simply equal to the product of the conditional first birth hazard and the proportion of the population at risk: $d_x^1 = q_x^1 \times l_x^1$. For subsequent births, the proportion of the population at risk of a parity $p > 1$ birth begins at $l_{15}^p = 0$. As women age, the proportion beginning age x at risk is determined jointly by the share at risk in the previous year, the rate at which women exited the risk pool in the previous year, and the rate at which women entered the risk pool in the previous year $l_x^p = l_{x-1}^p - d_{x-1}^p + d_{x-1}^{p-1}$. The unconditional probability of a parity p birth at age x is likewise jointly determined by the relevant birth hazard, the proportion of the population at risk of a parity p birth at age x, and the proportion of women newly at risk of a parity p birth for at least half of the year (or half of those experiencing a parity $p-1$ birth, assuming a uniform distribution of birth timing): $d_x^p = q_x^p \times (l_x^p \times \frac{1}{2} d_x^{p-1})$. The unconditional probability of a birth can be interpreted as an age- and parity-specific fertility rate. These rates then are used to calculated age-specific fertility rates (summing across parities), parity-specific fertility rates (summing across ages), and total fertility rates for each event year.

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