

For better or for babies: The effect of the two-child policy in China on who gets married

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Ongoing work, comments are welcome

Abstract

Can fertility policies have unintended effects on who gets married? We investigate the effect of the relaxation of the one-child policy, one of the strictest large-scale fertility policies of all time, on marriage. Before everyone was allowed to have two children with the two-child policy, some were already exempted from the strict one-child limit. Theory suggests that if a larger family size is preferred, the relaxation of the one-child policy could increase marriage rates among those previously not exempted. Yet, those exempted could also have had a “child advantage in the marriage market” as they brought the potentially valuable characteristics of having two children. In a context with a strong sex ratio imbalance with more men than women, the advantage can increase men’s chances of getting married. In this case, we expect the marriage rate to change only for men as those previously advantaged “lose out” from the policy change. We use detailed policy data on the main exemptions from the one-child policy and match them with individual data from the China Family Panel Study collected between 2010 and 2018. We find that with the end of the one-child policy, those previously exempted as less likely to get married. The effect is mainly driven by men – the likelihood of women getting married is only weakly affected. The results suggest that there was indeed a significant child advantage in the marriage market which, coupled with the skewed sex ratio, distorted who got married.

Keywords: fertility, family planning, marriage, China

JEL codes: J12, J13, J18, O53

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1 Introduction

Family planning policies are nowadays pervasive and a debated topic in most countries. In 1976, 52% of all countries did not have any (official) policy – this decreased to 27% in 2019. Yet, fertility decisions, and thus family planning policies, affect many other, non-fertility socio-economic outcomes of parents and those that plan to be parents. They have an effect on maternal labor supply and income (e.g., [Angrist and Evans, 1996](#); [Lundborg et al., 2017](#); [Guo et al., 2018](#)), retirement ([Chen and Fang, 2021](#)), or educational investment ([Huang et al., 2021](#); [Raiber, 2022](#)). This paper investigates the unintended effects of a family planning policy on another, life-determining family outcome: whether to get married or not. Marriage is a formalized union between two people that has important socio-economic consequences. It affects labour market participation, consumption, the allocation of leisure time, mental health, and physical well-being.

This paper studies the end of the one-child policy (OCP) in China, one of the most large-scale and restrictive family planning policies of all time. In a country where children are important culturally and for retirement both financially and in terms of health care, the policy imposed a strong burden on households. During the OCP, several groups were exempted from the strict one-child limit and allowed to have two children. These conditions were dependent on the group characteristics of either one spouse or both spouses, giving some groups in some provinces a “second child advantage”. At the beginning of the OCP, these exemptions had a pro-poor focus, allowing rural and minority households to have a second child. Later, to alleviate the inter-generational imbalance, couples of two only children were allowed to have a second child. The policy was relaxed in two steps starting in 2013: First, all couples with one spouse being an only child were allowed to have two children. In 2015, it was announced that every couple would be allowed to have two children. Through these policy generalizations, those previously exempted lost their child advantage. We investigate if losing this child advantage has an effect on getting married.

China is a culture in which sons are important. Over time, exacerbated by the different fertility restrictions, this has led to a significant sex ratio bias. Nowadays, there are many more marriageable men than women. The sex ratio, i.e. the number of males per 100 females, at birth, increased from 108.5 in 1982 to 117.96 in 2010 ([National Bureau of Statistics of China, 2012](#)). At the same time, marriage rates are still high, much higher than in neighbouring countries such as Japan or South

Korea. With more marriageable men than women, men compete for wives while women have more choice over who they marry. Indeed, unmarried rates among men have been rising as local women are scarce. According to [Yeung and Hu \(2016\)](#), among those born 1976-1983, by the age of 30, almost all women had been married and by the age of 33, over 95% of men had entered into their first marriage. In the China Family Panel Study (2014-2018), 99% of women between 35 and 40 are married compared to 94% men. Being allowed to have two children because of group characteristics could have been a valuable trait in the marriage market before the end of the OCP.

Theory suggests that there could be two different mechanisms for how the policy relaxation can affect marriage rates. First, if a larger family size is preferred, the relaxation of the one-child policy increases the marriage surplus created through marriage (as children are assumed to be an outcome of marriage). This then increases the incentives to get married and thus marriage rates among those previously not exempted. The second channel relates to competition for spouses. Before the relaxation, those exempted could also have had a “child advantage in the marriage market”. They had the potentially valuable characteristics of having two children. Under the assumption of a strong sex ratio imbalance, those of the abundant sex (men in this case) could benefit from this characteristic by having a higher likelihood of being selected as a spouse compared to those without this characteristic. With the relaxation, they lose this advantage and their marriage rates could decrease as the marriage rate for those without the advantage increases. In this case, we expect the marriage rate to change only for men.

Using detailed policy data, we quantify the potential “child advantage in the marriage market”. Exemptions from the one-child limit were set on the province level and varied between the groups and sometimes between men and women. We use this province-level policy data to identify those exempted from the OCP based on observable quasi-exogenous characteristics. These include those with a rural household status (hukou) who could often have two children, mostly (but not always) under the condition that their firstborn was a girl. It also includes those who are an only child and those who have ethnic minority status. We connect this policy data with individual data from the China Family Panel Study which collects individual data bi-annually between 2010 and 2018, thus covering the time of the policy change. For each wave, we define the cohort of “marriageable men and women”. We use a difference-in-differences estimation to identify the effect of the policy relaxation between 2013 and 2015 on their likelihood of being married as a function of their presumed

“child advantage”.

We find that those who had a presumed child advantage before the relaxation are less likely to get married after the policy change compared to those who did not have this advantage. This effect is mainly driven by men – the effect is weak and mostly insignificant for women. Being allowed to have a second child thus seems to indeed have been an advantage in the marriage market and losing this exemption implies being less likely to get married. We also find that this effect is stronger in countries where fertility rates are higher. This supports the interpretation that the effect is driven by those who want to have more than one child. It implies that women who value children as part of the marital outcome, on the margin, selected those with whom they could have two children. This also suggests that men previously exempted from the policy experienced a drop in their marriage rates. In a society where marriage is an important outcome, they are losing out from the relaxation policy.

This study contributes to several strands of the literature. First, it highlights another unintended effect of the OCP and fertility restrictions in general. Most closely related, [Huang et al. \(2015\)](#) investigate the effect of the OCP on marriages and inter-ethnic marriages. Looking at marriages in 1980 and 1990 where the sex ratio imbalance was less an issue, they find that the OCP restrictions decrease marriage rates. They also find that the exemption for minorities being applicable to one spouse or both spouses affects inter-ethnic marriages. The results from this paper are in line with these findings. We document that these marriage distortions continued until the relaxation of the OCP and that it later on predominantly affected men due to the rising sex ratio imbalance. Fertility restrictions in China have also been found to have affected ethnic identity ([Jia and Persson, 2021](#)), mental health in retirement ([Chen and Fang, 2021](#)), and domestic violence.

Second, the paper contributes to the literature on spousal preferences. The biological and anthropological literature highlights that male preferences are often shaped by the preferences for a highly fertile spouse. Selecting a “highly-fertile husband” seems to be less a driver for partner selection – this can be due to male fertility to be generally assumed to be high, unobservable, or because it does not matter to women. This paper suggests that the latter is not true: women make their choices taking into account the “fertility potential” of their husband. At the margin, they preferred a husband with whom they had to option to have two children.

2 Context

2.1 From the One-child policy to the Two-child policy

China introduced measures to decrease population growth as early as 1962. During the so-called “later, longer, fewer”-policy, families were encouraged to have fewer children, starting later and with longer birth intervals (Zhang, 2017; Wang et al., 2017). Birth quotas were set and enforced on the province level with the promotion of contraceptive methods, but also pressure to abort or get sterilized. In 1979, the central government announced the One-child policy (OPC) that had at its core the goal for each couple to have one child only. The policy was enforced with monetary fines but also forced abortion and sterilizations, or mandatory IUD insertion (Banister, 1991; Li et al., 2011; Feng et al., 2016). Again, the policy was implemented on the province level.

Yet, the policy was not implemented equally for everyone. In 1980, during the implementation phase, different exemptions were introduced. While married couples always had to apply for a “child permit” (unmarried couples or singles were not allowed to have children), some could apply for a “second child permit” under different eligibility rules. While these were first informal, responding to the resistance to the policy particularly in rural areas, they were formalized in family planning guidelines in the 1990s. Importantly, they varied between provinces and between different groups within provinces (Han and Zhao, 2022).

The two most important groups targeted by the early exemptions were ethnic minorities and the rural population. In the rural areas, where fertility rates were high, the policy implementation met resistance. Especially agricultural households relied on (male) children to provide labour and support during old age. As a response to this, most provinces allowed couples with a rural household registration status whose first child was a girl to apply for a second child permit. While over time, the number of households active in agriculture decreased, the exemptions have stayed coupled with the rural household registration status. The household registration status, *hukou*, gets assigned at birth (until the mid-90 by the mother’s status) and was extremely difficult to change. In some provinces, rural women were allowed to have two children independent of the sex of the first-born and the status of their spouse.

Ethnic minorities in most provinces were allowed to have two children, and in some autonomous regions even more. Yet, this was not the case in all provinces, and there was also variation in if

both spouses had to be from the ethnic minority or only one of them. In some cases, only rural ethnic minorities were allowed to have two children.

The provinces also had other criteria for remarried couples, couples that adopted or had a child overseas. Several also allowed specific groups whose work was a great hardship to have two children: These often included fishermen, miners and army veterans. A vague condition of “economic hardship” often complimented the criteria under which married couples could apply for a second child permit. This underlines that, at least at the beginning of the OCP, the exemptions had a pro-poor focus. Children, especially sons, were not only culturally important to carry on the family name, they were also important sources of financial assistance during old age. Recent literature from the “later, longer, fewer”-campaign suggests that having fewer children did not decrease financial resources in old age. Yet, they find that they have fewer visits and are mentally more vulnerable (cite). The effect of the OCP on this still needs to be evaluated.

After the first introductory year, the punishment for having too many children became mainly monetary: Married couples who had a second child without being allowed to were subject to monetary fines that were often a multiple of their annual income. Furthermore, they risked losing their job (especially) those working for a government agency and other career-related punishments. They would have less access to government infrastructure, for example, formal childcare slots. This meant that wealthy couples who could afford it could “pay” to have a second child.

The “one child per family”-goal was announced to apply to one generation. In the 1990s, provinces thus introduced an exemption for couples in which both spouses were an only child. While at the beginning this exemption had little bite, as most people had at least one sibling, it became more important in the 2000s for those who were already born under the OCP.

The OCP was lifted in three steps over three years (Feng et al., 2016). The process began in March 2013, when China established the National Health and Family Planning Commission by merging two institutions associated with family planning and health. In November 2013, the government announced that only one spouse had to be an only child for the couple to be allowed to have a second child in all provinces. This policy was implemented in the following year. Finally, in October 2015, it declared that all couples would be allowed to have two children starting in 2016. Couples who voluntarily had one child during the OCP would continue to be rewarded and subsidised if they chose to have another child now (Wang et al., 2017). Yet, of the estimated 11

million couples who became eligible with the 2013 change, only 1.69 million had applied to have their second child by August 2015 (Feng et al., 2016). This led to concerns that after the relaxation of the OCP, families would not take the opportunity to have a second child, especially as raising a child is considered costly by many in China. Already during the OCP, some families chose to have only one child when they were allowed to have two (Zhenzhen et al., 2009). However, some studies showed an increase in fertility with the two-child policy (TCP) (Zhang and Zheng, 2021; Wu, 2022).

2.2 Marriage patterns and the sex ratio

China is traditionally a patriarchal and patrilineal society (Ma et al., 2019; Hu and Scott, 2016). It is also a context in which parents are highly respected: there is the notion of filial piety which refers to the idea that children should be devoted to their parents' care (Cheung, 1972). Sons are particularly valued as they contribute economically to the household, perpetuate the family line and provide social security for their parents in their old age (Arnold and Zhaoxiang, 1986; Das Gupta et al., 2003; Banister, 2004; Li and Cooney, 1993; Moore, 1998; Murphy et al., 2011).

Within Chinese society, starting a family is thus an important goal (Ma et al., 2019; Yeung and Hu, 2013). Although attitudes towards marriage and family life have become more liberal (Hu and Scott, 2016), marriage has been until lately a prerequisite for being allowed to have a child (Huang and Zhou, 2015; Yeung and Hu, 2013; Cai, 2010). Indeed, babies born out of wedlock are still not generally accepted by society (cite) and even if cohabitation outside marriage has increased in recent years, it remains very rare. Moreover, in most cases, it is only a step before marriage (Yeung and Hu, 2016). Thus, even if China has moved much closer to Western norms in many regards, marriage remains very traditional, valued, and almost universal (Jones and Yeung, 2014). In this point, China contrasts with other East Asian countries such as Japan and South Korea that have seen substantial drops in marriage rates (cite).

Traditionally, parents and extended family were part of the selection process of the future spouse, this was called the "matching doors" (Hu, 2016). with arranged marriages being banned in 1950, individuals are theoretically free to make their choice. However, since finding a spouse – and a "good one" – is so important, parents or other relatives are still involved in the process (Huang et al. (2017); Raiber et al. (2021)). Parents may have an incentive to be part of the matching process

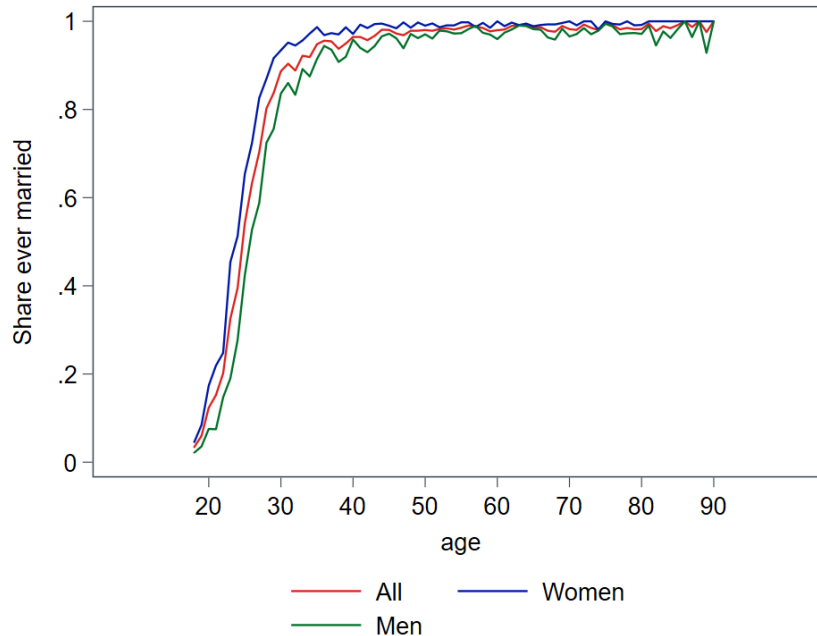


Figure 1: Marriage rates by age and gender (respondents from the CFPS interviewed between 2014 and 2018).

to ensure that the match created is the one that will bring them the most benefits (Anderson, 2003; Cheung, 1972) and that they will be supported in their old age. Having grandchildren is an important factor for parents: Huang et al. (2017) find that when parents are involved in the matching process, the couple later has more grandchildren.

People still tend to get married relatively early (Yeung and Hu, 2016; Raymo et al., 2015). Marriage is legal at 22 years for men and 20 years for women. During the OCP, late marriage (men marrying no earlier than 25 and women marrying no earlier than 23) was rewarded with longer maternal leave. This benefit was only removed in 2016 with the two-child policy (Wang et al., 2017). The age of first marriage increased slightly from 25 in 1980 to 26 in 2010 for men and from 23 in 1980 to 23.9 in 2010 for women. The average age of first birth has also increased, from 23 in 1900 to 26.2 in 2010 (Raymo et al., 2015). Figure 1 illustrates the marriage rates by age in recent years. Less than 10% of men and women get married before the legal age of 20 (women) or 22 (men). At the end of their 30s, most men and women are married: over 90% of women and over 80% of men.

Marriage is not completely universal though. The OCP coupled with a strong son preference

within the society is usually blamed for significant sex ratio imbalances at birth (cite, numbers). Due to the imbalance in the sex ratio, there is a surplus of men who struggle to find a partner, especially those that are poorly educated and from poor, rural areas (Li et al., 2010; Han and Zhao, 2022; Raymo et al., 2015). This gap can also be seen in Figure 1: while the initial gap between men’s and women’s marriage rates can be explained by men marrying later, the gap never closes until age 50. The generation that is strongly affected by the sex ratio imbalance was up to 40 years old in 2018. Looking at those between 35 and 40, nearly all women are married (over 95%), yet only around 90% of men are. This disparity is expected to increase with age.

3 Theoretical Framework

In this section, we sketch the theoretical framework and derive the predictions to be tested in the empirical section. We look at two stages of adult life: In the first period, men and women get married - we consider only heterosexual marriages here. In the second period, the couple decide to have children and how many. We focus on the effect of second-child permits and keep everything else as simple as possible. We model the second period similar to Huang et al. (2015) Thus, a couple consisting of woman i and man j are allowed $\bar{n}_{ij} \in 1, 2$ children. They derive (strictly increasing and convex) utility $\alpha u(n_{ij})$ from their children with α measuring their fertility preferences. They earn (exogenously given) $y_m > 0$ and pay the cost $C > 0$ for raising each child. Importantly, for each child they have more than what they are allowed to have, they pay a fine $f \geq 0$. These could be the official fines collected by the government, potential career consequences, and other disadvantages, but also the cost of getting around the assigned birth quota by for example (temporal) emigration.

A married couple thus gets the following utility in period 2:

$$U_{ij}^m = \alpha u(n_{ij}) + y_m - Cn_{ij} - \delta_{n_{ij} \geq \bar{n}_{ij}}(n_{ij} - \bar{n}_{ij})f \quad (1)$$

If they stay single, they do not have children and men receive income $y_{s,m}$, women receive income $y_{s,w}$. The marriage surplus is thus defined as:

$$V_{ij} = U_{ij}^m - y_{s,m} - y_{s,w} \quad (2)$$

Proposition 1 *Being assigned a higher birth quota \bar{n}_{ij} weakly increases the likelihood of wanting to get married.*

Intuition: A couple wants to get married if the marriage surplus V_{ij} is positive. How does the marriage surplus respond to an increase in \bar{n}_{ij} ? If fertility preferences are low, such that $n^* \leq \bar{n}_{ij}$ even if there are no fines ($f = 0$), an increase in \bar{n}_{ij} will not change the marriage surplus. However, if for $f = 0$, $n^* > \bar{n}_{ij}$, couples would want another child if there were no fines. An increase in \bar{n}_{ij} increases the marriage surplus by f . Notice that proposition 1 increases the likelihood for a couple to want to get married. Observing higher marriage rates relies first, on having a share of the population that has good outside options, such that they would not get married if their assigned birth quota for low (only allowed to have one child). Furthermore, for this to hold on the individual level, say for man j , there needs to be a woman i with whom he now has a positive marriage surplus, and who does not have the option for another match with a higher marriage surplus.

3.1 Sex ratio imbalance

We now look at the case where there is an imbalance in the sex ratio: there are many more marriageable men than there are women. The theoretical literature stipulates that this improves women's bargaining position: because men compete for wives, they are willing to concede more marriage surplus to the women (cite). It also implies that if marriage is generally valued and the marriage surplus is positive for all matches, all women get married, but there are men who would want to get married but cannot find a match. In our simple case where there is no individual heterogeneity, we can assume that the marriage surplus is positive for V_{ij} even if the couple is only allowed to have one child ($\bar{n}_{ij} = 1$). Notice that, in this case, proposition 1 does not lead to higher marriage rates. Strong competition in this simple framework also implies that, if the marriage surplus increases, only women will receive this additional utility.

Assume that there are I women and J men with $J > I$, that are defined by their group x_i/x_j . There are three different groups: $x_i \in 1, 2, 3$ (equally for men). They differ in their assigned birth quota. Those with $x_i = 1$ have $\bar{n}_{ij} = 2$, independent on the characteristic of their spouse. Those with $x_i = 3$ have $\bar{n}_{ij} = 1$ - except if they get matched with someone from group 1. Those with $x_i = 2$, have $\bar{n}_{ij} = 2$ if they get matched with someone from group 2 or group 1. Also, assume

that the marriage surplus for any match increases if \bar{n}_{ij} increases (everyone prefers two children). Assume also, for simplicity, that the share of individuals is the same in each group and if two matches give the same utility, one is drawn at random. This implies, as there are more men than women, that within each group, there are more men than women.

Proposition 2 *Men who are allowed to have a second child, dependent on the spouse or not, have a higher likelihood of getting married.*

Intuition: In the standard model (Becker, 1981), everyone from one side agrees on the ranking of potential partners. In our case, the ranking depends on their own characteristics. For those in group 1, all matches give the same marriage surplus. For those in group 2, those of the opposite sex in group 2 and group 1 give the same marriage surplus which is higher than with those in group 3. For those in Group 3, only those in Group 1 lead to a higher marriage surplus. Under the assumption of strong sex imbalances, women are the ones benefitting from an increased marriage surplus and will choose their spouses: Women in Group 2 will choose (randomly) a man from Group 2 or Group 1. Women in Group 3 will choose a man from Group 1. Women in Group 1 will choose a man randomly. This implies that men in Group 1 have the highest likelihood of being chosen, followed by men in Group 2, and then men in Group 3. It follows that those advantaged, in Group 1 and 2, have a higher likelihood of being chosen as a spouse and thus a higher likelihood of getting married.

3.2 Implications to be tested

Under Proposition 1, we expect that those previously not exempted from the one-child limit have a higher likelihood of getting married after the policy change in comparison to before the policy change. For those previously exempt, the marriage surplus does not change so their likelihood should stay the same. We can thus compare those exempt and not exempt to see if the marriage rate overall diverges. As marriages occur between men and women, the effect should be symmetric for men and women. We also only expect an effect if there are “marginal couples” who would not want to marry if they can have only one child, but would get married if they can have two children.

Under Proposition 2, we assume that previously exempted had a “child advantage in the marriage market”. Once there is competition, this advantage changes who gets married. As the

competition is assumed to be heavier on the men’s side, we expect differences to be asymmetric with men being more affected. Here, we have previously advantaged men “losing out” in comparison to not advantaged men: The likelihood of marriage increases for previously not advantaged men while the likelihood decreases for those previously advantaged. Finding such an effect is also based on the assumption that there is a significant share of the population who values having more than one child.

4 Data and descriptive statistics

4.1 Policy data

For the policy data of the exemptions from the OCP, we went through the translation of the province-specific Family Planning guidelines. We focus on the exemptions that are based on observable and relatively exogenous criteria: rural household status, having siblings, and minority status. We disregard exemptions that are based on the job type or living in a specific remote or border area as we do not have this type of information. We also do not include special rules for remarried couples¹ Figures 2, 3 and 4 illustrate the variation for each of the main groups.

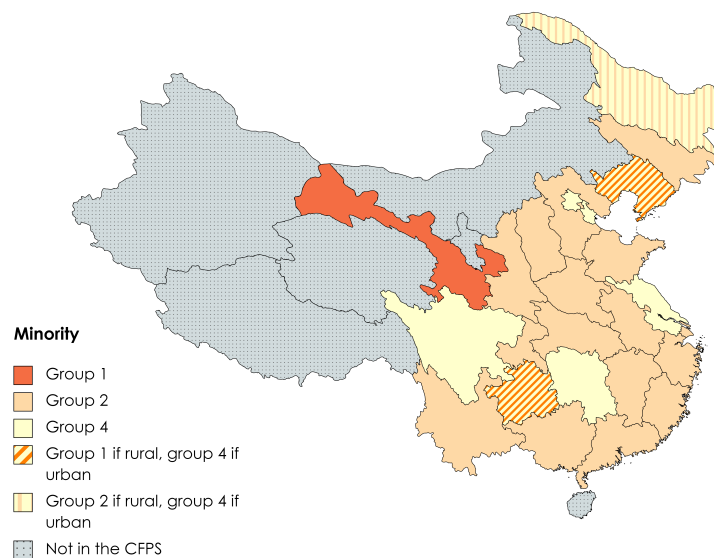


Figure 2: Distribution of groups according to the ethnicity

¹Even if divorce is increasing and becoming more democratic in China (Hu and Qian, 2019), remarriage is still stigmatised and very rare (Ma et al., 2018; Hu and To, 2018).

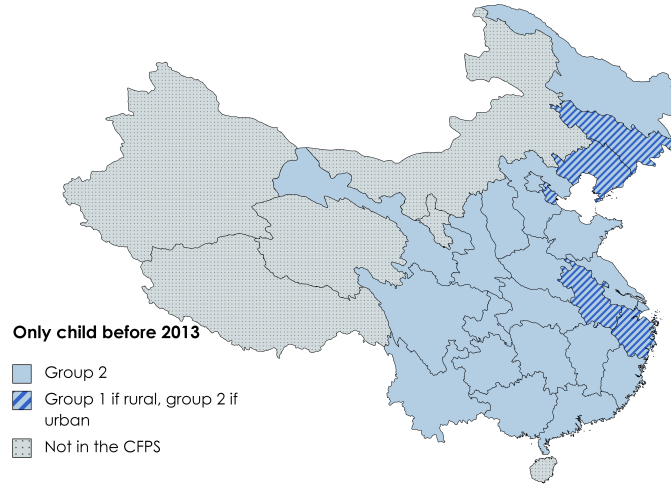


Figure 3: Distribution of groups according to the number of siblings

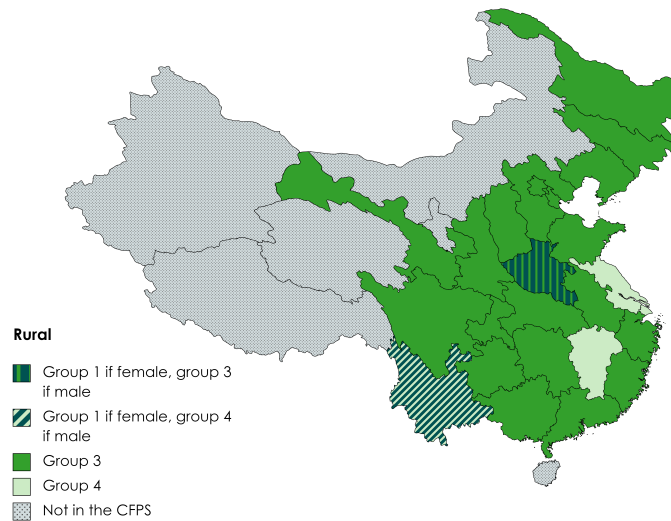


Figure 4: Group distribution for rural individuals (if they do not benefit from the above exceptions).

4.2 Individual data

We use data from the China Family Panel Survey (CFPS), a survey launched in 2010 and conducted every two years by the Institute of Social Science Survey (ISSS) of Peking University. The CFPS provides information on the economic and non-economic aspects of the Chinese population. The survey covers information on economic activities, educational achievements, family relationships, migration, and health. In the baseline survey, 15,000 families and nearly 30,000 individuals within these families were interviewed. We use the waves from 2010 to 2018. The available sample is

constructed to be nationally representative. Some autonomous regions with specific statuses were not included in the CFPS (Hong Kong, Macao, Taiwan, Xinjiang, Tibet, Qinghai, Inner Mongolia, Ningxia and Hainan).

We construct our sample as all individuals, in year t , that are within the age they are allowed to and likely to get married. This implies the age 22-35 for men and 20-35 for women with 22 and 20 being the minimum legal age for marriage. The age range was chosen to include all those allowed to marry, of childbearing age and expected to be married at that time. [Jones and Yeung \(2014\)](#) and [Yeung and Hu \(2016\)](#) find out that almost all women are married by the age of 30. Even though the legal age of marriage is 20 and 22, some people reported being married before that. We vary the upper and lower levels of our sample cut-off as robustness checks.

We define an individual as either *ever married* or *never married*. The "*ever married*" includes those who were married at least once in their life. Within our age group, divorced and widowed individuals are rare. We consider those that are cohabiting as *never married*. Only married couples are allowed to have children and cohabitation in this context is usually an intermediate step before marriage.

4.3 Descriptive statistics

The final sample for our main specification of men and women in their marriageable age (men: 22 - 35; women: 20 - 35) consists of 42,139 observations from 2010 to 2018. The survey is collected every two years. The CFPS is a panel survey with a large share of respondents being present at all waves. However, there was attrition and new respondents were added. Furthermore, in our case, as we restrict the sample to those between 20/22 to 35 years, we have more respondents entering and leaving our sample. We thus treat our sample as a repeated cross-section. We use the information on those interviewed in 2010 to create a cross-sectional panel for 2008. We use the same strategy to extend the sample and fill in the missing years for the extended sample. We use the extended sample in our robustness check only as we have missing information on the year of marriage for a significant share of respondents in the survey years 2014-2018.

As illustrated in [Table 1](#), Han individuals - the ethnical majority - represent around 90% of our sample, which is close to the proportion within the total population of China ([National Bureau of Statistics of China, 2020](#)). We have a higher share of women than men in our sample as we have

a lower threshold for women to be included (20 old for women and 22 for men. The majority of the sample has rural residence status. This changes between the 2010 survey and the following years due to more respondents with a rural household status being added to the survey. The marriage rates vary between 74% and 66%. The decrease in the share of married could be due to the resampling between the years. It could also be explained by higher attrition among those who get married over the years, as getting married and moving out often happen at the same time. Finally, it could be indicative of a decreasing trend in marriage rates.

Table 1: Summary statistics

	(1)	(2)	(3)	(4)	(5)	(6)
	2008*	2010	2012	2014	2016	2018
Female	0.576	0.568	0.526	0.525	0.543	0.539
Age	28.229	28.008	27.537	27.705	27.955	28.306
Han	0.908	0.909	0.919	0.917	0.917	0.915
Rural residence status	0.654	0.655	0.719	0.734	0.748	0.755
Only child	0.156	0.193	0.196	0.203	0.203	0.204
Group 1	0.053	0.055	0.059	0.203	0.198	0.200
Group 2	0.198	0.226	0.190	0.043	0.045	0.049
Group 2b	0.489	0.483	0.541	0.559	0.565	0.565
Group 3	0.260	0.236	0.210	0.195	0.192	0.186
Child advantage	0.480	0.510	0.510	0.518	0.517	0.523
Married	0.741	0.716	0.668	0.665	0.687	0.666
Observations	6358	6234	7764	8057	9550	10534

Note: Based on the China Family Panel Study 2010 - 2018. Each year includes men and women of marriageable age (men: 22 - 35; women 20 - 35) present in the survey. *Exception: 2008 is based on the data from 2010, using information on the marriage year.

5 Estimation strategy

5.1 Defining the “child advantage”

We define those with a presumed “child advantage” as those who were exempted from the OCP before the relaxation started in 2013. The exemptions were set on the couple level. As noted in the data section, We focus on observable quasi-exogenous characteristics at the time of marriage. These include having a rural “hukou” (household registration status). Individuals inherit their hukou from their parents. Furthermore, we consider ethnic minority status which is dependent on

their parent’s ethnicities. Finally, we use the fact that they are an only child and assume that at the time they are of marriageable age, their parents will not have another child.

We can differentiate between different groups of exceptions. In group 1, we group those who are exempt from the one-child limit independent of the status of their spouse (i.e., only one needs to be an ethnic minority). In group 2, we define those who are exempt if their spouse shares the same characteristic (i.e., both need to be an ethnic minority). In group 2b, we have those whose exception depends on the spouse’s characteristics but also on the sex of their firstborn: rural couples who can have a second child if the firstborn is a girl. In group 3, we have those who are not exempted based on their characteristics.

In our main specification, we group those that are in groups 1 and 2 to have a full child advantage. This has several reasons: First, in 2013 only children moved from group 1 to group 2. Thus, if they were treated separately, some would change their treatment status at the time of the treatment making the interpretation of the results difficult. Second, how strong a child advantage truly is might depend on them being in group 1 and group 2, but also the distributions of the group characteristics with the relevant marriage set, and on in-group preferences. While we have information on the first, we do not on the second, due to limitations of the data. We include those in group 2b to have a “half child advantage” as at the time of marriage, this is the presumed expectation of them having a girl first and then being able to have a second child. As illustrated in Table 1, around 20 to 25% of the population have a full child advantage (the variable “child advantage” equal to 1) and around 50% have a half child advantage (the variable “child advantage” equal to 0.5). Between 20 and 25% have no advantage.

5.2 Empirical specification

For the empirical specification, we use a Difference-in-Difference strategy where those having a “child advantage” are seen as those who are treated and the policy change comes in two steps in 2013 and 2015. The years 2012 and prior thus constitute the “pre-period” and those 2013 and after as “post-period”. To investigate pre-trends and dynamic treatment effects, we use year dummies.

Our main specification is the following:

$$married_{ipt} = \alpha_1 child_advantage_{ipt} + \alpha_2 (child_advantage_{ipt} \times \gamma_t) + X_i + \gamma'_t \rho_p + \phi_c + \epsilon_{ipt} \quad (3)$$

Where $married_{ipt}$ corresponds to 1 if individual i in province p has ever been married (i.e. married, divorced or widowed) in year t . It is 0 if individual i in province p has never been married or is in cohabitation in year t . $child_advantage_{ipt}$ is defined according to the definition in the previous subsection. $year_t$ corresponds to year dummies for each year of the CFPS with 2012 as the baseline year. The coefficients of interest are thus α_2 for the interaction between the year dummies and the treatment status. We include year times province fixed effects $\gamma'_y \rho_p$ allowing for differential province trends. We also include a vector of individual level controls X_i which include the group indicators (hukou status, minority status, only child), an indicator for the exemptions groups (spouse-dependent or independent advantage, or half-advantage - see previous subsection), and relevant individual characteristics (age, sex, level of education). We also include county-level fixed effects which are below the province level (ϕ_c). The standard errors based on the unobserved error term ϵ_{ipt} are clustered on the group level within the provinces.

For each year, our sample consists of men and women in their “marriageable age”: We define this with the lower limits being determined by the legal marriage age (20 for women, 22 for men) and the upper limit by 35.² We do not use a hazard rate model as in [Ashraf et al. \(2020\)](#) as we lack data on the exact year of marriage: while we observe in each survey if the respondent is married, we have a high share of missing data that we can only roughly impute for those who stay in the survey.³

6 Results

6.1 Effect of the two-child policy on marriage rates

Our main results are summarized in [Table 2](#) and illustrated in [Figures 5, 6 and 7](#). First, we can see in [Figure 5](#) that overall the marriage rates of those with a presumed child advantage decreased after our baseline in 2012 compared to those without an advantage. Marriage rates before 2012 seem stable and then drop sharply in the following years. The results are robust to controlling for fertility rates on the local level ([5 columns 2](#)).

²In the robustness analysis, we plan to show that extending the range to men and women up to 40 and from 18 onward does not change the results.

³With this caveat in mind, we are currently imputing the marriage year under some assumptions to get data for even years. The results will be added shortly.

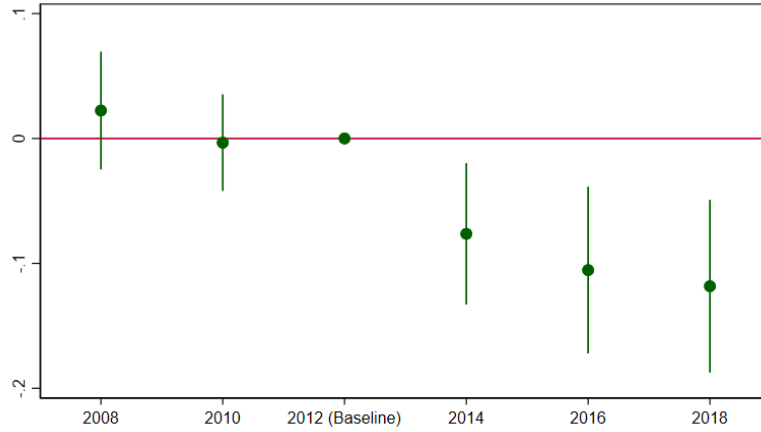


Figure 5: Effect of the two-child policy on marriages

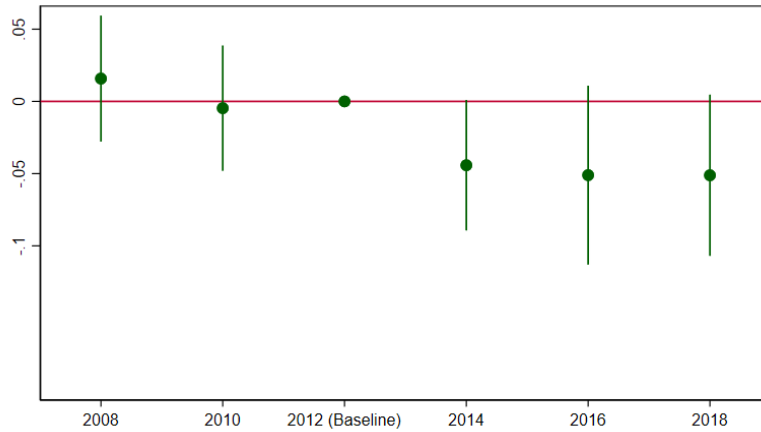


Figure 6: Effect of the two-child policy on marriages for women

Looking separately at men and women, we find that the effect for women is small and significant at 10% in two years only when we do not control for fertility rates (Figure 6 and Table 5 columns 3 and 4). For men, the results are negative and significant (Figure 7 and Table 5 columns 5 and 6). In line with the gradual relaxation of the policy, the effect in 2014 was smaller than those in 2016 and 2018.

As the next steps, we to conduct more analysis to understand marriage patterns, using education levels and age of marriage.

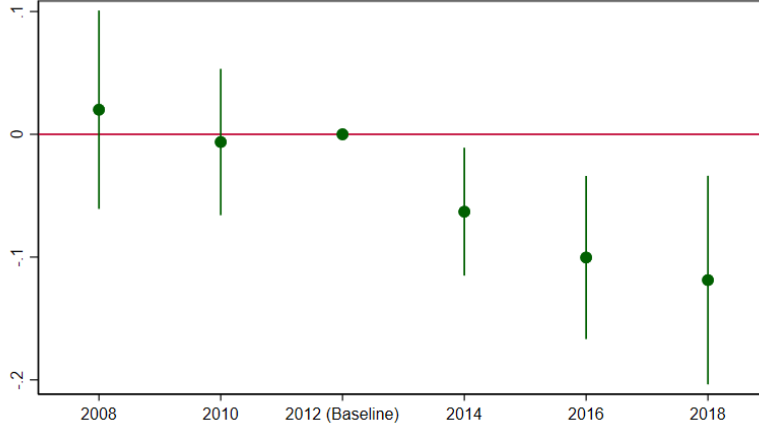


Figure 7: Effect of the two-child policy on marriages for men

Table 2: Effect of the two-child policy on marriages

	All		Women		Men	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Pre:</i>						
Child advantage × 2008	0.022 (0.024)	0.020 (0.023)	0.016 (0.022)	0.017 (0.022)	0.020 (0.041)	0.017 (0.038)
Child advantage × 2010	-0.003 (0.020)	-0.005 (0.019)	-0.005 (0.022)	-0.004 (0.022)	-0.006 (0.030)	-0.008 (0.029)
<i>Post:</i>						
Child advantage × 2014	-0.076*** (0.029)	-0.068** (0.030)	-0.044* (0.023)	-0.038 (0.024)	-0.063** (0.026)	-0.048* (0.026)
Child advantage × 2016	-0.105*** (0.034)	-0.103*** (0.034)	-0.051 (0.031)	-0.048 (0.031)	-0.100*** (0.033)	-0.093*** (0.033)
Child advantage × 2018	-0.118*** (0.035)	-0.110*** (0.036)	-0.051* (0.028)	-0.045 (0.029)	-0.119*** (0.043)	-0.105** (0.044)
Province x Year-FE	Yes	Yes	Yes	Yes	Yes	Yes
County-FE	Yes	Yes	Yes	Yes	Yes	Yes
Fertility	No	Yes	No	Yes	No	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Yes	Yes	Yes	Yes	Yes	Yes
Observations	43,325	40,468	23,431	22,198	19,519	18,260

Standard errors in parentheses

Standard errors are clustered at the province, residence status and ethnicity level

Controls include group indicator, ethnicity, residence status, age and education

2012 is used as the baseline

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

6.2 Heterogeneity

In Table 3 we estimated the effect of the policy according to fertility levels⁴. We see that the effect holds for men in high-fertility counties, and that an effect appears for women in those counties. This means that the individuals that are the most affected by this policy change (i.e this loss in the child advantage) are the ones living in the counties where fertility is important.

This could suggest that women were also affected by the number of children they could have in places where fertility is more. Therefore, in those high fertility areas, they did not have as much market power. This could be explained by less skewed sex ratio, therefore with less men left unmarried and less bargaining power for women⁵.

Table 3: Effect of the two-child policy on marriages by fertility levels

	All		Women		Men	
	(1) Low	(2) High	(3) Low	(4) High	(5) Low	(6) High
<i>Pre:</i>						
Child advantage \times 2010	0.008 (0.022)	-0.030 (0.037)	0.021 (0.029)	-0.064* (0.038)	0.002 (0.033)	-0.009 (0.062)
<i>Post:</i>						
Child advantage \times 2014	-0.031 (0.038)	-0.111*** (0.042)	0.002 (0.033)	-0.100** (0.045)	-0.036 (0.034)	-0.079 (0.054)
Child advantage \times 2016	-0.044 (0.040)	-0.182*** (0.050)	0.021 (0.031)	-0.152** (0.059)	-0.075* (0.042)	-0.151*** (0.055)
Child advantage \times 2018	-0.057 (0.050)	-0.181*** (0.045)	0.010 (0.044)	-0.126*** (0.044)	-0.096* (0.056)	-0.152** (0.064)
Province x Year-FE	Yes	Yes	Yes	Yes	Yes	Yes
County-FE	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Yes	Yes	Yes	Yes	Yes	Yes
Observations	14796	19320	8017	10523	6768	8793

Standard errors in parentheses

Standard errors are clustered at the province, residence status and ethnicity level

Controls include group indicator, ethnicity, residence status, age and education

2012 is used as the baseline

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

⁴We did not put 2008 for the pre-period as the fertility level could not be recovered. Indeed, this is computed using the number of children each woman had, but as there were no birth dates we cannot know what was fertility in 2008

⁵We will conduct further analysis on this

7 Robustness checks

To check if our results are sensitive to the selection of the age threshold for our sample, we extend these thresholds as a robustness check. The results are presented in Table 4. We extended the age limit to 40 for both men and women and started to include individuals 2 years younger than the legal age of marriage (18 for women and 20 for men). The results are robust to the change in the age composition of our sample.

Table 4: Effect of the two-child policy on marriages

	All		Women		Men	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Pre:</i>						
Child advantage \times 2008	-0.000 (0.016)	-0.001 (0.015)	0.014 (0.016)	0.015 (0.016)	-0.019 (0.025)	-0.021 (0.024)
Child advantage \times 2010	-0.006 (0.015)	-0.007 (0.014)	0.008 (0.017)	0.008 (0.017)	-0.026 (0.020)	-0.027 (0.020)
<i>Post:</i>						
Child advantage \times 2014	-0.063*** (0.020)	-0.056*** (0.021)	-0.015 (0.017)	-0.011 (0.017)	-0.078*** (0.023)	-0.062** (0.024)
Child advantage \times 2016	-0.091*** (0.022)	-0.089*** (0.023)	-0.032 (0.022)	-0.033 (0.022)	-0.103*** (0.023)	-0.098*** (0.022)
Child advantage \times 2018	-0.097*** (0.023)	-0.090*** (0.023)	-0.022 (0.018)	-0.018 (0.019)	-0.121*** (0.030)	-0.111*** (0.030)
Province x Year-FE	Yes	Yes	Yes	Yes	Yes	Yes
County-FE	Yes	Yes	Yes	Yes	Yes	Yes
Fertility	No	Yes	No	Yes	No	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Cluster	Yes	Yes	Yes	Yes	Yes	Yes
Observations	73,555	69,703	38,577	36,999	34,559	32,700

Standard errors in parentheses

Standard errors are clustered at the province, residence status and ethnicity level

Controls include group indicator, ethnicity, residence status, age and education

Women aged 18-40 and men aged 20-40

2012 is used as the baseline

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

8 Conclusion

In this paper, we analyse the effect of the end of the OCP on the marriage outcomes for individuals of childbearing age. To do so, we use heterogeneity in the implementation of the OCP and its

effect on marriage using a difference-in-difference framework. Results suggest that the policy led to a decrease in marriage for the individuals who were previously exempted from the one-child limit. We find that the overall effect is driven nearly exclusively by men. Men who were previously exempted are less likely to get married after the end of the OCP compared to those not exempted. The exceptions often concerned individuals from an ethnic minority or with a rural hukou who might already have been less attractive in the marriage market. The results suggest that before the relaxation of the OCP they had a “child advantage” which increased their attractiveness in the marriage market and thus their likelihood to get married. However, at the end of the policy, by losing their advantage they become less desirable in the marriage market.

We find no effect for women, suggesting that, as the marriage market is less crowded for women, they do not suffer from the loss of the child advantage. However, it could change who they marry which is an avenue for future research. We argue that this is due to women having more bargaining power in the marriage market and that they chose a partner who could bring them the maximum number of children possible. This shows evidence that sex ratios increase women’s bargaining power and that possible children influence marital decisions.

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Appendices