Declining cohort fertility in China: persistent differences by education, residence and household registration

Siyu Tian[1] and Tomáš Sobotka[2]

1 Sociology department, Beijing University, China

2 Wittgenstein Centre for Demography and Global Human Capital / Vienna Institute of Demography, Austrian Academy of Sciences

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Abstract

Although fertility estimates for China differ widely, all studies show that China has become a low-fertility country, with below-replacement fertility reached in the early 1990s. Period fertility trends in China have been extensively researched. In contrast, cohort fertility changes have been relatively little analysed. Furthermore, many studies have analysed wide urban-rural differences of household registration or resident difference in Chinese fertility, but only limited attention has been paid to education differences in fertility decline. This is surprising considering that highly educated women in many countries were forerunners of the shift towards low fertility and that rising education has been identified as one of the key drivers of fertility decline. We argue that education has been a neglected factor in Chinese fertility decline that merits detailed investigation.

Using data from a sample of the 2005 one-percent census in China we analyze fertility trends by official household registration (urban vs. rural), actual place of residence (city, town and village) and by education among the women born between 1941 and 1964. These cohorts are of particular interest as they experienced a rapid expansion of secondary education and were having children in the times of the shift towards stringent "one-child policy" since 1980, resulting in the fall towards sub-replacement fertility in the country. We look at the completed cohort fertility and its main components—parity progression ratio and the distribution of women by the number of children. The analysis demonstrates a wide gap between women with urban and rural household registration, actual place of residence, but also huge educational differentials in fertility among urban residents. These differentials are most pronounced in second birth rates. The contrasts in fertility among urban residents remain striking, with fewer than 20% of women with secondary or university education born in the early 1960s progressing to the second birth as compared with a majority (over 60%) of women with lower than secondary education. One-child families remain less common among the women with rural registration, irrespective of their education and actual place of residence.

Keywords

China, fertility, cohort fertility, fertility decline, low fertility, education, fertility differentials, one-child families, urban-rural differences

1. Introduction

During the past forty years, period fertility rates in China have fallen to very low levels (e.g., Zhao 2010). This development is not unexpected as Chinese society has seen very rapid pace of economic growth and societal transformation that are typical drivers of intensive fertility declines. Between the 1970s and 2010s China has undergone a shift from a poor, low-developed, predominantly rural and agricultural society with rapid population growth towards a middle-income country with rapid education expansion, fast urbanization, a shift towards industry- and service-based economy, and also a very rapid pace of population aging. The share of people living in urban areas surpasses 50 percent, up from 20 percent in 1982 (UN 1988: Demographic Yearbook 1986).Since the launching of economic reforms in 1978 manufacturing attracted many rural labourers to move to cities, often informally without receiving official authorisation, and this process has sped up urbanization in China(Yu, 2013; Ma, 2002; He & Zheng, 2007).Concomitant with rapid modernisation of the society and the rise of the middle class, new attitudes towards family, marriage, sexuality, and childbearing emerged and marriage and childbearing have been postponed. Fertility decline in China has been accelerated by an adoption of restrictive antinatalist policies widely referred to as “one child policies” (Cai 2010; Wang et al. 2013).These policies, partly abandoned in 2015, differed between regions, urban and rural areas and by ethnicity (Gu et al. 2007), but, overall, restricted most families to having one child only.

Although fertility estimates for China differ widely, all studies show that China has become a low-fertility country, with some estimates of total fertility rate being as low as 1.4 or lower. Below-replacement fertility was reached during the period of rapid fertility decline in the early 1990s (Zhao and Guo, 2010). Period fertility trends in China have been widely documented, although the existence of a wide range of different sources and estimates, frequent under-reporting of births, limited data documentation together with restricted access to some data sources means that the fertility estimates for China remain uncertain (Zhao and Zhang, 2010). In contrast, cohort fertility changes have been relatively little researched, with the contribution by Morgan, Guo and Hayford (2009)and Lovely (1990) being the main exceptions. Many studies have analysed wide urban-rural differences in Chinese fertility without distinguishing between the household registration (i.e., a place of officially registered residence, *hukou*) and the actual place of residence. As more and more people migrated to make a living, a gap between official and actual place of residence emerged. Furthermore, only very limited attention has been paid to education differences in fertility decline. This is surprising considering that highly educated women in many countries were forerunners of the shift towards low fertility and that rising education has been identified as one of the key drivers of fertility decline(Bongaarts, 2003; Freedman, Xiao, Li, and Lavely, 1988). We argue that education has been a neglected factor in Chinese fertility decline that merits detailed investigation. In addition, many studies on fertility in China still focus on changes in total or completed fertility, without discussing much the parity-specific patterns underlying these changes. In the light of restrictive policies limiting family size in China, it is particularly relevant to study whether one-child family pattern has already emerged as a dominant one among some population groups.

This study aims to analyse changes in completed fertility, family size and parity progression ratios among women in China born between 1941 and 1964. These cohorts were in their prime childbearing years shortly before the start of sweeping economic reforms in 1978 and during the first two decades of sweeping economic expansion of the 1980s and 1990s. The oldest cohorts born in the early 1940s were low educated—often illiterate—and largely rural, yet their family behaviour was already affected by the policies promoting smaller family size, later family formation and longer birth spacing, introduced in the early 1970s. In contrast, the women born in the early 1960s were considerably more educated and more urban and formed their families at a time when the “one-child policy” was well established across China. We pay attention to social status differentials of fertility, focusing on three key dimensions: education, official place of residence (*hukou*), and the actual place of residence. We hypothesise that education and urbanisation were two key factors fuelling Chinese fertility decline and that especially better educated women living in cities were the forerunners of the shift towards one-child families. We also look at the role of urban immigration, distinguishing between the women with urban registration, many of whom were born and raised in

urban areas and the women who lived in cities and towns in 2005, but whose official residence remained in rural areas. Many of these women were unauthorised labour migrants to cities, forming the vast pool of China's "floating population" that is not enjoying the same rights for education, healthcare and social security as their counterparts with urban *hukou*.

2. Background

Policies aiming to curb population growth in China affected to some extent all the cohorts studied here. Following the period of pronatalism and opposition to birth control, first birth control campaign in China took place already in 1953-54 (Lavely 1990). In 1971China launched a family planning campaign known as the *Wan, Xi, Shao (*"later, longer, fewer") policy, which promoted later marriage, longer birth intervals (at least three to four years), and fewer children (i.e., no more than three) (Attane, 2002; Scharping, 2003). To reach these policy goals, contraceptive and abortion services were extended to rural areas, and the minimum age at marriage was recommended, though not legally set, to 23 for women and 25 for men (Wang et al. 2012). The considerably more restrictive "one-child policy" was formulated in 1978-80 in support of the developmental goals advanced by the Chinese leadership which included achievement of zero population growth (Wang et al. 2012).

This policy has affected especially the women born after 1955. Although it initially aimed to restrict both rural and urban couples to having one child only, it has met very strong resistance in rural areas and was subsequently relaxed. Since 1984 rural couples meeting certain criteria (especially living in poor area and having only a daughter) were allowed to have two children (Gu et al. 2007). Later, the policy has undergone further revisions, which often differed by region. Recently, the policy restrictions were relaxed considerably, first allowing couples where the husband or the wife had no siblings to have a second child since 2013 and then, since 2015, allowing two children per couple.

Arguably, the policy has strongly contributed to fertility differentials by social status and place of residence. One factor was the rural-urban differentiation in target family size, mentioned above. Another factor concerned the strictness with which the policy was applied and potential consequences for the families that did not comply with the one-child rule. The "one child policy" imposed strongest control on couples with urban household registration and with formal employers. As education is important for obtaining formal employment, especially urban women with higher education and formal jobs were more strongly motivated to comply with the policy restrictions. Violating this policy could have negative consequences for their jobs, income, and their career. In addition, women with higher education might have limited their childbearing more strongly than the other groups as they changed most rapidly their fertility preferences to very low levels. The joint effects of policy restrictions and falling family size preferences should therefore have affected most strongly the women with urban *hukou* and higher education, contributing thus to widening social status differentials in fertility. We expect that especially women born after 1960 with a city *hukou* and upper secondary or tertiary education have widely adopted one-child family model.

Before the Economic Reform Era began in 1978, there had been strict limitations about the movement from rural area to urban area (cities and towns)(Zhou, 1998). After the reform, more and more people with rural registration flow to the cities and towns to find job chances and make a living, which means that people have chances to change their life course. Fertility intention is a subjective idea about the preference of number of children, gender of children, timing of childbearing. According to the recent internal fertility literature on migration and hypothesise, migrants exhibit fertility levels similar to those of the population at destination(Brockerhoff 1995, Kulu 2005), which means that except for the household registration, the residence of people also has influence on the fertility. A subjective idea is truly hard to change thoroughly, because it roots from local culture; but it is easy to change partly. Because the places people living in partly decide the level of income and outcome, the lifestyle and then these aspects shape different fertility intention. After several generations their thought about childbearing might change. Therefore, we analyze the change of cohort fertility and parity distribution by cohort and education with the control of household registration and residence.

Educational level and structure in China have changed a lot compared with the early period of 20 century. The average duration of getting education increased from 8.95 years in 1990 to 13.325 years in 2010. But there are difference between city, town (urban areas means city and town) and village (rural areas):14.46 years, 13.64 years, and 12.33 years, in 2010 respectively. Age-specific-enrollment rates of people from six-year-old to sixteen-year-old are more than 80%. Generally speaking, primary school has six years, both lower-secondary (junior middle schools) and upper-secondary (senior middle schools) education have three years, and universities usually have four years. From this aspect, the average educational level in China has already been higher than upper-secondary school (12 years' education) since 2010.Education has great influence on the fertility, which is an unquestionable fact, even though the relationship between these two might be positive or negative. Since the education structure has huge changes, how about the fertility?

When analyzing the factors of fertility change, education is always included. But there are seldom articles focus on the covariance of education and fertility in China. What's more, the indicators of fertility are usually period ones, for example, total fertility rate. Women with higher and longer education might postpone their childbearing, but this postponement would make the period fertility rate lower than reality, which is the tempo effect. If we could use cohort fertility rate to explore the relation of education structure and fertility level, tempo effects are not a question any more, and the results will be more accurate. Using cohort indicators could help us to know the real change of relations between women's educational level and their cohort fertility level by cohort. And then we can know the difference of cohort fertility between different educational levels and the changing trend of cohort fertility by education.

According to the previous articles in China, education has negative effect on Chinese childbearing with the control of other variables: higher education, fewer children. In China household registration system is a quite basic system, which leads to different policies, different social resources and opportunities, it must be controlled. There are significant difference between city, town and village; therefore residence also needs to be considered. In recent years, more and more people leave their hometown and go to more developed places to find work and live, which may affect their ideas of childbearing. Then we make a cross-tabulation using registration and residence. With the control of these factors, we could get a clearer picture of covariance of education and cohort fertility.

3. Data and method

3.1. Data

We use a sample of *2005one-percent population sample survey (mini census)* to do analyses.More recent data, such as 2010 census and 2012 Chinese Family Panel Survey (CFPS) are not used, because individual data of 2010 census are not available yet and 2012CPFS cannot represent well the whole population, especially distribution of education, which leads to unstable fertility estimates.

There are 367,931 women born between 1941 and 1964 in 2005 mini census. Some cases in data have missing value in household registration (*hukou*).To verify the quality of 2005 data, I have made a series of comparisons of indicators by cohorts based on 2005 mini data and 2010 sixth census and the values are very similar, such as sex ratio, household registration distribution, education distribution, cohort fertility, parity progression ratio and so on.

Cohorts born between 1941 and 1964 are selected because of empirical reasons. The number of women born before 1941 is less than 1000, and it will be biased because of small quantity if we do comparisons by education and some interactions. Speaking of the youngest birth cohort, 1964 was aged 40-41 at the time of the 2005 mini census and almost 99% of fertility in China had been already realized by that age. So the fertility of this cohort can be considered as completed fertility and the analysis is not biased by the very small number of children they had at later ages.

Household registration *(hukou)* includes two categories: rural and urban, which is consistent with person's parents. Initially, they were called agricultural and non-agricultural respectively in China. But in international journals, rural and urban are more often to use. Household registration is difficult to change category or transfer to other places even when people move to that place to live (Wu, 2011). From this aspect, household registration is different from residence and people are also subjected to the fertility policies of their original registration place. Therefore household registration is more meaningful than current residence for these older cohorts born before 1965.

Current residence means the places people living in, which includes three categories: city, town and village (rural areas). In cities and towns, also named as urban areas, both rural and urban people could live there, especially in recent years, but they own different social resources limited by registration system. According to the residence and household registration, women are divided into 5 groups: **city_urban, city_rural, town_urban, town_rural and village.** Since urban women in village are very few (3.6%), they are not divided from village women. The percentages of women in cities and towns increase and percent of women in village decreases, which is consistent with China's urbanization. However, the percentage of women with urban registration living in urban areas (cities and towns) fluctuate around 30% by birth cohorts, yet that of women with rural registration living in urban areas increased gradually.

Also because internal migration is restricted by household registration system before 1984(Zhou, 1998), the average percent of floating women in selected cohorts is 8.79%, but the average difference of CFR between women who were floating and those who were not floating is 0.45. This difference will become very small when women divided by residence and household registration.

Table1: Distribution of womenby place of residence, household registration (hukou) and birth cohort according to the 2005 population survey

	Frequence				**Percent**			
	1941-49	1950-59	1960-64	total	1941-49	1950-59	1960-64	total
city_urban	20271	39176	23806	83253	21,6	22,9	23,1	22,6
city_rural	8035	15906	10284	34225	8,6	9,3	10,0	9,3
city_total	28306	55082	34090	117478	30,2	32,2	33,0	31,9
town_urban	5969	10884	7354	24207	6,4	6,4	7,1	6,6
town_rural	8856	16747	10641	36244	9,4	9,8	10,3	9,9
town_total	14825	27631	17995	60451	15,8	16,2	17,4	16,4
village	50656	88241	51062	189959	54,0	51,6	49,5	51,6
TOTAL	93787	170954	103147	367888	100,0	100,0	100,0	100,0

There are four levels of ***education*** defined: illiteracy, primary, lower-secondary and upper-secondary. Illiteracy means people almost got no formal education at all. The later three levels represent that people had gone to primary school (6-12 years old), junior school (13-15 years old)or senior school or college (from 16 years old), respectively, no matter whether they completed it or not.In China, primary education and lower-secondary education are compulsory according to the current educational system.The distribution of women by cohort, education, household registration and residence of the cleaned sample is presented in the tables below (Table 2-4).The educational structures of rural and urban household registration are different from each other. Within urban

women the percentage of women with senior or higher educational level increases, and that of other three levels decrease. For rural women, percentages of women with junior and senior or higher education both increase.

Table2: Distribution of women in China by education, household residence and official registration (hukou); women born1941-1949 (data from the 2005 population survey)

	Total number	Percent				
		illiteracy	primary	lower-secondary	upper-secondary	total
city_urban	20271	7,2	29,5	33,3	30,0	100,0
city_rural	8035	29,8	55,3	13,6	1,4	100,0
city_total	28306	13,6	36,8	27,7	21,9	100,0
town_urban	5969	14,8	43,1	28,5	13,5	100,0
town_rural	8856	36,2	52,1	11,0	0,8	100,0
town_total	14825	27,6	48,5	18,0	5,9	100,0
village	50656	43,2	48,7	7,3	0,8	100,0
TOTAL	93787	31,8	45,1	15,1	8,0	100,0

For the birth cohorts 1941-1949, the percent of city women with higher education (lower-secondary and upper-secondary or higher) is higher than town and much higher than village, and the percent of illiteracy women in cities is lowest. Within cities and towns, large differences of illiteracy and higher education between urban registration and rural registration exit simultaneously, which is affected by household registration system (Wu, 2011).

Table 3: Distribution of women in China by education, household residence and official registration (hukou); women born 1950-1959 (data from the 2005 population survey)

	Total number	Percent				
		illiteracy	primary	lower-secondary	upper-secondary	total
city_urban	39176	2,8	14,0	42,1	41,2	100,0
city_rural	15906	16,6	50,4	27,8	5,2	100,0
city_total	55082	6,8	24,5	37,9	30,8	100,0
town_urban	10884	6,9	26,3	35,9	30,9	100,0
town_rural	16747	21,3	50,5	23,7	4,6	100,0
town_total	27631	15,6	40,9	28,5	14,9	100,0
village	88241	26,3	53,0	17,6	3,1	100,0
TOTAL	170954	18,3	41,9	25,9	13,9	100,0

For the birth cohorts 1950-1959, educational levels in cities and towns becoming higher than older cohorts are resulted from the increasing percent of women with higher education (lower-secondary and upper-secondary or higher), and education level increasing in villages is resulted from the decrease of women without education. The differences between urban and rural women within cities and towns decrease but are still big.

Table 4: Distribution of women in China by education, household residence and official registration (hukou); women born 1960-1964 (data from the 2005 population survey)

	Total number	Percent				
		illiteracy	primary	lower-secondary	upper-secondary	total
city_urban	23806	0,9	4,8	31,1	63,2	100,0
city_rural	10284	7,0	31,2	50,2	11,7	100,0
city_total	34090	2,7	12,8	36,8	47,7	100,0
town_urban	7354	2,0	10,1	39,7	48,3	100,0
town_rural	10641	8,2	33,7	48,6	9,5	100,0
town_total	17995	5,6	24,0	45,0	25,4	100,0
village	51062	12,7	42,7	38,5	6,1	100,0
TOTAL	103147	8,2	29,5	39,1	23,2	100,0

For the youngest cohorts, the percent of women in cities with upper-secondary or higher education increases most quickly and percentages of women in towns and villages with lower-secondary education increase most quickly. The differences between urban and rural women within cities and towns focus on the highest educational level (upper-secondary or higher).

3.2. Methods

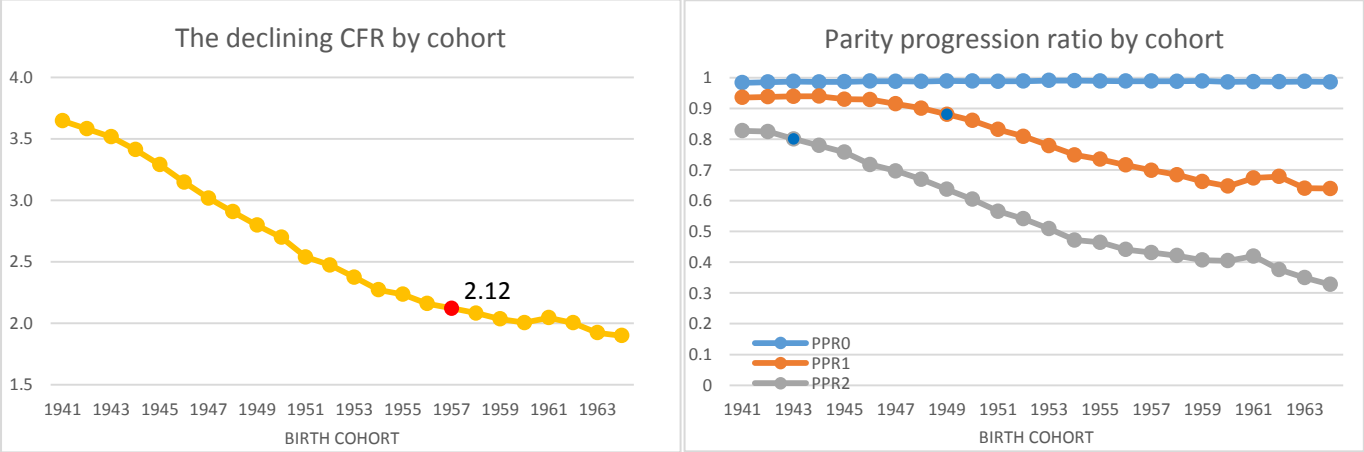
Using data from the 2005 population census women are divided by household registration (urban vs. rural), residence (city, town and village) and by education among the women born between 1941 and 1964. These cohorts are of particular interest as they experienced a rapid expansion of secondary education and were having children in the times of the shift towards sub-replacement fertility in the country. We focus on the completed cohort fertility and its main components—parity progression ratio and the distribution of women by the number of children. From the differences of a series of fertility indicators between different educational levels and cross classification, when, how and whose fertility changed could be discovered, and then the effect of education could be known to some degree.

4. Results

In this article, completed fertility rate (CFR) and parity progression ratio (PPR) are the core indicators. PPR0 means the ratio of women from no children to the first child, PPR1 means the ratio of women from first child to the second one, and the rest can be done as the same way. From the cohort born 1941, not only we can get more stable results but also we can have a look at the changing trend of cohort fertility: from 1957 birth cohort the cohort fertility dropped around replacement level (2.12) and the declining speed also slowed down; PPR0 of all cohorts are always close to 1.0, since having at least one child is the basic target of most couples; PPR1 and PPR2 decreased quickly

(about 0.02 lower than last cohort) from 1949 and 1943 cohort respectively; PPR3 was much lower especially for the younger cohorts, which means that the analysis of PPR3 only have limited value. Therefore, PPR1 and PPR2 are paid more attention to in this article. Besides, the relationship between cohort fertility change and population policies execution could be shown: from 1960s, the government started to encourage families to have less children, which promoted the decline of fertility from 1940 birth cohort.

Figure1: Completed fertility rate and parity progression ratios in China; women born in 1941-1964



4.1. Completed fertility rate by household registration and residence

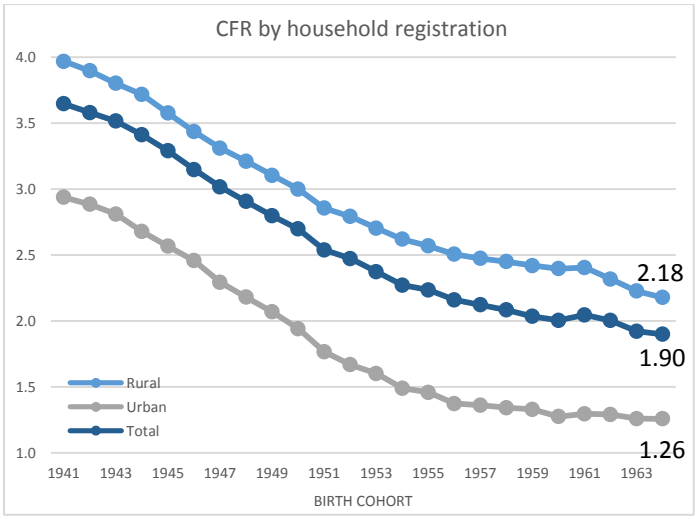
Completed cohort fertility rate (CFR) decreases significantly from 1950birth cohort to 1960 cohort. CFR of women with rural household registration is much higher than that of urban women.When China's CFR has dropped around replacement level (2.1 of 1957 birth cohort), urban CFR is only 1.35 and rural CFR is 2.45.The continuous decrease of CFR was partly affected by population policies. During 1960-1969, the government promoted people living in big cities and some populous villages to have fewer children. In the early of 1970sChina launched population policy of later childbearing (of first birth), longer parity interval and fewer children. Even for the oldest cohort born 1941, when they entered prime reproductive period at 20-year-old (1969), they had already been affected by policies. One-child policy carried out in 1980 also affected cohorts born between 1950 and 1960.

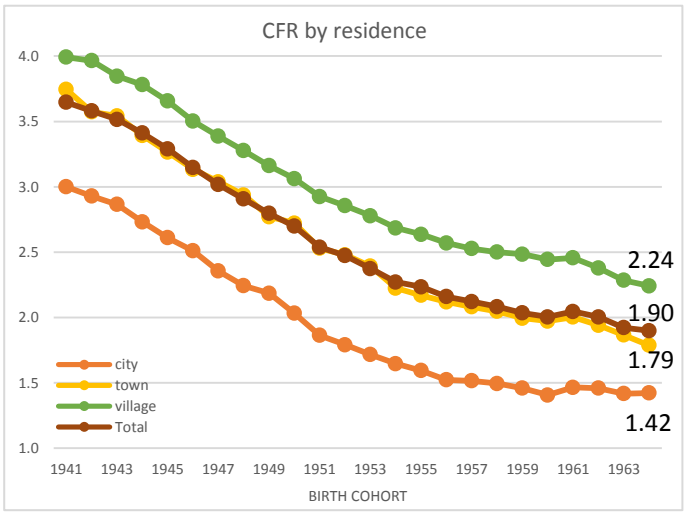
Besides, the Economic Reform Era began in 1978 in China, which pushed the economic development and more women going to the labour market. Women born 1958 were 20 in 1978, the start of legally marriageable age (female 20, male 22) and the start of prime reproductive period. Therefore, the birth cohorts after 1957 experienced both economic development and political changes, which influenced the time and interval of their marriage and childbearing and led to the continuous decrease of fertility. But for the urban women, the decrease of CFR from 1960 became very slowly.

In China, lots of social resources are related to household registration, which means that people with different registration have different chances to get social welfare, education, and jobs. What's more, people with urban registration had fewer possibilities to have a second child. From this figure, it is obvious that the difference of cohort fertility rate between rural and urban existed in all cohorts born between 1941 and 1964. The cohort fertility rate of 1949 birth cohort with urban registration already decreased to 2.07 and that of 1964 birth cohort with rural registration was 2.18, still above replacement level.

Figure 2: Completed fertility among women in China by household registration (hukou)

Figure 3: Completed fertility among women in China by place of residence

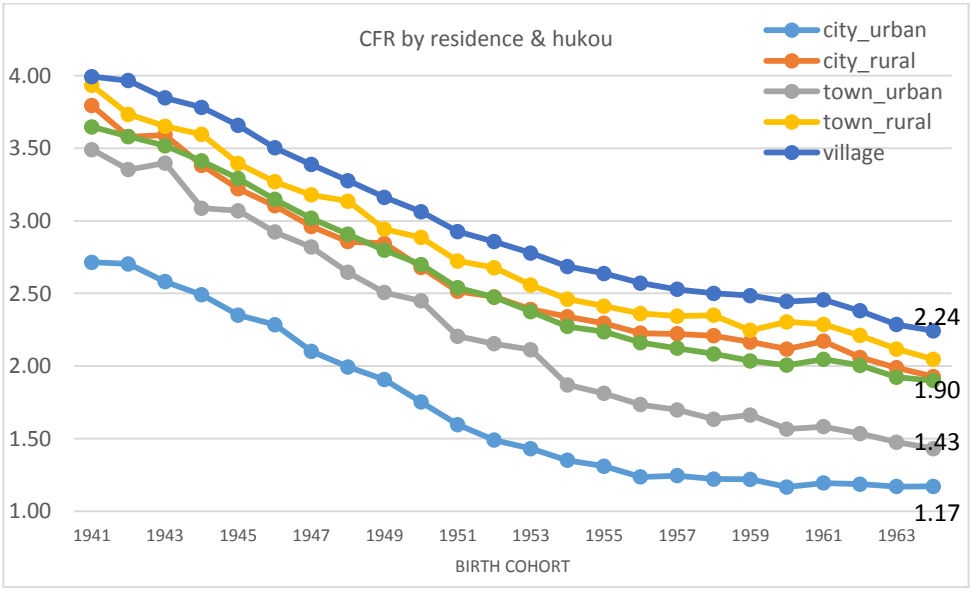




Since more and more rural people move to cities and towns to make a living, separately considering residence or household registration is not enough to analyze the difference of cohort fertility rate. Therefore we classify all women into five sub-groups by residence and household registration and compare the differences of cohort fertility between them.

Cohort fertility rates of city_urban and town_urban women of all cohorts were always below total cohort fertility rate and became lower in younger cohorts. But the difference of CFR between these two sub-groups in older cohorts is bigger than that in younger cohorts. Village women had highest CFR and were followed by town_rural, city_rural. For the youngest birth cohort, 1964 cohort, only village women's CFR (2.24) was above replacement level. Therefore women with same household registration display similar cohort fertility behavior, especially for women with rural registration.

Figure 4: Completed fertilityamong women in China by place of residence and household registration



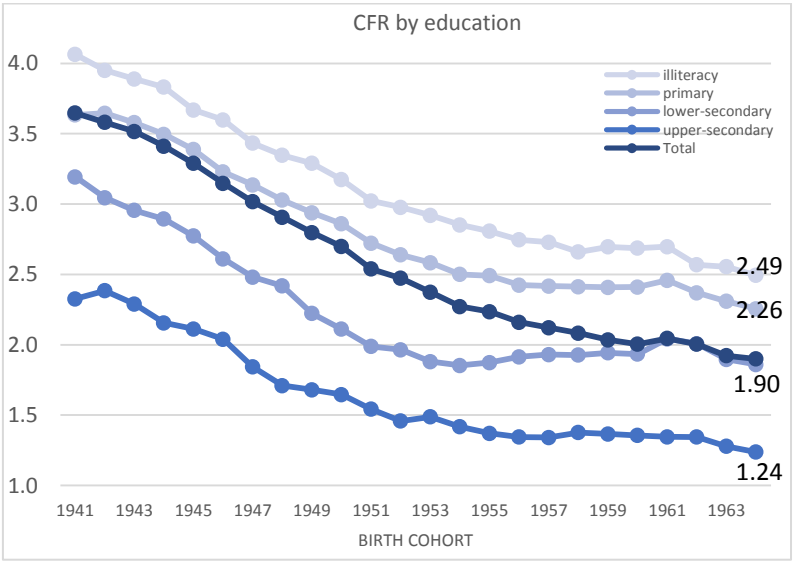
4.2. Educational differences in completed fertility

Even though population policies related to household registration have important effects on CFRby controlling the number of children in every family, the differences of fertility between educational levels always exit and stay stable: the higher education they have, the lower fertility they own. Highest cohort fertility of women with highest

education is **1.68** on 1950 cohort, which is surprisingly lower than replacement level. CFR of women with lower-secondary education also drops below 2.1 from 1951 birth cohort, while that of women with primary education or no education is still above 2.1 for the youngest cohort.

CFR of women with primary education or no education changed more than other two higher educational levels. There is smaller difference between primary education and illiteracy and this difference also gradually becomes smaller, which is opposite of two higher educational levels. The fertility of women with highest education decreased slowly and that of women with lower-secondary education was around 1.90 from 1954 birth cohort. The higher education women have, the bigger difference between educational levels is.

Figure5: Completed fertility in China by educational attainment

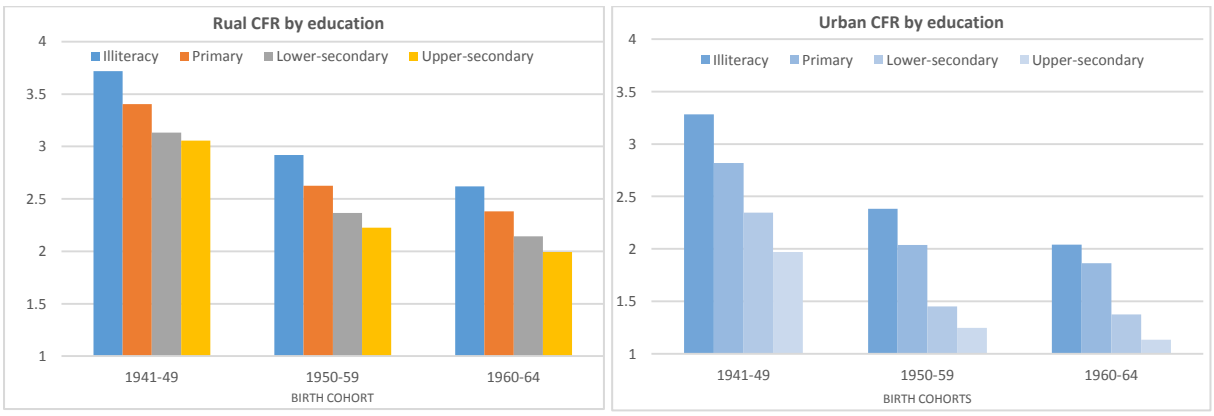


4.3. Completed fertility by education and interaction of household registration and residence

Since the educational structures of urban and rural women are different, we divide 24 cohorts of women into 3 cohorts groups by household registration and education and compare the differences of fertility by education between rural and urban. Except for the difference of rural and urban resulted from policies, cohort fertility of urban women had more differences between educational levels and those with highest education changed most from the oldest cohorts to the youngest ones. Unlike urban women, rural women with lowest education have most obvious drop in cohort fertility.

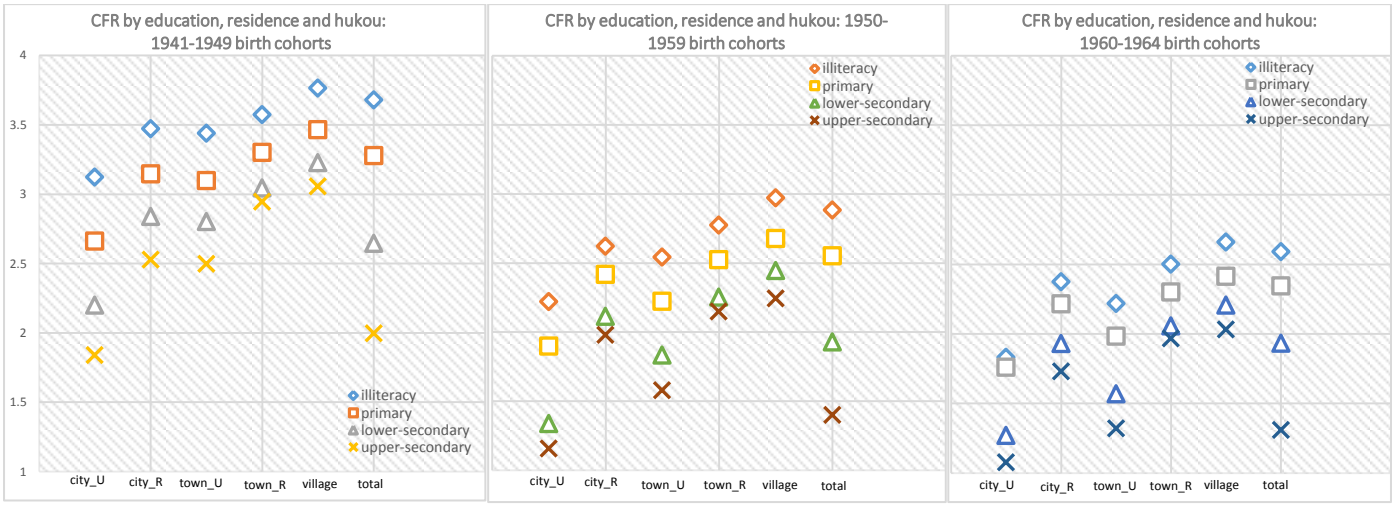
The declining trend of CFR by household registration could be seen in the following figure but the differences between educational levels always exist. This partly proves that education has its own effects on the completed fertility.

Figure6: Completed fertility in China by achieved level of education and household registration (hukou)



To do further analysis of educational difference of fertility, we use interaction of household registration and residence to replace the household registration. From Figure6, we could see that the difference of cohort fertility rate between two adjacent educational levels experiences expansion firstly and then contraction. When the higher education spreads to more people, this education effects become obvious and when it continues spreading, the popularity of lower education and higher education are similar, which might result in the contraction of difference. Compared with oldest birth cohorts (1941-1949), there are fewer differences between lower-secondary education and upper-secondary for the 1960-1964 birth cohorts.

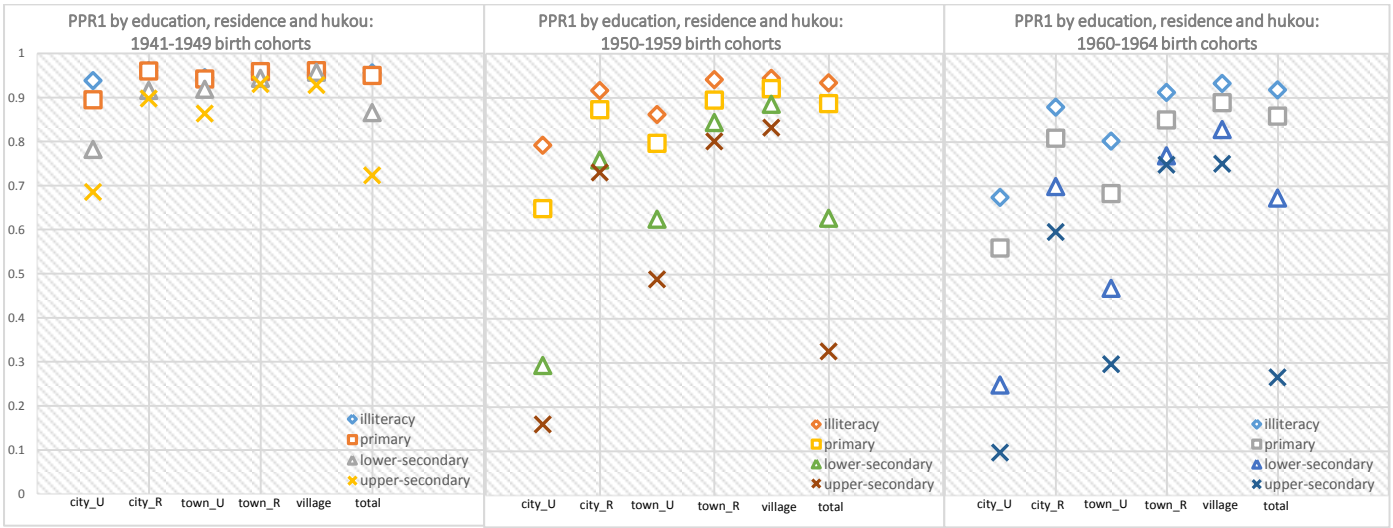
Figure 7: Completed fertility in China by education, actual place of residence and household registration (hukou); women born in 1941-49, 1950-59 and 1960-64



4.4. Progression to second birth by education and interaction of household registration and residence

From older cohorts to younger ones, we can see the difference of PPR1 by education became more and more dispersed, especially for the women with lower-secondary and higher education, whose PPR1 declined quickly.

Figure 8: Second birth progression rate (PPR1) in China by education, actual place residence and household registration (hukou); women born in 1941-49, 1950-59 and 1960-64



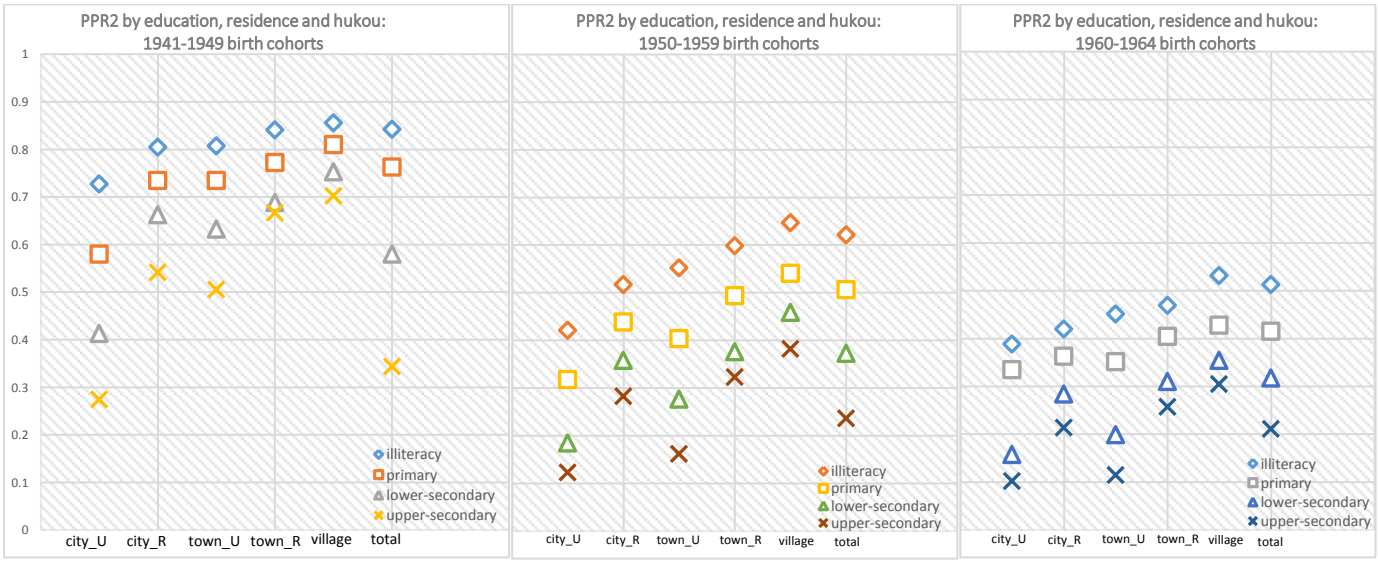
For every educational level, PPR1 of village women was highest and was followed by town_rural, city_rural, town_urban and city_urban. In the cohorts of 1941-1949, only city_urban women already had clear difference by education (primary, lower-secondary and upper-secondary+) on PPR1 and the difference between illiteracy and primary was very small. And then the difference of PPR1 between primary and lower-secondary extended most

quickly compared with other couples. City_rural and town_urban women share similar changing style, but all the levels of PPR1 were higher than city_urban women. The differences of PPR1 of town_rural and village women by education slowly increased but were still very small.

4.5. Progression to third birth by education and interaction of household registration and residence

Parity progression rate from the second child to the third child (PPR2) was lower than PPR1 and also decreased more quickly than PPR1 from older cohorts to younger cohorts. And the difference of PPR2 by education also shrank, except for the difference between illiteracy and primary from 1941-1949 birth cohorts to 1950-1959 cohorts.

Figure 9: Third birth progression rate (PPR2) in China by education, actual place residence and household registration (hukou); women born in 1941-49, 1950-59 and 1960-64



PPR2 of two younger cohort groups (1950-1959 and 1960-1964) without education (illiteracy) had different order from others: PPR2 of village women was still highest and town_rural second highest, but was followed by town_urban not city_rural. This change might mean that for the younger cohorts without education, it is resident places had more influence on the decision of third children, not the household registration. After the average distribution of difference of PPR2 by education in every group, it polarized into two parts: primary and less and lower-secondary and more. City_urban and town_urban had already polarized on the 1950-1959 cohorts and 1960-1964 cohorts, respectively.

4.6. Distribution of women by family size

From the percentage of women with 1 child we could know that the change of family structure by cohort. Percent of women with 1 child increased quickly from older cohorts to younger cohorts and it increases most quickly in city_urban group, followed by town_urban and city_rural, town_rural and village. The differences between educational levels also increase like this and difference between primary and lower-secondary firstly appeared in all groups.

Figure 10: Share of women having one child only by education, residence and household registration; women in China born in 1941-49, 1950-59 and 1960-64

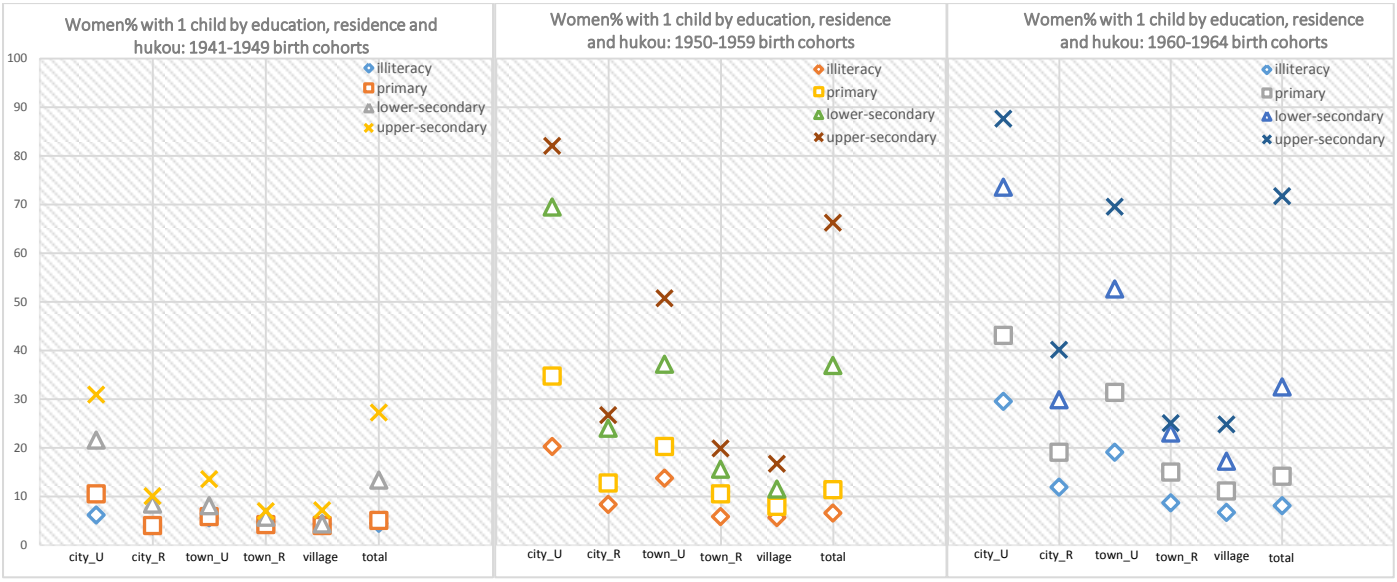
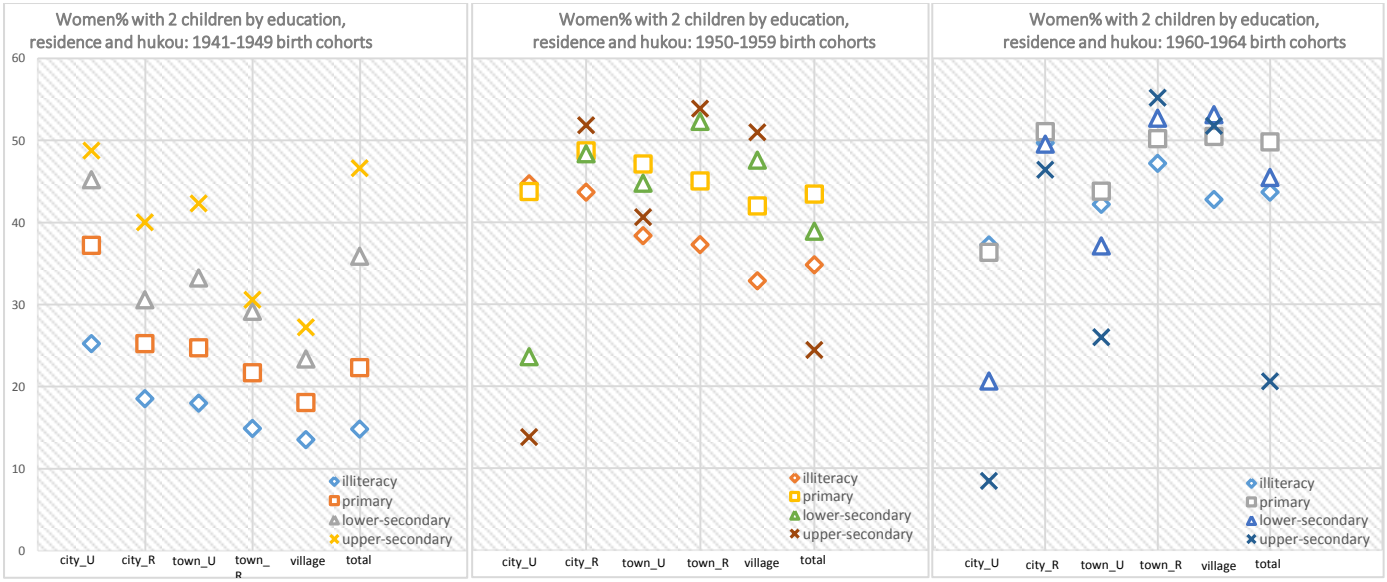


Figure 11: Share of women having two children by education, residence and household registration; women in China born in 1941-49, 1950-59 and 1960-64



A positive correlation exited between education and the percent of women with 2 children for the 1941-1949 birth cohorts and city_urban women had highest percent, followed by city_rural and town_urban as second higher group and town_rural and village belonging to the lowest group. For city_urban women, difference between illiteracy and primary is biggest and for city_rural and town_urban women, difference between lower-secondary and upper-secondary+ is biggest, which might be the result of lower proportion of highest education. But for 1950-1959 birth cohorts, city_urban women with highest education has lowest percent and biggest difference becomes smallest, which is the result of all women having less children: more women with lower education have 2 children not 3 and more women with higher education have 1 child not 2. This change also happens on other groups in this cohort group and 1960-1964 cohorts. There were differences of percent with 2 children by education for the city_urban and town_urban women, while there were very small differences by education for the city_rural, town_rual and village women. Because for them it was quite common to give birth to second child, no matter which degree of education they got.

5. Summary and discussion

The analysis demonstrates a continuous educational difference of fertility between women by cohort and interaction of household registration and residence, but also huge educational differences of PPR1 and PPR2 among urban women, which are most pronounced in the second birth rates. In contrast, education differences in fertility and second birth rates (PPR1) among women with rural registrations remained small. Overall, second birth parity progression ratio fell below 0.5 among the women with urban household registration born in the early 1950s and below 0.3 among those born in the late 1950s, largely a consequence of restrictive antinatalist policies. But the contrasts in fertility among urban women remain striking, with fewer than 20% of higher educated women born in the mid-1960s progressing to the second birth as compared with a majority (over 60%) of women with lower than secondary education.

This is, to my knowledge, the first study on China that systematically analyses education differentials in cohort fertility decline. The persistence of education differences among women with urban registration suggests that the better educated have limited their fertility more than they were required by the antinatalist policies that limited the possibility for most women to have a second child. The observed differences in fertility by level of education are also consistent with findings on low intended family size among women with higher education in China, with a majority preferring having one child only (Ding and Hesketh, 2006). Considering a continuing migration to urban areas and the ongoing education expansion, fertility in China might decline further in the future if the observed fertility differentials persist.

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