Fertility Decline and Women's Status Improvement in China

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ABSTRACT

The literature typically treats fertility reduction in developing countries as a result of women's status improvement, based on the assumption that women have greater decision making power on childbearing as their status improves. This paper investigates whether and how fertility decline leads to reduction in gender inequality and the improvement of women's status in China, where the fertility decline was mainly resulted from the state policy intervention. Based on the analyses of data from two nationally representative surveys, we show that women with fewer children do less housework and are more satisfied with their status within family. Such effects are more pronounced for women in more recent marital cohorts. Across generations, lower fertility implies fewer siblings and daughters may have benefited more in terms of years of schooling and subsequently occupational attainment.

INTRODUCTION

Scholars studying fertility decline in developing countries tend to focus on changing gender relationships and improvement of women's status as key causes of fertility decline (Mason 1987). Women's education and labor force participation are two common indictors of women's socioeconomic status. In many developing countries, education increases at a faster pace for women than it does for men and gender gaps in schooling are also shrinking (Buchmann and Hannum 2001). Consequently, female labor force participation has increased in most countries and women have gained more economic independence over time (Brinton, Lee, and Parish 1995; Buchmann, DiPrete, and Anne McDaniel 2008).

Empirical research has shown that fertility is negatively associated with women's education and employment (Mason 1987), not only because women's improved education exposes them to modern values and ideas that emphasize individualism and gender egalitarianism (Inglehart and Norris 2003), but also because women's economic independence enables them to decide for themselves the number of children they desire (Mason 1987). In other words, women's increasing educational attainment and labor force participation has contributed to fertility decline in most developing countries (Jejeebhoy 1995; Lam and Duryea 1999).

While fertility reduction in developing countries was seen mainly as a result of women's enhanced status, the social consequences of fertility decline, especially in promoting gender equality within marriage/family and beyond, nevertheless, have been rarely addressed in the literature (but see Zhu, Li, et. al. 1997). China provides a particularly interesting case to shed lights on the latter process, because the country's fertility decline since the 1970s is not linked to trends in gender equality in either education or employment, but rather is directly caused by a change in the state birth control policy.

Indeed, since the founding of the People's Republic of China in 1949, the visible hand of the socialist state has thus played a strong role in driving the changes in women's employment, education and fertility at different paces according to its policy agenda in

different historical periods. For instance, the female labor force participation rates have been always high in China until recently, thanks to various social policies to promote gender egalitarianism (Honig and Hershatter 1988).[1] Such a high rate of female labor force participation was a direct consequence not so much of their improved educational opportunities relative to men's (Hannum and Xie 1994; Lu and Treiman 2008), because gender inequality in education fluctuated in the first three decades of the People's Republic of China, and only in recent years has the country witnessed a dramatic improvements in women's education relative to men's, largely due to economic development and educational expansion since the 1980s (Hannum 2005).

In this paper, we aim to chart the complicated and dynamic pathways through which the process of women's status improvement and fertility decline enhance each other,[2] and focus on the social impact of fertility reduction on the improvement of women's status both within marriage/family and in society. Based on the data from two national representative surveys conducted in 2000 and 2006, in a general analytical framework, we test a set of hypotheses on the association between child birth and women's status within family, and, across generations, between the sibship size and women's educational attainment relative to men's. Finally, we highlight the role of marriage and family as important agents in resource allocation in understanding the unintended consequences of fertility decline in China as well as in many other developing countries in the second half of the 20th century.

CHILD BIRTH AND THE PATHWAY TO WOMEN'S STATUS IMPROVEMENT: AN ANALYTICAL FRAMEWORK

In very general terms, women's status improvement is a dynamic process and many factors contribute to the reduction of gender gaps. This trend is based on the fact that women were historically disadvantaged in the gendered division of labor. While men were bread winners of families and dominated the gender relationship, women were responsible for human reproduction and household chores. The role differential, legitimized through

either economic calculation or gender ideology (Becker 1991; Goldscheider and Waite 1986), expects married women to give birth, raise children, and take care of domestic work. Women's economic dependence upon their spouses makes their education and employment unnecessary and thereby their subordination to men inevitable.

Child birth is an important life event that fulfills one of women's principal gender roles. As discussed in the introduction section, a common argument is that the improvement of women's socioeconomic status, as measured by education and labor force participation, has led to the fertility decline (Jejeebhoy 1995; Mason 1987). Formal schooling not only equips women with knowledge and skills for economic activities in the labor markets but also serves as a crucial catalyst for changes in values and gender ideology (Inglehart and Norris 2003; Stember 1961; Thornton 1983). From a sociological perspective, women's economic and social independence resulting from their improved education are increasingly incompatible with their traditional role as mothers and homemakers. On the one hand, an increase in schooling often delays women's marriage and reduces the duration of women's reproductive period. On the other hand, women may be increasingly able to limit the number of children to have because employment has rendered them more economically independent and the opportunity cost of having children would also be greater, especially for those better educated and with higher career aspirations. Educated women have gained more access to and acceptance of birth control, greater knowledge of health practices that reduce infant and child mortality.

Nevertheless, such a causal link captures only one part of the complicated relationship between women's changing socioeconomic status and declining fertility. Although most women gave birth only after they have left school and completed education (Bledsoe and Casterline et.al. 1999; Rindfuss and Morgan 1996), decisions on birth and employment might be intertwined. In other words, because of the dual role played by women as mothers and homemakers, while empowered women may be able to make birth decisions, child birth and family obligations may also hinder career development and earnings growth (Staff and Mortimer 2012). Due to gender asymmetry in the division of domestic labor, working women

are still required to spend a substantial amount of time on housework, making it difficult to strike a balance between career and family (Blossfeld 1995). Many women opt to withdraw from the labor force at a certain life stage to take care of their children and families, and even more choose careers that are more "suitable" for women so that they could fulfill their prescribed gender roles (Jao and Li 2012). Therefore, a reverse causality may also exist: marriage and subsequent childbirth (fertility) may yield negative effects on women's career development and earnings.

In this case, it is clear that not only is women's status relative to men's affected by the visible hand of the state, also subject to marriage and family relationship constraints. In other words, to understand the process of women's status change at the societal level, particular attention needs to be paid to women's relative status to their marital spouses within the family. For a married woman, a key variable adversely associated with her labor market attainment is childbearing. Because of gender role differentials in childrearing and traditional gender ideology exhorting women to spend more time on taking care of their husbands and children, women tend to spend more time on domestic housework than their spouses. As a result, the tension between work and household labor is more pronounced for women than for men (England and Farkas 1986), and married women tend to reduce the amount of effort they invest into their careers (Becker 1991). Therefore, a woman's number of births has important implications for her share of housework and time commitment to her family, both of which would distract her from work and career advancement in the labor market.[3]

Moreover, there is a second pathway through which childbirth affects women's (daughter's) process of status improvement. Women's number of births indicates the sibship size of their children's generation, an important feature that characterizes the structure of the family. Sociologists have shown a continuing interest in identifying factors that affect intra-family resource allocation for children's educational advancement, among which a prominent one is sibship size (Cicirelli 1978; Heer 1985; Steelman et al. 2002).

Previous literature on the effect of sibling configuration has consistently shown that sibship size is negatively associated with an individual's educational attainment (Steelman et. al. 2002). A common explanation for the effect of sibship size on educational attainment is the resource dilution thesis. Some familial resources, such as parental interactions with children, affect children's intellectual development and thus educational attainment indirectly; other resources, such as financial resources which reduce the need for children to leave school to contribute to family incomes, affect educational attainment directly (Downey 1995). According to Blake (1981), the amount of resources that can be allocated to any given child depends on both the total amount of resources and the number of children in the family. The larger the sibship size, the closer the child spacing, the greater the dilution of family resources, and in turn the lower the educational attainment of each child.

The allocation of educational resources could also depend on the gender composition of siblings and parental preferences on investment in children's education, especially in developing countries. Chu, Xie, and Yu (2007) revealed that the negative effects of sibship size on educational attainment in Taiwan were the strongest for girls who had younger brothers and sisters. Under the strong influence of the Chinese patriarchal culture, couples with more children were more likely to be constrained by family resources for children's education, and they typically had higher expectations on sons and tend to invest more in their sons' education than in their daughters'. With limited resources available, girls were more likely than boys to give up schooling and work to support their brothers' education, especially in the East Asian context (Chu, Xie, and Yu 2007).

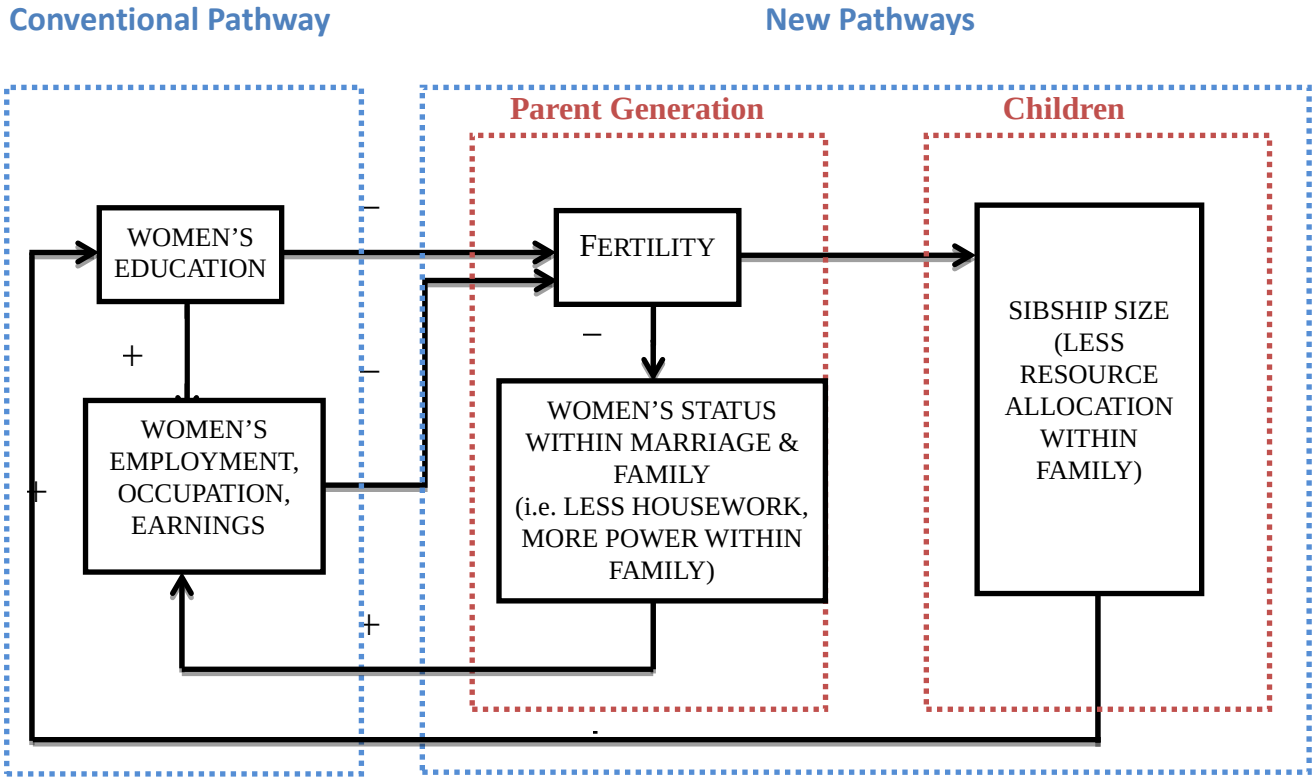
The birth control policies in China since the early 1970s have lowered fertility rate and changed sibship size, thus have had significant implications for family investment in children's education and thereby educational gender inequality. For Chinese couples who abide by the state's one-child policy, their investment in children's education would not be biased toward sons for two reasons: they are typically better off than those who have more than one child and thus are subject to less resource constraints; they will invest in their only

child regardless of the child's gender. Research has shown a substantial reduction in the mean differences in schooling between men and women in China, especially for the young cohort born after the one-child policy was implemented (Wu and Zhang 2010), and fertility decline could be an important factor accounting for the reduction in women's disadvantage in education.

Figure 1 summarizes the complicated and dynamic pathway through which the process of women's status improvement and fertility change enhance one another. While conventional research has devoted much attention to how women's improved education and socioeconomic status have contributed to fertility decline, we highlight the impact of fertility reduction on women's status improvement in two ways. First, giving birth may affect women's status within marriage and the family, which may further affect their involvement in market work and thus socioeconomic attainment. Second, women's fertility is directly related to how many siblings their children have, which inversely affects their children's educational attainment. A smaller sibship size resulting from fertility decline would favor girls' education and thus would contribute to a reduction in educational gender inequality in the next (their daughters') generation. In both pathways, marriage and family serve as important agents in resource allocation (between women and their husbands and between sons and daughters) in the context of fertility decline.

China, like other developing countries, had experienced a dramatic decline in fertility since 1970s. While the country's birth rate remained at around 35 per thousand in the first decade of the People's Republic, the death rate halved from 20 per thousand to about 10 per thousand from 1949 to 1965, probably due to improvement in healthcare and recovery from years of war, with an exception for the period of the Great Leap Forward and the subsequent famine (Greenhalgh and Winckler 2005). Consequently, the population grew rapidly from 541,670,000 in 1952 to 829,920,000 in 1970, reaching a peak in the natural growth rate of 33.33 per thousand in 1963 (National Bureau of Statistics 2009, p. 1).

Figure 1. Analytic Framework: Childbearing and the Pathway to Women's Status Improvement



Concerned that overpopulation could hinder economic development and the improvement of living standards, the Chinese government rolled out the first national birth control campaign in 1971, with the slogan "later-longer-fewer" (*Wan Xi Shao*), referring to later marriage, longer birth spacing, and fewer children (Greenhalgh and Winckler 2005; Presser et al. 2006). A more stringent one-child policy was implemented when China started its economic reform in 1978. To limit the total population to 1.2 billion by 2000, the new Constitution of the People's Republic of China in 1978 declared state advocacy for birth planning, and the Marriage Law of 1980 required every couple to abide by the birth control policy (Greenhalgh 2008). As a result, the total fertility rate dropped from 5.8 children per woman in 1970 to 2.7 in 1979, and was further reduced to 1.5 by the late 1990s (Poston et al. 2006).

Fertility decline in China since the 1970s has yielded many profound economic and social consequences witnessed in the 1980s and afterwards, such as economic growth, population aging, and improvements in children's wellbeing and gender inequality (Zhu, Li, *et al.* 1997). Given the fact that the fertility decline in China largely resulted from state policy intervention rather than increase in women's socioeconomic status, as measured by the improvements in education and labor force participation, we focus on a part of the complex model in the analytical framework outlined in Figure 1 above, namely, how fertility decline has enhanced women's status both within and outside their families. The China case would allow one to better handle the reverse causality issue when looking at the relationship between fertility decline and gender inequality.

RESEARCH QUESTIONS AND HYPOTHESES

We attempt to answer two sets of questions in this paper by proposing and testing six hypotheses. First, does the number of children that a married woman has affect her share of housework and satisfaction with her status within the family and marriage? And how these effects change over time the effect (i.e., from one cohort to another)? Second, how does the changing sibship size resulting from the decline in parental fertility affect educational and occupational attainment relative to men's?

Our empirical analysis is divided into two parts. We argue that lower fertility increases married women's status and wellbeing relative to their husbands' (men) within the family. Time allocation and division of household work are important indicators of women's power status. As fertility declines, women on the whole spend shorter periods of their overall lifespan on childbearing and childrearing, therefore the number of births has significant implications for their family lives and careers. Because of gender role expectations, even if a married woman, like her husband, holds a job, she is expected to devote more time and effort to children and family as a wife and a mother. The more children she has, the more attention and time she needs to devote to family life. This is also the case in the context of Chinese society (Yu and Xie 2012). Therefore, we propose the following hypothesis:

Hypothesis 1. *The more children a woman has, the larger her share of housework would be relative to her husband's share within the family.*

Because of the increase in education and labor force participation, women's compliance with traditional gender roles may not be voluntary. Instead, not only may the tension between family and work hinder their career development, it may also affect their perceived status within the family, for which Hypothesis 2 is testable.

Hypothesis 2. *The more children a woman has, the less satisfied she would be with her self-perceived status in the family.*

We examine two dimensions of women's status within marriage and family in relation to fertility: their share of housework and their satisfaction with their perceived status in the family. A reduction in the number of child births across each cohort contributes to less of a burden on women in terms of housework and greater satisfaction with their perceived status in the family. Within the same marriage cohort, however, women who give birth to more children against the general trend of declining fertility are subject to a larger burden of housework and are less satisfied with their status within the family. Hypothesis 3 is thus proposed.

Hypothesis 3. *The negative effect of childbearing on women's status tends to be stronger in younger cohorts than in older cohorts.*

Across generations, lower fertility implies fewer siblings for the next generation. It is well known that an individual's educational attainment is negatively associated with sibship size. Due to resource constraints and son preference, parents with more children tend to sacrifice the wellbeing of girls for better education for boys. As typically observed in Chinese societies, girls tend to leave school earlier and earn cash income to help support their brothers' education (Chu, Xie and Yu 2007). This fact provides another perspective of in looking at the gender disparities in educational and other socioeconomic outcomes. In other words, because of son preference, daughters in a Chinese family with a mixture of sons and

daughters tend to be disadvantaged in schooling. We expect a first-order interaction between gender and sibship size in educational attainment which can be tested in the following hypothesis:

Hypothesis 4. *Women's disadvantage in education is larger for those with more siblings.*

A similar hypothesis can be posed with regard to the effect of sibship size on gender inequality in occupational attainment, although the effect may be indirect and may occur through education.

Hypothesis 5. *Women's disadvantage in occupational attainment is larger for those with more siblings.*

Because fertility decline yields fewer siblings in the children's generation, those with more siblings against the trend may be placed in a more disadvantaged position. We expect the detrimental effect of sibship size on women's educational attainment relative to men's to be even stronger across birth cohorts and propose our last hypothesis:

Hypothesis 6. *The negative effects of sibship size on women's status are more pronounced among the younger cohorts than among the older cohorts.*

DATA, VARIABLES, AND MEASURES

Data

To examine the impact of fertility (number of children) on married Chinese women's status within the family and test Hypotheses 1-3, we analyze data from the Women's Status Survey, a national representative survey of about 19,449 individuals aged between 18 and 64, including both men and women. The survey, jointly conducted by the Chinese Federation of Women and the China National Bureau of Statistics in 2000 (hereafter WSS2000), includes questions on fertility, gender roles, marriage, the household division of labor and labor market activities. We restrict our analysis to the 8,531 married women who took part in the survey.[4]

To examine how the reduced sibship size resulting from a decline in fertility affects gender equality in educational and occupational attainment in in the subsequent generation and test Hypotheses 4-6, we base our analyses on the China General Social Survey,[5] an annual survey involving a national representative sample of the adult population—those aged 18 or above—in both rural and urban China except for Tibet. The survey in 2006 (hereafter CGSS2006) contains 10,151 completed interviews of adults, with unique information on sibling configuration, i.e., the numbers of elder brothers, elder sisters, younger brothers, and younger sisters each interviewee had (for details of the survey, see Bian and Li 2012). The sibship size can be obtained by adding the numbers of sisters and brothers together. As far as we know, such information is not available from other comparable surveys. We restrict our sample to those born between 1949 and 1988, i.e., men and women aged between 18 and 57 at the time of the survey. We assume that those who aged 18 or above come from family with parents having completed childbearing.

Variables and Methods

For the first part of the analysis using WSS2000, we employ two dependent variables to measure women's status within the family and marriage – division of housework and satisfaction with perceived status. Respondents are asked two questions. For the first question, "Who does more housework", there are three possible choices: the husband, the wife, both about the same. As the question is answered by married women, we treat it as an ordinal variable measuring women's share of housework. The second question, "How satisfied are you with your status within the family?" uses an ordinal scale, with 1 indicating very unsatisfied and 4 indicating very satisfied.

The key independent variable is the number of children the respondent has, which is treated as a continuous variable in the analysis. Other control variables are education, work status, residence, and marriage cohort. Education is coded into four levels: primary school or below, junior high school, senior high school, and college or above. These levels are treated as

a set of dummy variables in multivariate models. Work status is a dummy variable, indicating whether or not the respondent was involved in any paid work at the time of the survey (1 if yes and 0 otherwise). Rural residence is also a dummy variable. To examine the temporal trends, we split all respondents into four marriage cohorts based on the year they were married: 1952-1970, 1971-1980, 1981-1990, and 1991-2000.[6]

For the second part of the analysis using the data from the CGSS2006, the dependent variables are educational attainment, measured by the number of years of schooling completed as a continuous variable, and occupational status, measured by the International Socioeconomic Index of Occupations (ISEI), ranging in principle from 0 to 100 (Ganzeboom, De Graaf, and Treiman 1992).

In this part of the analysis, our central interest is in how gender inequality in education is affected by sibship size over time. Therefore, the key independent variable is the respondent's gender, which is coded as a dummy variable (female=1), with sibship size when the respondent was aged 10 as a/the continuous variable. In this way we measure the sibling effect on the dilution of family resources for children's educational advancement when they grew up.

Family socioeconomic background is an important predictor of educational attainment. We use two proxy measures of family background as control variables: the household registration status, also known as *hukou*, and father's occupational status when the respondent was age 18. One's *hukou* status has important causal effect on educational attainment (Wu 2012), although people can change *hukou* later in their life, mostly by receiving higher education (Wu and Treiman 2004). We take the current *hukou* status (if the respondent has never changed *hukou*) or *hukou* status at age 7 (if the respondent has changed *hukou*) as the respondent's *hukou* origin to examine its impact on educational attainment. Father's occupation at the time when the respondent was aged 18 is another indicator of the influence of family background, especially the financial capacity of a family to support its children's education. It is also measured by the ISEI.

Because the second part of the analysis includes both men and women, regardless of marital status, we use birth cohorts instead of marriage cohorts to approximate periodic variations (see footnote 5). Birth cohorts are coded into three categories: 1949-1970, 1971-1978, and 1979-1988, corresponding to the changes in China's birth control policy. The first cohort (1949-1970) was not subject to birth control policies; the second cohort was born during China's first national birth control campaign that began in 1971; and the third cohort was born after China started implementing its strict one-child policy in 1979. We expect women's educational attainment to increase and sibship size declines across birth cohorts.

For both data sets, we use sampling weights to correct for this oversampling to compute figures representative of the general population in China. The clustering effect on principal sampling units is also taken into account and robust standard errors are presented.

EMPIRICAL FINDINGS

1. Fertility Decline and Women's Status within Family

Table 1 presents descriptive statistics for the selected variables from WSS2000 among the entire sample and also for four marriage cohorts. Overall, among Chinese couples, 77.8 percent of wives perform more housework than husbands on average, despite some variations across different marriage cohorts, especially for those married between 1971-1980 and 1981-1990, who may still have non-adult children or aged parents to take care of. On the other hand, most women seem to be satisfied with their family status, although younger cohorts are slightly less satisfied than older cohorts.

Table 1 also shows the trend in fertility decline. Chinese couples on average have 2.08 children: 3.45 children for those married before 1971, 2.46 for those married between 1971 and 1980, 1.95 for those married between 1981 and 1990, and 1.21 for those married after 1991. Education increases across marriage cohorts: in the oldest cohort, only 4.2 percent completed a senior high school education and 1.1 percent completed college education or above, whereas in the youngest cohort, the corresponding figures are 15.2 percent and 6.7 percent, respectively. In the WSS2000 sample, only about 14.95 percent of married women do not work.

Table 1. Descriptive Statistics for Selected Variables, Chinese Women, 2000

	Overall Sample	Marriage Cohort			
		1952-70	1971-80	1981-90	1991-00
Who does more housework within family (%)					
Husband	8.58	10.46	8.68	7.77	8.66
Same	14.66	14.68	13.26	13.89	17.06
Wife	76.76	74.85	78.06	78.33	74.30
Satisfaction with family status[1]	3.301 (0.617)	3.361 (0.621)	3.346 (0.607)	3.288 (0.611)	3.250 (0.627)
# of children, mean (SD)	1.939 (1.094)	3.297 (1.120)	2.239 (0.982)	1.753 (0.798)	1.142 (0.589)
Education (%)					
<=Primary	43.73	73.38	56.55	34.76	29.29
Junior high	32.82	17.20	28.10	37.89	38.21
Senior high	18.92	7.41	12.66	22.99	22.03
>=College	5.15	2.00	2.70	4.36	10.47
No job (1=yes)	14.26	17.95	12.48	12.33	16.60
Rural resident	51.80	51.44	54.25	53.49	47.23
N	8,531	1,316	1,732	2,815	1,814

Note: The numbers in the table are weighed by population distribution of China.

1. Satisfaction with family status is the ordinal variable with 1=very unsatisfied, 2=somewhat unsatisfied, 3=somewhat satisfied, 4=very satisfied.

We examine the relationship between fertility and women's status within family as measured by two indicators. Table 2 presents estimated coefficients for the ordinal logit models predicting the share of housework for the entire sample and for each of the four marriage cohorts. The positive coefficient suggests that women tend to perform more housework than their husbands, other things being equal. As shown in the table, women with more children tend to perform more share of housework: one additional child increases the net odds by 14.1 percent (=$e^{0.132}$). [7]

Table 2. Ordinal Logit Model for Women Who Do More Housework, Women Status Survey, China, 2000

	Female Sample	Marriage Cohort			
		1952-70	1971-80	1981-90	1991-2000
# of kids	0.132**	0.041	0.072	0.156*	0.390**
	(0.042)	(0.061)	(0.075)	(0.068)	(0.119)
Education (primary or below [omitted])					
Junior high	-0.122	-0.398*	-0.015	-0.066	-0.092
	(0.074)	(0.157)	(0.155)	(0.123)	(0.145)
Senior high	-0.437***	-0.555**	-0.470*	-0.295*	-0.534**
	(0.089)	(0.210)	(0.200)	(0.144)	(0.179)
College or above	-0.499***	-0.334	-0.649*	-0.312	-0.617**
	(0.118)	(0.320)	(0.258)	(0.191)	(0.214)
Marriage cohort (1952-70[omitted])					
1971-80	0.388***				
	(0.097)				
1981-90	0.521***				
	(0.099)				
1991-00	0.338**				
	(0.120)				
No job	0.305***	0.442*	0.380	0.186	0.330*
	(0.080)	(0.193)	(0.199)	(0.125)	(0.153)
Rural	0.092	0.153	0.099	0.165	-0.100
	(0.082)	(0.153)	(0.152)	(0.116)	(0.151)
Cutoff point 1	-1.833	-2.077	-2.234	-2.208	-2.138
	(0.147)	(0.240)	(0.225)	(0.172)	(0.222)
Cutoff point 2	-0.643	-0.957	-1.135	-1.035	-0.801
	(0.147)	(0.233)	(0.211)	(0.165)	(0.209)
N	8,531	1,316	1,732	3,469	2.014
Log likelihood	-5,919.948	-955.859	-1,146.302	-2,298.717	-1,504.979

Notes: Numbers in parentheses are robust standard errors adjusted for clustering in counties. *** p<0.001, **p<0.01, * p<0.05.

Education and employment are two viable means to empowering women in the society and enhancing their status within the family. Education decreases a married woman's share of housework, whereas a woman without a job tends to perform a larger share of housework.

Moreover, women married more recently, who are likely to have non-adult children and aging parents to look after, tend to perform more housework. To investigate how the effect of fertility on housework by marriage cohort and test Hypothesis 3, we replicate the models for each cohort. For those married during 1952-1970 and 1971-1980, the number of children they have does not affect their share of housework, whereas for those married during 1981-1990 and 1991-2000, the number of children significantly increases their share of housework. One additional child increases the net odds of sharing more housework by 4.18 percent ($e^{0.041}$-1) for those married between 1952 and 1970, 7.47 percent ($e^{0.072}$-1) for those married between 1971 and 1980, 16.9 percent ($e^{0.156}$-1) for those married between 1981 and 1990, and 47.7 percent ($e^{0.390}$-1) for those married between 1991 and 2000. The chi-square tests show that such increases across different equations are statistically significant ($p<.01$).[8]

In Table 3, we examine how fertility affects women's satisfaction with their own perceived status within family. Results show that the number of children has a negative impact on women's satisfaction with their own family status. Other things being equal, one additional child reduces the net odds of being more satisfied by 7.96 percent ($1-e^{-0.083}$), and the effect is statistically significant ($p<.05$). Education affects women's satisfaction with their family status non-monotonically. Those women with high school education are more satisfied than both women with primary education or below and women with college education or above. Again, women in the younger marriage cohorts are less satisfied than those in the older marriage cohorts. Perhaps young generation of women are butting up against the continuing hurdles to attaining real positions of power; they are more educated but shoulder more dual burden between housework/childcare and labor market participation.

Again, we replicate models by each marriage cohort. As predicted by Hypothesis 4, the negative effect of fertility on the satisfaction with family status is more prominent in the younger cohorts than in the older cohorts, and the difference is statistically significant ($p<.05$).

Table 3. Ordinal Logit Model for Satisfaction with Perceived Family Status, Women Status Survey, China, 2000

	Female Sample	Marriage Cohort			
		1952-70	1971-80	1981-90	1991-2000
# of kids	-0.083*	0.049	-0.128*	-0.138*	-0.195*
	(0.033)	(0.056)	(0.057)	(0.059)	(0.087)
Education					
(primary or below [omitted])					
Junior high	0.229***	0.274*	0.179	0.332***	0.006
	(0.060)	(0.138)	(0.111)	(0.093)	(0.122)
Senior high	0.201**	0.413*	0.053	0.334**	-0.067
	(0.071)	(0.200)	(0.156)	(0.105)	(0.158)
College or above	0.054	0.686	0.109	-0.003	-0.147
	(0.103)	(0.410)	(0.279)	(0.161)	(0.168)
Marriage cohort					
(1952-70 [omitted])					
1971-80	-0.213*				
	(0.084)				
1981-90	-0.478***				
	(0.088)				
1991-00	-0.656***				
	(0.109)				
No job	-0.092	-0.019	-0.173	-0.105	-0.725
	(0.070)	(0.162)	(0.139)	(0.108)	(0.129)
Rural resident	0.011	-0.293*	0.100	0.132	-0.026
	(0.078)	(0.140)	(0.137)	(0.097)	(0.132)
Cutoff point 1	-5.423	-5.143	-5.345	-4.876	-5.105
	(0.182)	(0.437)	(0.330)	(0.244)	(0.284)
Cutoff point 2	-3.123	-2.803	-2.976	-2.684	-2.713
	(0.136)	(0.253)	(0.190)	(0.151)	(0.177)
Cutoff point 3	0.020	0.354	0.135	0.546	0.352
	(0.129)	(0.210)	(0.154)	(0.138)	(0.168)
N	8,531	1,316	1,732	3,469	2.014
Log likelihood	-7605.03	-1143.89	-1533,66	-3067.85	-1842.62

Notes: Numbers in parentheses are robust standard errors adjusted for clustering in counties. *** p<0.001, **p<0.01, * p<0.05.

In sum, the results of ordinal logistic regression consistently show that fertility is negatively associated with women's status in the family and the effects are more prominent for younger marriage cohorts than for older marriage cohorts with the decline in fertility. Hypotheses 1-3 are all supported.

2. Fertility Decline and Gender Inequality across Generations

We proceed to examine how sibship size affects educational attainment and occupational achievement in terms of the status of a first job for women as compared to men in the children's generation. Table 4 presents descriptive statistics for selected variables from CGSS2006. We see that both the years of schooling and the status of the first occupation increase across the cohorts, while sibship size declines from 3.5 for those born before 1970 to 1.6 for those born after 1979. Indeed, the percentage of those who are an only child increases from 4.1 percent for the first cohort to 17.1 percent for the third cohort.

Table 4. Means and Standard Deviations for the Sample: Chinese General Social Survey, 2006.

	Full	Birth Cohort		
	Sample	1949-1970	1971-1978	1979-1988
Years of schooling	7.8	7.0	8.7	9.6
	(4.0)	(4.0)	(3.8)	(3.4)
First occupation ISEI	34.8	33.2	36.5	38.2
	(13.2)	(13.0)	(13.7)	(12.3)
Female (%)	51.7	50.4	54.0	53.8
Sibling configuration				
Sibship size	2.9	3.5	2.5	1.6
	(1.8)	(1.8)	(1.6)	(1.2)
No siblings (%)	7.1	4.1	7.1	17.1
Urban *hukou* origin (%)	21.7	22.0	21.4	20.8
Father's ISEI	29.8	29.6	30.2	30.3
	(13.3)	(13.3)	(13.3)	(13.1)
N (un-weighted)	7,425	4,732	1,539	1,154

Notes: Figures in parentheses are standard deviations. Data are weighted.

Table 5 presents the estimated coefficients of the determinants of years of schooling. In Model 1, we include gender, sibship size, father's ISEI, *hukou* origin, and cohort as the independent variables in the models.[9] Results confirm a significant gender gap in schooling. Other things being equal, women still receive about 1.3 fewer years of schooling than men. Having more siblings decreases educational attainment for both men and women. One additional sibling reduces an individual's schooling by 0.24 years; educational attainment increases across time/cohorts. Those who were born in 1971-1978 and 1979-1988 are more educated than those who were born in 1949-1970, by 1.54 years and 2.22 years, respectively. The effects of other control variables are as expected: people with urban *hukou* and children from better socioeconomic backgrounds do enjoy significant advantages in education.

The results in Model 1 provide a benchmark for subsequent analyses. In Model 1a, we examine how the effect of sibship size on schooling differs by gender by adding an interaction term. Results show that having more siblings is more detrimental to women's schooling than it is to men's. The non-significant coefficient for the main effect term suggests that the influence of sibship size on schooling is negligible for men, but the significant coefficient of the interaction term indicates a much larger impact on women. Other things being equal, an extra sibling decreases a man's schooling by 0.079 years and a woman's schooling by 0.382 years (0.079+0.303). The difference is statistically significant ($p<0.001$). The evidence lends support to Hypothesis 4, that is, women's disadvantage in education is larger for those with more siblings.

We further break down the sample into three birth cohorts, 1949-1970, 1971-1978, and 1979-1988, and run separate analyses for each cohort. Models 2, 3, and 4 in Table 6 are additive models, confirming the trend in an educational gender gap shown in Table 5. There is no significant difference in schooling between men and women in the youngest cohort (1979-1988) which is affected by the one-child policy.

Table 5. OLS Regression Coefficients for Models of Educational Attainment, Chinese Men and Women, 2006

	Full Sample		Birth Cohort: 1949-1970		Birth Cohort: 1971-1978		Birth Cohort: 1979-1988	
	Model 1	Model 1a	Model 2	Model 2a	Model 3	Model 3a	Model 4	Model 4a
Female	-1.271***	-0.380*	-1.786***	-1.054***	-0.528*	-0.023	-0.327	-0.242
	(0.106)	(0.190)	(0.126)	(0.277)	(0.247)	(0.425)	(0.283)	(0.424)
Sibship size	-0.236***	-0.079	-0.166***	-0.061	-0.362***	-0.244*	-0.556***	-0.527***
	(0.033)	(0.042)	(0.037)	(0.053)	(0.068)	(0.097)	(0.116)	(0.134)
Father's ISEI	0.057***	0.057***	0.059***	0.059***	0.061***	0.061***	0.045***	0.045***
	(0.004)	(0.004)	(0.005)	(0.005)	(0.010)	(0.010)	(0.008)	(0.008)
Urban *hukou*	2.491***	2.479***	2.643***	2.634***	1.983***	2.001***	2.296***	2.291***
	(0.154)	(0.155)	(0.174)	(0.175)	(0.340)	(0.346)	(0.283)	(0.284)
Female×Sibship size		-0.303***		-0.210**		-0.203		-0.055
		(0.053)		(0.071)		(0.133)		(0.198)
Birth cohort: 1971-1978	1.537***	1.548***						
	(0.151)	(0.151)						
Birth cohort: 1979-1988	2.216***	2.199***						
	(0.152)	(0.153)						
Constant	6.206***	5.756***	6.132***	5.778***	7.640***	7.362***	8.820***	8.779***
	(0.196)	(0.207)	(0.218)	(0.259)	(0.407)	(0.417)	(0.386)	(0.382)
N	7,425	7,425	4,732	4,732	1,539	1,539	1,154	1,154
R^2	0.264	0.269	0.221	0.223	0.186	0.188	0.239	0.239

Notes: Numbers in parentheses are robust standard errors adjusted for clustering in counties. *** p<0.001, **p<0.01, * p<0.05

The negative effect of sibship size actually increases over time. Other things being equal, an additional sibling decreases schooling by 0.166 years for those born in 1949-1970, 0.362 years for those born in 1971-1978, and 0.556 years for those born in 1979-1988. In an era of low fertility and high child-rearing cost, children from families with high fertility (thus more siblings) might be particularly disadvantaged, but the effects no longer differ between men and women. In Models 2a, 3a, and 4a, we add an interaction term between female and sibship size, and results show that, except for the 1949-1970 cohort, having more siblings does not harm women's educational opportunities in particular. The magnitude of the interaction effect does not vary significantly across cohorts. Hypothesis 6 is not supported.

Finally, we examine gender differences in the effect of sibship size on the status of an individual's first occupation,[10] and the results are shown in Table 6. Model 1 includes female, sibship size, father's occupational ISEI, urban *hukou*, and birth cohort, and Model 1a includes an interaction term between gender and sibship size. We do not run these models separately for each cohort as in Table 6, since gender difference in the effect of sibship size does not vary by cohort.

Similar to what was observed for educational attainment, the status of a woman's first occupation tends to be lower than that of a man's first occupation, by 2.308 points, other things being equal. Those with more siblings are also more disadvantaged, and an additional sibling reduces the occupational status by 0.243 points. The statistically significant coefficient for the interaction term between gender and sibship size suggests that women with more siblings are even more disadvantaged in occupational status attainment compared to men ($p<.001$). This result is consistent with Hypothesis 5.

Note that in the models above, we did not include education as an independent variable. Once the years of schooling is controlled for in Models 2 and 2a, the effects of gender, sibship size, and their interaction terms all become insignificant, but education becomes a strong

predictor of occupational attainment, as shown by the classic Blau-Duncan status attainment models. Therefore, we conclude that China's fertility decline and the resulting small sibship size has had a direct effects on the changing gender inequality in education, whereas gender inequality in occupational attainment is largely due to the effect of education. Women who were born into families with more siblings tended to be less educated, and consequently, were more likely to start in a first job of lower-status.

Table 6. OLS Regression Coefficients for Models of Status of First Occupation, Chinese Adults, 2006 (N=7,425)

	Without Years of Schooling		Controlling for Years of Schooling	
	Model 1	Model 1a	Model 2	Model 2a
Female	-2.308***	-0.349	-0.457	0.203
	(0.357)	(0.633)	(0.324)	(0.588)
Sibship size	-0.243*	0.102	0.100	0.216
	(0.102)	(0.149)	(0.098)	(0.142)
Father's ISEI	0.210***	0.210***	0.127***	0.128***
	(0.018)	(0.018)	(0.017)	(0.017)
Urban *hukou*	5.956***	5.930***	2.329***	2.333***
	(0.490)	(0.491)	(0.484)	(0.484)
Birth cohort:				
1971-1978	3.049***	3.074***	0.812	0.828
	(0.495)	(0.495)	(0.424)	(0.424)
1979-1988	4.477***	4.439***	1.250*	1.248*
	(0.561)	(0.562)	(0.553)	(0.553)
Female×Sibship size		-0.667***		-0.227
		(0.172)		(0.169)
Years of schooling			1.456***	1.451***
			(0.057)	(0.057)
Constant	27.75***	26.76***	19.34***	19.00***
	(0.762)	(0.822)	(0.767)	(0.831)
R^2	0.148	0.150	0.292	0.292

Notes: Numbers in parentheses are robust standard errors adjusted for clustering in counties. Data are weighted. *** p<0.001, **p<0.01, * p<0.05

DISCUSSION AND CONCLUSIONS

In this paper, we elucidate the complicated and dynamic pathways through which the process of women's status improvement and fertility decline enhance each other. We highlight the impact of fertility reduction on the improvement of women's status in two ways. First, giving birth/child rearing may affect women's status within marriage and family. Second, the small sibship size resulting from fertility decline enhances girls' education, thus contributing to the reduction of educational gender inequality in their daughters' generation. In both pathways, marriage and family serve as important agents in resource allocation (between women and their husbands and between sons and daughters) in the context of fertility decline.

Given the fact that fertility decline in China since the 1970s largely resulted from state policy intervention rather than women's improved socioeconomic status, this paper focuses on how fertility decline leads to the improvement of women's status both within and outside of their families in China. Results from two national representative surveys conducted in 2000 and 2006 show that women with lower fertility perform less housework and also tend to be more satisfied with their status within the family than women with higher fertility. Such effects are more pronounced for women in more recent marital cohorts. Across generations, lower fertility implies fewer siblings for the next generation and daughters tend to benefit more in terms of years of schooling and subsequently the status of their first occupations. The gender gap in educational attainment is negligible for the youngest cohort born after the implementation of the one-child policy since 1979. After taking into account the effect of education, we found no significant gender gap in occupational status attainment, however.

From the development policy perspective, investments in women and the promotion of gender equality are effective methods of controlling population growth in developing countries. On the other hand, as we see in China, reduced fertility also has the effect of enhancing women's status in marriages and the families, and girls with fewer siblings tend

to benefit more in terms of schooling and subsequently in occupational attainment. Perhaps these are just a few of the many important but unintended consequences of fertility decline in China as well as in many other developing countries.

To address the consequences of fertility decline on the enhancement of women's status, analyses of cross-sectional data have several limitations. First, while we focus on women's status as the outcomes, indicated by the share of housework and perceived status within family, and education and employment in the society, women's power/autonomy relative to men's is a broad term that needs better measures at the micro-level in relation to their decisions on child births (e.g., Safilos-Rothshild 1982). Second, the impact of child births on women's status may be endogenous in two respects. A wife with more power relative to her husband may do less housework, more satisfied with her status and also have more autonomy in making decisions on child births. Parents with higher expectations on their children's education may also limit their births, known as the "Endogenous Quality-Quantity Tradeoff" (Becker and Lewis 1973; Steelman et al. 2002). Before better data and more rigorous identification strategies become available, one should be cautious to treat the relationship between fertility and women's status as causal. Finally, the paper has no evidence to link a woman's status within the family and her labor market status, as outlined in the analytic framework in Figure 1, and women's status improvement is a complex concept that encompasses many dimensions, including education, safety, health, ability to make decisions, freedom of movement, and etc. which exist at multiple levels. Our analyses have been able to capture only a small but the most tangible part of it. We hope that future empirical research on China in this field will fill the void with the data from more carefully designs surveys and better measures.

Notes

[1] According to data from the 1982 census, 85.3 percent of Chinese women ages 15 to 55 (excluding students and retirees) held a job, far higher than any other country with a similar level of economic development, and also higher than other Chinese societies such as Hong Kong or Taiwan (National Bureau of Statistics 2005). The rate before the mid-1980s was not available but presumably higher.

[2] As Safilos-Rothshild (1982) pointed out, women's education and labor force participation may not be the most sensitive measures of women status to study the relationship between status and fertility rates, because reproduction is a behavior occurring at the micro level, it is a woman's relative power to her spouse that determines the birth decision. Thus women's power/autonomy within the household should be distinguished from the status of women in the society (also see Dyson and Moore paper 1983). Since this paper is mainly concerned with the social consequences of fertility decline, the distinction becomes less an issue. We focus on both women's status within family and their education and occupational attainment relative to men's in the empirical analyses.

[3] While the relative amounts of resources the husband and the wife bring from the labor market may affect the division of housework to some extent, women still need to shoulder disproportionately more housework to display their gender roles as wives and mothers (Brines 1994; Yu and Xie 2012).

[4] We appreciate Dr. Zheng Dandan of Huazhong University of Science and Technology for the assistance in getting access to the data.

[5] Ideally, the two sets of hypotheses can be tested with a single data source, which is not available. Nevertheless, the two sets of questions with regard to the consequences of fertility decline are linked to each other with the general framework outlined in Figure 1.

[6] Alternatively, one can compare variations across different birth cohorts, but the results do not differ much, since our analyses are restricted to the married women only.

[7] To check whether the effect of the child births is linear or not, we compare two nested models, one with linear specification whereas the other includes the number of children as a set of dummy variables. A likelihood ratio test shows that χ^2=4.67, with 4 degrees of freedom, and the difference is statistically insignificant. Hence, linear specification in the model is appropriate.

[8] This pattern may reflect the life-cycle effect, namely, more share of household work may be positively associated with the existence of non-adult children in the household, but negatively associated with the co-residence of parents. We do not have the information on co-residence in the WSS2000 data.

[9] To check the linearity specification for the sibship size effect in Model 1 of Table 6, we fitted a new model, in which sibship size (ranging from 0 to 10) is treated as a set of dummy variables. The F-test statistic for the two nested models is non-significant at .118 with 9/7409 degrees of freedom, suggesting that the linearity specification is acceptable.

[10] Here we use the status of the first job to avoid the confounding effect of life course. We also tried the status of the current job and obtained the same results.

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