Fertility Preference among Chinese Currently Married Women: Evidence from 2004 China Health and Nutrition Survey

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Any comments or suggestions will be greatly appreciated by the author.

Background

Empirical research has indicated that women's fertility intention is a strong predictor of their later childbirth (De Silva, 1995& Rasul, 1995). Once the effective fertility control methods are widely available to the public, the influence of fertility preference on subsequent fertility behaviors becomes important both in theory and practice.

China's population control policy has been implemented for almost three decades. Today, China is the only country using quotas on childbearing decisions (Scotese and Wang, 1995). As early as 1990s, Feeney and Wang (1993) mentioned that lots of evidence showed China's population control policy had been effective in changing fertility behaviors and maintaining below-placement-level fertility rate (2.1 births per woman). According to 2005 CIA World Factbook, total fertility rate in China was 1.72 children born per woman. The purpose of this study is to examine the most recent reproductive intentions among Chinese currently married women at reproductive age; and find out how the contextual and individual factors influence women's fertility preference.

Literature Review

In developing countries, married women of reproductive age who want to stop having children are increasing. About 50 per cent of married women of reproductive age want to stop having children (Population Reports, 2003). Unlike China, most of these countries do not have stringent population control policy; therefore, the decreasing of fertility intention in these countries is more voluntary in nature.

In China, the dramatic decline of fertility rate was attributed to the economic and administrative incentives for one-child families, and the tough penalties for couples

having out-out-plan births under the population control policy (Aird, 1986). The incentives for one-child families are very small. The penalties for out-of-planning births are very high, which usually means the loss of jobs for couples working in public sectors or state owned enterprises, or high amount of fine for the other couples. In the meanwhile, the core information delivered by the population control policy, that is 'fewer but higher quality children' could have significantly influenced people, especially, those with high education. According to data from surveys conducted in four counties in northern China between 1991 and 1994, Merli and Smith (2002) found that women in the most urban, industrialized county with the most rigid family planning policy had the highest acceptance of one-child family planning policy. Women in the poorest county with the most lenient family planning policy had lower acceptance of the policy. Considering the increasing economic differences between urban and rural areas in recent years, urban / rural difference could have been an important factor for women's fertility preference. And in the meanwhile, the details of the family planning policy could also have effect on women's fertility preference.

Research conducted both outside and inside of China has indicated that family sex composition has been an important factor for women's reproductive intentions. For example, using longitudinal data during 1977 to 1988, Chowdhury, Bairagi and Koenig (1993) found that, in addition to the increase of the percentage of women who did not want more children, the sex composition of children was related to women's fertility preference in Bangladesh. Women with more sons were less likely to intend to have more children. Greenhalgh, Zhu and Li (1994) reported that, in early 1990s, rural residents' motivation for at least one son had not been weakened despite the decrease of total

fertility rate. Merli and Smith (2002)'s study also implied that whether having a son was related to Chinese women's intention to have another child in the future.

Traditionally, Chinese society has had a strong preference for male offerings. Without having a son has been considered as the number one indicator for lacking of filial piety, and it has been regarded as serious disrespect to the ancestors in the family. In reality, since the establishment of the People's Republic of China, Chinese society has established a dual social welfare system. The urban citizens have had generous social welfare services, including pensions, medical care, housing allowance, and so on. However, the rural citizens have not been able to enjoy these benefits. They have had to rely on their family for social support, and had mainly expected their sons to take care of them when they are old. Therefore, having more children, especially sons, has more practical meanings to rural residents. Considering the fact that parents have been allowed to have fewer children, the traditional preference for sons can be intensified. Selective-sex abortions are illegal but widespread in China. The fifth census in China found that the sex ratio of the newborns was 116.86 boys/100 girls in 2000 (China Population Information and Research Center, 2006), which was far above the acceptable international standard of 107 boys/100 girls. The great regional differences of sex composition imbalance have been continuously reported. For example, according to Xinhua News (2003), the most important government media in China, the sex ratio of new borns was 135.64 boys/ 100 girls in Hainan Province. The Chinese Women Federal (2004) also reported that in Chongqing, the city with the largest population in China, the sex ratio was 140 boys/ 100 girls. All of these factors indicate a strong son preference, urban/rural and regional difference in fertility preference in current Chinese society.

As to the relationship between education and fertility preference and behaviors, different theories exist. The leader-follower model considers the educational difference in fertility as only a temporary factor. It suggests that the relationship between education and fertility can be moderated by fertility transitional stages of a country. At the earliest transitional stage, the lower fertility occurs among the small group of educated women. At late and post-transitional stage, most women will be educated and their fertility will decrease. The educational difference in fertility will disappear when countries reach replacement-level fertility (Bongaarts, 2003). However, other studies have found evidence to support permanent difference model, which suggests that women's educational difference plays a role in fertility behaviors regardless of the stage of fertility transition in countries. In developing countries, women's educational level has been found to be negatively associated with fertility, after controlling for household income, rural-urban residency, and husband's education (Jejeebhoy, 1995). Using the data from Demographic and Health Surveys (DHS) in 57 developing countries, Bongaarts found that women's education was still playing a significant role in fertility in late and post-transitional stage. When it comes to China, the core principle delivered by the population control policy – fewer but higher quality children - could have been more accepted by higher educated women at the beginning. During the late and post-transitional stage, this principle could have widely influenced the public. In addition, the high costs of sons (who usually require a new house when get married), can decrease low educated women's motivation to have sons.

Therefore, it can be concluded that gender composition and education are two important factors to women's fertility preference. In China, the regional difference and

the implementation of the family planning policy can influence people's reproductive intentions and behaviors.

Methods

Data source and final samples

The final samples are selected from 2004 China Health and Nutrition Survey (CHNS). The CHNS project was designed to examine the effects of the health, nutrition, and family planning policies and programs implemented by national and local governments and to see how the social and economic transformation of Chinese society is affecting the health and nutritional status of its population. The survey covers nine provinces (Liaoning, Heilongjiang, Jiangsu, Shandong, Henan, Hubei, Hunan, Guangxi, and Guizhou in 2004) that vary substantially in geography, economic development, public resources, and health indicators. In each province, a multistage, random cluster process was used to draw the sample. In 2004, there were 4,400 households in the overall survey, covering about 16,000 individuals.

Since 1991, for the CHNS, a questionnaire of Ever-Married Women (EMW) under the age of 52 has been included to investigate women's family care responsibility, marriage and fertility history, and family planning. However, the longitudinal data of EMW has not been merged. Only the cross-sectional data of EMW can be used for analysis. The EMW covered four groups of women: currently married women, widowed women, divorced women, and separated women. In this study, only currently married women are selected. The final selected samples included: 1) women who were currently pregnant; 2) women who had no children and were not currently pregnant; and 3) women

who had at least one child and were not currently pregnant. The final samples have 2792 currently married women nested within 216 communities. After listwise deletion, there are 2321 valid cases in 203 communities.

Research questions

The primary purpose of this study is to investigate the recent fertility preference among currently married women in China. The research questions include:

1) What is the overall fertility preference among Chinese currently married women?
2) Does the average fertility preference vary across the community level?
3) Does the family planning policy influence the average fertility preference at community level?
4) Does regional difference influence women's average fertility preference at community level?
5) Does the sex composition of current children influence women's fertility preference at individual level?
6) Does educational difference influence women's fertility preference at individual level?

Analytic strategy and main variables

The research questions are intended to examine the contextual and individual factors for women's fertility preference by using the multiple level data. Accordingly, a multilevel regression model is used to 1) evaluate the degree to which the mean value of

the intercept of the final outcome variable varies across communities, 2) whether the specified explanatory variables at community level (level 2) help to account for that variation, and 3) whether the specified explanatory variables at individual level (level 1) help to explain the variation of the outcome measure (level 1).

The outcome variable in this study is the log-odds of a binary measure of the fertility preference among currently married women in China. It was measured by asking the question: if you could choose the number of children to have, would you want to have another child sometime? There were two answers to the question: 0 for no, and 1 for yes.

At community level, there are two clusters of explanatory variables: regional differences and the strictness of family planning policy. The cluster of regional difference variables include urban/rural (0 represents rural area and 1 represents urban) and four regions of the communities. The nine provinces in the survey are divided into four regions: Northeast (Liaoning Province and Heilongjiang Province), East coastal area (Jiangsu Province and Shandong Province), Central China (Henan Province, Hubei Province and Hunan Province), and Southwest (Guangxi Province and Guizhou Province). In the final full model, Northeast, Central China, and Southwest are recoded into three dummy variables; and East coastal area is regarded as the reference group. The family planning policy variables include: 1) whether it is allowed to have at least two children; 2) whether one-child subsidies are provided; 3) whether one-child families receive child health care subsidies; 4) whether the local cadres have implemented the family planning responsibility system, and whether it is connected with economic rewards. The percent of Han population is the control variable at community level. China is a multi-ethical country. In addition to Han, there are 55 minorities. The details of the

family planning policy can be different for minorities from Han population in some areas, but there are no consistent rules across the country. In addition, due to cultural, historical and economic difference, the fertility preference among minorities can be different from Han population. Therefore, it is necessary to control the percent of Han population at community level.

At the individual level, the two primary explanatory variables are the educational levels of the respondents, and the number of sons that respondents had. Educational level is a dummy variable: whether the respondents had at least some upper middle school education [2]. Every currently pregnant woman was supposed to have one living birth. Therefore, for these women, the total number of children they were having will be increased by one in additional to the total number of children they reported for the survey. When a currently pregnant woman mentioned she would like to have another child if the child was a boy, the total number of sons that the woman had would be increased by one in addition to the actual number of sons she reported. When a currently pregnant woman mentioned that she would like to have another child if the child was a girl, the total number of daughters that the woman had would be increased by one in addition to the actual number of daughters she had. When a pregnant woman said that she would like to have another child regardless of the gender of the child, the gender of the child is treated as missing.

The primary control variables at individual level include employment situations, age, household income, the number of daughters, total number of children, health situation, whether having medical insurance, and the proximity to parents and parents-in-law. The

[2] Upper middle school is similar to high school. People go to upper middle school after finishing junior middle school.

measure of employment situation is a binary variable: whether a respondent is working or not. Health situation is a four ordinal measure: 1 to 4 represents excellent to poor, respectively. Household income is a binary variable: whether at least one adult in the household had regular income. The detailed items of the household income in the survey are very complicated. For any case, missing of one item will make the total household income missing, which means that case will be excluded from the final model. Due to the high missing rate of total household income, a rational compromise is made. Whether at least one adult in the household had regular income is considered as the proxy for economic situations. Research using earlier CHNS data found that the proximity of parents influenced married women's maternal childcare (Chen, Short & Entwisle, 2000), and the maternal childcare responsibility can influence women's fertility preference. Four groups of variables are used to represent the proximity of father, mother, father-in-law and mother-in-law. Each group is recoded into two dummy variables: 1) whether the parent was living in the same city or county; 2) whether the parent was living in other city or county. The reference group is that the parent was living in the same house or quasi-house (next door, adjacent to household or same neighborhood/village). The measure for medical insurance is a binary variable: whether have medical insurance.

Analysis

Descriptive analysis

The descriptive statistics for level 2 variables are shown in Table 1.The results show that 66 percent of the communities were in rural areas. More than half of the communities were allowed to have at least two children. Couples received one-child subsidy in more

than 64 percent of the communities. However, only 30 percent communities provided child health care subsidies for one-child families. It was very common that local cadres implemented the family planning responsibility system and connected with economic rewards.

TABLE 1 DESCRIPTIVE STATISTICS FOR VARIABLES AT LEVEL 2

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Whether allow two children	204	.00	1.00	.5245	.50063
Urban/rural	216	.00	1.00	.3380	.47411
Northeast	216	.00	1.00	.2269	.41977
Central China	216	.00	1.00	.3333	.47250
Southwest	216	.00	1.00	.2222	.41671
One-child subsidy	213	.00	1.00	.6385	.48157
One-child health care subsidies	213	.00	1.00	.3005	.45954
Local Cadres implemented policy and connected with economic rewards	216	.00	1.00	.7315	.44422
Local Cadres implemented policy but not connected with economic rewards	216	.00	1.00	.2222	.41671
Percent of Han Population	211	.00	100.00	87.4204	26.64368
Valid N (listwise)	203				

At the individual level, among all the 2792 currently married women, only 11 per cent reported that they would like to have another child if they could choose the number of children to have. Compared with the other developing countries, Chinese women's reproductive intention is very low. About 23 percent of the respondents had at least some upper middle school education. The mean value for the number of sons was 0.79, and the

mean value for the number of daughters was 0.68. The overall gender composition of the children was 116 boys/ 100 girls, which was very close to the average national level. The overall labor force participation rate is quite high: 67 per cent of currently married women were employed. On average, the self-reported health status was not very good. More than half of the respondents reported fair and poor heath status. Only 24 per cent of the respondents had medical insurance. As to the proximity to parents, about half of the respondents were living in the same house or quasi-same house with parents. About 90 percent of the respondents were living in the same house or quasi-same house with parents-in-law. In conclusion, Table 2 demonstrates that the overall reproductive intention of Chinese currently married women is very low; however, there is a lot of variation. The gender composition imbalance of the children born to the respondents was serious.

TABLE 2. DESCRIPTIVE STATISTICS FOR VARIABLES AT LEVEL1

Variables	N	Minimum	Maximum	Mean	Std. Deviation
Fertility preference	2598	0	1	.11	.316
Age	2772	18	52	39.58	8.050
Upper middle school	2792	.00	1.00	.2285	.41995
Employment status	2767	0	1	.67	.470
Current health status	2768	1	4	2.24	.778
Number of children	2553	0	6	1.62	.773
Number of sons	2772	0	6	.79	.696
Number of daughters	2772	0	5	.68	.734
Medical insurance	2760	0	1	.24	.429
Mother lives within the same city or county	2772	0	1	.43	.496
Mother lives in other city or county	2772	0	1	.09	.284
Father lives within the same city or county	2772	0	1	.34	.473
Father lives in other city or county	2772	0	1	.07	.258
Mother-in-law lives within the same city or county	2772	0	1	.10	.294
Mother-in-law lives in other city or county	2772	0	1	.03	.170
Father-in-law lives within the same city or county	2772	0	1	.07	.259
Father-in-law lives in other city or county	2772	0	1	.03	.157
Household has regular wage income	2792	0	1	.43	.496
Valid N (listwise)	2443				

Community variation in fertility preference

At the first analytic step of the multi-level analysis, a Bernoulli sampling model with no predictors at either level is used to gauge the magnitude of variation between communities in fertility preference. The results show: the variance of the log-odds of fertility preference between communities is 0.51 (se = 0.17, p=0.0024); the intra-class correlation is 0.13>0, indicating a significant random effects between communities. Therefore, it is necessary to employ the multi-level regression model for this study.

Model selection

Raftery's proposal to use the Bayesian information criterion (BIC) is used to select the 'best model' among the null-model (the model without any explanatory variables), the random-intercept model, and the random-slope model. For the random-intercept and random-slope model, one of the most important explanatory variables, the number of sons, is used to test BIC. The results show that the BIC for the null-model is 0, the BIC for the random-intercept model is -47.1, and the BIC for the random-slope model is 8.5. The smaller the BIC, the better the model, therefore, the random-intercept model is selected in the final analysis. It also indicates that there is no significant variation of the slope of the number of sons across communities.

The effects of contextual and individual factors

Table 4 gives the results of the final hierarchical logistic regression of fertility preference among Chinese currently married women. The intercept is 1.79, which is the average value of the log-odds of fertility preference (to have another child) across communities.

As to regional difference, Table 3 shows there is significant urban and rural difference between communities in model 1. The average log-odds of fertility preference in rural communities are significantly higher than that in urban communities. However, in model 2, when the three regional dummy variables are included, Table 4 shows the urban/rural difference becomes insignificant. On average, the fertility preference in Southwest China and Central China is stronger than other areas. However, none of the family planning policy variables is significant in the final model.

At the individual level, the number of sons and education are the explanatory variables for fertility preference within communities in this study. The fixed effect of the number of sons is significantly related to the individual fertility preference. On average, the increase of one son will decrease the log-odds of individual fertility preference by 0.64. However, educational level does not influence women's fertility preference. Among the control variables at level 1, age is found to be negatively associated with women's reproductive intention. Every one-year increase in age will decrease the log-odds of fertility preference by 0.10. Women's fertility preference is negatively associated with the total number of children having now. The log-odds of the fertility preference will decrease by 1.33 with every one increase of the total number of children. However, none of the other control variables are associated with women's fertility preference.

TABLE 3

HIERACHICAL LOGISTIC REGRESSION OF FERTILITY PREFERENCE: Model 1

Parameter	Estimate	Standard Error	t Value	Pr > | t |
Intercept	1.98	0.83	2.38	0.02
Urban / rural	0.65	0.26	2.51	0.01
Number of son	-0.58	0.24	-2.40	0.02
Education	-0.00	0.03	-0.16	0.87
Age	-0.11	0.01	-8.35	<. 0001
Medical insurance	0.07	0.24	.029	0.77
Employment	0.20	0.21	1.01	0.31
Heath status	0.20	0.12	1.67	0.10
Total number of children	-1.24	0.24	-5.11	<. 0001
Number of daughter	-0.19	0.24	-0.79	0.43
The variance of intercept	1.08	0.30	3.64	0.00

N=2437

-2 Log Likelihood = 1166.7

TABLE 4

HIERACHICAL LOGITIC REGRESSION OF FERTILITY PREFERENCE: Model 2

Parameters	Estimate	Standard Error	t Value	Pr > | t |
Intercept	1.7890	1.0533	1.70	.0910
Urban / rural	.3695	.2604	1.42	0.1576
Northeast	-.5050	.3797	-1.33	.1842
Southwest	1.0125	.3829	2.64	.0088
Central China	.7453	.3358	2.22	.0276
Whether allow two children	.3417	.2600	1.31	.1903
One-child subsidy	-.2449	.2476	-.99	.3237
One-child health care subsidies	.1040	.2674	.39	.6977
Local Cadres implemented policy and connected with economic rewards	-.3293	.4635	-.71	.4783
Local Cadres implemented policy but not connected with economic rewards	-.8147	.5182	-1.57	.1174
Percentage of Han population	.0052	.0049	1.08	.2826
Age	-.0971	.0139	-6.96	<. 0001
Upper middle school	-.0883	.2301	-.38	.7016
Employment status	.1548	.2049	.76	0.4509
Medical insurance	.2661	.2544	1.05	0.2967
Current health status	.1589	.1201	1.32	.1870
Number of children	-1.3336	0.2397	-5.56	<. 0001
Number of sons	-.6171	.2397	-2.62	.0096
Number of daughters	-.2425	0.2362	-1.03	0.3059

Mother lives within the same city or county	-.03577	.2365	-.16	.8735
Mother lives in other city or county	.3880	.4379	.89	.3766
Father lives within the same city or county	-.0083	.2291	-.04	.9711
Father lives in other city or county	-.6344	.4868	-1.30	.1940
Mother-in-law lives within the same city or county	-.5907	.4670	-1.26	.2074
Mother-in-law lives in other city or county	.8637	.6803	1.27	.2057
Father-in-law lives within the same city or county	-.1569	.4845	-.32	.7464
Father-in-law lives in other city or county	-.4669	.7732	-.60	.5466
Household has regular wage income	-.0280	.2047	-.14	.8914
The variance of intercept	.5142	.2215	2.32	.0212

N=2321

-2 Log Likelyhood = 1056.3

Discussion

From the above analysis, we can see that, in general, there is very low fertility preference to have another child among currently married women. However, the reliability of the data can be a problem if the potential respondent bias is considered. The limitation of face-to-face surveys could lead the respondents to guard their tongues (Merli & Smith, 2002; Hermalin & Liu, 1990; Wang, 1990). It is hard to determine to what extent these women's responses reflected personal ideals in contrast to social norms, esp., in China, where people are more likely to subject to social pressure. Therefore, the next step should investigate these women's contraception behaviors to triangulate the research results. When it comes to the nature of fertility decision-making in the family building process in

China, the survey did not take into account of the attitudes of other family members - particularly husband, who can significantly influence women's reproductive decisions.

Women's fertility preference is related to community context. Significant regional difference in fertility preference exists across communities. Southwest and Central China communities have stronger fertility preference than other community regions. However, the family planning policy strictness is not related to fertility preference. One potential reason for this result can be the nature of the question being asked. In the CHNS survey, the question asked about fertility preference (if you could choose the number of children to have) was about the most idealistic situation; therefore, it is possible that the respondents did not take the policy factors into consideration. Another potential reason for the non-significant relationship between fertility preference and policy strictness can be due to the fact family planning policy does not influence people's fertility intention in reality. In another word, even without the family planning policy, the fertility preference among currently married women is still very low.

At the individual level, in addition to the total number of children, gender composition plays a significant role, which is consistent to other studies. The number of sons is still a decisive factor for women's reproductive intention. Furthermore, this effect remains consistent across communities, which implies that the strong preference for sons is a common phenomenon in China. The number of daughters does not impact women's fertility preference. Under the stringent population control policy, because the total number of children is limited, the gender composition imbalance can continue and become more serious due to illegal sex preselection.

Surprisingly, the educational level is not associated with women's fertility preference; and this result can give evidence to the theory of leader-follower model. It is possible that with the increase of education in the whole population, the individualism increases among these women. The increase of education could have also helped women to accept the idea of "fewer but higher quality children". Medical insurance is not related to women's fertility preference. China has undergone medical insurance reform since late 1990s; however, it was claimed as a failure by the government in the early 2006. The low level of the coverage of medical insurance, and the increasing proportion of personal contribution could have made the benefits very low in reality. So, from the perception of the respondents, there could be no significant difference of whether having medical insurance or not. In this study, among the 24 per cent of the respondents having medical insurance, more than 2 per cent have commercial medical insurance. The coverage of the population and the services of public medical insurance are very limited, which probably indicated no substantial benefits. Perhaps this is the true reason why there is no significant relationship between medical insurance and fertility preference. Fertility preference is not significantly related to household economic situations. This result indicates that the long historical traditional idea of having a son to support the old parents is not as strong as before.

Conclusion

The overall fertility intention among currently married women in China is very low. The fertility intention is both influenced by community context and individual factors. The average fertility preference varies across communities. Fertility preference at

community level is related to regional difference; however, it has nothing to do with the family planning policy. At the individual level, the traditional strong emphasis on the importance of sons still holds true at present. However, individual fertility preference is not related to education, economic situations, and the proximity to parents and parents-in-law. However, considering of the limitation of the dataset, the reliability of the results need to be triangulated in the future. The contraception behaviors of women are necessary to be investigated to verify the reliability of their responses to fertility preference. The fertility decision making process, and the attitudes of other family members (especially, husband) needs to be accessed in order to better predict women's later fertility behaviors. In addition, China is a large country with huge regional difference, and the CHNS is not a random sampling survey representing the whole situations in China, therefore, the generalization of this study should be dealt with caution.

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