Impact of Living Arrangement on Sex Ratio at Birth in China's Rural Area

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Abstract: This paper analyzes the impact of living arrangement on sex ratio at birth in China's rural areas based on the 1% population sample survey data in 2005.The results show that, comparing with couples who live alone, women who live with parents-in-law has a higher percent to have boy babies, while, living with women's own parents makes almost no difference. In the view of parity, impact of living arrangement mainly concentrates on the second and above parity. Among regions, in the third type with the sex ratio at birth between 110 and 120, the forth type region with the sex ratio at birth higher than 120, living arrangement has more distinct influence. In addition, education of women in China's rural areas has a reverse U-shape effect on children's sex. Sex structure of ever born children apparently affects sex of babies when women give birth again. Participating in pension insurance could decrease the percentage of women having boy babies.

Introduction

Long-term imbalance of sex ratio at birth becomes a gradually important population issue in today's China. The sixth population census of China in 2010 shows that sex ratio at birth of 13 provinces is above 120, 15 between 110-120, indicating the severe situation in the country. Speaking of reasons for imbalance of sex ratio at birth in China, "son-preference" and its social ,cultural background must be mentioned. In traditional China, social system is based on patriarchy, thought of "male-superior-to-female", "No off-spring is the worst unfilial", "continuation of the family" impel couples to give birth to boys. Especially in context of family planning policy, number of children one couple could have is strictly limited, however, traditional "son-preference" and related social, cultural environment lag behind, leading to the stronger desire to have a boy baby for couples.

Corresponding to the traditional patriarchal social system, living arrange after marriage in China is dominated by "patrilocal residence" pattern (living with husband and his family). However, recently family structure in China presents apparent changes, proportion of nuclear

family goes up, average family size shrinks. At the same time, living arrangement undergoes changes, more and more couples choose to live apart from parents, "uxorilocal residence" gradually rises, even up to 18.5% in some special regions of China (Yan Fumei,1995). Both living arrangement and sex ratio is close related with China's traditional culture, then what is the relationship between living arrangement and sex ratio at birth? This paper is aimed at to explore the relationship between these two variables.

Literature Review

Since 1980s, sex ratio at birth in China began to rise, presenting characters of wide range, long term, high level. There are fruitful literature on the issue of reasons for imbalance of sex ratio at birth, including economic, social, cultural, demographic, statistical perspectives. Liu Shuang (2006) thought that boys in China have special social and family value which girls lack and social culture is the essential reason for imbalance of sex ratio at birth. As the important reflection of traditional social culture, living arrangement after marriage makes significant influence on sex ratio at birth. Yan Fumei (1995) pointed out that preference to kids' sex in espouse marriage and ambil-anak marriage is significantly different, couples in espouse marriage have apparently stronger son-preference. Jin Xiaoyi, Li Shuzhuo etc. (2004) found there is no apparent son-preference in regions where ambil-anak marriage is prevailing.

Past research on this subject are mostly based on field surveys conducted in some special regions, and these research are majorly concentrated on regional analysis from the micro perspective, that means national analysis in this field is lacking. In addition, past research are mainly conducted without parity subdivision. Thus, this paper will use nationwide demographic data to study on the impact of living arrangement on parity-specific sex ratio at birth, and compare the influence between different parities and regions.

Data and Method

Intergenerational interaction is the important means for living arrangement making effect on women's fertility behavior, especially in big families where adult children live together with parents (Yang Juhua, 2007). Therefore, comparing with couples living alone, living with parents makes interaction between adult children and parents more frequent and direct, old parents' fertility thought of "son preference" "continuing the family clan" easily affects their children.

This affects women's fertility behavior and thought directly and indirectly though daily intergenerational interaction, making the fertility thought in two generations convergence. What's more, women would like to improve status through giving birth to boy babies when living together with parents.

This paper will use the 1% population sampling data of China in 2005 to do analysis. According to the question R2 (relationship with the householder), R3 (sex), R7 (residence place) and R35 (information about women's fertility in the last year before survey), choose samples and calculate their living arrangement pattern. On account of that this paper pays particular emphasis on impact of living arrangement on parity-specific sex ratio at birth, however, in China urban areas, most couples only have one child, and simultaneously the fertility policy is different between rural and urban areas in China, consequently we drop urban samples. At last, we get 19551 cases.

Dependent variable is made according to the survey questions "whether gave birth in the past one year" and "sex of the baby". This is a dummy variable, with value 0 meaning female baby, value 1 meaning boy baby. In China, the imbalance of sex ratio at birth is different among parities, higher parity, higher sex ratio at birth (Chen Wei & Wu Lili, 2008). Thus, it is necessary to differentiate parity when analyzing impact of living arrangement on children's sex ratio at birth. So, this paper defines other two variables, sex of the first parity, sex of the second and above parity.

With the data, we use descriptive statistics and binary Logistic regression to analyze impact of living arrangement on sex ratio at birth.

Results and Analysis

In our sample, 9883 women live with their husband alone, account for 50.55% of the total sample (See in Table 1). So, it is clear that living alone is the main living arrangement pattern for couples in present China. While, 1285 women live together with their parents, making up 6.57%. The remaining 8383 women live together with their parents-in-law, about 42.88% of the whole sample.

Table 1 Contingency Table Analysis of living arrangement and SRB

Living Arrangement	Frequency (person)	Percent (%)
Living Alone	9883	50.55

Living with parents	1285	6.57
Living with parents-in-law	8383	42.88
Total	19551	100.00

Living arrangement is the main independent variable, fist we observe the relation between the variable and sex ratio at birth of kids using the contingency table. Table 2 shows that SRB of kids are significantly different among women with different living arrangement patterns. Totally speaking, women ling with their parents-in-law give birth to more boy babies, of course, SRB of kids born in these families is much higher. While, women living with their own parents has lowest probability to give birth to boy babies.

Within parities, living arrangement makes different influence. For the first child, SRB is almost the same among 3 kinds of living arrangement. But for second and above child, the impact is rather significant.

Table 2 Contingency Table Analysis of living arrangement and SRB

	Total		First Kid		Second kid and above	
	Percent of boy babies(%)	SRB	Percent of boy babies(%)	SRB	Percent of boy babies(%)	SRB
Couples live alone	55.03	122.38	52.59	110.95	56.49	129.84
Living with parent	53	112.77	51.89	107.87	57.2	133.64
Living with parents-in-law	54.67	120.61	52.43	110.23	62.09	163.75

Note: SRB means "sex ratio at birth", it equals to number of boy babies / number of girl babies*100.

To further explore the relation between living arrangement of women and SRB of kids, I run binary Logistic regression model, including some important variables, such as education of women, age, ethnicity, employment, participation of social security.

Model 1 is for the total SRB of kids, Model 2 is about the first kid, and Model 3 is for second parity and above (See Table 3). The regression result shows that for the first child, living arrangement has almost no influence on kid's sex ratio at birth, just as the outcome of contingency table. But for the second parity and above, living arrangement shows great impact on kid's sex ratio at birth. Comparing to couples living alone, women living with parents-in-law have a 21%

higher probability to give birth to boy baby. Besides living arrangement, women's soc-economic characters also make influence on their kid's sex ratio at birth. Women's education shows an inverted U-shaped impact on kid's sex ratio at birth. Sex structure of kids ever born presents significant influence on the next kid's sex.

Table 3 Logistic regression results

	Model 1		Model 2		Model 3	
	Odds ratio	Std. Error	Odds ratio	Std. Error	Odds ratio	Std. Error
Living Arrangement						
（Reference：living alone）						
Living with parents	1.013	0.063	0.992	0.071	0.99	0.126
Living with parents-in-law	1.066*	0.036	1.008	0.041	1.208****	0.071
Age	0.991**	0.004	1	0.006	0.985***	0.006
Ethnicity						
（Reference：minority）						
Han	1.032	0.044	1.007	0.058	1.06	0.069
Education						
（Reference：primary school and below）						
Junior middle school	1.088**	0.037	1.119**	0.051	1.044	0.053
Senior middle school	1.047	0.071	1.034	0.081	1.101	0.168
College and above	1.024	0.201	1.07	0.227	0.657	0.349
Employment						
（Reference：no）						
yes	0.973	0.031	0.941	0.036	1.034	0.057
Region						
（Reference：imbalance worst）						
Slight imbalance	0.823***	0.053	0.983	0.083	0.642****	0.063
Medium imbalance	0.862****	0.028	0.937	0.038	0.742****	0.04
Sex structure of kids ever born						
（Reference：no kids）						
only girl	2.072****	0.09			2.068****	0.335
only boy	0.809****	0.041			0.805	0.132
# of boys equal to girls	1.214*	0.143			1.258	0.245
more boys than girls	0.249****	0.074			0.268****	0.091
more girls than boys	4.872****	1.039			4.768****	1.268
Endowment insurance						
（Reference：no）						
yes	1.045	0.107	1.122	0.137	0.879	0.168
Pseudo R2	0.023		0.005		0.048	
N	19252		11573		7668	

Significance: P<0.1，*；P<0.05，**；P<0.01，***；p<0.001，****.

Conclusion

In China's rural areas, "patriarchal" living arrangement, i.e. living with husbands' parents, is dominant, however, along with the social-economic development and marital thought changing, living arrangement after marriage changed as well and made impact on sex of babies. This paper draws several conclusions based on data analysis:

(1) Comparing with couples living alone, women living with parents-in-law in China rural area give birth to much more boy babies, leading to higher sex ratio at birth. Women living with parents-in-law undergo much more stress than those living alone, and simultaneously parents-in-law make more influence on women's fertility behavior through daily life. Women are likely to select to give birth to boy baby to improve their family status. What's more, living with parents-in-law enhances the probability of transferring parents' son preference to women, affecting women's fertility behavior from outside environment. Traditional living arrangement makes adult son the only support choice for parents when they are old, thus son preference develops, living together makes it easy to realize the traditional function of supporting the elderly. While, living apart from parents weakens the function to some extent, or it transforms into economic support, in this situation, having sons makes no difference from having daughters.

(2)) In addition, impact of living arrangement on kid's sex ratio at birth depends on parity, the influence is mainly concentrated on second parity and above in China rural area.

(3)Furthermore, women's soc-economic characters also make difference. In modern society, education level of rural women in China is much improved, and the living arrangement distribution of women with different education level has much difference. For women with college degree, percent of women living alone is about 68.3%, 10 to 20 percentages higher than other women. The regression result shows that, percent of these women giving birth to boy baby is apparently lowered.