The Effect of Migratory Behavior on Fertility in Fujian, China

(preliminary draft)

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Abstract

This study uses data from China International Migration Project to examine the effect of couple's migratory behavior on the fertility in Fujian, China. Taking both internal and international migration experience of the couple, and multiple aspects of fertility into account comprehensively, this research not only improve theoretical framework but also give policy implications on China's Family Planning. Applying event history analyses, we find strong evidence for the association of migration with lower fertility. Migration inhibits fertility in three aspects: reduce number of children, lengthen 1st and 2nd birth interval from marriage, and decrease the risk of having 1st and 2nd child birth. In addition, wife's migrant experience is also crucial in the fertility behavior, which pushes us to rethink the sex role of domestic economy and family reproduction.

Introduction

China has the largest population in the world. In 2008, the population of China reached 1.3 billion, which is over one-fifth of the world population. China had kept high fertility until the implementation of family planning in the early 1980s. The overall fertility rate in China has dramatically reduced in the past three decades. However, due to the tremendous population base, it's still a critical task to control Chinese population.

For China, both the internal migration and the international migration are on the rise. As a result of China's transition to a market-oriented economy and the remaining household registration system, the amount of temporary migrants has increased greatly. In addition, there are evidences that the size of domestic migrant population is likely to continue rising. (Liang, 2001). On the other hand, China has a long history of emigration. The destinations spread over all the continents, from southeast Asia to North America. Because of the economic reform in the late 1970s, the size of international migrants is also growing rapidly. Fujian Province, located in the southeastern of coastal regions, is famous for its magnitude of migration. By the mid-1990s, Fujian Province had overtaken Guangdong Province and become the top immigrant-sending province in China (Liang, 2001).

As two important demographic elements, migration and fertility is closely correlated. Given the rising internal and international migration in China, it's very meaningful to explore their effects on fertility. This research aims to examine the effect of migration behavior on migrant couples' fertility in Fujian Province, China.

Migration and Fertility

In population studies, a large number of accumulated research links migration with fertility

and family maintenance (Goldstein and Goldstein 1981, Stephen and Bean 1992, Brockerhoff and Yang 1994, White et al., 1995). Most research, which examines the relationship between migration and fertility, regards migration as an independent variable and fertility as outcome.

Quite a few research demonstrate negative effect of migration on the number of children. Menken (1979) and Bongaarts and Potter (1979) found out that fertility among the women with migrant husbands were depressed. Jensen and Ahlburg (2004) found that large fertility declines accompany post-migration employment in the Philippines. They also offer speculative evidence that disruption accompanying migration largely account for lower fertility. But migrants are not always those who would have lower fertility. Brockerhoff and Yang (1994) found in some sub-Saharan African countries that the pre-departure fertility of migrants from rural areas was higher than average (sometimes substantially so). Using data from MMP, Lindstrom and Giorguli Saucedo (2002) reveal that spousal separation due to temporary migration reduces birth probabilities in the short term, but does not decrease marital fertility in the long term.

However, the relationship between migration and birth intervals appears to be less clear. Massey and Mullan (1984) showed that the seasonal absence of migrant husbands from Mexico disrupted both the level and timing of fertility. Using longitudinal data from the Peru Demographic and Health Survey, White et al (1995) indicated that having fewer children are positively associated with geographical mobility. As to the case of Brazil, Hervitz (1985) found that rural-to-urban migrants maintain their high fertility levels without any lasting reduction. His empirical research provided evidence of significant disruption effects, but was only subject to short-term. Using data from the Melbourne Family Formation Survey, Carlson (1985) also found the temporary but very potent disruptive effect of international migration on fertility. Migration had a short-term impact on the timing of the next birth, but had no effect on the timing of

subsequent births. A given birth interval was on average nearly twice as long for women who migrated during it as for women who did not.

Lindstrom and Giorguli Saucedo (2007) find that U.S. migration at the outset of marriage does not disrupt the timing of the first birth. However, after the first birth, the tempo of childbearing in the U.S. slows considerably compared to childbearing in Mexico. Their earlier study (Lindstrom and Giorguli, 2002) revealed that men and women reacted differently to their experience in the U.S. Migration experience of women result in lower fertility. While U.S. migration experience among men who return to Mexico is associated with higher marital fertility in Mexico.

Why migration affect fertility?

Three most common mechanisms linking migration and fertility are disruption, adaptation and selectivity. Disruption associated with solo migration of the husband or wife can cause lower fertility through physical separation of spouses (Harrison et al, 1986; Kiningham et al. 1996). Menken (1979) and Bongaarts & Potter (1979) have demonstrated the potential of recurrent separations to increase the length of birth intervals and thereby reduce completed fertility among non-contraception couples. While spousal separation may in the short term delay a birth and disrupt the tempo of childbearing, the influence of separation on completed fertility depends on the expected number of births, the duration and frequency of migrant trips. Lindstrom and Giorguli Saucedo (2002) found no evidence that long-term separation will reduce cumulative fertility since couples were able to compensate for lost reproductive time by accelerating the timing of births when they get reunion after separation.

The adaptation hypothesis suggests that change in residential environments experienced by

rural-urban and international migrants generate fertility declines. This fertility trend results from both economic and cultural factors. Couples migrate to low-fertility areas are expected to adjust their fertility to lower level in response to the costs (cost of childcare) and opportunities (more widespread employment opportunities) encountered in their new environment, and as a result of the gradual adoption of prevailing lower fertility norms in the destination (Lee and Farber, 1984; Jensen and Ahlburg, 2004). White et al. (2008) found rural-to-urban migrants have lower fertility once in urban settings, and confirmed the adaptation mechanism in the effects of migration and urbanization on fertility. The underlying assumption of the adaptation hypothesis is that migration is long-term. Fertility adaptation is one aspect of multifaceted effort to maximize the long-term returns on migration.

Selectivity implies that migrants may be selected for individual characteristics that are related to lower- or higher-than-average fertility. Generally, selectivity alone is not a critical causal explanation of the impact of migration on fertility trend since these sort of individuals would have lower fertility even if they didn't migrate. In order to give solution to this issue, I include control variables such as age, education in the models. I also compare the effects of migration for international migrants (usually long-term) and domestic (largely short-term, circular) migrants. Moreover, I compare the fertility of international and domestic migrants to non-migrants in the origin place.

The case of migration and fertility in Fujian, China

Many of the recent theoretical and empirical studies on migration and fertility are based on the case of Mexico-to-U.S. migration. The significant rise of both domestic and international migration provides a good opportunity to examine if the theory and findings from previous

research also fit the case of China. Considering the different geography and socio-political institutions of the two countries, the results are very likely to be different. As a developing country with the largest population, the research on the relationship between migration and fertility may not only improve theoretical framework but also give policy implications on China's Family Planning. Fertility is the key to the population growth in China, which directly influences economic development and social welfare. Family planning (one-child policy), which endeavors to control birth, was formally put into practice in 1983. However, in many rural areas, it's very difficult to implement one-child policy due to various socio-cultural factors. Poston et al. (2002) use data from the 1% Sample of the 1990 Census of China to find abnormally high SRB's in most of the provinces of China, especially at parities 2 and higher when the prior births were daughters. They also find that these patterns are prevalent in societies with rapid fertility decline and strong son preference, such as Taiwan and South Korea.

How will migration affect family planning in the context of China. In other words, will migration make family planning easier or more difficult to carry out? Using data from a 1988 survey of Hubei Province, Goldstein et al. (1997) argued that migrants generally do not have more children than non-migrants, although changing family planning policies have a strong impact on the timing of first birth and on the likelihood of higher-order births. From a 1993 survey conducted in Hubei province, Yang (2001) made a different conclusion. She found that temporary migrants exhibit a significantly higher probability of having a second or higher order birth than comparable permanent migrants and non-migrants because separation leads to a greater likelihood to have unplanned birth. Since the relationship between migration and fertility is reciprocal, the sex of a child can act as a selection factor in the migration of married women (Hoy 1999).

Fujian Province is located on the southeastern coast of China, across the Taiwan Strait. The 2000 Chinese population census shows that Fujian had a population of 34 million (NBS 2002). We choose Fujian as our case for several reasons. First, Fujian has a long legacy of migration, and is famous for its magnitude of both internal and international migration since 1980s. It has become the top international migrant-sending province in China. Second, Fujian province has relatively high fertility, especially in its rural areas. According to the 2005 1% Chinese population survey, in the rural area of Fujian, 34.2% family have more than one child. In rural Fujian, the number of live-born per woman is 1.94, above the national average level (1.83). If large scales of migration decrease the number of children and lengthen birth intervals, it will exert great impact on population growth and economic development in migrant sending communities. Third, most non-urban regions in Fujian keeps the traditional norms of childbearing. For example, "more children, more happiness", "bring up more sons to support parents in their old age", and the sex preference for boy is still widespread. It's a precious experimental field to test adaptation hypothesis: to examine if migration from rural to urban areas (both domestic and international migration) can facilitate the fertility transition. After migrants from rural Fujian adapts to urban fertility norms, will they communicate these norms to the population at origin through circulation?

Research on the relationship between migration and fertility in China was hindered by lack of data. Questions on migration and details of fertility were not included in the first three population census of the People's Republic of China. Due to the lack of event history data in China, the causality of prior migration and later fertility hasn't been clarified. Even with limited data from surveys in Hubei Province, researchers haven't reached a consensus on the issue yet. This study is among the first to investigate this field in the context of China. In addition, most

previous studies examined the effect of either domestic or international migration on fertility. Our research focuses on both internal and international migration, which may not only add to current empirical evidences about migration and fertility but also improve the theory.

Data and Method

Data for this study is from *The China International Migration Project*. This research is funded by The National Science Foundation (SES-0138016), The National Institute of Child Health and Human Development (1 R01 HD39720-01), and The Ford Foundation (1025-1056). It's composed of Four Fujian surveys conducted from October 2002 to December 2003. We choose all household heads and their spouses to construct a database, where each case includes both husband's and wife's socio-demographic characteristics (e.g. age, education), their migration information, and their shared marriage features (number of children, marriage time, 1st and 2nd child birth time, etc). There are a few missing data on month of marriage, month of husband's and wife's domestic and international migration, and also the month of 1st and 2nd child birth. I impute missing values to the mean month respectively for these listed variables above. For those couples who got married and gave birth to their 1st child at the same year but have missing value on the detailed month (52 cases), I made some reasonable changes to their 1st birth interval. Since both the average months of marriage and 1st birth are 7 (July), I replace those 1st birth intervals (0 month) with 10 months. Finally, 1419 married couples consist of our sample.

Although both husband's and wife's migration behavior affect fertility outcomes, this paper pays more emphases on the former. Husbands migrate more frequently since males traditionally take heavier responsibilities for family wellbeing in China. This project first analyze the relationship between number of marriage children and different migrant status of couples. OLS

regression will applied in this part to examine the effect of couple's migration experience on their number of children after controlling several important socio-demographic characteristics.

In the second part, this paper mainly examines how couples' migratory behavior influence the timing of 1st child birth and 2nd child birth. Because fertility and migration are defined in terms of change over time, event history analysis is the best method to study its causes. Event-history analysis, a burgeoning statistical method, has made important contributions to sociological research in several notable respects. First, it has made stochastic process models of social phenomena tools of main-stream research in sociology. Second, it has demonstrated benefits of longitudinal data analysis, which promotes causal inference, to many social researchers. Third, it has made certain analytical concepts central to sociological research, including: hazard rates; the number, timing and sequencing of life events; censored observations; and unobserved heterogeneity. Finally, it has largely enriched the substantive knowledge in several areas of sociology. In short, event history analysis has already established itself as a strong methodological tool for the analysis of longitudinal data in sociological research. It provides us with the opportunity to think more deeply about the integration between theories and models of social phenomena and the refinement of data analysis.

Migrant category is the key independent variable. Migration is a time-varying explanatory variable. Dependent variables include interval between time of marriage and time of 1st child birth, and also interval between marriage and 2nd child birth. The unit for birth interval is month, so it's continuous-time data. Controlling variables are couples' education level, wife's age at marriage, marriage cohort of female, age difference between spouses. I will use cox model to conduct event history analyses.

We divide couples into several categories according to husband and wife's migration history.

Husbands are categorized into three groups: non-migrant husband, domestic migrant husband, and international migrant husband. To clarify the causal impact of migration on fertility, in the 1st child fertility analysis, a non-migrant husband is defined as the husband who didn't have a migration history between marriage and 1st child birth. A domestic migrant husband refers to the husband who migrated domestically during the period from marriage to 1st child birth. An international migrant husband is defined as the husband who have international migration after marriage but before 1st child birth. The migrant category for wives are conducted in terms of the same criteria.

In the analyses of the effect of migration on 2nd child fertility, a non-migrant husband means the husband who didn't have migration history between 1st child birth and 2nd child birth. A domestic migrant husband indicates the husband who migrated domestically between 1st child birth and 2nd child birth. An international migrant husband is defined as the husband who migrated internationally after 1st child birth but before 2nd child birth. The same criteria are applied for the categorization of wives in accordance of their migration history. The migrant categories for 1st child birth analyses are independent from those for 2nd child birth analyses because couples' migrant status may change in different periods. A non-migrant husband in 1st child interval could become domestic migrant if he migrated domestically between 1st child and 2nd child birth.

I propose three hypotheses as follows:

1. Both families with domestic migrant husband and those with international migrant husband will reduce the number of children.

2. For the 1st child fertility, both domestic and international migrant husbands have longer

interval from marriage to the 1st child birth if they migrated during the period. Expectation of long distance separation will accelerate the birth plan of their first child. But long time of migration experience may delay giving birth to their 2nd child. Migrant husband or wife, whatever type of migration, has lower risk to have 1st child birth than their non-migrant counterparts.

3. For the 2nd child fertility, a couple with domestic migrant husband or international migrant husband has longer interval of 2nd child given the husband migrate after their 1st child fertility. Both domestic and international migrant husbands have lower risk to have 2nd child birth. Higher education level of wives will decrease the risk to give birth to 2nd child, no matter their husband migrate internationally or not.

Results:

First, let's examine the association between the number of marriage children and couple' migration experience. Each married couple in our sample have 3 children on average. Among them, 17.5% have only 1 child; 33.4% have 2 children, 28.6% have 3 children, and 20.5% of them have 4 or more children.

Table 1[1] shows the migrant category for all married couples until the time of survey. 46.6% couples (661) have never migrated before. 19.4% couples (275) are composed of international migrant husband and non-migrant wife. 12.8% couples (182) have domestic migrant husband and non-migrant wife. Among all the husbands, 18.0% are domestic migrants, and 27.1% are international migrants. While for all the wives, 15.2% are domestic migrants, and only 6% have international migration experience.

The mean number of married children for every migrant category is listed in table 2.

[1] See Appendix for tables.

Couples without any migration experience have 3 children on average. Those non-migrant wives with domestic migrant husband give birth to 2.4 children averagely. The mean number of children for couples of non-migrant wife and international migrant husband reduces to 2.15. For domestic migrant wives, the mean number of children also decrease with the spatial distance between spouses. Those couples of domestic migrant wives and international migrant husband have the lowest average number of children (1.74) among all migrant groups. Couples of both international migrants have 3 children on average, the same as those non-migrant couples, because most international migrant couples live together. The pattern indicates that spatial separation for couples have negative impact on their number of children.

Table 3 shows the effect of couples' migration experience on their number of children. Model A only include socio-demographic characteristics of couples. Model B adds the migration information of both husband and wife. In model A, all the three marriage cohorts (1980-1989, 1990-1999 and after 2000) significantly decrease their number of children compared to the cohort prior to 1979. Younger wives when they got married are likely to give more births. Compared to illiterate women, those wives with some education attainment tend to reduce their number of children. The education level of husband also have significant negative impact on their number of children. Age differences between husband and wife is not statistically significant. In model B, the effects of all the controlling variables are very similar to those in model A. Couples with wives who have migrated domestically tend to increase their number of children. Families with domestic or international migrant husbands are likely to reduce their number of children.

In the next part, I will explore the influence of couple's migration on the probability and the timing of 1st child birth and 2nd child birth.

Table 4 demonstrates the case distribution among migrant category of married couples in the 1st child fertility analysis. The majority of couples (85.5%) fall into the non-migrant husband and non-migrant wife category. The second largest group is the couple of non-migrant husband and the domestic migrant wife (9.8%). Couples composed of domestic migrant husband and non-migrant wife (2.7%) and couples of international migrant husband and non-migrant wife are the following sized categories.

In the 2nd child fertility analyses, the couples of non-migrant husband and non-migrant wife are still the majority group (85.6%). Couples of international migrant husband and non-migrant wife make up the second largest category (7.9%). The next sizable group is couples of domestic migrant husband and non-migrant wife (2.5%). Couples of non-migrant husband and domestic migrant wife is the number four group (2.0%).

Table 6 demonstrates descriptive statistics of variables in the 1st child fertility analysis. We can see that intervals from marriage to 1st birth increase with the migration distances of husband. Couples with non-migrant husband have the shortest 1st birth interval (22.42 months). There are significant differences on 1st birth interval between domestic migrant husband and non-migrant husband. Couples with domestic migrant husband delay their 1st birth interval by about 14 months. There are also clear differences on 1st birth interval among non-migrant, domestic migrant and international migrant wives. Domestic migrant wives have the shortest average intervals (21.62 months), followed by non-migrant wives (23.09 months). Couples with international migrant wives have the longest interval from marriage and 1st child birth (58.4 months), over 21 months longer than those with international migrant husbands.

As to wives' age at marriage, couples of international migrants (either husband and wife) have the youngest brides, while couples composed of non-migrants have eldest brides. Age

differences between spouse for those couples with domestic migrant wife are the largest. Husbands are 4.7 years older than their wives on average. Couples with international migrant wives have smallest age differences between spouses (3 years). Let's see the proportion distribution of marriage cohort among different migrant categories. For non-migrant husbands and non-migrant wives, before 1979 marriage cohort is the majority group(59.7% and 61.5% respectively). The size and the proportion of the marriage cohort decrease with time. For domestic migrant husbands, 46.7% of them are in the marriage cohort prior to 1979, 28.9% are in the 1980-1989 cohort. For domestic migrant wives, 1980-1989 marriage cohort are the largest group (39.3%), followed by prior 1979 cohort. 45% of international migrant husbands belong to prior 1979 marriage cohort and 40% belong to 1990-1999 cohort. For all migrant categories of husbands in the 1st child fertility analyses, their wives have a mode in elementary education attainment. 37.8% wives of domestic migrant husbands have junior high school education, higher than those of non-migrant and international migrant husbands. In families with non-migrant wives, 22.5% of wives have no schooling and 48% have only elementary school education. In families with domestic migrant wives, the wives' education attainment tend to be higher than those families with non-migrant wives. 52.4% of wives have elementary school and 29.7% have junior high school education. As to the level of husband's education attainment, the majority of domestic migrant husbands (42.2%) have completed junior high school; while most of non-migrant husband(47.2%) and international migrant husbands(47.4%) have elementary school education. For non-migrant wives and domestic migrant wives, the majority of their husbands(46.1% and 54.2% respectively) have elementary school education.

Table 7 shows the descriptive statistics of variables in the 2nd child fertility analyses. The mean interval from marriage to the 2nd child birth are longest for couples with international

migrant wives (135.40 months), followed by couples with international migrant husbands (119.43 months). The couples with domestic migrant husband or domestic migrant wife have shorter 2nd birth intervals, while the couples with non-migrant husband have the shortest 2nd birth intervals (64 months on average). Those husbands who migrated during the period from 1st child birth to 2nd child birth have the eldest brides when they got married. The pattern of age differences among various migrant categories is the same as that in the 1st child fertility analyses. The majority of non-migrant husbands or domestic migrant husbands are in the marriage cohort prior to 1979. In contrast, 64.2% of international migrant husbands fall into the marriage cohort of 1990-1999, and 30.1% belong to 1980-1989 cohort, which indicates that international migration has rise among young males since 1980, and accelerated in 1990s. The wives distribution of marriage cohort is different. 60.6% of non-migrant wives got married before 1979, 47.6% of domestic migrant wives fall into 1980-1989 cohort, while 40% international migrant wives are in the 1990-1999 marriage cohort. 51.2% wives of international migrant husbands have junior high school education, the majority of wives in other two categories have elementary school education. 19% wives of domestic migrant husbands have attained senior high school and above education, which is much higher than that of wives of international migrant husbands and non-migrant husbands. The education pattern of couples with wives of three migrant categories is very similar to that in the 1st child fertility analyses. The majority of international migrant husbands or husbands of international migrant wives (46.3% and 46.7%) have junior high school education, which are much higher than that in the other two categories.

The next two tables present results of event history analyses using Cox model in the 1st and 2nd birth interval. Model 1 has all variable except the migrant category variable. Model 2 includes

the migrant category for both husband and wife. Model 1 in table 8 shows the effects of socio-demographic characteristics on the interval between marriage and 1st child birth. For all three marriage cohorts, the hazard of having 1st child birth is higher than that of the reference group (prior to 1979 marriage cohort). The hazard of couples married after 2000 giving birth to 1st child is 1.957 times the hazard of couples married before 1979. For wives, elder age at marriage increase the probability of having 1st child birth. A wife married at 22 or 23 years old increase the hazard of giving 1st birth to 1.606 times the hazard of a wife married before 19 years old. Husbands with junior high school education increase the chance of having 1st child birth by 24.3%.

In model 2, after controlling all the variables in model 1, the international migrant wife and domestic migrant husband exert significant negative impact on the hazard of having 1st child birth. The hazard for an international migrant wife to have her 1st child birth is as low as 0.386 times the hazard for a non-migrant wife. A domestic migrant husband also reduces the chance of 1st child fertility by 28.1%. The direction and the magnitude of the effect of marriage cohort, wife's age at marriage and husband's education level are very similar to those in model 1. I don't repeat here.

Since the number of cases for international migrant wife/husband are quite small, I do the chi-sq test using command "sts test". For migrant wives, the result shows that $Pr>chi^2 = .0087$. Thus we reject the null hypothesis and conclude that domestic migrant wives are significantly different from international migrant wives on the 1st child birth. However, the chi-sq test for migrant husbands doesn't pass the significant level (.05). It indicates that couples with domestic migrant husbands don't differ greatly from those with international migrant husbands on their 1st child birth.

Table 9 shows a very exciting linkage between migration and a risk of having 2nd child birth. In model 1, couples married between 1990 and 1999 reduce the hazard of having 2nd child to only 0.186 times the hazard of couples in prior 1979 marriage cohort. A wife married at her age of 20-21 years old, and of 22-23 years old increase the chance of giving birth to 2nd child. Wife's education attainment displays significant negative influence on the probability of having 2nd child birth. For wives with senior high school education or above, the hazard of having 2nd child birth is 0.749 times that hazard of wives with no schooling.

In model 2, couples of three migrant categories all reduce their hazard of having 2nd child birth. Families with international migrant wives have a hazard of giving birth to 2nd child only 0.432 times that of the non-migrant wives. Husbands who migrated domestically during the 1st child fertility and the 2nd child fertility also bear the 2nd child at about 25.1% lower rate than their non-migrant counterparts. International migrant husband decreases the hazard of having 2nd child birth to as low as 0.168 times that of non-migrant husband.

In addition, I conduct chi-sq test for both migrant wives and migrant husbands. Both of them pass the .05 significance level. Therefore, domestic migrant wives are significant different from their international migrant counterpart on the 2nd child birth. Couples with domestic migrant husbands also behave differently from those with international migrant husbands on their 2nd child fertility.

Conclusion and discussion

In this article, we find strong evidence for the association of migration with lower fertility. More important, our exploitation of event history analyses using cox model gives us a much more conclusive and refined view of the relationship between couple's migration status and the hazard

of 1st and 2nd child birth.

The differences of the number of children among various migrant categories are apparent and significant. Migrant couples (both domestic and international migrant husband or wife) tend to have less children than their non-migrant counterparts. The mean number of marriage children for non-migrant couples is about 3. Couples composed of domestic migrant wife and international migrant husband have the smallest number of children (1.74) on average. This may result from the long distance between spouse and also the unstable and hard living conditions in different destination. Couples with migrant husband (both international and domestic) are likely to have less marriage children than their non-migrant counterparts. However, couples who have international migration experience tend to give birth to more children. This is probably due to the different fertility policy in destination (mostly in the U.S.).

In the 1st child birth analyses, domestic and international migrant husbands have much longer interval from marriage to the 1st birth than their non-migrant counterparts. While international migrant wives also delay their 1st child birth, domestic migrant wives have shorter interval between marriage and 1st birth. Most domestic migrants in China are short-term and circular. The expected household duty of bearing/caring children and looking after the old is much higher for wives than husbands, which makes those wives who migrated after their marriage cut down their duration and came back home to have 1st child birth. In addition, couples with international migrant wife and couples with domestic migrant husband have lower risk to have 1st child than their non-migrant counterparts.

In the 2nd child fertility analyses, both international migrant husbands and wives have significant longer interval from marriage to the 2nd birth. Especially the mean of 2nd birth interval for international migrant wives (over 11 years) are almost twice as long as that of non-migrant

wives. Couples with domestic migrant husband also dramatically extend their 2nd birth interval. Moreover, cox models confirm that couples with migrant husband, either domestic or international, will reduce the hazard of having 2nd child than non-migrant husband. International migrant wives also have lower risk to give birth to 2nd child.

This paper provides insightful empirical evidences to the debate of whether migration increase fertility or not in the context of China. Our findings are contrary to the argument that rural couples migrate to escape from family planning policy and tend to have more children. From the data of Fujian survey, migration inhibits fertility in three aspects: reduce number of children, lengthen 1st and 2nd birth interval from marriage, and decrease the risk of having 1st and 2nd child birth. Though migration is probably driven by the economic motivation, it will have dramatic, profound and lasting influence on fertility, thus further promotes demographic transition. What's more, although we suppose husband's migrant status weighs more in the fertility behavior, the results indicate that wife's migrant experience is also crucial. This push us to rethink the sex role of domestic economy and family reproduction.

As to the further study, more could be done to explore mechanisms underlying the linkage between migration and fertility. For example, in order to better examine adaptation hypothesis, we should consider the destination type, the length of migration etc. It's essential to rule out adaptation hypothesis in order to confirm the dominance of disruption hypothesis, though migration may affect fertility through several mechanisms simultaneously. As the sample sizes of migrant husbands/wives are relatively small, I plan to add other couples besides household head couples into the further analysis. However, some work need to be done to identify those correct pairs.

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Appendix

Table 1 Migrant Category for all married couples

		Husband			
		Non-mig.	Domestic mig.	International mig.	Total
Wife	Non-mig.	661 (59.1%)	182 (16.3%)	275 (24.6%)	1118
		(84.7%)	(71.4%)	(71.6%)	(78.8%)
	Domestic mig.	93 (43.1%)	65 (30.1%)	58 (26.9%)	216
		(11.9%)	(25.5%)	(15.1%)	(15.2%)
	International mig.	26 (30.6%)	8 (9.4%)	51 (60.0%)	85
		(3.3%)	(3.1%)	(13.3%)	(6.0%)
Total		780	255	384	1419
		(55.0%)	(18.0%)	(28.1%)	(100%)

Table 2 Mean number of married children for every migrant category

		Husband			
		Non-mig.	Domestic mig.	International mig.	Total
Wife	Non-mig.	3.04	2.40	2.15	2.72
		(1.35)	(1.10)	(.99)	(1.29)
	Domestic mig.	2.41	2.26	1.74	2.19
		(1.15)	(1.14)	(.83)	(1.10)
	International mig.	2.85	2.25	3.00	2.88
		(1.29)	(1.04)	(1.36)	(1.31)
Total		2.96	2.36	2.20	2.65
		(1.34)	(1.11)	(1.08)	(1.28)

* numbers in parentheses are standard deviations.

Table 3. Coefficients of OLS Regression Models Predicting Number of Marriage children

Independent Variables	Model A		Model B	
	B	SE	B	SE
Intercept	5.495 ***	.250	5.488 ***	.250
Marriage cohort				
1979 or before(reference)	----	----	----	----
1980-1989	-.904 ***	.067	-.862 ***	.070
1990-1999	-1.538 ***	.086	-1.487 ***	.088
2000 or later	-1.674 ***	.230	-1.642 ***	.230
Wife's age at 1st marriage	-.079 ***	.009	-.077 ***	.009
Wife's education level				
No schooling or literature (reference)	----	----	----	----
elementary	-.257 ***	.072	-.248 ***	.072
Junior high	-.386 ***	.092	-.368 ***	.092
Senior high or above	-.395 **	.125	-.371 **	.126
Husband's education level				
No schooling or literature (reference)	----	----	----	----
elementary	-.337 ***	.097	-.327 ***	.097
Junior high	-.461 ***	.105	-.448 ***	.105
Senior high or above	-.445 ***	.120	-.426 ***	.120
Age difference between spouses				
Wife older than husband(reference)	----	----	----	----
Same age or husband one year older	-.063	.130	-.074	.129
Husband 2-4 years older	-.168	.180	-.176	.125
Husband 5+ years older	-.190	.128	-.199	.128
Couple's Migrant status				
Domestic migrant wife			-.112	.074
International migrant wife			.222 *	.112
Domestic migrant husband			-.165 *	.072
International migrant husband			-.131 *	.067
R Square	.433 ***		.444 ***	
df	13		17	
Number of cases	1384		1384	

Note: * P < 0.05, ** P < 0.01, *** P < 0.001

Table 4 The Migrant Category of couples in the 1st child fertility analysis

		Husband			
		Non-mig.	Domestic mig.	International mig.	Total
Wife	Non-mig.	1213 (95.6%)	39 (3.1%)	17 (1.3%)	1269
		(89.6%)	(86.7%)	(85.0%)	(89.4%)
	Domestic mig.	139 (95.9%)	6 (4.1%)	0 (0%)	145
		(10.3%)	(13.3%)	(0%)	(10.2%)
	International mig.	2 (40.0%)	0 (0%)	3 (60.0%)	5
		(3.2%)	(0%)	(15%)	(0.4%)
Total		1354	45	20	1419
		(95.4%)	(3.2%)	(1.4%)	(100%)

Table 5 The Migrant Category of couples in the 2nd child fertility analysis

		Husband			
		Non-mig.	Domestic mig.	International mig.	Total
Wife	Non-mig.	1215 (89.2%)	35 (2.6%)	112 (8.2%)	1362
		(96.9%)	(83.3%)	(91.1%)	(96.0%)
	Domestic mig.	29 (69.0%)	7 (16.7%)	6 (14.3%)	42
		(2.3%)	(16.7%)	(4.9%)	(3.0%)
	International mig.	10 (66.7%)	0 (0%)	5 (33.3%)	15
		(0.8%)	(0%)	(4.1%)	(1.1%)
Total		1254	42	123	1419
		(88.4%)	(3.0%)	(8.7%)	(100%)

Table 6 Descriptive Statistics for selected variables in the 1st Child fertility Analysis

Variable	Husband			Wife		
Husband's and wife's characteristics	**Non-mig**	**Dom mig**	**Int mig**	**Non-mig**	**Dom mig**	**Int mig**
Interval from marriage to 1st birth (mean months)	22.42	36.13	37.15	23.09	21.62	58.40
Wife's age at marriage (mean years)	20.58	19.71	19.50	20.56	20.37	18.60
Age differences between spouse (husband-wife) (mean years)	3.96	3.58	3.10	3.85	4.7	3.0
Marriage cohort (%)						
Before 1979	808(59.7)	21(46.7)	9(45.0)	781(61.5)	55(37.9)	2(40.0)
1980-1989	328(24.2)	13(28.9)	3(15.0)	286(22.5)	57(39.3)	1(20.0)
1990-1999	200(14.8)	9(20.0)	8(40.0)	186(14.7)	29(20.0)	2(40.0)
After 2000	18(1.3)	2(4.4)	0	16(1.3)	4(2.8)	0
Level of wife's education attainment (%)						
No schooling or literature class	292(21.6)	6(13.3)	5(25.0)	284(22.5)	18(12.4)	1(20.0)
Elementary school	656(48.6)	19(42.2)	8(40.0)	607(48.0)	76(52.4)	0
Junior high School	305(22.6)	17(37.8)	6(30.0)	282(22.3)	43(29.7)	3(60.0)
Senior high school and above	97(7.2)	3(6.7)	1(5.0)	92(7.3)	8(5.5)	1(20.0)
Level of husband's education attainment (%)						
No schooling or literature class	127(9.6)	3(6.7)	0	122(9.8)	8(5.6)	0
Elementary school	627(47.2)	17(37.8)	9(47.4)	573(46.1)	78(54.2)	2(40.0)
Junior high School	397(29.9)	19(42.2)	8(42.1)	375(30.1)	46(31.9)	3(60.0)
Senior high school and above	178(13.4)	6(13.3)	2(10.5)	174(14.0)	12(8.3)	0

Table 7 Descriptive Statistics for selected variables in the 2nd Child fertility Analysis

Variable	Husband			Wife		
Husband's and wife's characteristics	**Non-mig**	**Dom mig**	**Int mig**	**Non-mig**	**Dom mig**	**Int mig**
Interval from marriage to 2nd birth (mean months)	64.00	93.00	119.43	68.72	71.90	135.40
Wife's age at marriage (mean years)	20.37	21.14	21.93	20.49	21.79	20.67
Age differences between spouse (husband-wife) (mean years)	4.11	2.69	2.62	3.92	4.93	2.53
Marriage cohort (%)						
Before 1979	815(65.0)	17(40.5)	6(4.9)	825(60.6)	10(23.8)	3(20.0)
1980-1989	298(23.8)	9(21.4)	37(30.1)	319(23.4)	20(47.6)	5(33.3)
1990-1999	122(9.7)	16(38.1)	79(64.2)	201(14.8)	10(23.8)	6(40.0)
After 2000	19(1.5)	0	1(0.8)	17(1.2)	2(4.8)	1(6.7)
Level of wife's education attainment (%)						
No schooling or literature class	295(23.6)	3(7.1)	5(4.1)	297(21.9)	4(9.5)	2(13.3)
Elementary school	620(49.6)	17(40.5)	46(37.4)	655(48.2)	23(54.8)	5(33.3)
Junior high School	251(20.1)	14(33.3)	63(51.2)	312(23.0)	10(23.8)	6(40.0)
Senior high school and above	84(6.7)	8(19.0)	9(7.3)	94(6.9)	5(11.9)	2(13.3)
Level of husband's education attainment (%)						
No schooling or literature class	124(10.1)	3(7.1)	3(2.4)	126(9.4)	4(9.8)	0
Elementary school	599(48.8)	14(33.3)	40(32.5)	625(46.7)	21(51.2)	7(46.7)
Junior high School	355(28.9)	12(28.6)	57(46.3)	408(30.5)	9(22.0)	7(46.7)
Senior high school and above	150(12.2)	13(31.0)	23(18.7)	178(13.3)	7(17.1)	1(6.7)

Table 8. Cox regression model of the interval between marriage and 1st child birth

Independent Variables	Model 1		Model 2	
	Haz Ratio	SE	Haz Ratio	SE
Wife's Migrant status				
Non-migrant wife (reference)			----	----
Domestic migrant wife			.912	.083
International migrant wife			.386 *	.179
Husband's Migrant status				
Non-migrant husband (reference)			----	----
Domestic migrant husband			.719 *	.112
International migrant husband			.709	.164
Marriage cohort				
1979 or before(reference)	----	----	----	----
1980-1989	1.313 ***	.095	1.344 ***	.098
1990-1999	1.381 ***	.125	1.436 ***	.132
2000 or later	1.957 ***	.476	2.015 **	.493
Wife's age at 1st marriage				
19 or younger (reference)	----	----	----	----
20-21	1.421 ***	.104	1.410 ***	.103
22-23	1.606 ***	.131	1.549 ***	.128
24 or older	1.546 ***	.148	1.487 ***	.143
Wife's education level				
No schooling or literature (reference)	----	----	----	----
elementary	1.102	.084	1.109	.084
Junior high	1.030	.099	1.066	.103
Senior high or above	1.143	.152	1.179	.158
Husband's education level				
No schooling or literature (reference)	----	----	----	----
elementary	1.159	.118	1.171	.120
Junior high	1.243 *	.139	1.267 *	.142
Senior high or above	1.135	.143	1.127	.142
Age difference between spouses				
Wife older than husband(reference)	----	----	----	----
Same age or husband one year older	1.130	.156	1.119	.155
Husband 2-4 years older	1.142	.153	1.132	.152
Husband 5+ years older	1.207	.165	1.190	.163
LR chi^2	123.94 ***		139.76 ***	
Loglikelihood	-8831.80		-8823.89	
Number of cases	1389		1389	

Note: * P < 0.05, ** P < 0.01, *** P < 0.001

Table 9. Cox regression model of the interval between marriage and 2nd child birth

Independent Variables	Model 1			Model 2		
	Haz Ratio		SE	Haz Ratio		SE
Wife's Migrant status						
Non-migrant wife (reference)				----		----
Domestic migrant wife				1.139		.232
International migrant wife				.432	*	.179
Husband's Migrant status						
Non-migrant husband (reference)				----		----
Domestic migrant husband				.749	*	.150
International migrant husband				.168	***	.037
Marriage cohort						
1979 or before(reference)	----		----	----		----
1980-1989	.888		.070	1.070		.084
1990-1999	.186	***	.027	.287	***	.043
2000 or later	3.62e-15		4.19e-08	2.53e-14		1.08e-07
Wife's age at 1st marriage						
19 or younger (reference)	----		----	----		----
20-21	1.170	*	.090	1.173	*	.091
22-23	1.300	**	.116	1.329	***	.119
24 or older	1.206		.133	1.219		.134
Wife's education level						
No schooling or literature (reference)	----		----	----		----
elementary	1.043		.082	1.037		.082
Junior high	.890		.095	.963		.103
Senior high or above	.749	*	.124	.708	*	.120
Husband's education level						
No schooling or literature (reference)	----		----	----		----
elementary	1.187		.126	1.190		.127
Junior high	1.228		.144	1.247		.147
Senior high or above	.967		.136	.943		.134
Age difference between spouses						
Wife older than husband(reference)	----		----	----		----
Same age or husband one year older	.955		.149	.967		.152
Husband 2-4 years older	1.00		.150	1.018		.153
Husband 5+ years older	1.038		.156	1.020		.154
LR chi^2	272.75	***		393.10	***	
Loglikelihood	-7133.62			-7073.45		
Number of cases	1346			1346		

Note: * P < 0.05, ** P < 0.01, *** P < 0.001