

**Fact or Fiction of Low Fertility Trap in China: A Comparative Study with Korea,  
Japan and the United States**

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**Abstract:** While it has been held that China, following the path of Korea and Japan, has fallen into low fertility trap, data uncertainty necessitates further exploration of this judgment. This paper addresses this issue by comparing marriage and fertility patterns among the Chinese, Korean, Japanese and American populations. Results indicate that China remains characterized by universal and relatively early marriage and childbearing, and contextual forces have created a sense of anxiety regarding marriage and fertility, driving individuals to proceed to childbirth at a faster pace. While large cities in China share similar marriage and fertility patterns to developed societies, most Chinese families still have more than one child. Thus, it seems too early to conclude that China has fallen into fertility trap. Nevertheless, the long-lasting low total fertility rate (TFR) calls for the government to adopt family-friendly policies to facilitate more Chinese families to realize their fertility desire of two children.

**Keywords:** Fertility trap; fertility crisis; marriage patterns; proximate determinants; distal determinants; China; East Asia

## Introduction

In the second half of the 20<sup>th</sup> century, countries across the world have experienced a similar downward trend from high fertility to low fertility despite different social, economic, religious and cultural backgrounds. The TFR in developed countries has fallen below or around the replacement level, while some developing countries (e.g., China) have observed low fertility in the early or middle stage of development.

The number of births in China was 16.55 million in 2015, about 2 percent lower than in 2014, for example. Fertility reduction in a relatively relaxed fertility policy regime (e.g., “Single Two-Child” policy<sup>1</sup>) has been interpreted as hard evidence that China has fallen into a fertility trap after Japan and Korea. Debates on the future of Chinese fertility policy have become one of the most appealing issues, and calls on abolishing fertility policy or encouraging fertility have never ceased among social activists and some scholars. Otherwise, they argue, China’s economy would collapse, social development would stop, and the family would fall apart.

Such an argument mirrors the deep concerns of scholars and social activists with the future of China. However, attempts to address fertility trap in China face great challenges due to data uncertainty. China’s TFR varies substantially, ranging from 1.18 to about 1.6-1.8 (Chen 2015; Zhai et al. 2015), but the value of 1.18 can even hardly convince those advocating to encourage fertility. The implementation of “Single Two-Child” policy coincides with the Chinese lunar Year of the Goat (2015) when people tended not to give birth. Thus, the fact that not as many couples as expected applied for permission for a second birth does not, in itself, provide sufficient evidence that the Chinese in general do not want a second child. Given such uncertainty, the issue of the fertility trap deserves further discussion.

Drawing on authoritative data and adopting a comparative approach, this paper assesses the intertwined relationships of macro-micro factors to fertility:

(1) It first analyzes how structural forces and cultural background might be related to marriage and fertility by focusing on China, while making reference to

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1 A “Single Two-Child” fertility policy was issued in November 2013 and started to carry out gradually since early 2014 across provinces. It stipulates that if one side of the couple is a single child, the couple is allowed to have a second child.

other contexts when necessary. Considering both behavioral and structural forces would lay down a more comprehensive and solid foundation for understanding the issue of fertility trap.

(2) It then explores how the marriage patterns might be related to fertility in China by situating China in its international and historic context and comparing marriage and fertility behaviors of China with Japan, Korea and the U. S. in the most recent three decades. Linking fertility to marriage, the precondition of childbirth in China would enable us to better comprehend the current situation and future trend of fertility in China.

(3) It addresses the questions of “whether China has indeed fallen into a fertility trap” and “will China fall into a fertility trap in the near future” based on the above analyses. Findings from the comparative analysis would have implications for understanding the issue of the fertility trap in China.

A trap is defined as an unpleasant situation into which one enters unintentionally and which it is very difficult to get out of. A 1.5 TFR is regarded as a critical level or irreversible level which can be used as the tipping point of the fertility trap (Lutz et al. 2006; McDonald 2005). If TFR reaches 1.5, it tends to stay below this level, too low to bring up to 1.6, especially once it has already fallen to levels of 1.3 or 1.4 (McDonald 2005). In addition to postulating the possibility of such a cutoff point in fertility, it would be good to identify and describe the possible mechanisms that would constitute such a self-reinforcing process toward lower birth rates and the difficulty of escaping this trend (Lutz et al. 2006).

In addressing the issue of the fertility trap in China, it is also important to identify the mechanisms driving fertility to decline. Giving birth to one or more children, while individual and family decisions, depends also largely on institutional and structural forces, and the reasons behind a similar fertility rate might be rather different due to the unique contexts of each society. Fertility desires and behavior in China share similarities to those in East Asian and western societies, but are also unique in marriage and fertility patterns, and their macro backgrounds. By dissecting the commonalities and peculiarities across settings, this study may encourage more

fruitful discussion on this issue and enhance our understanding of fertility levels closer to reality in China.

### **Conceptual framework of fertility transition**

Fertility transition from high fertility to low fertility in the 20<sup>th</sup> century has been observed worldwide, although the onset, pace and outcome differ substantially across countries. As of 2014, about half of the world population lives in nations with fertility below 2.1 children per women, i.e., the replacement-level fertility (UN 2015), including most OECD countries, Brazil, Russia, Iran, Tunisia, China and many others. The countries or areas with the lowest fertility are in developed parts of East and Southeast Asia: Singapore, Macau, Taiwan, Hong Kong and South Korea.<sup>2</sup> While the TFR in the US has steadily risen since 1980 after the baby-bust in the late 1960s and 1970s, and is about 2.1 in 2014, China, Japan and Korea all experienced continuous fertility reduction in the past half century with a TFR in 2014 being about 1.6, 1.45 and 1.20 (UN 2015), respectively, far below the replacement level.

### ***Fertility transition theory***

The global trend of fertility reduction has been explained as a result of cost and benefit (Leibenstein 1957), quantity-quality tradeoff (Becker 1960, Schultz 1973), demand and supply of children (Easterlin 1975; Easterlin and Crimins 1985), and intergenerational wealth flow (Caldwell 1976), social interaction and diffusion (Cleland 1985; Cleland and Wilson 1987), among others. In their seminal work, Davis and Blake (1956) identify 11 intermediate variables affecting fertility, which are classified as three groups: (1) factors affecting exposure to intercourse: those governing the formation and dissolution of union in the reproductive period and those governing the exposure to intercourse with unions. (2) factors affecting exposure to conception, and (3) factors affecting gestation and successful parturition. They argue that any cultural or institutional factor cannot affect reproduction without going through at least one of these variables, or otherwise the writing would be inconclusive and confused (p.213).

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<sup>2</sup> <https://www.cia.gov/library/publications/the-world-factbook/rankorder/2127rank.html>

Inspired by this work, Bongaarts (1978) collapses the 11 intermediate fertility variables into eight factors and groups them into three categories: (1) exposure factors (e.g., proportion married); (2) deliberate fertility control factors (e.g., contraception and induced abortion), and (3) natural marital fertility factors (e.g., duration of the fertile period). Those direct determinants of fertility are then affected by indirect determinants, socioeconomic, cultural and environment variables. Using South Korea and the US as examples, he found that marriage, contraception, lactation and induced abortion are the primary proximate causes of fertility differences among populations. Since the direct variables allow the identification of the paths through which various distal variables affect fertility, this “model can be used in comparative fertility analysis ... for fertility differences among populations or subgroups within a population” (Bongaarts 1978: 125).

### ***Second demographic transition framework***

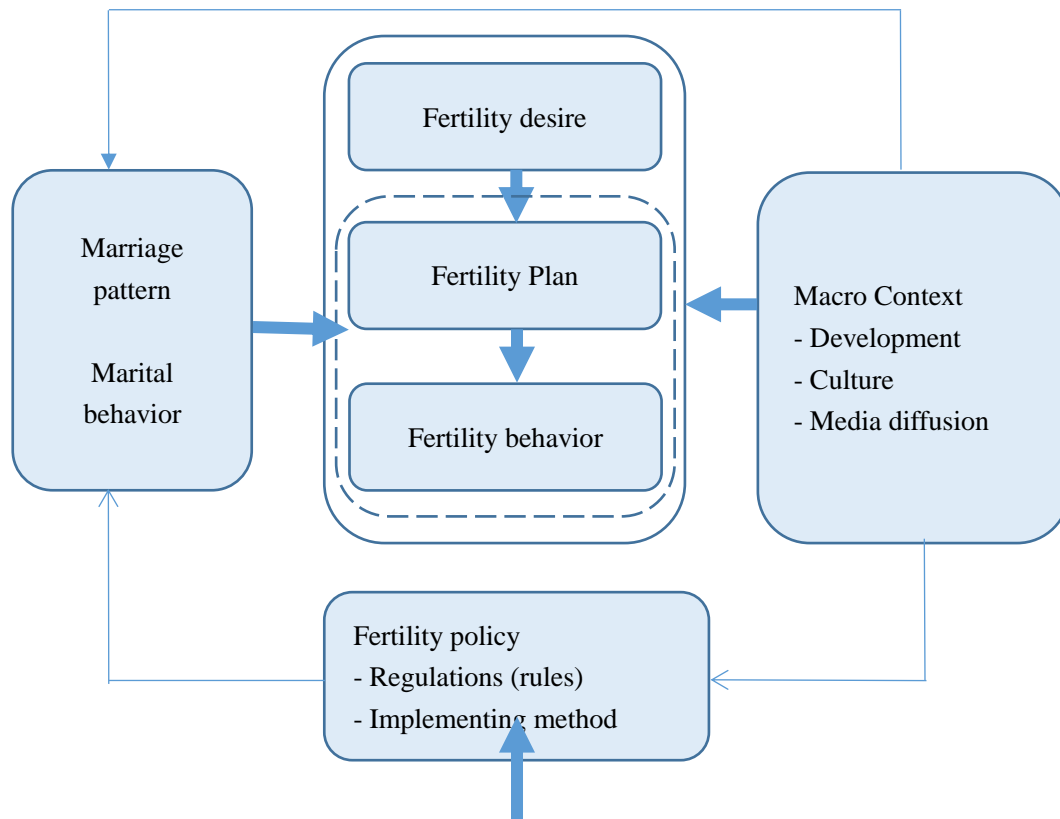
The notion of second demographic transition, first introduced by Lesthaeghe and van de Kaa (1986), attempts to explain why and how low the fertility rate has sustained or even further reduced in Western Europe and North America. It addresses the changes in the patterns of sexual and reproductive behavior occurring since the early 1960s, when the birth control pill and other cheap effective contraceptive methods are adopted by the general population. To do so, it stresses the importance of marital and family-related ideations and behaviors, e.g., single living, pre- and post-marital cohabitation, delayed fertility, high prevalence of non-marital fertility and high rates of union disruption.

Motivations of fertility have changed from traditional and economic ones to those of self-realization (Lesthaeghe 2014). Such changes, driven by sexual revolution, women’s increased participation in higher education and professional careers, and increased individualism and autonomy, particularly of women, have profoundly affected the demographics of industrialized countries, leading to the lowest-low fertility (van de Kaa 2002).

### ***Conceptual framework of this work***

Like many developed regions, the Chinese averagely desire two children, but the

ideal and actual number of children tend to be inconsistent due to fertility policy and other reasons (Yang 2014). We argue that, however, the inconsistency is less salient in China than in other developed countries, and will be further reduced in the context of the newly issued universal two-child policy.<sup>3</sup> Based on existing studies and situating this analysis in the context of low fertility, we propose a simple conceptual framework of fertility taking into account China's unique characteristics (Figure 1).



**Figure 1 Conceptual framework of Fertility**

Fertility behavior is directly affected by fertility plans, which is in turn affected by fertility desire. Some argues that how many children a couple eventually has is largely a function of fertility desire; when people get married, they reach a consensus on the number of children (i.e., one-decision model); others argue that the number of children is a function of changing environment, i.e., the sequential decision model (Udry 1983). While couples have desired number of children, whether or not such desire is achieved depends upon marital behavior and macro context.

Marriage patterns and marital behavior directly affect fertility plan and fertility,

<sup>3</sup> A universal two-child has been implemented since January 1, 2016, allowing each couple to have two children.

which in turn is affected by macro context and to a less extent by fertility policy. While China has launched a universal two-child policy since 2016, TFR, as a period measure, reflects policy effect from the past. Of course, the policy variations prior to 2016 is not exogenous, but affected by structural factors, particularly development level and cultural background. Prior to 2016, the so-called one-one policy has not been uniformly implemented: strict one-child policy in urban areas, a daughter-exception policy<sup>4</sup> in the countryside, and a two-or-more-child policy in underdeveloped countryside and minority regions. Both the policy rules and enforcing methods are affected by structural and cultural forces, which in turn reinforce traditional culture of fertility. As such, the policy have a stronger effect on residents in large cities, most developed regions and among those paid salaries by the state.

### **Contextual variables of fertility**

As distal determinants of fertility, context is a broad concept, and we here only identify three dimensions that might be closely linked to fertility, development, culture and norm diffusion by mass media, based on the above frameworks. The context-fertility relationship change overtime with varying association in high and low fertility regimes. While we draw historic evidence for comparison, it needs to be borne in mind that we are talking about fertility in the low fertility regime when a most people have two children or only one child.

### ***Development***

While it does not seem to be always true, it has been widely held that development is the best contraception in the 1980s and 1990s. As an indicator of development, urbanization is considered as a central cause of fertility decline, as urban residents have fewer children than peasants. Compared with the countryside, urban area is associated with higher education, greater conflicts of work with family, less demand for manual labor, higher cost of childrearing and more modern family and fertility norms, which would delay marriage and childbearing (Jones and Gubhaju,

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<sup>4</sup> That is, couples are allow to have a second birth if the first child is a daughter provided 4 or 5-years birth interval.

2009).

In the reform era, China has undergone rapid pace of urbanization. The share of urban population has increased from less than 20 percent in 1980 to about 54 percent in 2014. The rate of 54 percent is equivalent to the level of urbanization in Japan in 1970-1975, Korea in 1975-1980 and US in 1920, but their corresponding fertility is 2.07, 2.82 and 3.3 (PRB, 2015), respectively. Moreover, eliminating inflated part (e.g., rural-to-urban migrants who do not have access to urban benefits) leaves a urban rate of 37 percent in China in 2011 (Chen, 2011<sup>5</sup>), which equalizes the level of Japan in 1950, Korea in 1965-1970 and US in 1890-1900, and their corresponding TFR is 3.65, 4.71 and 3.6, respectively.

Similarly, the HDI of US, Japan, Korea and China is ranked 5<sup>th</sup>, 15<sup>th</sup>, 17<sup>th</sup> and 91<sup>th</sup> in 2014, respectively, among 187 countries, according to UNDP report. Countries with lower HDI tend to have higher TFR, but it is not true the other way around. Many countries with higher HDI may as well have higher TFR than Japan, Korea and China. Countries with similar HDI to China also have higher TFR.

Using GDP per capita to measure development and making a reference to fertility, we have observed that, while less developed countries tend to have higher fertility rate, advanced countries do not always have a low fertility “appropriate” to its development level. TFR fluctuates among countries with the highest GDP per capita as shown; both the GDP per capita and fertility of Japan and Korea are much lower than Luxemburg, for example. The TFR in countries with similar GDP per capita to China (e.g., Columbia and South Africa) tend to be higher than that of China.<sup>6</sup>

As such, the development-fertility relationship is complicated. Although conventional wisdom that higher development is consistently correlated with lower overall fertility has been confirmed (Luci and Thevenon 2010; Furuoka 2009), not all findings support this pattern. Instead, a j-shaped curve relationship has been detected with highly developed countries having a increasing fertility (The Economist 2009;

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<sup>5</sup> <http://www.chinanews.com/cj/2011/04-11/2962402.shtml>. Accessed in November 5, 2013.

<sup>6</sup> Source: The World Factbook (CIA 2014).

<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2004rank.html>;

<https://www.cia.gov/library/publications/the-world-factbook/rankorder/2127rank.html>



Myrskylä et al. 2009). In China, the inverse relationship of fertility to development has been confirmed in early studies in China, but its effect has been attenuated between 2000 and 2010 in China (Yang 2011). It is possible that when fertility is low, development effect might reduce. Studies in the West show a U-shaped relationship between fertility and gender equity within couples and at the macro level: societies with the lowest-low fertility tend to be associated with either very low gender equality or very high gender equality (Balbo et al. 2013), especially among educated women.

Despite the rapid pace of industrialization and urbanization, China remains to be featured by substantial urban-rural divides and regional disparity. Metropolitan and east coast areas are well developed, like Japan, Korea and the US, while the countryside and hinterland underdeveloped. The income gap of rural and urban areas, and across regions have steadily gone up in the reform era since 1978, 28844 and 18952 *yuan* for urban and rural residents in 2014, and the HDI in 2010 in Beijing is 0.821 and 0.598 in Guizhou province for example. When variations in development coincide with varying fertility policy, a more complicated image may emerge because they intervene each other's relationship to fertility. Residents in large cities, under stricter policy controls, share similar fertility patterns as their peers in Japan and Korea, peasants and those in less developed regions with a more relaxed policy tend to have two children.

Hence, judging from the development level, we may expect China to have a higher TFR than observed. The rapid fertility reduction has occurred in the early stage of development largely due to restrictive fertility policy. Unlike Japan and Korea with monotonic fertility pattern, it in China is more diversified, with the late marriage and low fertility being only observed in large cities, most developed regions and among those paid salaries by the state.

### ***Cultural context***

Cultural norms within the family and in society at large affect fertility levels. Since World War II, pro-family Confucianism prevalent in East Asia has been violently shocked by western culture. Compared to Japan and Korea, however, traditional marriage and family culture in China has proved resilient to change (Yang

and He 2014). For example, the tradition that marriage entails sex and sex entails pregnancy has not fundamentally changed. Modern technology has indeed universalized contraception, and made artificial insemination and in vitro more feasible, making it possible for sex, marriage and childbearing to separate. However, in China (also in Japan and Korea to a less extent), the three life events are still bound together, and marriage remains the prerequisite of childbearing. Children out of wedlock are not acknowledged and protected by law in China. Furthermore, the ethic of “marriage prior to childbearing” is reinforced by fertility policy, because China’s family planning services only target married women, issue them permission certificate of childbirth and provide relevant services, forcing single pregnant women to get married in a rush.

Values of children has also maintained in the reform era. In 1970s, Friedman proposed that fertility desire or value of children is deeply rooted in social system (Hoffman, Thornton and Manis 1978; Fawcett 1983). Twenty year later, he and his colleagues (1994) further discussed the values of children from the perspective of risk reduction and marital stability. Similarly, Caldwell (1982: 337-338) articulates that, in the follow-up study of wealth flow, people will continue to have children even if the wealth flow has reversed for reasons of pleasure and family completion. While the “children’s value” studies have been criticized for “psychological satisfaction” alone is “clearly insufficient to determine fertility behavior” (Schoen et al., 1997), children are always a source of instrumental values, and intrinsic values or non-substitutable pleasure, and the latter overweighs the former in the US, regardless of gender, race and education (Hoffman and Manis, 1979: 585).

Studies have shown that among unmarried Caucasian women only if they prioritize their career and at the same time devalue the social value of children can we then predict a relinquishment of childbearing (Schoen et al. 1997). When contraception is readily available, the needs for psychological satisfaction and continuation of family line might be intrinsic motivation for people to have children. In China having more children is in itself a symbol of success, particularly among rich people; for people lowly positioned socioeconomically, more children imply better

security in old age such that if one child is not filial, another one will provide support.

Such expectation is further manifested through son proclivity. In low fertility regime, both sons and daughters are valuable to parents, but this does not stop the desire for having a son. In identifying factors of enhancing fertility relative to desired family size, Bongaarts (2001) and Mason (1997) draw reference to sex preference. Couple may have in mind what kind of sex composition they want, which motivates them to keep giving birth until achieving their desire, leading to higher fertility than would be the case in the absence of such preference (Bongaarts 2001:269). Thus, women with one son and one daughter have a lower desire to have another child than women with two daughters (Arnold 1997). Studies have quantified the size of its fertility inflation: 13.5 percent in Korea (Park and Cho, 1995), 8.4 percent in India (Mutharayappa et al., 1997), and 8 percent in Bangladesh (Chowdhury and Bairagi, 1990). “These effects are large enough to have significant demographic consequences in post-transitional societies” (Bongaarts, 2001:271).

China is well known for son preference. While government has rigorously promoted gender equality, demand for sons has been even strengthened due to the restrictive and gender-biased fertility policy. Although the effect of son preference on fertility might be reduced by sex-selective abortion, the strong effort to prevent sex-selective abortion, when government attempts to bring back sex ratio at birth to the normalcy, may weaken such impact. We have always observed an inverse relationship between sex ratio at birth and TFR. Additionally, the Chinese also have a balanced preference for children’s sex composition. The Chinese character for “good” consists of two parts: a daughter and a son. In the low fertility regime, preferences for a son and balanced sex composition coexist, and the latter has become stronger premised on having at least one son. This implies that if existing child sex composition is not acceptable, fertility will be raised (Mason 1997).

### ***Mass media and diffusion***

Currently, mass media, civil society and academia jointly emphasize that China has fallen into fertility trap and faces such problems as short labor force, rapid aging pace, and enormous risk of single-child family. Such public opinions strengthen

people's anxiety on marriage and childbearing.

In transitional era from high fertility to low fertility, diffusion and spreading of new norms and technology of contraception to less developed areas has effectively reduced the number of children. In low fertility regime, the deeply rooted traditional norms may be sustained or even intensified through the power of widespread mass media. In other words, communication may play varying roles in different fertility context: when society advocates fewer births, those who have many children may suffer from discriminations, while those having no children or having too few children, when social environment favors or is conducive to more children, may also be criticized. People tend to behave in accordance with such norms. If having two children is the common practice, family size tends to steer towards that specification: people with smaller family preferences would increase their expectations, while people with larger family preference would lower their expectations. As Schneider and Schneider (1995: 184) articulate, the number of children responds to a cultural "imperative"-such as, "respectable couples have at least one, but no more than three children."

Nowadays, mass media is all-pervasive and perhaps the most effective way of communication. Marriage and family-related issues have been the most popular topics in the national and local TV channels in China. As a reflection of daily life, drama not only reminds people of, but also strengthens the normative roles embedded in tradition. For example, various TV dating programs, and related internet platforms and media coverage are all characterized by popular topics, sensational comments and hypes regarding to the celebrities. These programs, while entertaining, has slowly yet steadily ingrained into individual value system, driving young people to get married at earlier ages. Also, recently highly-rated TV serials, "The Second Birth" for example, tell the story of conflicts on whether or not to have a second child across generations, ends in one big happy ending with the arrival of the second baby. Other reality shows such as "Where Is the Dad Going" portray the loving and close relationship between parents and children, as well as husband and wife, which may arouse the yearning for having a family quickly among single women. Additionally, the common practice of

having more than one child among the rich and celebrities, publicized by media, may provide a guiding model and strengthen the public's willingness for having more children.

There is neither “single culture” or “childless culture” in China, past and present alike. Single men would be labeled as “incompetent” or “poor,” and single women aged 25 or older labeled as “picky” and “leftover.” As they continue to age, the stereotypical labels attached to them would become more derogatory, e.g., “psychological problems.” They are the targets of “care” and “concern” from families, friends and colleagues, and suffer great pressure simply for being single. It is common to see parents stepping in the matchmaking process of children, causing greater stress on marriage for children. Similarly, childless couples will be labeled as “psychological and biological problems.” Pressure from parents and all add to the overwhelmingness of having a baby. Meanwhile, topics relating to marriage and children are the most common ones of social gathering, leaving single or childless people fewer common topics to share. Also, marriage is the legal bond between a man and a woman, and children is the bond between a husband and a wife. For people lacking other resources, their fears, anxiety and uncertainties about the future can be lessened through marriage and childbirth.

All of these motivate individuals to show “appropriate” marriage or childbearing behaviors in corresponding ages to avoid being treated as “aliens.” Both marriage and childbearing are obligations to the natal family and in-law family. Marriage is often viewed as a symbol of maturity, and having children is the milestone of fulfilling family obligations. Perhaps the young has no intention of getting married or wants only one child, but both internal and external pressures force them to give up their original willingness and follow external expectations. Marriage has shifted from emotional connection of two people to “fast-food” matchmaking, and the natural biological process of childbirth carries too much familial and social responsibility.

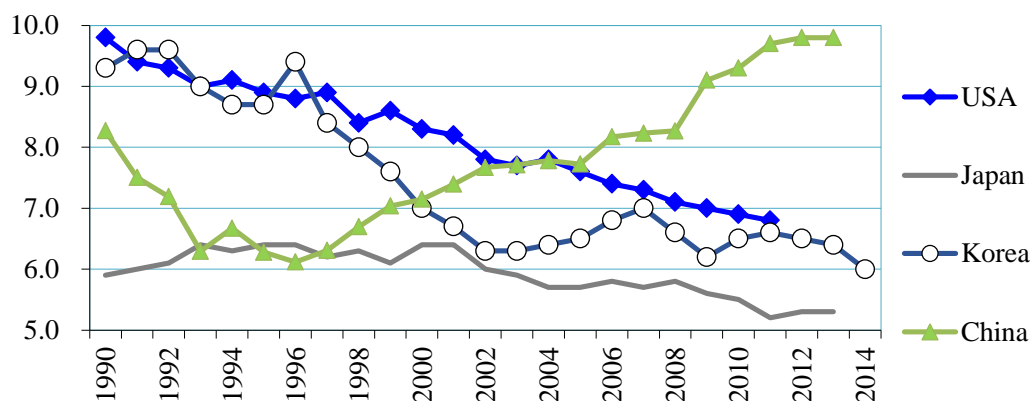
### **Marriage and fertility pattern in four societies**

Data reviewed in preceding sections demonstrate that macro context favors

higher fertility than it has been observed in the census data in China. Of course, as distal determinants of fertility, macro context affect fertility largely through proximate variables, e.g., marriage and marital behaviors, to which we now turn to .

### ***Marriage rate***

In East Asian societies, especially in China, almost all childbearing occurs within a marriage, but in recent years, the marriage rate has decreased.<sup>7</sup> From 1990 to 2014, the crude marriage rate in China declines first and then rises, and corresponding rate of other countries also declines with fluctuations (especially Korea) (see Figure 1). China's crude marriage rate, 10 per thousand in 2014, far exceeds that for other three societies, suggesting that the Chinese have the highest childbearing potentials in the four countries.



**Figure 1 Crude Marriage Rate in Four Countries; 1990-2010 (%)**

Source (all accessed in May, 2015):

(1) China National Statistic Bureau:

<http://data.stats.gov.cn/workspace/index?a=q&type=global&dbcode=hgnd&m=hgnd&dimension=zb&code=A0P0C07&region=000000&time=2013,2013>.

(2) Korean Statistic Bureau:

[http://kosis.kr/eng/statisticsList/statisticsList\\_01List.jsp?vwcd=MT\\_ETITLE&parentId=A#SubCont](http://kosis.kr/eng/statisticsList/statisticsList_01List.jsp?vwcd=MT_ETITLE&parentId=A#SubCont).

(3) Japanese Statistic Bureau: <http://www.stat.go.jp/english/data/nenkan/1431-02.htm>.

(4) American Statistic Bureau. Website?

When population age and sex structure is jointly considered, difference across countries becomes more evidenced in marriage rate (see Table 1). While the rate for

<sup>7</sup> Available at <https://euobserver.com/social/27161>

these two age groups has decreased over time in China, it remains much higher than that of other countries, regardless of gender. Among those aged 35-39 only less than 5 percent of Chinese women remain single in all time points examined here. The gap of China with Japan is particularly salient, about 30 and 26 percentage-points for male and female, respectively.

**Table 1 Proportion of Married in Four Countries by Age Groups: 1970-2010**

	USA		Japan		Korea		China	
	Male	Female	Male	Female	Male	Female	Male	Female
<b>Ages 20-24</b>								
1970	41.7	57.9	9.8	27.7	7.2	42.3	-	-
1980	27.9	41.4	7.4	18.0	5.5	27.8	27.8	53.3
1990	18.6	29.9	6.5	12.6	3.6	16.7	37.3	58.4
2000	18.9	26.7	6.2	10.4	2.4	10.7	21.1	42.2
2010	11.0	18.8	5.7	9.5	1.8	6.2	17.4	32.2
<b>Ages 35-39</b>								
1970	86.0	83.2	93.9	89.6	97.3	92.0	-	-
1980	76.9	74.5	83.4	88.3	95.7	93.3	90.8	98.2
1990	71.1	69.1	74.7	84.9	91.2	92.3	92.3	98.4
2000	67.1	67.0	65.1	73.8	86.5	90.7	93.4	97.4
2010	65.2	67.0	60.8	69.8	78.0	86.8	90.7	95.4

Source: same as Figure 2.

Note 1: except for special explanations, all data sources are the same as this table.

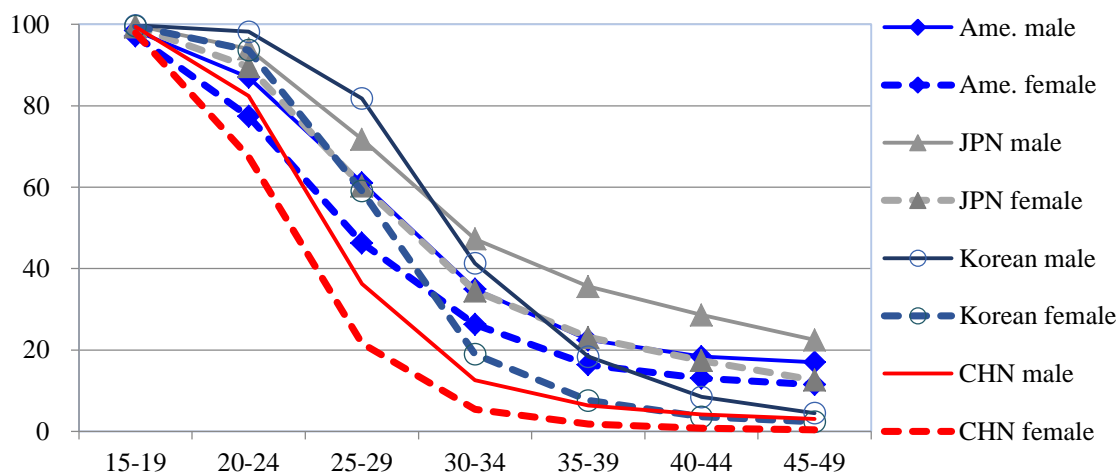
Note 2: in the following figures or tables, data of different countries come from different years

- (1) Date of China are for the year of 1982、1990、2000 and 2010 population census. China does not have data for 1970;
- (2) Data of Korea are for the year of 1970、1985、1995、2000 and 2005;
- (3) Data of Japan are for the year of 1970、1985、1995、2005 and 2010

Note 3: Proportion of Divorced includes those separated in Japan and USA.

Correspondingly, the proportion of the unmarried is the lowest in almost all age groups in China (see Figure 2), and a larger gap is observed between ages 25 to 34, the prime ages of childbearing. Among those aged 25-29, 80 and 60 percent of Korean male and female, and 70 and 60 percent of Japanese male and female remain single. By ages 30-34, there are still 50 and 30 percent of Japanese male and female being single. These figures are consistent with the data provided by the White Book

of Low Fertility and Social Solution in Japan. According to National Institute of Population and Social Security Research, the rate of lifelong unmarried (defined as those being single at age 50) accounts for 20.14 percent and 10.61 percent for male and female, compared to 5.57 and 4.33 percent in 1990 in Japan, respectively.



**Figure 2 Proportion of Unmarried by Age Group in Four Countries**

Source: same as Figure 1.

While the proportion of unmarried among Chinese females in younger ages has increased between 1982 to 2010, almost all women get married after age 40, less than 1 percent in all years. No fundamental change in marriage pattern is observed among women in the reform era China, as almost all Chinese women still practice traditional lifestyles of marriage. Such practice has been reinforced by the state which actively discourages non-traditional families such as those based on non-marital cohabitation, and non-marital childbearing. The universal marriage has profound implications for fertility.

### ***Ages at first marriage and first birth***

More people going to colleges and universities and working to obtain more post-graduate degrees there have contributed greatly to postponing marriage, and bearing children at all, or fewer numbers of children. As can be seen in Table 2, age at first marriage has been largely delayed over time in the four countries. What distinguishes China from other countries is that its pace of delay is slower. Japanese and Koreans get married much later and Chinese much earlier. In 2010, for example,



Chinese male and Korean male get married averagely at age 26.5 and 32, and Chinese female and Japanese female get married averagely at age 24.7 and 29.7, respectively. Age at first marriage in Japan was further delayed in 2012<sup>8</sup> and 2013.<sup>9</sup>

**Table 2 Age at First Marriage in Four Countries: 1970-2010**

Year	US		Japan		Korea		China	
	Male	Female	Male	Female	Male	Female	Male	Female
1970	23.5	21.5	27.5	24.7	27.2	23.3	-	-
1980	25.2	23.3	29.6	25.8	27.8	24.7	25.1	22.4
1990	27.6	25.4	30.7	27.7	29.3	26.1	23.8	22.1
2000	27.8	26.0	31.1	29.4	30.3	27.1	25.1	23.3
2010	28.8	26.9	31.2	29.7	32.0	28.8	26.5	24.7

Source: same as Figure 2.

Delayed age at first marriage would surely delay the age of first birth, which in turn may lower fertility desire (Quesnel-Vallee and Morgans 2003), and cause infecundity. The White Book of Low Fertility and Social Solution in Japan states that age at first birth exceeds age 30 in 2011, and reached 30.3 in 2012. Similarly, age at first birth in Korea is 30.3 and 31.0 in 2011 and 2014, respectively, the only country in the world with an age over 31 at first birth.<sup>10</sup> Ten years ago, half of TFR in Japan was contributed by those older than 29, and 30 percent of Korean TFR came from those aged 30-40 (Atoh et al. 2004); today, older mothers contribute more to TFR in these two countries. By contrast, age at first birth in US was only 25.5 in 2011.<sup>11</sup>

In China, both age at first birth and interval between first marriage and first birth have been delayed as well between 1990 and 2010, from 23.57 to 26.61 years old for the former, and from 1.5 year to 1.94 year for the latter, as seen in Table 3. Looking closely, it is evident that the delay of first marriage is not as salient in younger age groups as in older age groups. With regard to the interval between ages at first marriage and first birth, it has been shortened among those aged 30-34 or under between 1990 and 2010. This presumably implies the postponement of age at first

<sup>8</sup> <http://tieba.baidu.com/p/2418360959>

<sup>9</sup> <http://www.caogen.com/Topic/55400.html>

<sup>10</sup> <http://jingji.cntv.cn/2015/03/19/VIDE1426740658040392.shtml>. Accessed in April 28, 2015.

<sup>11</sup> Mother's mean age at first birth. <https://www.cia.gov/library/publications/the-world-factbook/fields/2256.html>. Accessed in April 28, 2015.

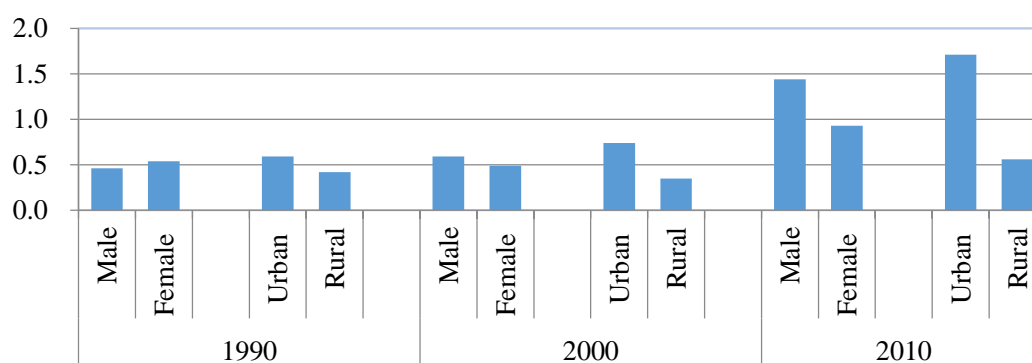
marriage, which motivate people to proceed to childbirth faster (i.e., catch-up effect), and a higher proportion of premarital pregnancy of young people.

**Table 3 Age at First Birth and Interval to First Birth: China 1990-2010**

Age group	Age at first birth			Interval to first birth		
	1990	2000	2010	1990	2000	2010
15-49	23.57	24.49	26.61	1.50	1.18	1.94
<=24	19.11	19.30	19.22	0.44	0.25	0.36
25-29	22.85	23.67	23.91	1.14	0.94	0.95
30-34	23.27	24.29	25.30	1.32	1.08	1.27
35-39	23.37	24.43	25.91	1.38	1.12	1.49
40-44	23.41	24.48	26.26	1.41	1.14	1.69
45-49	23.43	24.50	26.54	1.41	1.14	1.91

Source: 1990, 2000 and 2010 Population Census.

Among couples aged 30-49, the proportion of childless is extremely low across all categories and time points, especially in the countryside: less than or around 0.5 percent in 1990, 2000 and 2010 (see Figure 3).



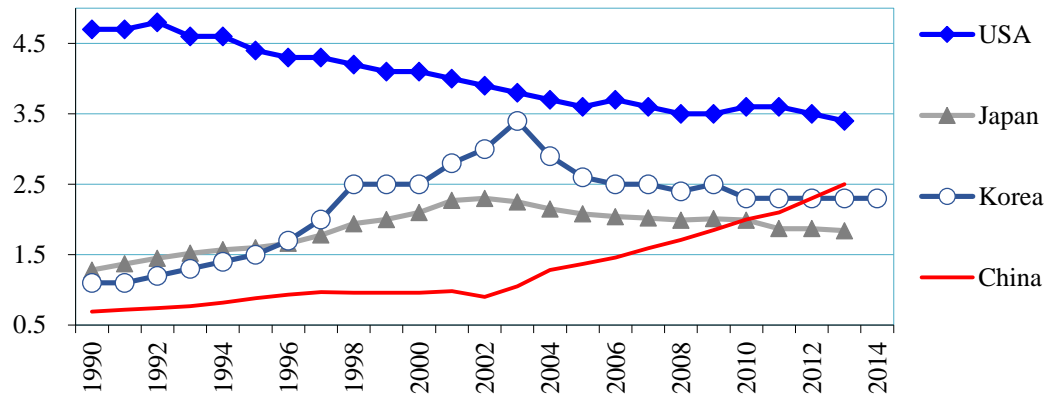
**Figure 3 Proportion of Childless among those Age 30-49: China 1990-2010**

Source: 1990, 2000 and 2010 China Women Status Survey. (replace with census data)

### ***Divorce rate***

When it comes to the disruption factors of fertility, China has effectively promoted contraception for all married couples, and legalized abortion. Readily available contraception is an important cause of fertility decline and method of fertility policy implementation. China has also experienced rapid increase in divorce rate in the past two decades. The crude divorce rate in China was 2.8 per thousand in 2015 (Civic Affair Ministry of China 2016), which exceed those of Japan and Korea

(see Figure 4).



**Figure 4 Crude Divorce Rate in Four Countries: 1990-2010 (%)**

Source: same as Table 1.

Among ever married women aged 45-49, however, the Chinese maintain a very low divorce rate compared with other countries, while also steadily rising over time (see Table 4). Since almost all Chinese are in wedlock by this age group, the low divorce rate reflects the retention of a more traditional marriage pattern, and suggests a less interruption in marriage life.

**Table 4 Proportion of Divorced among Those Ages 45-49 in Four Countries; 1970-2010**

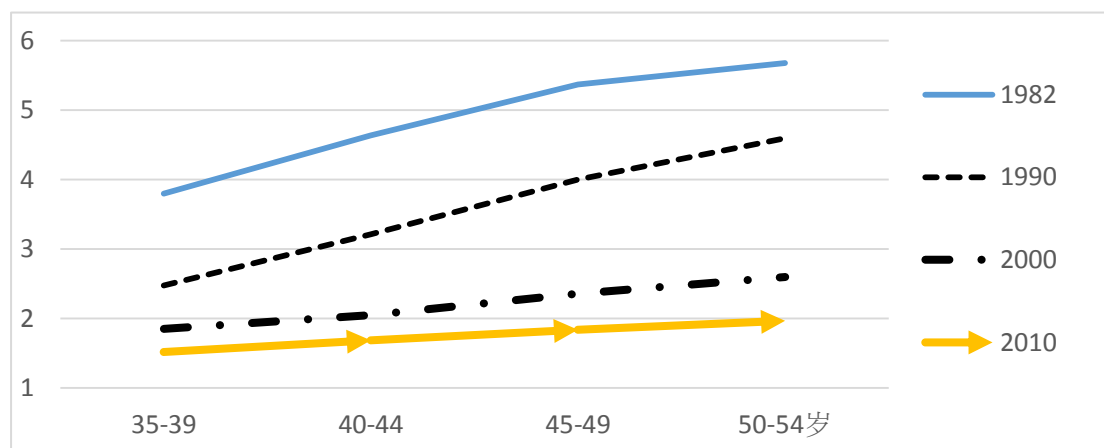
	US		Japan		Korea		China	
	Male	Female	Male	Female	Male	Female	Male	Female
1970	5.7	8.3	1.4	4.3	0.8	1.2		
1980	10.4	14.0	2.8	4.5	1.0	1.4	1.9	0.3
1990	14.8	19.0	4.0	6.4	2.5	2.7	1.4	0.4
2000	17.1	21.2	5.2	8.2	4.3	4.6	1.5	0.9
2010	16.5	20.1	5.8	9.5	6.2	7.2	2.5	2.1

Source: same as Table 1.

The effect of divorce on fertility in low fertility regime is double-edged. It may depress fertility by interrupting the normal marriage life and shortening childbearing years, especially in context where childbearing largely occurs within a marriage. It may also raise fertility due to remarriage although its effect might be minimal due to the low remarriage rate. China Family Planning Law stipulates that remarried couples are allowed to give birth in two circumstances: one side of the couple does not have

child(ren) or the child(ren) live(s) with ex-spouse.

Other disruptors of fertility include delay in marriage and first childbirth, cohabitation and reduced frequencies of sexual intercourse. Nevertheless, while delayed marriage may reduce fecundity, such negative effect can be offset by the availability of assisted reproductive technology, and its effect on fertility is extremely small (Eshre Capri Workshop 2010). Also, cohabiting couples without marriage tend to have fewer children due to the lack of commitment and “wait and see” uncertainty (Zhang and Song 2007), this practice is uncommon, and cohabiting people eventually proceed to marriage in China. The reduction in the frequency of sex will of course reduce the probability of conception. With greater pressure of work-family conflicts, about 40 percent of Japanese citizens aged 16–49 had not had sex for more than a month (Espenshade 2003). However, the high prevalence of contraception, the legalization of abortion, delays in marriage and first birth, cohabiting without proceeding to marriage and reduced sex may not bear significant effect on fertility in low fertility regime when people tend to desire two children. Hence, complete fertility among Chinese women who are under the strict control of fertility policy remains relatively high in 2010 (see Figure 5).



**Figure 3 TFR of Women Ages 35-54 in China: 1982-2010**

Source: National Statistic Bureau in corresponding census years.

Jointly considering marriage patterns and marriage behavior, therefore, messages conveyed above imply both similarity and difference across the four countries. While the US has a relatively low marriage rate and high divorce rate averagely, its TFR

retains around 2.1, the highest in the four countries and among the highest across developed world. Three factors can be identified as being responsible for the difference among the four settings. First, as we have seen, American women have a much higher marriage rate in younger age groups than Japanese and Korean women. Despite that the Japanese and Korean women in their late reproductive years have higher marriage rate than their American peers, their fecundity might be largely reduced. Second, the US have a high replacement of extra-marital fertility to TFR (Ambert, 2005; USCB 2011; Ventura 2009; World Marriage Report 2012), which offsets the negative impact of divorce on fertility (Coleman 1998). Conversely, the Japanese and Koreans tend to keep birth within the marriage institution, leaving less space for extra-marital fertility, connecting with a very low fertility rate (United Nations 2014). Finally, the US are featured by heterogeneity in population with some segments of the population have high fertility rates although other sub-populations may have lower fertility rate. Its various fertility patterns are in sharp contrast with the uniformity of later marriage and low fertility in Japan and Korea.

When it comes to China, it is evidenced that the Chinese remain to be featured by patterns of universal marriage and childbirth, and early marriage and childbearing, as well as longer years of reproduction, a unique case in East Asia (Jones and Gubhaju 2009). These patterns have especially important significance in low fertility regime since they enables women to have two children.

### **Summary and reflections**

In this work we attempt to assess whether China has indeed fallen into the low fertility trap by situating China in a longer historical time and broader spatial context. Comparison of China with Japan, Korea and the United States in marriage and fertility, and analysis of socioeconomic, cultural and media environment related to marriage and fertility in China enables us to draw the following preliminary conclusions:

First, China has indeed experienced a similar changing trend in fertility as the US, Japan and Korea in the past three decades. Specifically, ages at first marriage and first

birth have been largely postponed; the rate of divorce has noticeably increased, and consequently, the TFR has substantially reduced. A low fertility rate has been the new normal not only in developed world but also in China.

Second, the Chinese-style patterns of marriage and fertility have maintained compared to other countries such that the crude marriage rate is much higher, ages at first marriage and first birth are much younger, and divorce rate is much lower than the corresponding indicators of Korea, Japan and the US. Also, the interval between first marriage and first birth is small. In other words, China remains to be featured by universal marriage and childbearing, and early marriage and early childbearing. These patterns of marriage and childbearing are bound to maintain a relatively higher level of TFR if no external, strong yet depressing forces present. Indeed, among women ages 50-54 who have spent their childbearing years under the restrictive fertility policy, the TFR is about 1.8 according to China's 2010 population census.

Third, China is expected to have a higher TFR than what has been observed from the perspective of development level. The rapid decrease of TFR in China largely results from its strict fertility policy, far ahead of its development stage. The relationship between fertility and development is further complicated by tremendous urban-rural divides and regional disparities in China. Unlike Japan and Korea with monotonic fertility pattern, it in China is more diversified. Rural people and people in less developed regions tend to give birth to more than one child, regardless of fertility policy rules, while most urban citizens have one child due to the policy rules and high costs of childrearing. Even though, however, as count data with finite values, fertility in large cities will not infinitely reduce to the lowest low level, and the depressing effect of development on fertility largely manifests in transition from high fertility to low fertility. At the bottom-line, couples have to give birth by themselves and have at least one child given China's culture of marriage and value of children, which may also modify the development-fertility relationship.

Fourth, sociocultural environment and household contexts in China favor more children than one child. The Confucius tradition has never tolerated individuals being single or childless. Presently, various medias extensively disseminate the idea that low

fertility is extremely dangerous for the country and having only one child is extremely risky for the family and individuals. Traditional norms and current mainstreams of thoughts have joined hands, successfully creating a strong sense of anxiety in marriage and childbearing. This in turn pushes individuals, women in particular, to enter wedlock and have children earlier. Having children is still considered a display of power, fortune, and in some cases a privilege, and the value of children, instrumental and non-instrumental, has been further reinforced in the low fertility regime.

Fifth, there is no sufficient evidence to support that China would converge to Korea and Japan in fertility in the near future. Of the four countries, Japan is unique in marriage and childbearing for the time span examined here, while Korea and US (except for divorce rate) are more similar to China, but their onset, pace, and cause of changes in marriage and fertility transition vary. Similarities in changing trend of structural forces, and marriage and childbearing behaviors do not necessarily mean that China will follow the footsteps of others. Patterns of marriage and childbearing always result from the interactions of external economic, social, cultural and political factors, as well as internal preference. When a developing economy is combined with strong son proclivity or desire for having both a son and a daughter, as is the case of current China, the low fertility trap can hardly present.

Given all of the above findings and analysis, a tentative conclusion may be drawn that it is too early to conclude that China has fallen into fertility trap or will fall into the trap. While China has experienced a similar trend of fertility transition, the mechanism behind it differ substantially from that of Japan and Korea – in Korea, for example, its extremely low fertility largely results from substantially postponed marriage, although fertility decline also originated from family planning programs in the 1970s and 1980s. In contrast with new marriage patterns and marital behaviors, the fundamental intermediate factors of fertility decline in Japan and Korea, the mechanisms for fertility reduction is largely a result of fertility policy, especially in the period prior to 2000.

Although such norms have changed with modernization and urbanization, what

differentiate China from Japan and Korea is that the majority of Chinese has not treated singlehood or childless as a new lifestyle, as the Koreans and Japanese do. The military presence of American troops in Japan and Korea after World War II has yielded profound and long-lasting effect on marriage and fertility norms and behaviors. Together with rapid pace of development, the western norms of marriage and family have been ingrained in Korean and Japanese. Conversely, China closed its door to west in the cold war period. When it opened its door in 1978, the western culture has also imported to China, and regarded as advanced model to be eagerly learned. However, its effect is mostly confined within those better educated and elites in the early years of socioeconomic reform, when the majority of the Chinese remain living a traditional lifestyle. When mass media has penetrated into the the entire society in the past decade, the mainstream of marriage and fertility norms have more diversified. Individual heterogeneity become more prominent, when multiple factors are combined together, and when marriage and fertility has more become a decision of the individual and family. However, even though some people choose not to have children or have only one child, most people will still have two or more children in the two-child policy regime. In fact, even in metropolitan areas, we have often observed many two-child families in kindergartens or delivery rooms of health clinics. If small probability event occurs frequently, it may signify that the judgment of fertility trap is a fiction, rather than a fact.

Although findings emerged in this analysis is compromised by data uncertainty and compatibility across countries, it provides new thoughts on the issue of fertility trap in China. Whether or not China has fallen into fertility trap is truly a complex issue, which deserves intensive and extensive research and discussions beyond this research. The concern of fertility trap has aroused anxieties in the general population on the future of China, which is reminiscence of the apprehension and fear on high fertility expressed by the government and the society from the late 1970s to the beginning of the new century. There is a sincere hope that the size of the Chinese population would drastically decrease overnight. Had the state insisted on a two-child policy with later childbearing but longer birth interval, may the population size not be



more than what is it today. But there are no “if” in history. Childbirth roots in individual childbearing behaviors, but it is neither an individual’s decision, nor simply an issue of  $1+1=2$ . It is always entangled with economic, sociocultural and environmental factors, and tied to the country’s strategic development goals. The implementation of the restrictive fertility policy 35 years ago was to facilitate the realization “The Four Modernizations;” today, that scholars and social activists fervently advocate encouraging childbirth reflects a similar anxiety, but in the other way around.

Although the notion of fertility trap in China is more a fiction than a fact, it is a fact that China’s TFR is low. The job insecurity or uncertainty and high cost of childrearing may make work and family less compatible, discouraging some people from having the second child, as evidenced by the cases of Eastern European (Pobric and Robinson 2015). People are more likely in modern society to invest strongly in the needs of their children, making it more difficult to have large numbers of children (Liu 2015). Hence, the long-lasting low fertility rate and work-family conflicts jointly call for the Chinese government to adopt family-friendly policies to facilitate gender equality in the private and public arena, work-family balance and eventually the realization of fertility desire of two-children, a son and a daughter.

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