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Evaluation of Fertility Levels and Adjustment of Fertility Policy: Based on the Current Situation of the Chinese Mainland's Provincial Fertility Levels*

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"十一五"期间我国大陆的总和生育率为1.481，呈稳中有降态势，形成了"中、西部中度低水平，东部深度低水平，东北极度低水平"的空间格局。除少数极低生育率省区回升外，实际生育率及其与政策生育率的比值仍在下降。生育率下降的主要推动力是发展，突出表现为生育旺盛期育龄妇女比总人口和育龄妇女的城镇化、非农化水平高、人口外出流动比例大，以及城镇生产、生活方式和文化观念对农业人口的同化作用。发展促使生育率下降的趋势已不可逆转。现行生育政策难以使生育率稳定在合理的低水平。有可能引起政策性反弹的重点在计划生育基础较好的城镇和东部及东北地区；有可能引起非政策性反弹的势能，已基本释放；中、西部农村年轻一代妇女多胎生育平均只有4.12%。生育政策调整完善中的生育率反弹可通过渐进式策略实施有效调控，不会引起生育率大幅强烈反弹。我国生育政策全国统一调整时机已成熟。

关键词：政策生育率　实际生育率　分省生育率　区域生育率　一代独生子女政策

During the 11th Five-year Plan (2006-2010), the total fertility rate of the mainland of China was 1.481 and was stable with a slight decline, exhibiting a spatial pattern of moderately low fertility in the central and western regions, very low fertility in the east and extremely low fertility in the northeast. Except for a rebound in a few provinces and regions with extremely low fertility rates, the ratio of actual fertility rates to policy fertility rates is still falling. The reduced fertility rate is mainly driven by development, notably the proportion of the total population represented by the exuberantly fertile women of child-bearing age and their greater urbanization, growing level of non-agricultural employment and outflow from rural areas, as well as the assimilative effect of urban production, lifestyles and cultural

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concepts upon the agricultural population. Development has catalyzed an irreversible trend of declining fertility; existing fertility policy has proven insufficient to keep fertility rates stable at reasonably low levels. Policy-based rebounds may emerge in urban areas and the east and northeast, where family planning policy has been better implemented; on the other hand, a non-policy-based rebound may have been released. In the central and western rural areas, multiple births occur on average among only 4.12 percent of the younger generation of women. As fertility policy is adjusted and improved, fertility rebounds in transitional fertility policy adjustment can be effectively regulated through a gradual strategy which will not provoke a sharp rebound. The time is ripe for China to conduct a nationally unified adjustment of the existing fertility policy.

Keywords: policy fertility rate, actual fertility rate, provincial fertility rate, regional fertility rate, one generation of one-child policy

Arriving at a scientific judgment of China's actual fertility level and its changing trends is of great importance for our grasp of the overall trends of population change and for formulating population and socio-economic policies. The numerous surveys conducted since the beginning of the 1990s use different data, concepts and methods of estimation,[1] and have thus been unable to provide an accurate and credible description, making it hard to arrive at scientific conclusions and decisive policies in relation to the demographic situation. For this reason, the present research team is launching research aimed at assessing provincial fertility levels on the mainland of China on the basis of the results of China's Sixth National Census in 2010.

On the basis of the 2000-2010 national census and information from the sample survey of population, particularly the supplementary consolidated data from the National Bureau of Statistics, this paper evaluates the degree of family planning policy implementation by calculating the policy fertility rates and actual fertility rates of different regions in China and analyzing basic trends in the policy fertility rate, the actual fertility rate and the degree of policy implementation. The results show that fertility levels in most provinces, after falling to a moderately low, very low and second-lowest level, have continued to decline, with some even falling to the extremely low level. Thus, the time is ripe for an adjustment to fertility policy.

I. A Review of Evaluations of the Fertility Rate

Over the past decade, two leading schools of thought have dominated the academic community with regard to the assessment of China's national level fertility rate.

1 Yu Jingyuan and Yuan Jianhua, "Analysis of Chinese Women's Fertility Status in Recent Years," pp. 21-34; Guo Zhigang, "A Study of Lifetime Fertility Levels from the Perspective of Tempo-adjusted Fertility Behavior in Recent Years: Based upon the Effect of changes in the Toatal Fertility Rate as Shown in China's Fertility Data."

One holds that these low fertility rates are mainly due to underreporting, which we must manage to eliminate if we are to understand the "true" fertility rate. To estimate fertility rates, Robert D. Rutherford, Minja Kim Choe, Chen Jiajian, Li Xiru and Cui Hongyan employed the own-children method,[2] the birth history reconstruction method, parity progression ratios, and decomposition of the total fertility rate; Zhai Zhenwu and Chen Wei used education statistics to estimate fertility levels and the number of births adjusting the 2000 census data for the 0-9 age group;[3] Wang Qian made an indirect estimate of the true fertility level by means of cohort cumulative fertility rates;[4] and Wang Jinying estimated fertility rates on the basis of backfilling the birth population aged 0-10 in 2000.[5] However, the scientific nature of some of their methods and parameters has been questioned by some scholars, as have their very efforts to eliminate underreporting. For example, reviewing estimates of fertility levels for the 1990s, Zhang Guangyu and Yuan Xin found little evidence of large-scale and prolonged underreporting of births; on the contrary, there were good reasons to believe that the low fertility rates shown in every national census did reflect a substantial fall in actual fertility levels. They were moreover concerned that "too much attention to discussing the quality of data may distract attention from the factors involved in declining fertility and their effects."[6]

Another view claims that existing concepts, indicators and methods of analysis no longer provide a truthful reflection of fertility levels in the context of the delayed child-bearing involved in the transition to a low fertility rate. If China's fertility levels, already extremely low, are to be truly represented and understood, theoretical and methodological innovation are urgently needed, particularly intensified theoretical research on low fertility. This view is represented by Guo Zhigang, who has published more than 20 articles on this topic since the year 2000. By conducting a comparative analysis of survey statistics from different sources, Guo managed to detect discrepancies pointing to underreporting in data from different sources for the same year. If such differences are treated as underreporting, the maximum occurrence of underreporting for that tempo-adjusted would be only 17 percent, and even less in the late 1990s.[7] Guo also introduced into China the tempo-adjusted total fertility rate (TFR), which takes into account changes in the childbearing age and reflects lifetime fertility levels much better than the conventional total fertility rate.[8] Guo tested the TFR using Chinese data

2 Robert D. Retherford *et al*., "China's Fertility Rate: How Much Has It Been Reduced By?"

3 Zhai Zhenwu and Chen Wei, "A Study of China's Fertility Levels in the 1990s."

4 Wang Qian, "Applying the Cohort Cumulative Method to the Analysis of the Changing Trends of China's Fertility Levels in Discussion with Professor Guo Zhigang."

5 Wang Jinying, "Assessment of China's Changing Fertility Patterns and Fertility Levels 1990-2000."

6 Zhang Guangyu and Yuan Xin, "Reflections upon the Under-reporting of Births and Evaluation of Fertility Levels in the 1990s."

7 Guo Zhigang, "Research and Discussion of China's Fertility Levels in the 1990s."

8 Guo Zhigang, "A Study of Lifetime Fertility Levels from the Perspective of Tempo-adjusted Fertility Behavior in Recent Years: Based upon the Effect of Changes in the Total Fertility Rate as Shown in China's Fertility Data"; "Review and Analysis of Tempo-adjusted Fertility Level Indicators"; "An Analysis of China's Fertility Levels in the 1990s: Comparing Multiple Measurement Indices."

and also adopted the mother-child matching method to process the Fifth National Census sample and estimate the national fertility level for the 1990s.[9] Moreover, by introducing theoretical models of low fertility rates and revealing the complexities that currently affect low fertility rates in China, he urged us not to engage in one-sided exaggeration of the effect of underreporting at the expense of other explanatory factors. Guo used data from the Sixth National Census to demonstrate that previous studies had overestimated birth and fertility levels, leading to a statistical over-adjustment that biased the results far more seriously than any bias in the raw data. This had led to serious misconceptions.[10]

It is difficult enough to estimate fertility rates accurately at a national level; to estimate them at the provincial level is even harder. For the latter, what is most difficult is how to think about and address the impact of interprovincial migrations upon provincial fertility rates. We have been able to find three articles on this topic. One was written by Wang Jinying et al., who provided an estimate based on backfilling provincial-level underreported fertility rates in 2000 with a focus on estimating under-reporting and on backfilling.[11] This article provides a rough estimation of the number and proportion of the under-reported population under the age of one, but does not offer a rigorous proof of the relationship between indicators of population mobility and urbanization on the one hand and the underreported population on the other; further, the weighting of underreporting was subjectively determined. The second, by Yin Wenyao and his fellow researchers, makes an iterative estimation of provincial-level policy fertility rates and actual fertility rates.[12] With the annual population sample survey of the National Bureau of Statistics as a reference, they target provincial birth and death rates and the proportion of urban and rural population in a province, estimating provincial iterative fertility rates for 2001-2004 through repeated iteration. The accuracy of the results is constrained by the quality of provincial data and the accuracy of migration estimation. Where the two are unreliable, so are the results. The third article, by Wang Qian and Guo Zhenwei, replaces women's lifetime fertility rates with the average number of children born to women aged 35 as reported in the 2000 National Census to make an indirect estimation of the total fertility rate.[13] This was later questioned by Guo Zhigang on the grounds that the lifetime fertility rate is not the same thing as the total fertility rate.[14]

The present paper differs from other research mainly in that the basic data provided by

9 Guo Zhigang, "Using Raw Census Data to Estimate Single Child Information"; "Research and Discussion of China's Fertility Levels in the 1990s."

10 Guo Zhigang, "Major Errors in Previous Population Estimates and Forecasts Revealed by the Results of the Sixth National Census"; "Rethinking China's Demographic Situation."

11 Wang Jinying *et al*., "Assessment of Chinese Women's Total Fertility Rate in 2000 at the Provincial Level."

12 Yin Wenyao, Li Fen and Yao Yinmei, "Further Thoughts on System Simulation and Comparative Selection in China's Fertility Policy."

13 Wang Qian and Guo Zhenwei, "Analysis of China's Birthrate."

14 Guo Zhigang, "A Further Discussion of Why the Number of Children in an Average Cohort Should Not Be Regarded as an Estimation of the Present Total Fertility Rate."

the National Bureau of Statistics (unpublished; hereafter referred to as "supplementary consolidated data") enables us to further consolidate a province's registered population wherever they are in the country by age, gender, rural/urban and agricultural/non-agricultural households, thus counteracting the impact of migration flows on provincial populations and ensuring the completeness of the data. It should be noted that even in the supplementary consolidated data there are still some cases of underreporting cases, but by estimating the overall fertility rate for a past tempo-adjusted, we can still make reasonable inferences, to the extent possible, on the basis of the fertility rate for that census year. As the supplementary consolidated data is long table data that holds only 10 percent of the complete census data, overly detailed analysis of relatively small samples could bias the results, but this does not affect our global perception and understanding, and especially our conclusions on tempo-adjusted fertility levels.

II. Basic Data and Methodology of Fertility Rate Evaluation

1. Estimate of the tempo-adjusted policy fertility rate

The fundamental data on which our evaluation of tempo-adjusted policy fertility rates is based consists of the agricultural and non-agricultural population in urban and rural areas, and the number of only children and non-only children of different ages. The data source is the provincially published 2005 sample survey of one percent of the population. Where provinces have not published these data, we use the National Bureau of Statistics' consolidated data from the above survey. The methodological steps for evaluating tempo-adjusted policy fertility rates are:

Step one: using the all-ages probability method,[15] estimate the number of different types of couples. Their age distribution model is based on year 2000 census sample data (on CD) provided by the National Bureau of Statistics.

Step two: calculate the lifetime policy fertility rates (as stated in provincial and district regulations on family planning) among various groups in the population as the basic input variable.

Step three: calculate the tempo-adjusted policy fertility rate by region.

In the present text, the tempo-adjusted policy fertility rate is not an input variable but an endogenous variable and an output variable. It is calculated by taking the lifetime policy fertility rate of all types of couples as the tempo-adjusted fertility rate for each year and then calculating the total number of children born to all couples at different ages. We thus obtain the age-specific fertility rate of all couples and the total fertility rate. The latter is the tempo-adjusted "policy fertility rate." We thus have the weighted mean of the lifetime policy fertility rate for all types of couples calculated on the basis of the urban/rural and agricultural/

15 Li Fen, Yin Wenyao and Yao Yinmei, "Exploring the Marriage Probability and Marriage Pairing Estimation Method: A Key Technique in Fertility Policy Simulation."

non-agricultural populations, age distribution and fertility patterns. This variable changes with changes in the proportion of each type of couple in the total population and the age distribution and the proportion in the total population of the agricultural and non-agricultural population.

Step four: add the number of births and the number of women by region and by age to give the policy fertility rate at the regional and the national level.

2. Estimates of the actual fertility rates of the registered population

On the basis of the supplementary consolidated data, the present paper divides the registered population of each province by gender, age, and place of residence (province, municipality or autonomous region) into two categories: those who live in their native province and those who live in another province, so as to minimize the impact of migration flows upon estimation of the number of births and the fertility rate and eliminate the problem of a mismatch in data on mothers and children caused by mothers' working away from home and leaving their children behind. And we further subdivide our research subject into the agricultural and non-agricultural population by residence in the urban or rural areas of their own or other provinces. On this basis we analyze the differential fertility rates for migrants and non-migrants, for the urban and the rural population, and for the agricultural and non-agricultural population to see the effect on fertility of migration, urbanization and the shift to non-agricultural occupations. On the basis of the supplementary consolidated data, we use the annual age- and sex-specific dynamic mortality probability rate and the infant mortality rate for 2001-2009 to extrapolate the age-specific female population and number of births and thus obtain the TFR (hereafter referred to as "the actual fertility rate") for those years.

3. Basic parameters

(1) Dynamic changes in fertility patterns

Accompanying China's rapid socio-economic change has been rapid change in fertility patterns. No fixed model can provide an objective estimate of the true fertility level in each region. We adopt the method of simple interpolation to extrapolate parity progression fertility patterns for 2006-2009.

(2) Dynamic changes in the age distribution of fertility

The age distribution of child-bearing among women in the midst of the demographic transition is also changing. To reflect this dynamic change, we adopt a simple interpolation method similar to that used in estimating dynamic changes in fertility patterns, to work out the distribution of female child-bearing ages for 2000-2005 and 2005-2010.

(3) Dynamic changes in mortality levels and patterns

China's age-specific mortality levels are also changing. The age data in the 2010 census shows that changes in mortality levels and patterns need to be taken into consideration if we wish to extrapolate the birth population of previous years. The mortality probability for 2006-2009 can be estimated using logarithms of sex- and age-specific mortality probability and simple interpolation, and the infant mortality rate can be calculated from the national

mortality rate of infants under one as a proportion of the mortality rates for this age group monitored by Departments of Health.

4. Methodology and indicators for fertility levels and trends

(1) Subdivision of fertility levels

The present generally recognized criterion for low fertility rates is that the total fertility rate should be below the low fertility rate required for population replacement. This has a rigorously defined demographic significance. However, there has been no systematic subdivision of such low fertility rates, making it hard to obtain a picture of the varying levels of fertility in different regions of China. Using the average fertility level for the period of the 11th Five-year Plan, this paper divides fertility rates into six levels.

"Higher fertility levels" refers to a TFR higher than or equal to replacement level (TFR $\geqq$ 2.1).[16]

Fertility levels falling below replacement level are broadly termed "low fertility levels." They can be divided into five subdivisions, as follows.

A slightly low level refers to a TFR of more than 1.8 but less than 2.1 ($1.8 \leqq TFR < 2.1$), that is, lower than the replacement level but greater than 1.8, with a widespread average of two children. At one time, some of the literature regarded 1.8 as the ideal low fertility level.[17]

A moderately low level refers to a TFR of more than 1.5 but less than 1.8 ($1.5 \leqq TFR < 1.8$), that is, less than two children. Its lower limit is roughly equivalent to the policy whereby couples in some rural areas in China are allowed to have a second child if their first is a girl, but not if it is a boy.

A deeply low level refers to a TFR of more than 1.25 but less than 1.5 ($1.25 \leqq TFR < 1.5$), that is, less than 1.5 children but more than 1.25.

A secondary extremely low level refers to a TFR of more than 1 but less than 1.25 ($1 \leqq TFR < 1.25$), where the average number of children is less than 1.25 and the lower limit is an average of one child.

An extremely low level refers to a TFR of less than 1 ($TFR < 1$), or an average of less than one child. "Extremely" here is intended to stress that present-day China is already at the "extreme" of the lowest level of fertility.

Such a hierarchical division is basically accord with the varied requirements of our national policies and reflect the present actual fertility levels.

(2) Trends in changing fertility levels

To reduce the influence of individual years on the overall trends, we use the least-square method to calculate the annual average increase or decrease and then determine the overall trends. When the average variation is above zero, the fertility rate is on the rise; when it is below zero, the fertility rate is declining; and when it is equal to zero or approximate to zero,

16 We do not here consider the impact of gender of births upon the replacement level.

17 Research Group of the National Population Development Strategy, *National Population Development Strategy Research*, vol. 1, p. 19.

the fertility rate is in a stable state. Thus, its numerical value reflects the intensity of changes in the trend.

(3) Estimates of the Degree of and Trends in Policy Implementation

We use the ratio of the actual fertility rate to the policy fertility rate to measure the extent to which policies have been implemented, or the "policy implementation ratio," reflecting the degree of deviation of the actual fertility rate from the policy fertility rate and the effectiveness or degree of policy implementation. When the ratio is equal to 1, it indicates that the actual fertility rate equals the policy fertility rate; when it is above 1, it indicates the former is higher than the latter; and when it is below 1, it indicates that the former is lower than the latter. Then we use the average variation in the policy implementation ratio calculated by the least squares method to measure implementation trends in the policy fertility rate. When the policy implementation ratio is below 1, the higher the variation is above zero, the closer the actual fertility rate is to the policy fertility rate; the lower the variation is below zero, the lower the actual fertility rate is below the policy fertility rate. When the policy implementation ratio is above 1, the higher the variation is above zero, the higher the actual fertility rate is above the policy fertility rate; and the lower the variation is below zero, the closer the actual fertility rate is to the policy fertility rate.

III. Overall Conclusions on the State of Fertility: The Time Is Ripe for Adjusting the Family Planning Policy

The evaluation of the fertility rate shows that the time is ripe for adjusting family planning policy from the multiple perspectives of the present fertility situation, factors influencing it, policy effects and future trends, and the conditions of the target population.

1. The national fertility rate, generally at a deep-low level and stable with slight declines, has formed a new spatial pattern.

Analytical results show that the overall fertility rate of the mainland of China was stable below 1.5, with a slight decline in the midst of stability in the first decade of the 21st century. It was 1.481 on average during the 11th Five-year Plan period and 1.428 in 2010, or basically at the same level as the policy fertility rate (1.416). According to the criteria for fertility levels set in this paper, both policy and actual fertility rates are at deep-low levels; urban fertility rates in different provinces are at/below these levels while rural fertility rates are stable at low in 77 percent of provinces. Thus urban and rural fertility rates throughout the country, together with the policy implementation ratio, have contributed to the form of a new spatial pattern.

(1) Evaluation of national fertility levels

(a) Generally stable at a deep-low level (< 1.5).

The total fertility rate of the back projection of the registered population at the national level (not including Hong Kong, Macao, and Taiwan, the same below) was generally stable at around 1.459 during 2001-2009. The lowest was about 1.372 in the lunar year of the Ram

(2003,) and the highest about 1.536 in 2006.

It is worth noting that the actual fertility rate entirely computed on the basis of the supplementary consolidated data fell to 1.381 in 2009, 0.103 lower than the previous year; and was further reduced to 0.866 (below 1), a fall of as much as 0.515. As China's 11th Five-year Plan from 2006-2010 had witnessed economic development, social stability and a slow recovery in policy fertility, there were few dramatic fluctuations within the policy environment of daily life and fertility. However, fertility levels estimated from the census data of 2009 and 2010 showed quite marked decreases for two years in a row. Even if the mass of the people's reproductive intentions may have affected the fertility rate to some extent, this should have resulted in a steady, gradual fall; a fall of these dimensions is impossible, particularly for 2010. To seek its causes, we need to shift our attention to the underreported population in terms of births or infants under one. Therefore, we have adjusted the data on the birth population fort 2009 and 2010 on the basis of the following two hypotheses.

Hypothesis 1: The younger the age, the higher the rate of underreporting, After the reorganization of registered households prior to the census, underreporting rates of the population which has reached or is about to reach the school age will fall to a very low, or negligible, level.

Hypothesis 2: The real fertility levels of 2009 and 2010 followed the basic trend of the last years of the 10th Five-year Plan and the first years of the 11th Five-year Plan.

On the basis of these hypotheses, we have used the least-squares method to obtain the average annual variation in the fertility rate of all areas for 2005-2009 and, taking 2008 as our base, have re-estimated the fertility rate of the registered population by region for 2009-2010 (see Figure 1).

On that basis, the estimated national fertility rate averaged 1.481 (below 1.5) during the 11th Five-year Plan. It was 1.456 in 2009 and 1.428 in 2010. To minimize the impact of individual year estimation errors upon our conclusions about the overall level, we base the following analysis primarily on the national and provincial average levels during the 11th Five-year Plan.

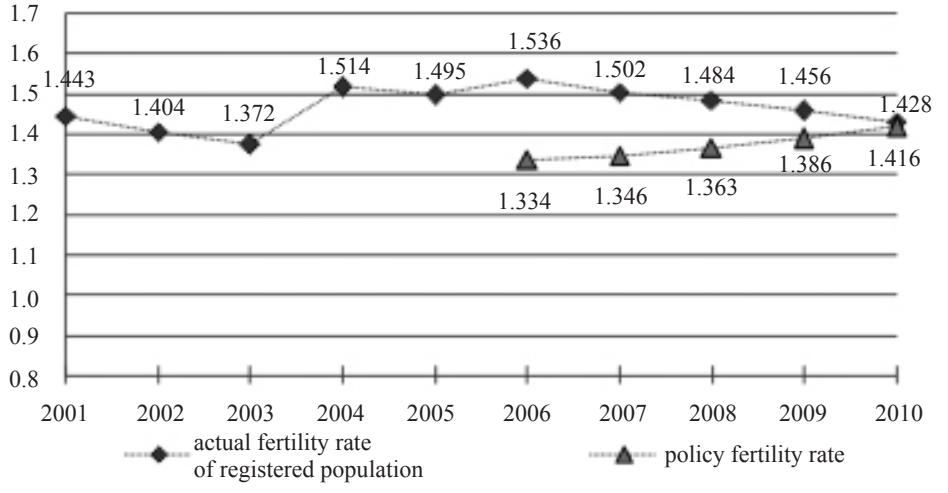
(b) Actual fertility rates are generally consistent with policy requirements.

Our calculations show that the policy fertility rate in 2006 was 1.334, rising to 1.416 in 2010. We can see from the back projections that the policy fertility rates climbed back while the actual fertility rates declined, gradually narrowing the gap between the two. Between 2006 and 2010, the national policy implementation ratio fell from 1.151 to 1.008, increasingly approaching zero, which indicates that nationally, actual fertility levels were basically consistent with policy levels at the end of the 11th Five-year Plan (Figure 1).

The national average actual fertility rate was 1.481 over the 11th Five-year Plan, dropping to 1.428 at the end of that period. On the surface, this seems to be very general or abstract data. To have a full understanding of the evaluative results at a national level still requires the display of specific information at regional and provincial levels, revealing the rich

connotations underlying it.

Figure 1 Actual and Policy Fertility Rates at a National Level



(2) New spatial differences among the three major regions and the northeast[18]

(a) The actual fertility rate was moderately low in the central and the western regions, deeply low in the east, and extremely low in the northeast.

In 2010, the actual fertility level was highest in the central region and lowest in the northeast, with the western and eastern regions in the middle, at 1.579, 0.891, 1.514 and 1.368 respectively. That is to say, the central and the western regions were at moderately low levels while the east and the northeast were at a deep-low level and an extreme-low level respectively.

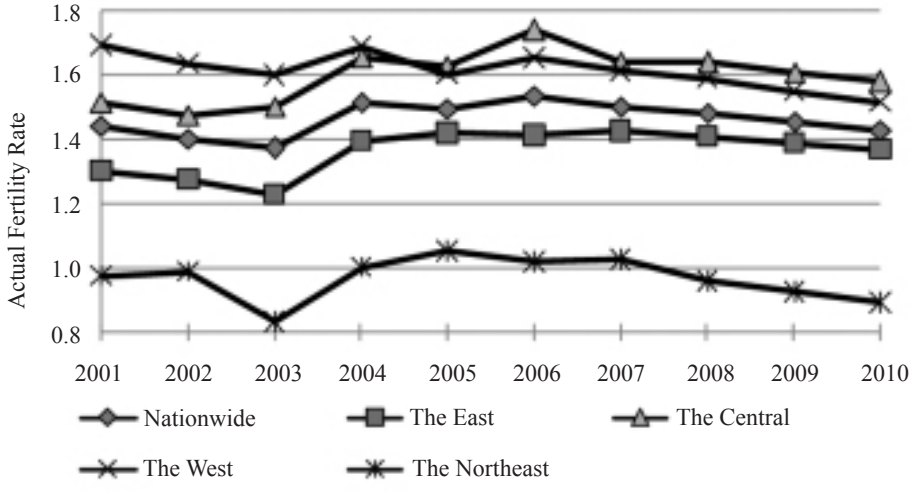
Over the 10th Five-year Plan, the western region was steady with a slight decline while the other three regions were steady with a slight rise. In the lunar Year of the Ram, 2003, the actual fertility rate of the western region, and more especially of the northeast and the eastern region, formed a trough (Figure 2) while the central region was less exposed to the influence of the Chinese zodiac.[19] In 2001, the actual fertility rate of the western region was higher than that of the central region, while in 2005 the contrary was the case, forming a pattern of "slightly high in the central and western region, low in the eastern region and still lower in the northeast." During the 11th Five-year Plan, the actual fertility rates of the four regions were

18 The present paper divides the mainland of China into four major regions. The eastern region includes Beijing, Tianjin, Hebei, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong and Hainan; the western region includes Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang; the central region includes Shanxi, Anhui, Jiangxi, Henan, Hubei and Hunan; and the northeastern region includes Liaoning, Jilin and Heilongjiang.

19 That 2003 was year of the SARS epidemic, with sharply lower population mobility, may have had some influence on this result.

all stable with a slight decline, maintaining the same pattern as above. Here, "slightly high" is understood as a level relative to that of other regions. The mean value of the central region during those five years was 1.642, or 0.158 lower than 1.8, but still at a moderately low level (Figure 2).

Figure 2 Actual Fertility Rates of the Three Regions and the Northeast



(b) Policy fertility rates of the three regions and the northeast were all on a slow recovery from deeply low levels.

During the 11th Five-year Plan, the policy fertility rates of the four regions were all recovering slowly, with the highest rate in the central region, the next highest in the western region, the third highest in the eastern region, and the lowest in the northeast. By 2010, the rate had risen from 1.316 to 1.386 in the eastern region, from 1.392 to 1.460 in the central region, from 1.334 to 1.413 in the western region and from 1.287 to 1.349 in the northeast (Table 1).

Table 1 Policy Fertility Rates and Actual Fertility Rates of the Three Regions and the Northeast during the 11th Five-year Plan

Year	Eastern		Central		Western		Northeast	
	Policy fertility rate	Actual fertility rate	Policy fertility rate	Actual fertility rate	Policy fertility rate	Actual fertility rate	Policy fertility rate	Actual fertility rate
2006	1.316	1.413	1.392	1.740	1.334	1.652	1.287	1.019
2007	1.326	1.425	1.402	1.644	1.346	1.612	1.304	1.024
2008	1.341	1.410	1.416	1.639	1.361	1.588	1.319	0.958
2009	1.362	1.389	1.437	1.609	1.380	1.551	1.335	0.925
2010	1.386	1.368	1.460	1.579	1.413	1.514	1.349	0.891

(c) Degree of policy implementation: the actual fertility rates of the central and western regions were increasingly close to their policy fertility rates while those of the eastern region and the northeast were lower than their policy fertility rates.

During the 11th Five-year Plan, the fertility levels of the central and western regions were increasingly close to their policy fertility rates. Their policy implementation ratios had dropped from 1.238 to 1.071 and from 1.250 to 1.082 respectively by 2010, with the former was closer to the policy fertility rate than the latter. The actual fertility rate of the eastern region was already very close to the policy rate in 2006 but by 2010 had fallen below it, and the northeast's actual fertility level had already fallen below the policy rate in 2006 and remained below it for many years thereafter (Table 2).

Table 2 Policy Implementation Ratios of the Three Regions and the Northeast during the 11th Five-year Plan

Year	Nationwide	Eastern	Central	Western	Northeast
2006	1.151	1.074	1.250	1.238	0.792
2007	1.116	1.075	1.173	1.198	0.785
2008	1.089	1.051	1.157	1.167	0.726
2009	1.051	1.020	1.120	1.124	0.693
2010	1.008	0.987	1.082	1.071	0.660
Mean value	1.083	1.041	1.156	1.160	0.731

(3) Hierarchy and trends of fertility levels at provincial levels

According to the ranking of fertility levels, the fertility rates of all provinces (municipalities /regions) had fallen to the level of low fertility by 2010. Two had fallen to the slightly low level, eleven to the moderately low level, eight to the deeply low level, seven to the secondary extremely low level and three to the extremely low level.

In terms of changing trends during the 11th Five-year Plan, twenty-five provinces (municipalities/regions), or 81 percent of the total, had an average fertility rate below the moderately low level of 1.8; three had rebounded from below 1.8 to 1.8 and another three had fallen from above 1.8 to 1.8, accounting for 10 percent; and no provinces had an average rate above 1.8 and a rising trend (see Table 3).

Comparing the actual and the policy fertility rates, during the 11th Five-year Plan there were eleven provinces (municipalities/regions), accounting for about one-third of the 31 provincial administrative regions on the mainland of China, with average actual fertility rates below their corresponding policy fertility rates, and twenty, accounting for two-thirds of the total, with average actual fertility rates higher than the corresponding policy fertility rates (see Table 3). Another three, accounting for 10 percent, had average levels of actual fertility rates that were significantly lower than their policy implementation ratios but were returning towards them; these were ranked as having secondary extremely low or extremely low levels

of fertility with a policy implementation ratio that was rising by an annual average of 0.013 (Shanghai), 0.031 (Inner Mongolia) and 0.048 (Beijing). Eight others, accounting for 26 percent of the total, had average actual fertility rates that were lower than their policy rates and were continuing to decline; the annual average fall in their policy implementation ratios was 0.051 (Heilongjiang), 0.045 (Fujian), 0.035 (Jilin), 0.034 (Hubei), 0.030 (Zhejiang), 0.030 (Shaanxi), 0.020 (Liaoning) and 0.009 (Tianjin). The twenty provinces where with the actual fertility rates were higher than the policy rate but were declining towards the policy rates accounted for 65 percent of the total.

Table 3 Estimated Results of Policy Fertility Rates and Actual Fertility Rates at the Provincial Level

	Policy Fertility Rate					Actual Fertility Rate				
Provinces (municipalities/ autonomous regions)	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010
Beijing	1.081	1.095	1.103	1.129	1.189	0.795	1.017	1.004	1.077	1.151
Tianjin	1.236	1.296	1.359	1.357	1.360	1.030	1.159	1.119	1.138	1.157
Hebei	1.391	1.384	1.407	1.408	1.426	1.766	1.659	1.688	1.660	1.631
Shanxi	1.360	1.350	1.363	1.276	1.441	1.492	1.400	1.347	1.291	1.235
Inner Mongolia	1.309	1.292	1.254	1.104	1.315	1.176	1.182	1.155	1.144	1.132
Liaoning	1.419	1.433	1.452	1.467	1.489	0.971	1.050	0.958	0.940	0.922
Jilin	1.426	1.424	1.445	1.449	1.472	1.101	1.078	1.042	1.010	0.977
Heilongjiang	1.080	1.083	1.081	1.079	1.074	1.018	0.970	0.907	0.858	0.808
Shanghai	1.173	1.220	1.258	1.283	1.389	0.787	0.957	0.935	0.976	1.018
Jiangsu	1.210	1.230	1.246	1.258	1.273	1.393	1.400	1.337	1.305	1.273
Zhejiang	1.423	1.398	1.422	1.426	1.441	1.271	1.262	1.218	1.174	1.131
Anhui	1.418	1.419	1.413	1.421	1.421	1.738	1.642	1.591	1.531	1.470
Fujian	1.438	1.434	1.440	1.457	1.442	1.346	1.361	1.319	1.283	1.246
Jiangxi	1.393	1.412	1.409	1.418	1.407	1.932	1.790	1.710	1.639	1.568
Shandong	1.389	1.384	1.394	1.385	1.401	1.465	1.542	1.529	1.511	1.492
Henan	1.402	1.405	1.420	1.419	1.412	2.107	1.981	2.053	2.055	2.058
Hubei	1.427	1.434	1.455	1.460	1.475	1.319	1.283	1.277	1.266	1.256
Hunan	1.437	1.425	1.431	1.473	1.460	1.611	1.549	1.555	1.537	1.518
Guangdong	1.369	1.379	1.369	1.375	1.413	1.457	1.443	1.432	1.404	1.375
Guangxi	1.432	1.427	1.431	1.435	1.414	1.867	1.785	1.764	1.723	1.682
Hainan	1.160	1.149	1.142	1.139	1.156	1.698	1.661	1.685	1.634	1.584
Chongqing	1.121	1.135	1.150	1.171	1.177	1.804	1.844	1.701	1.654	1.606
Sichuan	1.117	1.136	1.139	1.148	1.128	1.640	1.591	1.542	1.492	1.442
Guizhou	1.590	1.570	1.594	1.589	1.516	2.018	1.893	1.872	1.818	1.764

Yunnan	1.323	1.327	1.317	1.332	1.335	1.706	1.650	1.653	1.624	1.595
Tibet	1.932	1.912	1.887	1.876	1.883	2.218	2.164	2.181	2.100	2.019
Shaanxi	1.338	1.387	1.396	1.412	1.389	1.285	1.272	1.282	1.276	1.270
Gansu	1.454	1.450	1.449	1.456	1.437	1.685	1.616	1.595	1.531	1.468
Qinghai	1.384	1.387	1.383	1.377	1.354	1.729	1.694	1.694	1.644	1.593
Ningxia	1.300	1.299	1.300	1.298	1.296	1.704	1.694	1.686	1.638	1.590
Xinjiang	1.461	1.467	1.464	1.461	1.441	1.633	1.760	1.782	1.778	1.774

2. At the present stage, development is the leading force in the fall in the fertility rates; policy is no longer a significant factor.

This is first manifested in the fact that in provinces where the actual fertility rate has fallen to the policy fertility rate or below, development is the main driving force behind the continuous decline in actual fertility rates. In those rural areas where actual fertility rates have remained above replacement level for a long time, the driving force behind falling fertility is likewise development. The supplementary consolidated data shows that developmental factors are mainly expressed in three demographic forces: urbanization, changing to non-agricultural occupations and large-scale population flows. These forces are represented in four levels of the population: the total population, the female population, women of child-bearing age and women at the peak of their fertility. Out of these, the most direct and important factor is the urbanization, abandonment of agriculture and large-scale mobility of those women at the peak of their fertility. Thus, it is precisely these three forces that have sent fertility rates to a deeply low or even an extremely low level.

During the 11th Five-year Plan, the mean value of national fertility rates was only 1.121 in urban area but was as high as 1.949 in rural areas, with a mean national value overall of 1.481. The main reason for the latter was the urban-rural structure of the population, especially as it related to the female population of exuberantly fertile age.[20] The rate of urbanization among such women was 55.95 percent, or 6.66 percentage points higher than the urbanization rate of the total population (49.29 percent). Calculated according to the weighting of this proportion of the population, the weighted mean of urban and rural fertility rates is 1.486, with an error rate of only 0.34 percent; this compares with the national average level of 1.481. According to national household registration during the 11th Five-year Plan, the fertility rate of the non-agricultural population was 1.023, and of the agricultural population, 1.686. The non-agricultural population accounted for 27.98 percent of the total population. Non-agricultural women at the peak of their fertility represented 28.81 percent of the total population, 0.83

20 This paper defines "women of exuberantly fertile ages" as fertile women aged 20-35. The reason for this is that according to the supplementary consolidated data of the National Bureau of Statistics, the proportion of the total fertility rate at the national level accounted for by the sum of the fertility rates of women aged 20-35 is 92% in urban areas and 90% in rural areas. This indicates that fertile women aged 20 to 35 are the main force.

higher than the proportion of the non-agricultural population in the total population, and the national fertility rate calculated on the basis of this weighted proportion is 1.495 with an error rate of 0.945 percent. During the same period, the fertility rate of those who were registered in their native provinces and were also living there was 1.584, and that of the emigrant population, 0.672. Among them, the proportion of the emigrant female population at the peak of their fertility was as high as 12.28 percent and the fertility rate based upon the weighted proportion was 1.472, with an error rate of only -0.608 percent.

The effect of development upon the fall in fertility rates ("the contraceptive effect of development") is also felt in the fact that the intensity of the agricultural fertility decline caused by urban production and lifestyles and cultural values is greater than that caused by fertility policy. At the national level, the fertility rate of the agricultural population living in cities and towns was 1.251, and that of the non-agricultural population, 1.011; the fertility rate of the agricultural population living in rural areas was 1.983 and that of the non-agricultural population, 1.196.Within the same province, family planning policy for the agricultural population is the same whether they live in urban or rural areas, but nationwide, the actual fertility rate of the agricultural population in urban areas is 0.732 lower than in rural areas, and this is quite common in every province. Of these, the actual fertility rate of the urban-dwelling agricultural population is more than 1 lower than that of the rural agricultural population in five provinces; between 0.5-1 lower in fifteen provinces; and between 0.25-0.5 in ten provinces.

From another viewpoint, the fertility rate of the rural agricultural population is 0.787 higher than that of the rural non-agricultural population while the fertility rate of the urban agricultural population is 0.240 higher than that of the urban non-agricultural population at the national level. In the rural areas, fertility rates vary greatly among different types of household registration, while in urban areas, such differences are small. This is extremely common in all provinces except for the three old municipalities (Beijing, Shanghai, Tianjin) and Hainan province. This indicates that urbanization has narrowed the gap in fertility between different types of household registration and different family planning policies. Urbanization has had a greater impact upon the fertility rate than differences in type of household registration. Similarly, developmental factors have had a greater impact than policy factors.

Development as the leading factor in fertility decline is of both theoretical and practical significance. The dynamic mechanism motivating fertility control in China has undergone a significant change, since the positive effect of using family planning policy to regulate the fertility rate is diminishing. Thus, in provinces that still have high fertility rates, more effort should be invested in the promotion of development; family planning policy can only play a supplementary role to a certain extent. Places where fertility rates are low need to keep them stable at a reasonably low level while paying due attention to development.

3. The existing family planning policy has been proved ineffective in keeping fertility rates

stable at a reasonably low level.

The existing family planning policy has played a limited role in regulating the fertility rates of the less developed provinces. This is mainly reflected by the fact that after thirty odd years of family planning policy implementation, there are still seven provinces where rural fertility rates are consistently above replacement level. During the 11th Five-year Plan, the mean value of their fertility rates were 3.048 (Chongqing), 2.615 (Henan), 2.435 (Tibet), 2.421 (Guizhou), 2.412 (Guangxi), 2.223 (Jiangxi), and 2.185 (Anhui). This shows that policy has had less influence upon the rural areas of these provinces, primarily because they are less developed. But even in these less developed areas, fertility rates are on the decline. During the 11th Five-year Plan, the annual average decline was 0.162 in Chongqing, 0.002 in Henan, 0.038 in Tibet, 0.089 in Guizhou, 0.056 in Guangxi, 0.125 in Jiangxi and 0.106 in Anhui. Rather than being the result of the stronger enforcement of family planning policy, the decline is because these provinces and regions have also been developing, with consequent falls in their fertility rates. On the contrary, many coercive family planning measures are no longer in use and have been, instead, replaced by "softer" methods due to emphasis on "administration according to law" in recent years.

Existing child-bearing policy, already unable to keep fertility rates stable around the required policy level, can be analyzed from the following aspects.

In terms of the three regions and the northeast, as previously stated, the actual fertility rate in the eastern region was already close to the policy level while its policy implementation ratio fell to 1.074 in 2006; during the 11th Five-year Plan, its actual fertility rate, instead of staying around the policy fertility rate, continued to fall until it dropped below the policy fertility rate in 2010, while its policy implementation ratio fell below 0.987. In the northeast, the actual fertility rate dropped below the policy rate, while its policy implementation ratio was 0.792 in 2006; during the 11th Five-year Plan, its actual fertility rate, rather than remaining stable, was on a continuous decline, leading to a further drop in its policy implementation ratio to 0.660 in 2010 (see Table 2).

In terms of provinces, fertility rates in ten provincial administrative areas (Liaoning, Jilin, Shanghai, Tianjin, Zhejiang, Heilongjiang, Beijing, Hubei, Fujian and Shaanxi) remained below their policy fertility rates for a long time without stabilizing. They continued to drop, as did their policy implementation ratios. The urban fertility rates of five provinces ($\leqq 1$) were equal to or below 1. During the 11th Five-year Plan their mean value and annual average variation respectively were as follows: Heilongjiang (0.734, -0.041), Shaanxi (1.000, -0.025), Inner Mongolia (1.008, -0.023), Jilin (0.823, -0.019), Hubei (0.952, -0.011) and Liaoning (stable around 0.806). There was a certain rebound in fertility rates in Tianjin, Shanghai and Beijing, but all three had an average level of below 1, respectively, 0.950 (Tianjin), 0.922 (Shanghai) and 0.998 (Beijing).

Keeping fertility rates steady at 1.8 is an important index of national population development. During the 11th Five-year Plan, among the 24 provinces (excluding Tianjin) that

kept their average fertility rates above 1 and below 1.8, rather than at 1.8, all had declining fertility rates. Among the eight provinces and regions (not including Beijing, Shanghai and Tianjin) that had policy implementation ratios below 1, the policy implementation ratios of the remaining seven (not including Inner Mongolia) were also falling and had not stabilized at the required policy level.

Once actual fertility rates had fallen to their policy levels, they did not remain stable but continued to fall. There are two reasons for this. First, existing policy can only set limits to the small number of people in the developed regions who plan to have more children than allowed; it cannot actually encourage those who do not want to have children, delay having children or have children unusually late to return to the policy planning birthrate or normal birthrate; on the contrary, measures have been designed to encourage people to have fewer children or none, to fit in with government demands. In other words, the existing policy itself contains a contraceptive effect, not a stabilizing one. Second, with the interaction of multiple factors in the context of economic, social and cultural development, the number of those who don't want to have children, delay having children or have them unusually late is increasing while the contraceptive effects of development continues to proliferate. Thus, instead of offsetting the contraceptive effect of development, policies have a synergistic effect on the status quo. As a result, the overlapping contraceptive effect of policies and development leads to a continuous decline in fertility rates and lower the likelihood of a rebound. To try to stabilize low fertility rates by way of policies of stabilization can only make them even lower.

4. Adjustments to family planning policy will not bring about a large-scale strong rebound in the fertility rate in rural areas or in the central and the western regions.

Rebounds in fertility can be classified into two categories: the policy-based and the non-policy-based. Under a relaxation of strict family planning policies, the proportion of couples who are allowed to have two children will inevitably increase. Even if policies are strictly observed, the fertility rate will rise. This is a quite normal "policy-based rebound." Another kind of policy relaxation may occur when people might take the chance to have more children than the policy allows, resulting in a rebound of the fertility rate that is known as a "non-policy-based rebound." This may arise from women who already have two children but may have a third and those whom policy restricts to one child but who want to have a second child. The main concern is over the non-policy-based rebound of fertility rates in rural areas, especially those of the central and western regions.

(1) The upper limit of the focal groups for possible policy-based rebounds in the rural areas accounts for 7 percent of the total female population of childbearing age throughout the country.

According to the supplementary consolidated material of the National Bureau of Statistics, in the national census of 2010, among rural women of child-bearing age those who had no children accounted for 24.97 percent; those with one child accounted for 29.60 percent; and

those with two or more children accounted for 45.42 percent. Among those who already had one child, women in exuberantly fertile age group of 15-35 and were most likely have a second child accounted for 56.03 percent of the total, with those aged 36-49 accounting for 43.97 percent respectively. Among those aged 15-35, those who had left for other provinces and had a slightly low fertility rate accounted for 4.58 percent, while those who resided in their native provinces accounted for 95.42 percent. Of the latter group, those with agricultural household registration and a relatively high fertility rate accounted for 95.12 percent. Fertile women aged 15-35 with agricultural household registration who already had one child and resided in their native provinces accounted for 15.05 percent of the total number of rural women of childbearing age and 6.99 percent of the total number of women of childbearing age throughout the country. These are the focal groups for a possible policy-based rebound of fertility rates in the rural areas, and their upper limit accounts for approximately 7 percent of the total female population of childbearing age throughout the country. Here we use the term "upper limit" mainly because if we deducted the number of couples who are allowed to have two children under the existing policy (where both members of a couple are from one-child families, or in some areas, where the couple's first child is a girl); the floating population within the same province; and the number of couples who voluntarily abandon or delay having a second child in areas such as the eastern region and the northeast, this proportion would be even lower.

(2) Factors that might result in a non-policy-based rebound in the central and western have already been set in motion and multiple births can be effectively controlled.

It is generally acknowledged that if the fertility rate exceeds 1.8, it means that excluding groups who want "no marriage or no children or no intention to have children," the rest will basically have two children. During the 11th Five-year Plan, 19 provinces had an average rural fertility rate high above 1.8.[21] If we exclude Tibet, Xinjiang, Ningxia, and Guizhou with higher proportion of ethnic minorities, the figure is 15, among which rural women of child-bearing age accounted for 32.01 percent of the total female population of child-bearing age nationwide and women of child-bearing age left behind while their husbands worked elsewhere accounted for 31.02 percent of this total. During the 11th Five-year Plan, 17 provinces (excluding Tibet, Xinjiang, Ningxia and Guizhou) each had an average fertility rate for the rural agricultural population of over 1.8, of which the rural agricultural population of child-bearing aged women and left-behind women of child-bearing age accounted for 33.31 percent and 32.29 percent respectively of the total female population of child-bearing age nationwide. Whether we adjust fertility policy basically has no effect upon this third of the female population; those who want two children have them, and non-

21 During the 11th Five-year Plan period, provincial administrations with a rural fertility rate above 1.8 were Hebei (2.024), Jiangsu (1.827), Anhui (2.185), Jiangxi (2.223), Shandong (1.835), Henan (2.615), Hunan (2.040), Guangdong (2.017), Guangxi (2.412), Hainan (1.985), Chongqing (3.048), Sichuan (2.071), Guizhou (2.421), Yunnan (1.863), Tibet (2.435), Gansu (1.967), Qinghai (1.992), Ningxia (2.064) and Xinjiang (2.089).

policy-based rebound factors have been set in motion that would allow those who had been prevented from having two children to do so. Even if policy is relaxed so that each couple can have two children, most would still stop at two, which is simply a continuation of the status quo. A large-scale rebound is thus unlikely to be seen as long as multiple births are kept under control.

In the rural areas of central China with slightly high fertility rates, women aged 35 to 49 with 3 or more children account for 20.60 percent, but those aged 15 to 35 for only 2.98 percent. In the rural areas of western China, the former group accounts for as much as 23.69 percent while the latter accounts for only 5.22 percent. In the central and western rural areas, as a proportion of the total number of women with 3 or more children, women aged 35 to 49 account for 22.18 percent and those aged 15 to 35 for only 4.12 percent. This shows that under the impetus of development, the ratio of multiple births is clearly in decline as the age of the female population decreases, and multiple births among the younger generation of exuberantly fertile young women can be effectively controlled.

IV. Carrying Out a Gradual Adjustment Strategy to Effectively Control a Rebound in the Fertility Rate

According to the findings of our evaluation of fertility rates, it will be advisable to carry out a gradual adjustment strategy whether nationally or locally, so as to avoid a large-scale policy-based fertility rebound and ensure a smooth transition of policy improvement.

In the course of adjusting fertility policy and expanding those scope of those allowed to have two children, the main cause of a policy-based fertility rebound could be those women who have already had one child, their limit under current policy, but want to have a second and would now allowed to do so. The higher the proportion of these women, the greater the risk of a policy-based rebound.

In the 2010 national census, among the urban female population of child-bearing age, those who were childless accounted 32.84 percent, those who already had one child for 45.31 percent, and those who had two and above for 21.85 percent. Among those who had one child, the proportion of those in urban areas was 15.71 percentage points higher than that of those in rural areas, indicating that there is a greater risk of a policy-based rebound among the former. However, among women of child-bearing age who already had one child, those aged 36 to 49 accounted for 56.07 percent, showing that the majority of women of child-bearing age who already had one child were of an age of markedly lower fertility and desire for children. This will significantly lower the risk of an excessive policy-based rebound and will provide conditions for lowering a policy-based

rebound in the urban areas.[22]

The proportion of women of child-bearing age who already have one child was highest in the northeast (54.36 percent), second highest in the eastern region (41.40 percent), next highest in the western region (34.73 percent) and lowest in the central region (32.47 percent). In comparison, the risks of a policy-based fertility rebound in the northeast and the eastern region are higher, but the proportion of women aged 35 or over in the two areas regions are also higher or the highest, which again lowers the risk of a policy-based fertility rebound.

Fertility rebounds are constrained by the joint effect of the existing parity structure, policy changes and development. Given that the parity structure is set, we can decompose the newly-added second-child policy into different stages by adjusting the specifications of fertility policy and implementation dates, gradually relaxing restrictions on the scope of beneficiaries one group at a time to minimize the extent of a policy-based fertility rebound.

As shown above, factors that behind a non-policy-based fertility rebound in the central and western regions have been relaxed prior to schedule and the trend toward a rebound has been weakened due to the low percentage of women with one child who are waiting for a second one. Although the forces making for a rebound in the urban areas and in the northeast and eastern regions are a little higher, this will not be a concern since those areas have a good foundation of family planning and the strong contraceptive effect of development. Thus, in the three regions and the northeast, the time is ripe to carry out the same adjustment strategy at the same pace. For example, on the basis of the existing fertility policy, permission to have two children could first be given to couples who come from single-child families on both sides or on the paternal/maternal side and to their children and after a certain period of time, depending on the circumstances, it could be given to couples who did not, and their children.[23] Instead of causing new policy-based family planning differences and inequalities among different regions, this could effectively avoid unrealistic competition among regions, chaotic policies and mobility caused by reproductive factors. It could also promote the steady, orderly

22 Among couples who have already had one child, there are some who are allowed to have two children under the existing fertility policy (such as couples from single-child families on both sides), so they are not the target population for policy adjustment and unconnected to policy-based fertility rebounds. Thus, their small proportion of the total will not affect our overall judgment of the situation.

23 "Allowing couples who come from single-child families on both sides or either side" has the following basic characteristics: as long as couples coming from single-child families on both sides or on the maternal or paternal side have observed the one-child policy, their children and their descendants will not have to carry it again. This is the "one generation of one-child policy" in the real sense and also represents an incremental and improved policy adjustment. This is because its first beneficiaries are only children and then their children, and it is later relaxed to include "double no" cases and their children. Simulations show that implementing such a policy will lead to a natural transition to a policy of allowing all couples to have two children; but this is a long process. After a certain period of time, we could conditionally loosen restrictions on "double no" cases. For more discussion on policy relating to the the first generation of single children, see Yin Wenyao, Li Fen and Yao Yinmei, "A Third Discussion of the System Simulation and Comparative Selection of China's Fertility Policy Together with the Discussion on the 'Self-landing' of the 'One Generation of Only Children.'"

and unified adjustment of fertility policy.

Therefore, inevitable as the fertility rebound is, it is still adjustable and controllable through implementation of an incremental strategy; the steady and improved adjustment of family planning policy is worth waiting for.

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References

Guo, Zhigang. "A Further Discussion of Why the Number of Children in an Average Cohort Should Not

Be Regarded as an Estimation of the Present Total Fertility Rate" (再论队列平均子女数不能作为当前总和生育率的估计). *Chinese Journal of Population Science*, 2008, no. 5.

——. "A Study of Lifetime Fertility Levels from the Perspective of Tempo-adjusted Fertility Behavior in Recent Years: Based upon the Effect of Changes in the Total Fertility Rate as Shown in China's Fertility Data" (从近年来的时期生育行为看终身生育水平——中国生育数据的去进度效应总和生育率的研究). *Population Research*, 2000, no. 1.

——. "An Analysis of China's Fertility Levels in the 1990s: Comparing Multiple Measurement Indices" (中国90年代的生育水平分析——多测量指标的比较). *Chinese Journal of Population Science*, 2000, no. 4.

——. "Major Errors in Previous Population Estimates and Forecasts Revealed by the Results of the Sixth National Census" (六普结果表明以往人口估计和预测严重失误). *Chinese Journal of Population Science*, 2011, no. 6.

——. "Research and Discussions of China's Fertility Levels in the 1990s" (对中国1990年代生育水平的研究与讨论). *Population Research*, 2004, no. 2.

——. "Rethinking China's Demographic Situation" (重新认识中国的人口形势). *International Economic Review* (国际经济评论), 2012, no. 1.

——. "Review and Analysis of Tempo-adjusted Fertility Level Indicators" (时期生育水平指标的回顾与分析). *Population & Economics* (人口与经济), 2000, no. 1.

——. "Using Raw Census Data to Estimate Single Child Information" (利用人口普查原始数据对独生子女信息的估计). *Market & Demographic Analysis* (市场与人口分析), 2001, no. 1.

Li, Fen, Yin Wenyao and Yao Yinmei. "Exploring the Marriage Probability and Marriage Pairing Estimation Method: A Key Technique in Fertility Policy Simulation" (婚配概率及婚配对数估计方法的探讨——生育政策仿真的关键技术之一). *Statistical Research*, 2011, no. 3.

Research Group of the National Population Development Strategy. *National Population Development Strategy Research*, vol. 1 (国家人口发展战略研究报告 [上]). Beijing: China Population Publishing House, 2007.

Retherford, Robert D. *et al*. "China's Fertility Rate: How Much Has It Been Reduced By?" (中国的生育率：到底下降了多少？). *Population Research*, 2004, no. 4.

Wang, Jinying. "Assessment of China's Changing Fertility Patterns and Fertility Levels 1990-2000" (1990-2000年中国生育模式变动及生育水平估计). *Chinese Journal of Population Science*, 2003, no. 4.

Wang, Jinying *et al*. "Assessment of Chinese Women's Total Fertility Rate in 2000 at the Provincial Level" (中国省级2000年育龄妇女总和生育率评估). *Population Research*, 2004, no. 2.

Wang, Qian. "Applying the Cohort Cumulative Method to the Analysis of the Changing Trends of China's Fertility Levels in Discussion with Professor Guo Zhigang" (应用队列累计生育率分析我国生育水平变动趋势——兼与郭志刚教授讨论). *Population Research*, 2008, no. 6.

Wang, Qian and Guo Zhenwei. "Analysis of China's Birthrate" (中国人口生育率分析). In *Chinese Population in the New Century: An Analysis of China's Fifth National Census Data* (新世纪的中国人口——中国第五次全国人口普查资料分析), ed. Du Peng. Beijing: China Renmin University Press, 2011.

Yin, Wenyao, Li Fen and Yao Yinmei. "A Third Discussion of the System Simulation and Comparative Selection of China's Fertility Policy Together with the Discussion on the 'Self-landing' of the 'One Generation of Only Children'" (三论中国生育政策的系统模拟与比较选择——兼论"一代独生子女"政策"自着陆"). *Journal of Zhejiang University*, 2007, no. 6.

——. "Further Thoughts on System Simulation and Comparative Selection in China's Fertility Policy" (再论中国生育政策的系统模拟与比较选择). *Journal of Zhejiang University*, 2006, no. 6.

Yu, Jingyuan and Yuan Jianhua. "Analysis of Chinese Women's Fertility Status in Recent Years" (近年来中国妇女生育状况分析). In *Sample Surveys on China's Fertility Rates in 1992* (1992年中国生育率抽样调查论文集), ed. Jiang Zhenghua. Beijing: China Population Publishing House, 1996.

Zhai, Zhenwu and Chen Wei. "A Study of China's Fertility Levels in the the 1990s" (1990年代中国生育水平研究). *Population Research*, 2007, no. 1.

Zhang, Guangyu and Yuan Xin. "Reflections upon the Under-reporting of Births and Evaluation of Fertility Levels in the 1990s" (对1990年代出生漏报和生育水平估计问题的思考). *Population Research*, 2004, no. 2.

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