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Analysis of the Effectiveness of China's Universal Two-Child Policy

中國「全面二孩」政策效果之分析

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Abstract

The Universal Two-Child Policy was announced in the Fifth Plenary Session of the 18the Communist Party of China Central Committee in the year 2015 and was implemented in the next year. It ended the decade-long One-Child Policy and the changes of the birth rates could be seen in the following years. It could be observed that the changes provincial / municipal birth rates varied from regions to regions. It is found in the research that the difference of the economic development plays an important role when it comes to the birth rates of the China. The provinces with better economic development had relatively prominent increase in birth rates after the implementation of the policy while provinces with less developed economic development had less obvious increase in birth rate. The changes of birth rates of the Chinese municipalities, which have much more resources, however, were not prominent. The research can be a reference to other countries that want to make related policies in the future.

Key words: China, One-Child Policy, Two-Child Policy

摘要

中國於 2015 年的中國共產黨第十八屆中央委員會第五次全體會議上宣佈了終結維持數十年，且對於近代中國有著深遠影響的一胎化政策的「全面二孩」政策，並於隔年 2016 年開始實施。在政策實施後，出生率在不同的中國省市有了不同的變化。有的省市出生率的增長較為顯著，有的省市則較不明顯。本研究想進一步探究為何全面一胎化政策在某些省份的效果較為突出，而在某些省份的影響則相對較弱。本文發現，經濟發展因素佔了很重要的角色，經濟發展較為落後的省份在二胎化政策後的出生率成長較為不顯著，經濟發展較為進步的省份在二胎化政策後的出生率成則相對明顯。然而在資源更為充沛、發展更加完善的直轄市，出生率的成長卻並沒有顯著提高，這可能是因為基本生活開支過高的影響。本文的發現對於瞭解中國人口結構的變化以及「全面二孩」政策的有效性提供了一個初探性的觀察。

關鍵字：中國、一胎化政策、二胎化政策、全面二孩

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List of Abbreviations

PRC: People's Republic of China

CPC: Communist party of China

CBR: Crude birth rate

TFR: Total Fertility Rate

GDP: Gross Domestic Product

GDP per capita: Gross Domestic Product per capita

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Chapter 1 Introduction

1.1 Background of the Study

When it comes to the development of the country, the former President of the PRC, Mao Zedong （毛澤東）believes that the mass population is not a burden but one of the greatest advantages of the country. By the time the two-child policy was announced in China in 2015, the birth rate had already dropped to 12.4％ in the year 2014, which was much lower than the world birth rate of the time, 19.29％ (Birth rate, crude, World Bank, 2019). The Chinese government believed that the large population would consume many resources and become a big obstacle on its way toward prosperity (Guo, 2003). The Communist Party of China (CPC) released the one-child policy in the year 1979 in order to release the pressure given by the large population. From the economy to the structure of the society, the series of actions taken by the government massively changed every aspect of the country and brought a series of new challenges.

The population growth started to decrease gradually since the implementation of the one-child policy. The percentage of the population growth rate reached its peak at 2.79% in the year 1966. The one-child policy was announced in 1979 and within 4 decades, the number had dropped to 0.56% (World Bank, 2018).

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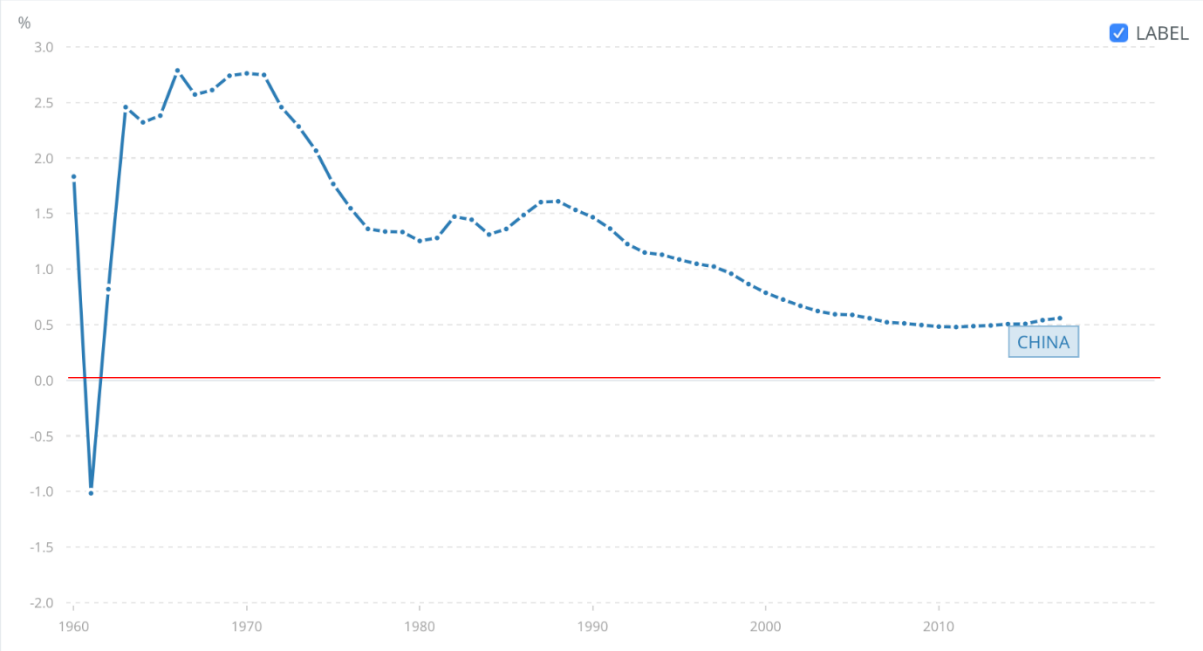

Figure 1. China's population growth (annual%)
Source: World Bank Database (2018)

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The results of the decrease of China's population is quite obvious, the birth rate, without any intervention from the government may drop to 1.3 by the end of year 2030 (Jiang, 2010). The low fertility rate, the disproportion of the children in the country, the distorted sex ratio, the lack of labor force and the shrinking of economy will make China face difficulties when it comes to competing with any other rivals in the future.

In the year 2015, China's population was 18.9% of the world population, however, the child population was only 12.9% of the world child population. India's share of the world child population, on the other hand, was 20% (UNICEF, 2017). For a country with low child population like China, the very first problem it may face is the decrease of the demographic dividend which may lead to the lack of labor force (Guo, 2016). For many international firms, the abundance of labor force along with the size of the markets are important factors that may influence them to make decisions when choosing places to invest, and the decrease of the size of the population might make China less competitive when attracting foreign investments (Meng, 2016).

The percentage of the people over 65 years old in China was 10.64% in the year 2014. The countries which had about the same Gross Domestic Product per capita, Kazakhstan, Lebanon and Mexico, around 8800 USD, are of 6.75%, 8.14% and 6.33% respectively. (Population ages over 65 and above, World Bank, 2019). These countries, along with China are of the same phase of economic development yet China is the only country that had strict birth control which may cause a big burden to the country's social security system in the foreseeable future. Having a large population over 65 years old may decrease the competitiveness of a country. Chinese pension system was established in 1997. With a large amount of people over 65 and a quite young pension system, the fast-growing Chinese economy will not have enough capital to sustain the system. The aging society will have a

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smaller labor force in the future which means that it will be hard to sustain and is likely to go bankrupt (Mu and Yuan, 2018).

The strict one-child policy also produces Shidu parents（失獨父母）, which literally means they have lost their only son or daughter. The ineffectiveness of the current Chinese social welfare system makes people mainly rely on their children after retiring. Yet the one child policy which leads to the 4-2-1 families: four grandparents, two parents and one child, makes the structure of family quite fragile. Because of the family structure, the child has to support the elders in the family which is why the burden falls on the child and the death or incapability of work of any of the family members might cause the family to collapse (Xu, 2012).

Serious sexual discrimination is also a "side effect" of one-child policy. Chinese society believes that men are the ones that can pass down the family name so many of the families want boys instead of girls when expecting babies (Mu and Yuan, 2018)). In certain coastal provinces in the South-East China, the sex ratio of male to female can be even high up to 120 to 100 (UNICEF). The distorted sex ratio in China makes it hard for men to find spouses which may lead to serious social problems. The difference of male and female population was 34 million in the year 2014 alone (Wang and Wang, 2016).

Seeing the burden given by the mass population and the predictable low growth rate of the population, China announced the two-child policy on 29 October, 2015 in order to slow the trend down.

The Standing Committee of the National People's Congress amended the Law of the People's Republic of China on population and Family Planning on December 27, 2015. The Paragraph 1 of Article 18 was divided into Paragraphs 1 and 2 and amended to read: "The State advocates that one couple bear two children." (Law of the People's Republic of China on Population and Family Planning, 2015). It then came in to force on January 1, 2016.

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The demographic policy of Chinese had changed seven times since the year 1949. It encouraged births after the New China was established then started to support birth control and late marriage in 1950s to 1960s. In 1980, one new marriage law was passed to place a limit of one child for every Chinese family (China Daily, 2015). In 1984, two children were allowed if both parents were the only child of their original family. Family of either parent is the only child can have two children in the year 2013 (Liu and Tang, 2015). In rural areas of most provinces, couples were allowed to have a second child if their first child was a girl in the year 1984 (Zeng and Hesketh, 2016). In the Fifth Plenary Session of the Communist Party of China 18th Central Committee, the decades-long birth control was completely changed, the universal two-child policy would be implemented across the country from 1 January, 2016, all the married couples would be allowed to have up to two babies from then on. (China Daily, 2015). The Chinese low birth rates, therefore, may have a chance to be twisted.

1.2 Research Questions

The two-child policy had come in force on January 1, 2016. However, when examining the birth rate of the year, not the birth rates of all the provinces had increased. By viewing table 1, the birth rates of the year 2016 and 2017, it can be told that not all the provinces have positive change. The table below shows the birth rates of Chinese provinces in the year 2014, 2016, and 2017. If the birth rate increases, the number of "2016 minus 2014" and "2017 minus 2014" will be positive, if it decreases, the number would be negative. According to table 1, in the year 2016, among the 29 municipalities and provinces, 18 had increase in their birth rates, including Shanghai（上海）, Liaoning（遼寧）, Jiangsu（江蘇）, Zhejiang（浙江）, Anhui（安徽）, Fujian（福建）, Jiangxi（江西）, Shandong（山東）, Henan（河南）, Hubei（湖北）, Hunan（湖南）, Guangdong（廣東）, Hainan（海南）, Sichuan（四川）, Guizhou（貴州）, Yunnan（雲南）, Shaanxi（陝西）, and Qinghai（青海）; in the year 2017, 21

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regions, including Chongqing（重慶）, Hebei（河北）, Shanxi（山西）, Inner Mongolia（內蒙古）, Jilin（吉林）, Jiangsu（江蘇）, Zhejiang（浙江）, Anhui（安徽）, Fujian（福建）, Jiangxi（江西）, Shandong（山東）, Henan（河南）, Hubei（湖北）, Guangdong（廣東）, Guangxi（廣西）, Hainan（海南）, Sichuan（四川）, Guizhou（貴州）, Yunnan（雲南）, Shaanxi（陝西）, Gansu（甘肅） all had increase in the birth rates of that year.

The numbers in Table 1 are the birth rates of provincial / municipal birth rates of the year noted respectively. The bold numbers in the table are the birth rates that had increases in comparison with that of the year 2014.

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Table1
The Chinese provincial birth rates of the year 2014~2017

Provinces/Municipality	**2014**	**2015**	**2016**	**2017**
Beijing 北京市	9.75	7.96	9.32(-0.43)	9.06(-0.69)
Tianjin 天津市	8.19	5.84	7.37(-0.82)	7.65(-0.54)
Chongqing 重慶市	11.8	11.07	11.26(-0.54)	**12.12(0.32)**
Shanghai 上海市	8.35	7.52	**9(0.65)**	8.1(-0.25)
Hebei 河北省	13.18	11.35	12.42(-0.76)	**13.2(0.02)**
Shanxi 山西省	10.92	9.98	10.29(-0.63)	**11.06(0.14)**
Inner Mongolia 內蒙古省	9.3	7.7	9(-0.3)	**9.5(0.2)**
Liaoning 遼寧省	6.49	6.17	**6.6(0.11)**	6.49(0)
Jilin 吉林省	6.62	5.87	5.55(-1.07)	**6.76(0.14)**
Heilongjiang 黑龍江省	7.37	6	6.12(-1.25)	6.22(-1.15)
Jiangsu 江蘇省	9.45	9.05	**9.76(0.31)**	**9.71(0.26)**
Zhejiang 浙江省	10.51	10.52	**11.22(0.71)**	**11.92(0.41)**
Anhui 安徽省	12.86	12.92	**13.02()**	**14.07(1.21)**
Fujian 福建省	13.7	13.9	**14.5(0.8)**	**15(1.3)**
Jiangxi 江西省	13.24	13.2	**13.45(0.21)**	**13.79(0.55)**
Shandong 山東省	14.23	12.55	**17.89(3.66)**	**17.54(3.31)**
Henan 河南省	12.8	12.7	**13.26()**	**12.95(0.15)**
Hubei 湖北省	11.86	10.74	**12.04(0.18)**	**12.6(0.74)**
Hunan 湖南省	13.52	13.58	**13.57(0.05)**	13.27(-0.25)
Guangdong 廣東省	10.8	11.12	**11.85(1.05)**	**13.68(2.88)**
Guangxi 廣西省	14.07	14.05	13.82()	**15.14(1.07)**
Hainan 海南省	14.56	14.57	**14.57(0.01)**	**14.73(0.17)**
Sichuan 四川省	10.22	10.3	**10.48(0.26)**	**11.26(1.04)**
Guizhou 貴州省	12.98	13	**13.43(0.45)**	**13.98(1)**
Yunnan 雲南省	12.65	12.88	**13.16(0.51)**	**13.51(0.86)**
Shaanxi 陝西省	10.13	10.1	**10.64(0.51)**	**11.11(0.98)**
Gansu 甘肅省	12.21	12.36	12.18(-0.03)	**12.54(0.33)**
Qinghai 青海省	14.67	14.72	**14.7(0.03)**	14.42(0.25)

Chinese provincial birth rates of the year 2014, 2016 and 2017, Source: National Bureau of Statistics of China

Note. Unit: ‰. Ningxia, Xizang and Xinjiang are not included in the table.

The numbers in the parentheses are the numbers of the birth rates in the year 2016 minus 2014 and 2017 minus 2014 respectively

The bold numbers are the ones that had increase in comparison with the birth rates of the year 2014

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When examining the data of the three different years, 25 provinces or municipalities of all 29 regions in the table had increases in their birth rates in either year 2016 or 2017, but only 14 provinces had increases in the following two years after the implementation of the policy.

When examining the data, there are 11 provinces or municipalities, including Beijing, Tianjin, Chongqing, Hebei, Shanxi, Inner Mongolia, Heilongjiang, Hunan, Guangxi, Gansu, and Qinghai had decrease in their birth rates in either year 2016 or 2017. Among them, Beijing, Tianjin and Heilongjiang had decrease in both year 2016 and 2017.

Figure 2 shows the difference of the birth rates of Chinese provinces and municipalities of the year 2016 and 2014. The different colors in the figure stand for the difference of the birth rates of the years. The darker the color is, the bigger the difference is. That is to say, the darker the color is, the stronger the effect is on the provincial birth rates after the implementation of two-child policy in the beginning of 2016. The birth rates grew comparatively higher in the southern province while Shandong province had the most significant increase in comparison with other provinces. Chongqing municipality （重慶市） and Guangxi province （廣西省） are the few in the middle and the south that had negative number.

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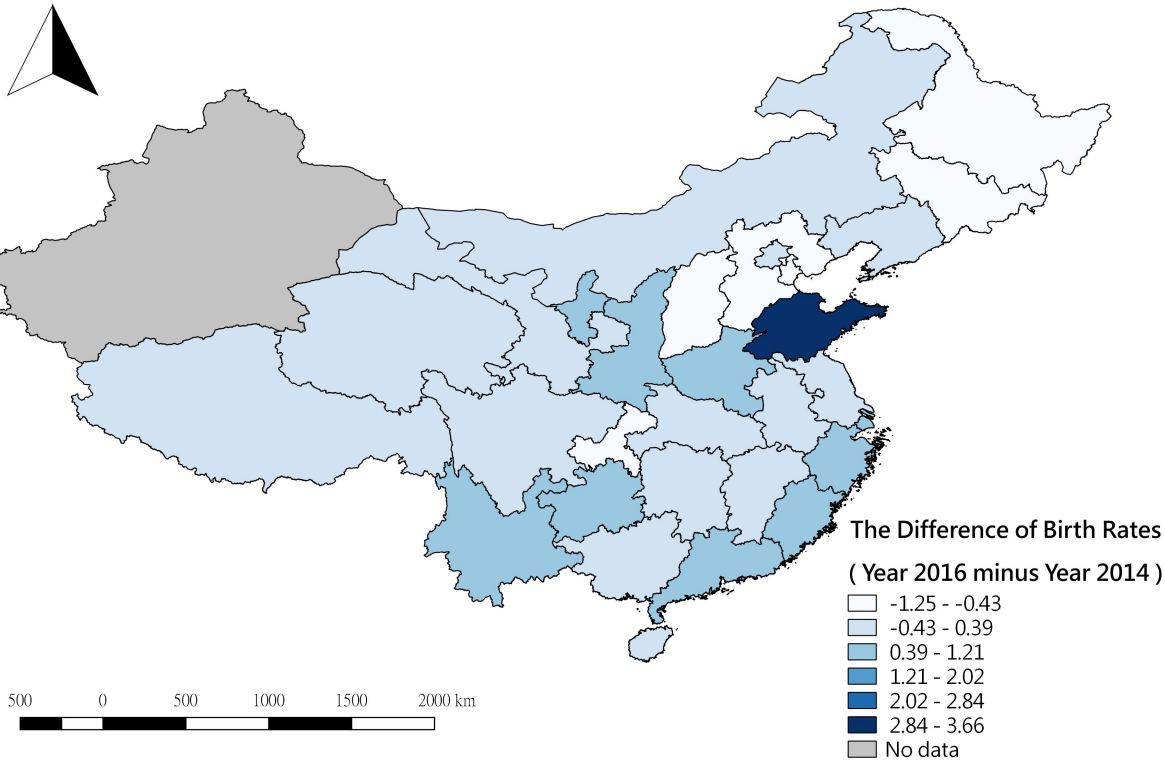

Figure 2. The difference of Chinese provincial birth rates between the year 2014 and 2016
Source: National Bureau of Statistics of China
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Two years after the implementation of two-child policy, most of the northern provinces had either lower or negative birth rate growth tendency in comparison with the provinces in the South. When reviewing Figure 3, it is clearly shown that the number of the provinces that had comparatively low birth rates in the year 2017 had decreased. Only five provinces and municipalities had lower birth rates in comparison with the year 2014. The differences between the provinces with positive change and the provinces with negative change had become even bigger. Heilongjiang, Liaoning, Beijing, Tianjin, Qinghai and Hunan provinces had relatively low birth rates while Shandong and Guangdong provinces had positive birth rate change.

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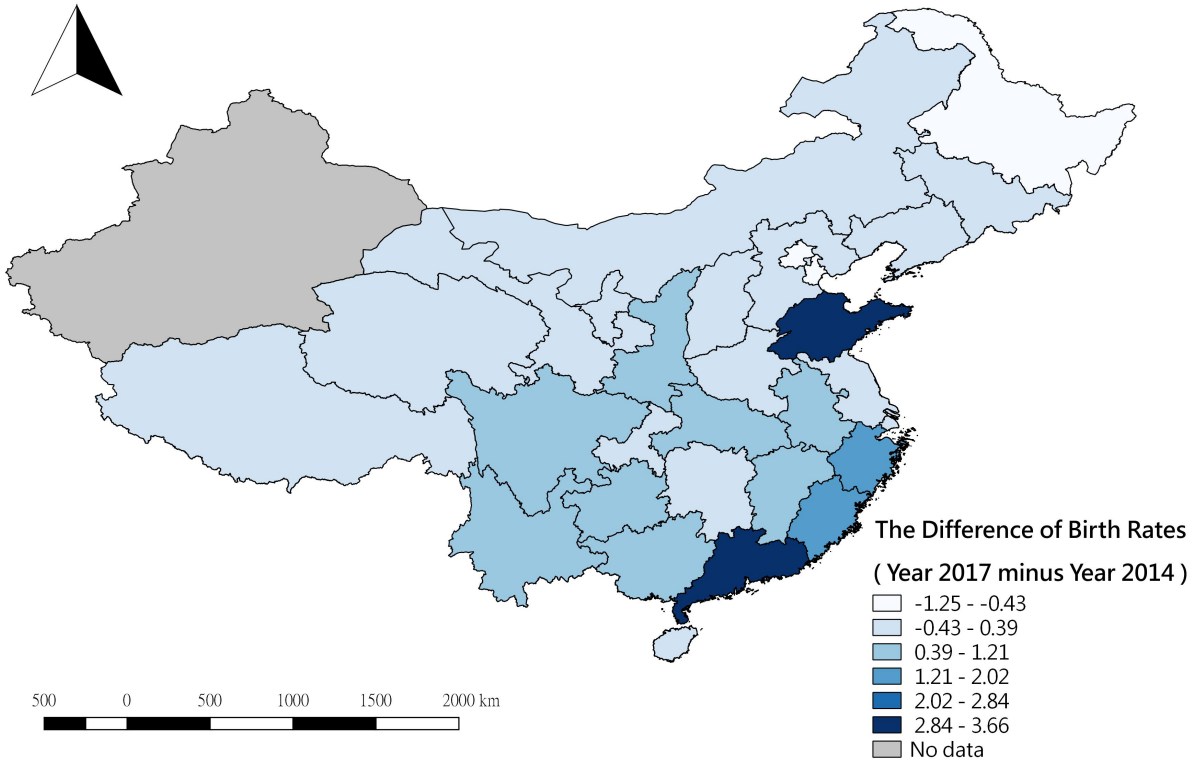

Figure 3. The difference of the Chinese provincial birth rates between the year 2014 and 2017
Source: National Bureau of Statistics of China
Recalculated by author

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After examining the tables and figures above, it can be found that the provinces and municipalities in the northern parts of China had negative result while the provinces in the south seemed to have positive birth rate growth after the policy came into force in the first day of the year 2016. Two questions can be concluded: the first question of the thesis is: **Why the policy has been more effective in some provinces while others did not have similar improvement or even have negative result?** The second question is: **What is correlated with the increase of the birth rate in terms of the development of the population of a province / municipality?**

The following part is the literature review that discusses the research other scholars had done before in the related field. It may make it more clear what factors had been found that would influence birth rates.

1.3 Literature Review: Elements that may Influence Birth Rate

The two-child policy was effective in some regions but not effective in others. When it comes to having babies, three different aspects may be taken into consideration by parents, the spiritual satisfaction that children can offer to the families, the mission of carrying on the family name, the burden of having babies (Mao and Luo, 2013). The birth rates vary from provinces to provinces. They are correlated to the differences of the average salary, age structure, urbanization rate of the provinces, and they may form the different birth policies and deeds that lead to the variation of the birth rates in different provinces (Weeks, 2001).

The choice made by women toward giving birth to babies comes from subjective process of decision making and it goes through motivation of giving birth to babies, willingness, plan and deed (Mao and Luo, 2013). To find out what may influence the couples when having babies and impact the growth of population, existed researches would be examined. It can be divided into three parts, cultural, social and economic influences.

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Having how many babies is not just a private issue. It is not solely determined by the interest or the willingness of individuals but the custom of the society, the shared value held by the family (Zhang, 2011).

According to the literature, economic influence, social influence, and cultural influence are the most important factors that make the birth rate of a region vary. Next, I will be reviewing these explanations.

Economic Influence

Apart from the cultural and social influences, people tend to think what can benefit them more economically when it comes to having babies. In cities, the economic influence plays an even bigger role. Unlike the people in the rural area which believe "the more the children, the greater the prosperous it would be," in more developed regions, the more educated people tend to have more than one kid, yet the high cost of having the second kid may decrease their willingness to have more than one kid (Zhang, 2011). China had entered a phase that the cost of having babies greatly impacts fertility rate (Li, 2009).

In comparison with the women who do not have the ability to work, the women who can work may give up the idea of giving birth to babies if the opportunity cost of having babies is too big (Mincer, 1963). Merrigan and St.-Pierre (1998) found out that the decline of fertility rate in young female generation is related to the uprising opportunity cost of having babies by observing the Canadian timing and spacing of births from 1950 to 1990.

Stable working condition is very important toward the intention having second child. The cost of raising one kid from 0 to 16 can be up to 250000 RMB (Xu, 2004). Continuous income, the pressure from competitive working conditions and the difficulty of re-entering the job market may strongly influence women's will of having second child (Tien et al., 2017). The

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subsidies on giving birth to babies may raise the birth rate in Western European countries, yet it did not work well in places that greatly influenced by Chinese culture, like Taiwan (Yu and Lee, 2016).

The ownership of house, on the other hand plays a rather important role when it comes to getting married and having babies. If the house price can be lower, the ownership of the house may rise, then young families which do not have much money at the early phase of their lives can spend more money on their kids instead (Peng and Tsai, 2012). The spending on real estates may push having babies out from the first priority of families which live at their original home and rental place (Lin & Chang, 2016).

Social Influence

To many Chinese family, spiritual satisfaction is the most important reason for many Chinese families to give birth to babies (Zhen, 2009). The atmosphere and the structure of the society may influence the attitude of people toward having babies as well. In agrarian society, people want as many kids as possible, after the entering non-agrarian society, to raise the "quality" of children with limited resources, people tend to decrease the number of babies they give birth to so that they can offer every kid the most resources (Liu, et al., 2009). After entering non-agrarian society, more women start to work and that made women pay more attention on things other than chores and family, the desire of having more babies therefore decline (Blake, 1974). Age is also one element that makes female not wanting to have a second child (Mao and Luo, 2013).

While more people spend more time at school, the income is predicted to be higher in the future, agrarian residents, especially the female will be more willing to spend much time and effort on work instead of family. The more education they get, the bigger the chance they may be liberalized from taking care of children to pursue their own career and realize their dream

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(Tien et al., 2017). Except for the "raise of women right," the consumption of general products, the self-realization, on the other hand, are gradually replacing the position of the value of having kids in the younger generation (Zhang, 2011).

The ideal number of children had been influenced not only by the governmental policies but also the transition of society which has turned into a kind of social and cultural discipline. People had got used to the scale of the family and many had taken it as an ideal number of children (Nie, 2005).

Cultural Influence

When it comes to having kids, family plays an important role. The will of grandparents influences Chinese parents' decision of having babies a lot (Zhang, 2011). Tradition and culture also influence the growth rate of population, Chinese zodiac sign is one of it. Chinese people tend not to give birth to babies in the year of the goat. In 2003, the birth rate of northern cities and provinces like Beijing, Liaoning, Jilin, Guizhou, Qinghai, Sichuan and Heilongjiang dropped by 6% in comparison with the year 2002; the birth rates of Beijing during July, 2014 to June, 2015 were 40% lower in comparison with the previous months (Mao, Guo and Yuan, 2017).

In comparison with women, men have stronger intention of having a second child and they usually are at the relatively dominant position (Tien, Gao, Ron, Sun, Zhang and Zhang, 2017). In agrarian society, people farmed to make a living, families heavily relied on labor force to bring more health. So, people had the strong idea of "the more children, the more blessing" and it led to high birth rate (Liu, Deng, and Tang, 2009).

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Table 2
The elements that may influence Chinese birth rates

Economic	Social	Cultural
The more educated people tend to have more than one kid, the high cost of having the second child may decrease the willingness of having more than one kid (Zhang, 2011).	The spiritual satisfaction is one of the most important reasons why Chinese families want to have kids (Zhen, 2009).	The will of grandparents influences Chinese parents' decision of having babies a lot (Zhang, 2011).
China had entered a phase that the cost of having babies greatly impacts fertility rate (Li, 2009).	People tend to have more babies in agrarian society and care much more about the "quality" instead of the "quantity" after entering non- agrarian society (Liu, et al., 2009).	The more children, the more blessing (Liu, Deng, and Tang, 2009)
If the cost of having babies is too big, the women in job market may give up the idea of having babies (Mincer, 1963).	After entering non-agrarian society, more women start to work and pay more attention on self - fulfilment instead of family and chores. The desire of having more kids therefore declines (Blake, 1974).	Men have stronger intention of having a second child and they usually are at the relatively dominant position (Tien, Gao, Ron, Sun, Zhang, and Zhang, 2017).
The decline of fertility rate in young female generation is related to the uprising opportunity cost of having babies in Canada (Merrigan and St.- Pierre, 1998)	Age is one of the elements that makes female not wanting to have second child (Mao and Luo, 2013).	
Competitive working condition and the difficulty of re-entering the job market may have negative influence on women's will of having second child (Tien et al., 2017).		
The decrease of the price of house may increase the percentage of the ownership of house and the young families can spend more money on their kids (Peng and Tsai, 2012).		

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The high housing price may push having babies out from the first priority of families (Lin and Chang，2016)		

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Debates over the Effectiveness of China's Two-Child Policy

In China, even after decades of high-speed development, the biased prejudice toward male is still rather strong. According to UNICEF's *Population Status of Children in China in 2015 – Facts and Figures,* China is the country with the most distorted sex ratio. The national male births per 100 female births is 113.5 in the year 2015 (UNICEF, 2015). However, the number can be even much higher when zooming down to provincial data. The number of male births per 100 female birth in coastal provinces like Jiangsu, Guangdong can soar up to 120.

No other countries have this kind of strict birth control policy and the Chinese special strict birth policy makes "the first child is female" one of the most important conditions of having second child (Tien et al., 2017). The chance of having a second child in three years after having the first kid for women who have girl as their first kid is three times higher than the women who have a boy as their first kid (Tan, Li, Qi, 2010). There are some other facts that may increase the desire of having more kids, such as siblings. The agrarian region residents tend to want more kids if they have siblings (Tien et al., 2017).

Many elements may influence the expectation of the number of children Chinese parents want. It is a rather complicated and dynamic deed. Even if the policy allows people to have more than one child, the uprising education fee, the change of the value of living quality and the living environment may suppress the willingness of young couples to have more kids (Zhang, 2011).

Some estimations had been made by scholars before the announcement of the two-child policy. Zhai, Zhang and Jin (2014) used the survey done in the year 2005 to predict the number of possible newly born babies will reach 49.95 million; Qiao (2014) had smaller numbers, ranging from 22 million to 27 million. However, the number of the newly born babies in the year 2016 and 2017 were 17.86 million and 17.23 million respectively, which proved the influence of the two-child policy was limited.

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Though most of the scholars believe that the birth rates of Chinese provinces may increase a lot after the announcement of the two-child policy, there are still scholars believe that the birth rates will only go down. Mu (2006) reckons that the base population is too small and it has already been too late to drag up the population of the country (Mu, 2006).

There is no single factor that can determine the birth rate of a region. The factors that may influence the birth rate of a region is varies from regions to regions, from a field to another field. This study will be based on the result of the research that had been done and see what more factors may determine the effectiveness of the two-child policy across different provinces.

Summary of Argument and Findings

The decades-lasting one-child policy had led to the low birth rates of China which had created negative impacts on China in various aspects. From cultural elements to social elements and economic elements, different scholars have different viewpoints toward the factors that may influence Chinese birth rates. After the implementation of the two-child policy in 2016, it could be observed that the effectiveness of the policy varies in different provinces. Cultural and social elements may have influences on the change of birth rates, but economic factors still play the most important role when it comes to having babies. With more money and resources, people are more willing to have more babies. In order to figure out the reasons that led to the differences, this research takes the viewpoints of the existed papers into consideration and makes three assumptions toward the effectiveness and the increase of the birth rates after the policy came into effect.

Three assumptions are made at the beginning of the research:

Assumption 1: The Universal Two-Child Policy works comparatively better in the provinces with better economic performance.

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Assumption 2: The Universal Two-Child Policy works less prominently in provinces with relatively bad economic development.

Assumption 3: The Universal Two-Child Policy works less prominently in the most developed municipalities, which also have the highest living cost in China.

1.4 Research Method and Limitations

The research is to find out why the universal policy had been more effective in certain provinces and municipalities while less effective in other regions and what are the very factors that leads to the difference of the development of the birth rates.

This thesis will use both quantitative and qualitative methods. The author of the thesis will use the most reliable information and data from renowned scholars to not to add biased personal point of views from individuals. The thesis will be mainly using secondary sources for the lack of the ability to do mass interviews, surveys and the collection of the data. The data used will be mainly collected from Chinese governments and the well-known newspapers, state-owned media and organizations such as the website of National Bureau of Statistics of China, China Central Television and Xinhua Net.

The first phase of the study will be examining the changes of the birth rates of Chinese provinces and municipalities after the implementation of two-child policy. To see which provinces and municipalities got influenced after the announcement of the two-child policy. The concept of regression discontinuity design will be applied and the geographic information system will be used to examine the changes of the birth rates for the fluctuation of the birth rates should be taken into consideration. They are to be discussed in the following paragraph. The second phase will be the identification of the factors that may influence the development of the birth rates of provinces and municipalities in China. Comparative research method will be applied in this phase to see what are the factors that cause the positive and negative changes

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of the birth rates of Chinese provinces and municipalities after the implementation of two-child policy in the year 2016.

Regression Discontinuity Design

For the lack of human resources and limited time, instead of using randomized controlled trial (RCT) to check the real number of the babies born in China before and after the implementation of the two-child policy, the thesis will be using regression discontinuity design to examine the change of the birth rates of different provinces before and after the announcement of the two-child policy.

The regression discontinuity design will be used in the research to examine whether there is observable discontinuity in the independent variable (the birth rates of different Chinese provinces/ municipalities in this research). Two comparison groups will be set to examine whether the trend was influenced (Ito, 2018). The trend of the birth rates of different Chinese provinces fluctuates within a certain range, if not being influenced by specific incident. In this thesis, standard deviation is used to indicate the fluctuation of the birth rate before the announcement of the policy. The birth rate after the implementation of the two-child policy is to be compared with the standard error to show the show the influence of the policy.

Geographic Information System (QGIS)

The thesis uses Quantum Geographic Information System (QGIS) to show the change of the birth rates of different Chinese provinces before and after the implementation of the two-child policy. The standard deviation stands for the fluctuation of the birth rate. The provinces are to have increase in their birth rate if the birth rates of the year are larger than the fluctuations.

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Comparative Research Method

Comparative research method which consists of four different steps, including description, interpretation, juxtaposition and comparison will also be applied (Bereday, 1964). The birth rate data gathered from the official database of the state-owned institutions will be analyzed by regression discontinuity design, shown by geographic information system. For the results of the provinces that positively impacted by the two-child policy will be described and interpreted. It then will be compared with the results of the provinces that negatively impacted by the policy.

The independent variables of the thesis include the degree of urbanization, average income, general attainment of degree/diploma and the employment rate of women in different provinces; the dependent variable will be the change of the birth rates of different provinces. The result will be examined to reveal the influence of two-child policy in different Chinese provinces.

Case Selection

Analyses will be done in the second chapter by using regression discontinuity design. The provinces and municipalities that have significant positive and negative changes will be selected as the cases to be compared with each other.

Limitations

There are at least three major research limitations in this study. First, the data of Xinjiang Uyghur Autonomous Region（新疆維吾爾自治區） and Ningxia Hui Autonomous Region（寧夏回族自治區）cannot be collected for the governments had not released the data needed in the research by the time the thesis was written, so the two regions mentioned above will be excluded from the discussion in the thesis.

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Second, the Chinese official database does not offer all the birth rates from the year 1980 on, but 2001. The birth rates from the year 2001 to 2014 are used instead.

The data of the provincial birth rates used in the thesis is mainly from the database of National Bureau of Statistics of China, except for Chongqing Municipality （重慶市）, Inner Mongolia Autonomous Region （內蒙古自治區）, Guangxi Zhuang Autonomous Region （廣西壯族自治區）, and Xizang Autonomous Region (西藏自治區) which are from the bureau of statistics of the provincial governments.

Third, the two-child policy was implemented in the year 2016. The time span from the implementation of the policy to the time the research started is too short to offer enough observation for a statistical research. Therefore, the comparative research method is used instead.

1.5 Organization of the Thesis Chapters

The following parts of the study will try to figure out the reasons why the universal two-child policy is more effective in some Chinese provinces while less effective in others and what the very factors that influence the birth rates of the regions. The first chapter of the thesis is the introduction of the thesis, giving the readers the basic understanding of this research. The literature review gives readers what other scholars had found that would influence birth rates and the debates over the Chinese birth rate growth after the implementation of two-child policy. The second chapter examines the differences of the birth rates of different provinces of China before and after the announcement of two-child policy. The cases of the provinces that achieved positive birth rate growth after the announcement of the two-child policy will be discussed in the third chapter. The cases of the provinces that had negative birth rate growth will be discussed in the fourth chapter. The very last chapter offers readers the conclusion of the thesis and provides suggestions for further study in the future.

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Chapter 2 The Examination of the Two-Child Policy

2.1 The Influence of the Two-Child Policy

This chapter is to examine the changes of the Chinese regional birth rates after the implementation of the Two-child policy. Chapter 2 contains two parts, the first part of the chapter is to explain the way the research examines the changes of the of birth rates. The second part is to note down the significance of the Chinese regional birth rates.

Due to the lack of the provincial data of certain years, the research only uses the data of Chinese provinces after the year 2011 to show the trend of the birth rates before the two-child policy came in force. Table 3 shows the provincial birth rates of China from the year 2001 to the year 2017.

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Table 3 The Chinese Provincial Birth Rates from the Year 2001 to 2017

Province/ Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Beijing	6.1	6.6	5.1	6.1	6.3	6.2	8.2	8	7.7	7.23	8.3	9.1	8.9	9.8	8.0	9.3	9.1
Tianjin	7.6	7.5	7.1	7.3	7.4	7.7	7.9	8.1	8.3	8.2	8.6	8.8	8.3	8.2	5.8	7.4	7.7
Chongqing	8.5	9.2	9.6	10.7	9.7	11.5	13.9	13.3	12.5	19.1	12.4	11.0	10.7	11.8	11.1	11.3	12.1
Shanghai	5.0	5.4	4.9	6.0	7.0	7.5	9.1	8.9	8.6	7.1	7.0	9.6	8.2	8.4	7.6	9	8.1
Hebei	11.2	11.5	11.4	12	12.8	12.8	13.3	13.0	12.9	13.2	13.0	12.9	13.0	13.2	11.4	12.4	13.2
Shanxi	13.1	12.9	12.3	12.4	12.0	11.5	11.3	11.3	10.9	10.7	10.5	10.7	10.8	11.0	10.0	10.3	11.1
Inner Mongolia	10.9	9.6	9.2	9.5	10.1	9.9	10.2	9.8	9.6	9.3	8.9	9.2	9	9.3	7.7	9	9.5
Liaoning	7.7	7.4	6.9	6.5	7.0	6.4	6.9	6.3	6.1	6.7	5.7	6.2	6.1	6.5	6.2	6.6	6.5
Jilin	8.8	8.3	7.3	7.4	7.9	7.7	7.6	6.7	6.7	7.9	6.5	5.7	5.4	6.6	5.9	5.6	6.8
Heilongjiang	8.5	8.0	7.5	7.3	7.9	7.6	7.9	7.9	7.5	7.4	7.0	7.3	6.9	7.4	6	6.1	6.22
Jiangsu	9.0	9.2	9.0	9.5	9.2	9.4	9.4	9.3	9.6	9.7	9.6	9.4	9.4	9.5	9.1	9.8	9.7
Zhejiang	10.0	10.0	9.7	10.7	11.1	10.3	10.4	10.2	10.2	10.3	9.5	10.1	10.0	10.5	10.5	11.2	11.9
Anhui	12.5	11.2	11.2	11.6	12.4	12.6	12.8	13.1	13.1	12.7	12.2	13	12.9	12.9	12.9	13.0	14.1
Fujian	11.6	11.4	11.4	11.6	11.6	12	11.9	12.2	12.2	11.3	11.4	12.7	12.2	13.7	13.9	14.5	15
Shandong	11.1	11.2	11.4	12.5	12.1	11.6	11.1	11.5	11.7	11.7	11.5	11.9	11.4	14.2	12.6	17.9	17.5
Henan	13.2	12.4	12.1	11.7	11.6	11.6	11.3	11.4	11.5	11.5	11.6	11.9	12.3	12.8	12.7	13.3	13
Hubei	8.5	8.4	8.26	8.4	8.7	9.1	9.2	9.2	9.5	10.4	10.4	11	11.1	11.9	10.7	12.0	12.6
Hunan	11.8	11.6	11.82	11.9	11.9	11.9	11.96	12.7	13.1	13.1	13.4	13.6	13.5	13.5	13.6	13.6	13.3
Guangdong	14.0	13.3	13.66	13.1	11.7	11.8	11.96	11.8	11.8	11.2	10.5	11.6	10.7	10.8	11.1	11.9	13.7
Guangxi	13.8	13.3	13.86	13.3	14.3	14.4	14.19	14.4	14.2	14.1	13.7	14.2	14.3	14.1	14.1	13.8	15.1
Hainan	15.2	15.2	14.68	14.8	14.7	14.6	14.62	14.7	14.7	14.7	14.7	14.7	14.6	14.6	14.6	14.6	14.7
Sichuan	11.2	10.4	9.18	9.1	9.7	9.1	9.21	9.5	9.2	8.9	9.8	9.9	9.9	10.2	10.3	10.5	11.3
Guizhou	18.6	18.0	15.91	15.1	14.6	14.0	13.28	13.5	13.7	14	13.3	13.3	9.9	10.2	10.3	10.5	11.3
Yunnan	18.5	17.9	17.0	15.6	14.7	13.0	13.08	12.6	12.5	13.1	12.7	12.6	13.1	13.0	13.0	13.4	14
Shaanxi	10.5	10.5	10.7	10.6	10.0	10.2	10.21	10.3	10.2	9.7	9.8	10.1	12.6	12.7	12.9	13.2	13.5
Gansu	13.6	13.2	12.6	12.4	12.6	12.9	13.14	13.2	13.3	12.1	12.1	12.1	10.0	10.1	10.1	10.6	11.1
Qinghai	19.1	18.1	17.0	16.3	15.7	15.2	14.93	14.5	14.5	14.9	14.4	14.3	12.2	12.2	12.4	12.2	12.5

Source: National Bureau of Statistics of China, http://www.stats.gov.cn/tjsj/. Reorganized by the author.
Note: 1. Unit: ‰. 2. National Bureau of Statistics of China does not provide the data of Xizang, Xinjiang and Ningxia.

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The provincial birth rates are dynamic. The birth rates may change slightly from time to time, but it should be within certain fluctuation. It means that 95% of numbers cluster near the area where the peak is. The extreme numbers, which fall within +/- 2 standard deviation from the mean at the tails of the two sides are the ones that got influenced by the two-child policy, therefore, had obvious change.

This thesis assumes that the enforcement of the two-child policy had either positive or negative influence on the birth rates of Chinese provinces after the implementation of the two-child policy in the year 2016. The relatively obvious changes of the birth rates denote the influence of the policy and allow to take the provinces or municipalities that had obvious changes as a point of departure to find out what the very elements that led to the difference in birth rates are.

The research uses regression discontinuity design to examine the birth rates of the provinces and municipalities that had obvious change after the implementation of the two-child policy. The fixed horizontal axis is the time span while the vertical axis is the provincial birth rates of China from the year 2001 to 2017. If the fluctuations go beyond or below by two standard deviations, then they are regarded to be having significant positive or negative influence from the policy.

Table 2 shows the birth rates of Chinese provinces and municipalities, which can be observed that the birth rates of four municipalities, Beijing, Tianjin, Chongqing, Shanghai, and five provinces, including Inner Mongolia, Jilin, Liaoning, Heilongjiang, Jiangsu had single digit birth rates, which were relatively low before and after the two-child policy came in force when comparing with other provinces.

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2.2 The Significance of the Chinese Regional Birth Rates

The birth rates may go upward or downward a bit from time to time, but they all went under certain range of fluctuation. That is to say, if the number of the birth rate go much beyond or below the fluctuation, then, it can be proved that the policy had influenced the birth rate. The research collects the data of the provincial birth rates of China from National Bureau of Statistics of China and takes the provincial birth rates from the year 2001 to the year 2014 to use as the population for calculating the standard deviation.

Table 4 shows the standard deviation of Chinese provinces and municipalities. Three municipalities and five provinces had relatively high standard deviation which means that the fluctuations of these regions were quite high before the implementation of the policy. The number of the birth rates of these regions should be higher if they are to show the obvious changes. Among all the cities and municipalities, Chongqing municipality and Yunnan province are the ones with the biggest standard deviation. Both of them have the number of higher than 1.96, which means that the fluctuation of the birth rates of these two is much higher than any other Chinese municipalities and provinces. On the other hand, Jiangsu province and Hainan province have significantly low numbers, which means that the fluctuations of the birth rates of the provinces are small.

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Table 4 Standard deviation of Chinese provinces / municipalities

Provinces/Municipalities	Mean	Standard Deviation (2001-2014)
Beijing	7.39	1.32
Tianjin	7.92	0.47
Chongqing	11.71	**2.55**
Shanghai	7.32	1.49
Hebei	12.6	0.71
Shanxi	11.5	0.82
Inner Mongolia	9.6	0.5
Liaoning	6.6	0.53
Jilin	7.16	0.92
Heilongjiang	7.56	0.41
Jiangsu	9.37	**0.19**
Zhejiang	10.21	0.39
Anhui	12.43	0.63
Fujian	11.94	0.64
Jiangxi	13.87	0.57
Shandong	11.78	0.77
Henan	11.9	0.55
Hubei	9.57	1.12
Hunan	12.55	0.75
Guangdong	11.99	1.07
Guangxi	14.01	0.35
Hainan	14.74	**0.2**
Sichuan	9.66	0.61
Guizhou	14.5	1.73
Yunnan	14.19	**2.09**
Shaanxi	10.21	0.27
Gansu	12.68	0.51
Qinghai	15.55	1.46

Source: National Bureau of Statistics of China, http://www.stats.gov.cn/tjsj/ . Recalculated by the author. Note: Xizang, Xinjiang and Ningxia are not included.

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The figure 4 is the standard deviation of Chinese provinces from the year 2001 to 2014. According to figure 4, most of the Chinese provinces and municipalities had relatively low standard deviation, which were all below 1.96. It means that the birth rates of these provinces and municipalities did not fluctuate much. In the figure, the provinces and municipalities in the Northern part of China had low standard deviation in comparison with the ones in the South. The standard deviation of the provinces in the middle and the West of China are comparatively higher than the ones in the East. Of all the data calculated, Beijing Municipality, Ningxia, Qinghai and Xizang have relatively big fluctuation. Yunnan and Chongqing are ones with the highest standard deviation, which means that the birth rates of these two regions fluctuate a lot.

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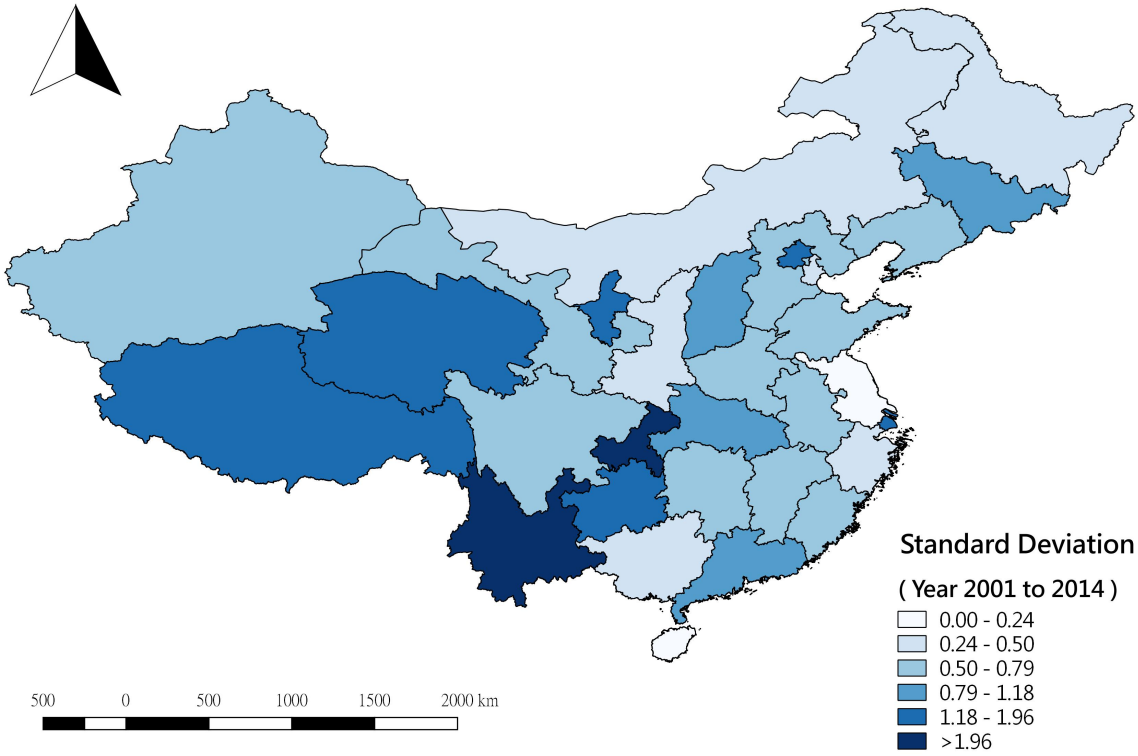

Figure 4. The provincial standard deviation (from the year 2001 to 2014)
Source: National Bureau of Statistics of China, http://www.stats.gov.cn/tjsj/ . Reorganized by the author.

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The numbers shown in Table 5 are the birth rates of the year 2016 and 2017 minus the birth rates of the year 2014 then divided by standard deviation (Year 2001 to 2014). This table shows the degree of the provinces and municipalities that had influenced by the Two-Child policy, the higher the numbers are, the more they got influenced by the policy positively; the lower the numbers are, the more they got influenced by the policy negatively.

Among all the data shown in Table 5, Zhejiang province, Fujian province, Guangdong province, Guangxi province and Shaanxi province are the provinces with one significant positive number in either item. Only the result of Shandong province surpassed the assumption mentioned, which are higher than two standard deviations. Heilongjiang is the only province that has the most significant negative number in both the year 2016 and 2017; Shandong province, on the other hand, was the only province that has the most significant positive number in both the year 2016 and 2017. It is clearly to be seen that after the implementation of the two-child policy, Shandong province was the one positive outlier while Heilongjiang was the negative outlier.

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Table 5 The Chinese provincial birth rates of the year 2016 and 2017 divided by standard deviation

Provinces/ Municipality	(2016-2014)/Standard Deviation	(2017-2014)/ Standard Deviation
Beijing	-0.33	-0.52
Tianjin	-1.73	-1.14
Chongqing	-0.21	0.13
Shanghai	0.44	-0.17
Hebei	-1.07	0.03
Shanxi	-0.76	0.17
Nei Mongol	-0.6	0.4
Liaoning	0.21	0
Jilin	-1.16	0.15
Heilongjiang	**-3.02**	**-2.78**
Jiangsu	1.62	1.36
Zhejiang	1.81	**3.59**
Anhui	0.25	1.92
Fujian	1.26	**2.04**
Jiangxi	0.37	0.97
Shandong	**4.72**	**4.27**
Henan	0.83	0.27
Hubei	0.16	0.66
Hunan	0.07	-0.34
Guangdong	0.98	**2.69**
Guangxi	-0.71	**3.05**
Hainan	0.05	0.84
Sichuan	0.43	1.71
Guizhou	0.26	0.58
Yunnan	0.24	0.41
Shaanxi	1.86	**3.57**
Gansu	-0.06	0.65
Qinghai	0.02	-0.17

Source: National Bureau of Statistics of China, http://www.stats.gov.cn/tjsj/ . Recalculated by the author. Note: Xizang, Xinjiang and Ningxia are not included

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Figure 5 and Figure 6 show the relation between Log (2016-2014) / standard deviation, 2016 GDP per capita, birth rates of the year and that of 2017 respectively. It can be observed that the higher the GDP per capita is, the more obvious the increase of the Chinese regional birth rate is.

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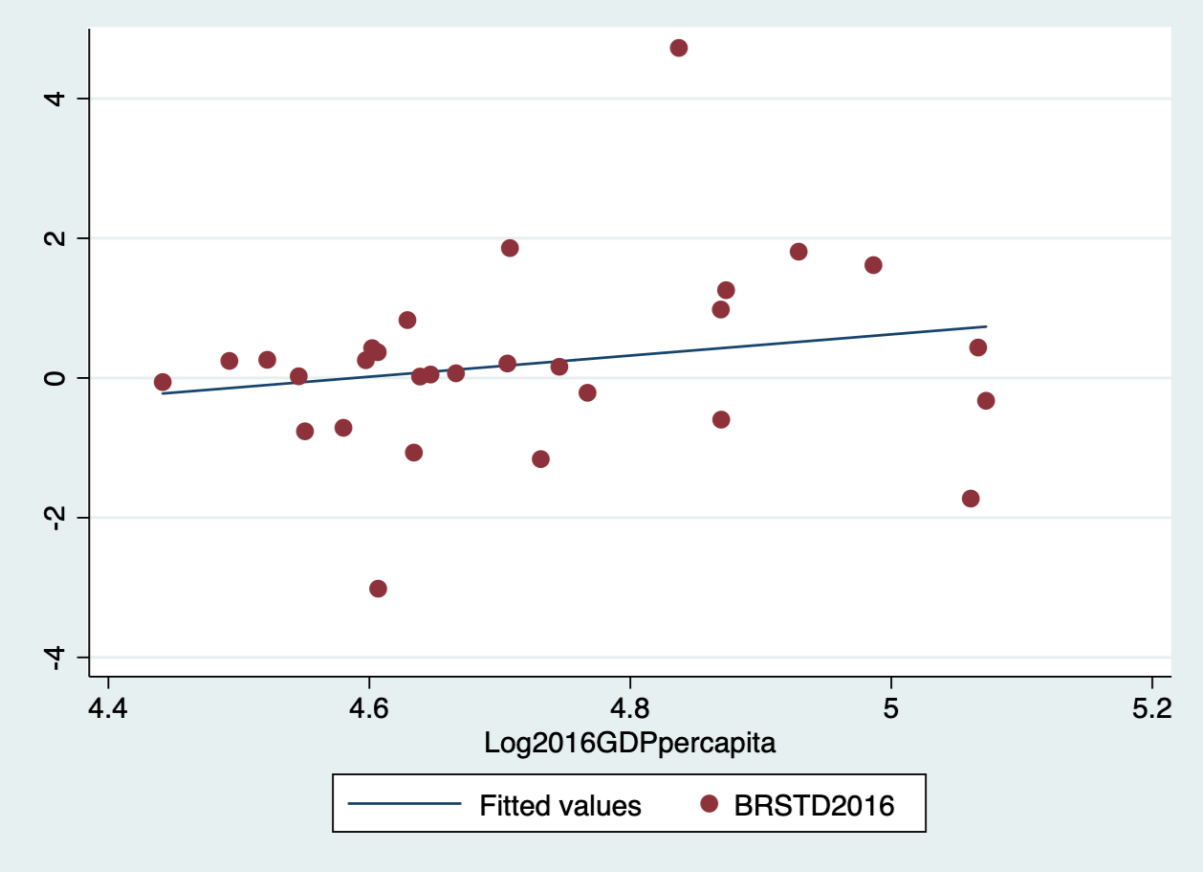

Figure 5. The relation between Log 2016 GDP per capita of Chinese provinces and birth rates of the year

Slope:1.52, Standard Error: 1.42, P>|t|: 0.295

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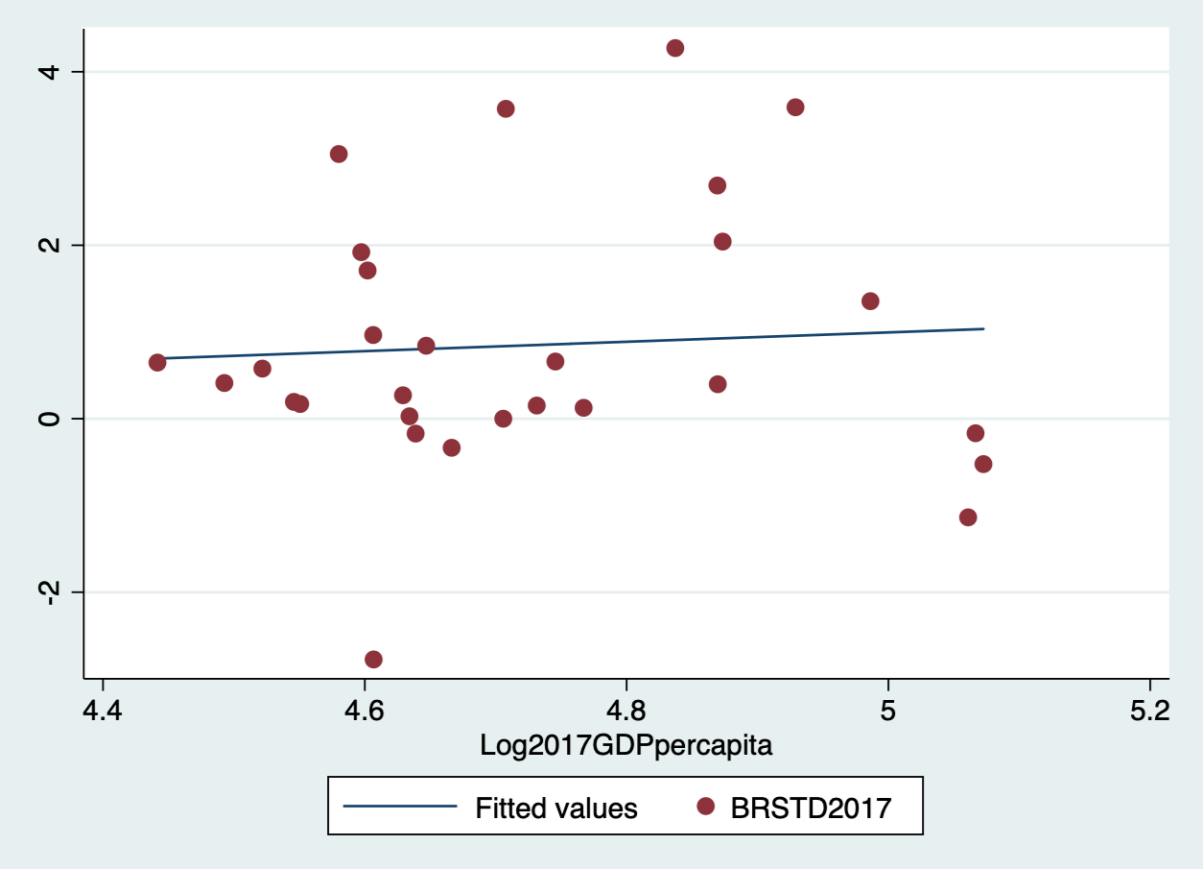

Figure 6. The relation between Log 2017 GDP per capita of Chinese provinces and birth rates of the year

Slope:0.54, Standard Error: 1.64, P>|t|: 0.744

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Figure 7 shows the result of the birth rates of the year 2016 minus the birth rates of the year 2014, divided by the standard deviation. The figure shows that the birth rates of the northern provinces and municipalities are not very obvious in comparison with the southern regions. It means that after the implementation of the Two-child policy in the year 2016, the decline of birth rates can be seen in most of the northern provinces and municipalities. For provinces that can be seen that the policy did not have much effect on are Qinghai, Hunan, Liaoning and Heilongjiang provinces. Heilongjiang has the most significant decline in comparison with all the others. On the other hand, provinces and municipalities in the South had more positive result, which means that the implementation of the Two-Child policy made the people in the South had more babies. Anhui, Jiangxi and Sichuan provinces have increase in the year, but not as obvious as Shandong, Zhejiang, Jiangsu, Fujian, Shaanxi, and Guangdong provinces, which are the provinces that have the much increase after the implementation of the policy. Among all, Shaanxi, Fujian and Shandong provinces have the most obvious change, especially Shandong province, which has the most significant positive change in the year.

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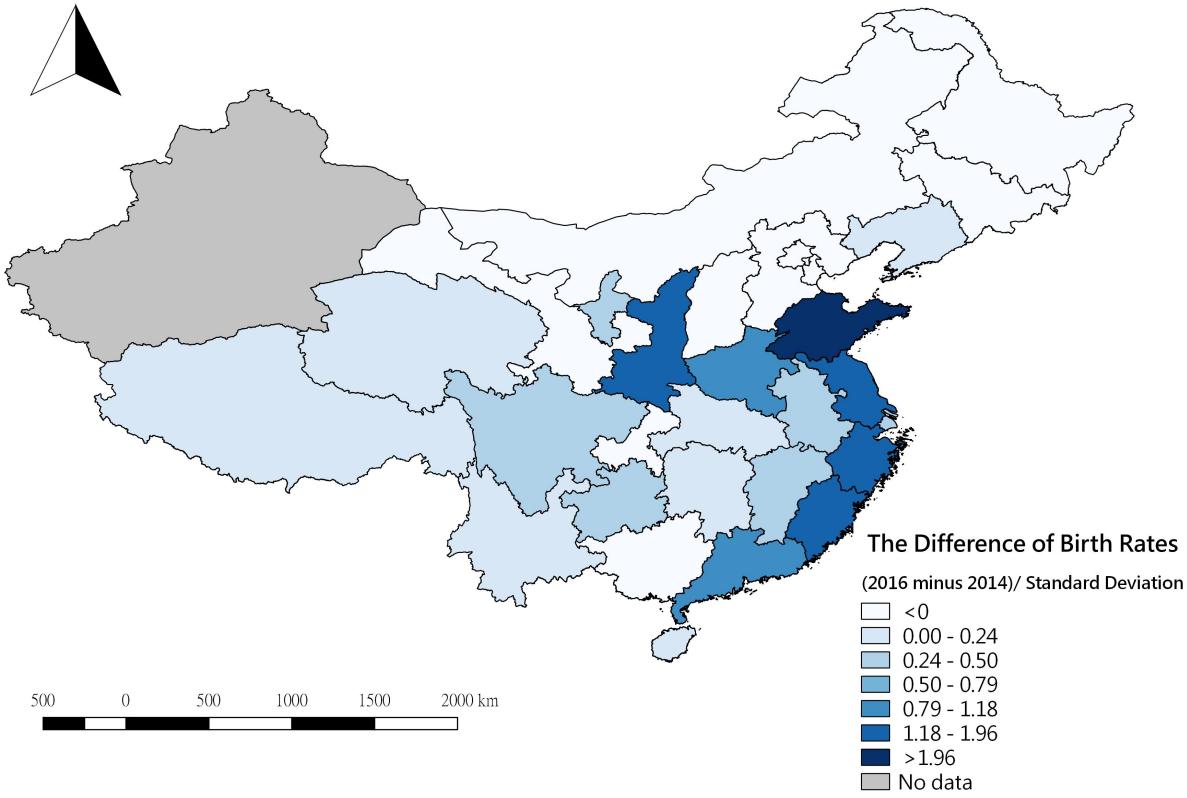

*Figure 7. (*The birth rate of year 2016 - 2014) / standard deviation
Source: National Bureau of Statistics of China, http://www.stats.gov.cn/tjsj/ , Reorganized by author

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Figure 8 shows the data of the birth rates of the year 2017 minus the birth rates of the year 2014 divided by standard deviation (from the year 2001 to 2014). It is much the same as figure 7, this figure also shows that the northern provinces and municipalities had comparatively low number in birth rates. Heilongjiang province has the lowest number in both figure 7 and figure 8. Shaanxi, Shandong, Zhenjiang, Jiangsu, Guangdong and Fujian still have relatively big number, and the numbers of Shaanxi and Fujian were even higher than the ones in the year 2016. Heilongjiang, on the other hand, is still the one with the most negative result.

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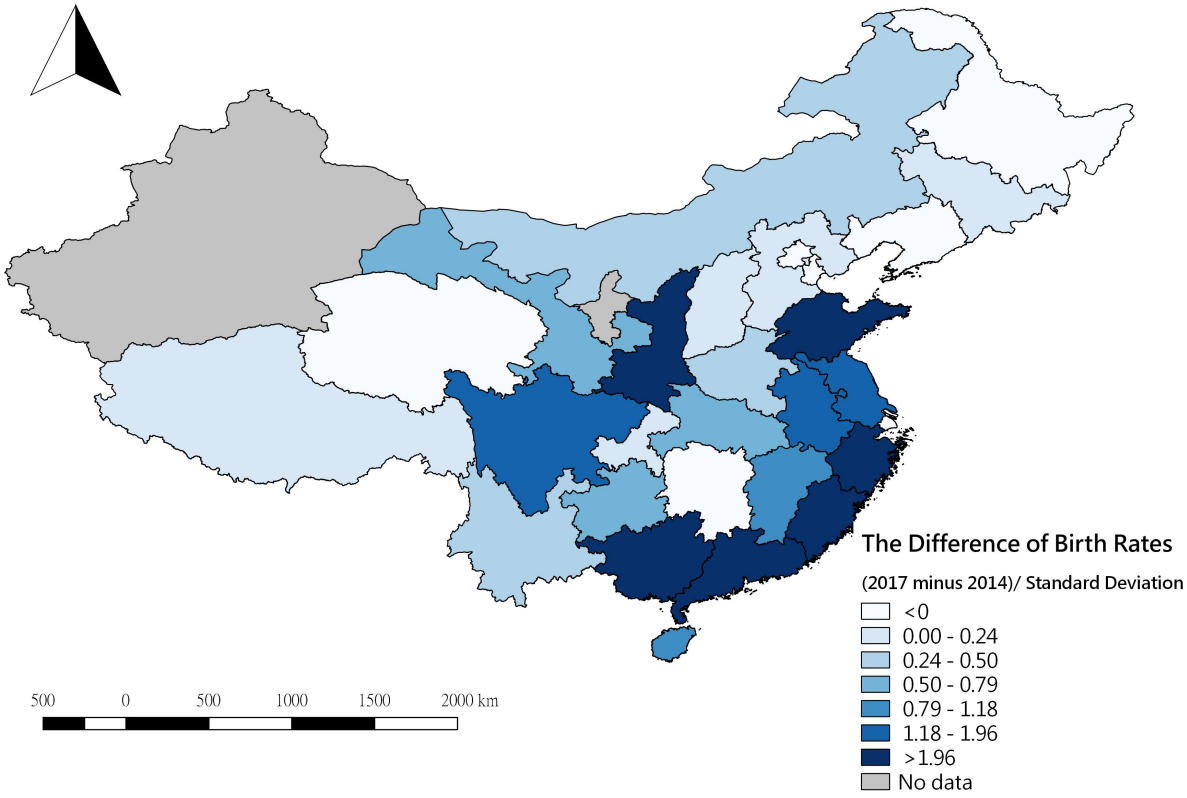

*Figure 8. (*The birth rate of the year 2017 – the year 2014) / standard deviation
Source: National Bureau of Statistics of China, http://www.stats.gov.cn/tjsj/ , Reorganized by author

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The data of provincial / municipal birth rates can be divided into two different groups. The first group, which has the most obvious positive change has six provinces, **Shandong, Zhejiang, Jiangsu, Fujian, Shaanxi, and Guangdong**. The second level which the change is slightly smaller contains three provinces, including **Anhui, Jiangxi, Sichuan**, **Heilongjiang, Liaoning, Hunan, and Qinghai** which the policy has less influence on.

The differences of the increase of the Chinese provincial birth rates can be divided into two different groups. Table 6 shows the classification of provinces with prominent changes after the implementation of the Two-Child policy and their domestic ranking in terms of the provincial GDP per capita in the year 2016 and 2017 respectively.

There are 13 provinces and municipalities in table five, including 6 municipalities and 27 provinces. It can be observed that the provinces in the first level are mainly the ones with good economic performance in the year 2016 and year 2017 while the provinces with less economic development went the other way round. All the provinces in level one are of the top ten best economic performance provinces except for Shaanxi in the year 2016 and 2017. Most of the provinces in level two, however, had bad economic performance in both years.

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Table 6
The classification of the domestic GDP per capita ranking and birth rates of the Chinese provinces with prominent changes after the implementation of two-child policy

Level 1	**Shandong** (9th in 2016, 8th in 2017), **Zhejiang** (5th in 2016, 5th in 2017), **Jiangsu** (4th in 2016, 4th in 2017), **Fujian** (6th in 2016, 6th in 2017), **Shaanxi** (13th in 2016, 12th in 2017), **Guangdong** (8th in 2016, 7th in 2017)
Level 2	**Anhui** (25th in 2016, 23th in 2017), **Jiangxi** (23th in 2016, 20th in 2017:), **Sichuan** (24th in 2016, 22th in 2017), **Heilongjiang** (22th in 2016, 24th in 2017), **Liaoning** (14th in 2016, 14th in 2017), **Hunan** (16th in 2016, 15th in 2017), **Qinghai** (18th in 2016, 31th in 2017)

Source: 2016: Xinhua 2017: Forbes, http://www.xinhuanet.com//fortune/2017-03/14/c_129508993.htm , https://www.forbes.com/sites/salvatorebabones/2018/02/12/china-quietly-releases-2017-provincial-gdp-figures/#5c86195520dc , Recalculated by author

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This chapter examines the data and the map of China and concludes that the trend of the increase of the provincial birth rates can be seen in the regions in the Southern part of China; and the trend of the decrease in the provincial birth rates after the implementation of the two-child policy can be seen in the Northern part of China. The next chapter, Chapter 3 will analyze the provinces with the least increase in birth rates and Chapter 4 will analyze the provinces with the most increase in birth rates after the announcement of the policy.

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Chapter 3 The Provinces with Positive Changes in Birth Rate

The changes of the birth rates of Shandong, Zhejiang, Jiangsu, Fujian, Shaanxi, Guangdong provinces after the implementation of the Two-Child policy were relatively positive. This chapter is to check the factors mentioned in the literature review and to see which factors play the most important roles in the provinces with obvious increase after the implementation of the Two-Child policy. Chapter three contains four parts. It starts with the fertility intention then followed by the influence of Chinese culture and governmental policy. The influence of economic development will be discussed in the third part, and a conclusion will be given in the very last part.

This chapter examines the potential elements that may lead to the positive influence of the fertility intention of Chinese society, governmental policy, education and economic development.

3.1 The Fertility Intention

The Two-Child policy passed in the year 2015 was meant to stimulate the birth rates of Chinese provinces and municipalities for the decline of birth rates. The policy came into effect one year after the announcement in the year 2016. The birth rates of Chinese provinces and municipalities had increase and decrease respectively in individual region. This chapter is to examine the factors that lead to the more prominent change of the birth rates of certain Chinese provinces and municipalities after the Two-Child policy came into force.

The intention of having babies is closely related to the universal decrease of birth rate, but the difference of the intention of having babies and the number of birth rates is getting bigger and bigger in both developed and developing countries, including China (Yang & Xie, 2019).

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According to the study of Zhai, Zhang, & Jin (2014), which is based on the mass interview of the intention of birth of Chinese women, the birth rate of China would rise dramatically, and the number of new born babies would soar up to more than 40 million once the One-Child policy is abolished. However, the rise of the birth rate was not seen in all the provinces and municipalities, and the number of babies in the following years after the cancellation of the one-child policy was just below 20 million, which means the difference between the intention of birth and the actual number of the babies that were born that year was rather big. The following two sections are to discuss the elements that influence the intention of birth and the number of new born babies in China after the announcement of the Two-Child policy. This chapter mainly focuses on the regions with prominent positive birth rate changes after the universal Two-Child policy came into effect.

Many scholars try to describe the degree and the relations of population, economy and resources but so far, there is still no single theory can offer an evaluation on them at the same time (Wang, Zeng, Zhou, & Wang, 2018). Population policy, the level of economic development, and the level of education are the three main elements that influence the birth rate and the change of the mode of a country (Zhai, et al., 2012). This chapter analyzes the relations between provincial / municipal birth rates and the three elements, the population policy, the level of economic development, and the level of education to see what lead to the decrease of the regional birth rates after the implementation of the Two-child policy.

3.2 The Influence of Chinese Culture and Governmental Policy

Chinese Culture

When it comes to the elements that influence the birth rate of a country, culture and the childbearing policies from governments are the two vital elements that cannot be ignored.

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To feed a great amount of population, big countries like China need a big amount of population to work in the primary sector of economy to produce enough food. This had not changed till the economic reform in the 20th century which causes a long-lasting culture of having big families with many people. The more people a family has the more helpers the family has to farm and it can lead to more production of the food and a prosperous family (Zheng W.-D. , 2007). The culture had passed down for thousands of years while the one-child policy suppressed the intention of having more babies by strictly limiting the number of Chinese people could have.

China had become an unified country in Qin Dynasty, under the reign of First Emperor of Qin in 221 BC. The culture of Han people had become dominant and territory had not changed much ever since then. So, the differences of the cultural influence on the intention of having babies can be seen in the comparison of China and other countries. While the differences of the cultural influence on the intention of childbearing can be ignored in the comparisons within different Chinese regions. Therefore, the cultural differences of China will not be discussed in this research.

Governmental Policy

Seeing the drop of the birth rates, Chinese government, like many other governments in the world, offers parental leave and childbirth subsidy to its people.

The amount of parental leave and childbirth subsidy are related to the financial situation of individual province and municipality. Provinces and municipalities may take the birth rate of the region, the financial situation and their development into consideration when making the decision. However, the amount of parental leave and childbirth subsidy offered by regional governments is not correlated with the regional birth rates. Heilongjiang province, as the province with one of the lowest birth rates and one of the provinces with the lowest birth rate

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change after the implementation of two-child policy offers 180 days of parental leave to it citizens (Regulations of Heilongjiang Province on Population and Family Planning , 2019). Shandong province, as the province with one of the highest birth rates before and after the implementation of two-child policy offers 158 days of parental leave to its citizens (Shandong has the least Parental Leave among 13 Provinces, 2016). It indicates that the amount of parental leave given by the government does not play an important role when it comes to stimulating the regional birth rates.

It means that the subsidy and parental leave cannot be the strong incentive to stimulate birth rates Yu and Lee (2016). Especially when it is compared with the cost of raising a baby in China, the subsidy is just not enough (Chen, Chen, Chung, & Lin, 2019). Chinese government cannot mainly rely on social welfare like parental leave and subsidy, but some long term policy that may reduce the burden on parents' shoulders.

3.3 The Influence of Economic Development

The most effective in the provinces which the policy makes the best are those with the best economic development.

When examining the CBR of most of the regions in the world, the trend of the developed regions have relatively low birth rate, on the other hand, the less developed regions usually have comparatively higher birth rate (Tsai, 2010). While it is found that the correlation between the economic development of Chinese provinces / municipalities and the provincial / municipal birth rate, is just more than that. This following part is going to figure out the correlation between the Chinese provincial / municipal birth rates and the Chinese regional economic development by analyzing the data of the birth rates of different Chinese provinces and municipalities.

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Before the Chinese economic reform, the distribution of Chinese population was not so condensed in the coastal area as it is today. Unlike the current situation, the Chinese population was scattered more evenly in three different parts of China, the West, the middle, and the East (Lu, 2016). The Chinese economic reform started in the year 1978. To develop the country, Deng Xiaoping proposed the idea of "Let some people get rich first" which gave certain regions flexibility to develop. It led to the uneven economic development of China and mass migration population in the South-East coastal area of China (Evogel, 2012). Since the Chinese Economic Reform, Chinese migrant workers had changed the standard of their destination from the area of arable land to the regions with more prosperous economy (Zhai, et al., 2012).

The difference of the development of the economy influences migration and population distribution (Tsai, 2010). People move to places other than where they were born at through human migration in pursuit of a better life. The economic environment of a place has always been playing the most vital role when people think about a place to live for it is the base of life. Therefore, the development of the economy of a place is the most important element that people take into consideration when thinking about moving to other places (Tsai, 2010). Among all the countries in the world, China has the largest human migration (Cripps & Wang, 2019). Each year more than 244 million people migrate from one place to another in pursue of better life in China (The Trend of the Total Chinese Migrant Population from the Year 2010 to 2016). Figure 9 shows the Chinese migration population from the year 2010 to the year 2017. Although the migration population of China fluctuates from time to time, it had never gone below 200 million which keeps it being at around 20% of the total population. The figure implies that migration is related to the uneven economic development of China.

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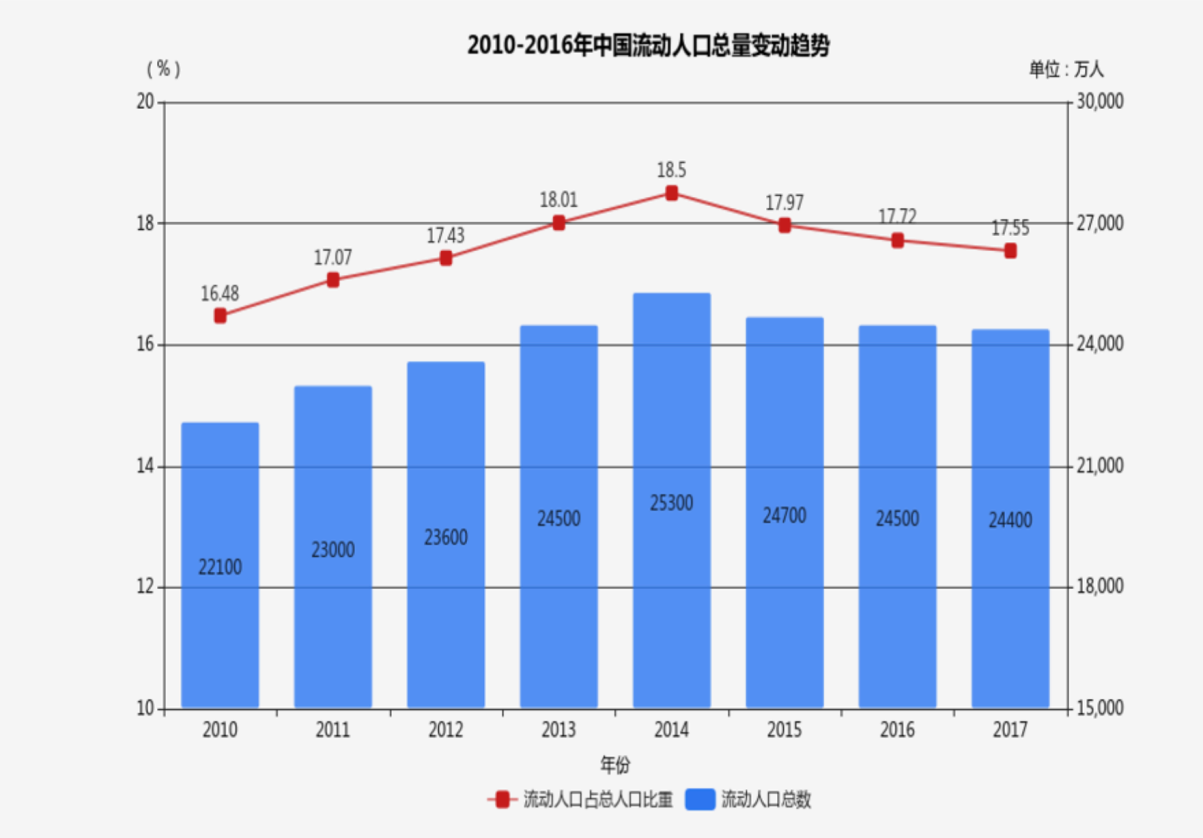

Figure 9. The population of human migration in China
Source: http://chinaldrk.org.cn/wjw/#/data/classify/visualization

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In countries like China which has a great amount of migrant population, the provincial and municipal GDP contains the labor of the migrant workers from less developed regions, so that it cannot directly show the degree of the economic development of the country. Therefore, it is more accurate to define the degree of the economic development and the standard of living of a region by analyzing the GDP per capita of a region. The indication of the degree of the economic development of a place clearly.

The Chinese college entrance examination was interrupted during the Chinese Cultural Revolution and restarted at the year 1977, the higher education of China started to develop in a rather high speed ever since. The number of college graduates reached 7.48 million in the year 2016 which became a strong power impacting the development of population (Zhang C. , 2019).

In Chinese society, having babies usually does not being considered before getting married. The much time spent on education had led to the postponement of marriage and the increase of first marriage age (Wang, 2009). Education has been playing an important role in choosing spouses and marriage. Though childbearing is considered time consuming and usually at the cost the potential salary of the mother, it is found that the level of education makes marriage rates different. The more educated a woman is, the more she wants to get married; the more educated a woman is, the less chance she gets divorced (Cheng, 2014). The movement of people moving from less developed regions to more developed regions precisely makes the resource of higher education for women more attainable. However, the cost of raising kids can be a rather big obstacle for families that want to have more than one babies. The intention of having more than one baby decreases when the highly cost of raising babies being taken into consideration (Zhang, 2011). This is more often seen in municipalities, and will be discussed in the next chapter.

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The more economically developed a region is, the more tax the regional governments can get, and the higher the budget of the regions will be. The provincial educational budget comes directly from the provincial general budget, which means that the higher the yearly budget of a province is, the more educational budget it has. Therefore, the educational budget of a province is highly related to the economic development.

Provincial / Municipal GDP per capita and Birth Rates

Figure 10 shows the relation between the Chinese provincial / municipal birth rate and the GDP per capita of Chinese provinces and municipalities from the year 2012 to the year 2017. The vertical indicator is the birth rates of Chinese regions and the horizontal indicator is the GDP per capita of Chinese municipalities and provinces. Every single spot in the figure stands for a province or municipality and has its own corresponding figures in the birth rate and the GDP per capita of the year. The graph has a rather obvious tendency that the lower the GDP per capita is, the higher the birth rate is; the higher the GDP per capita is, the lower the birth rate is. The birth rate and the GDP per capita are in inverse proportion. It means that people in the less developed regions have stronger intention of having more babies, while people in the more developed regions in China have less intention of having more babies.

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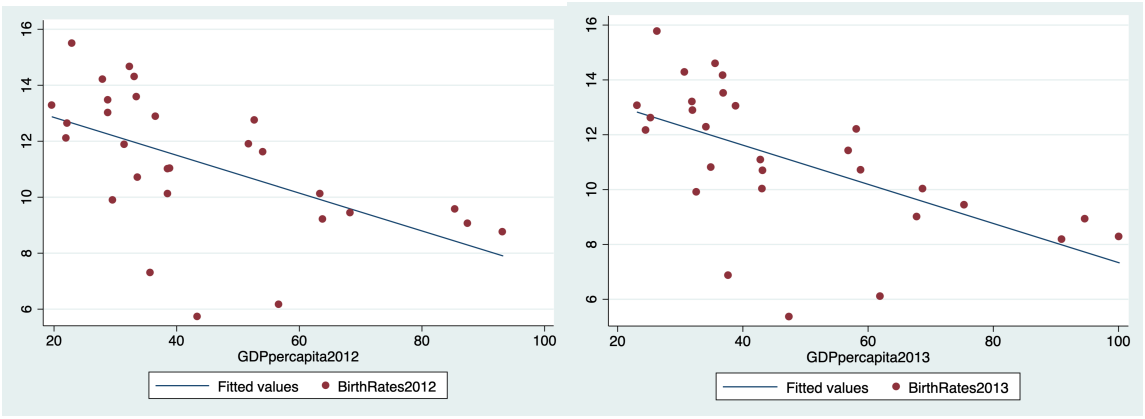
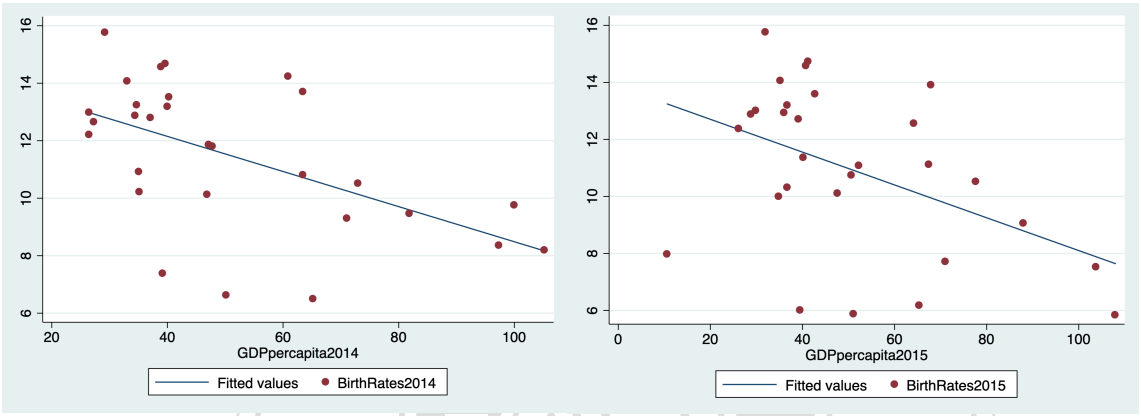
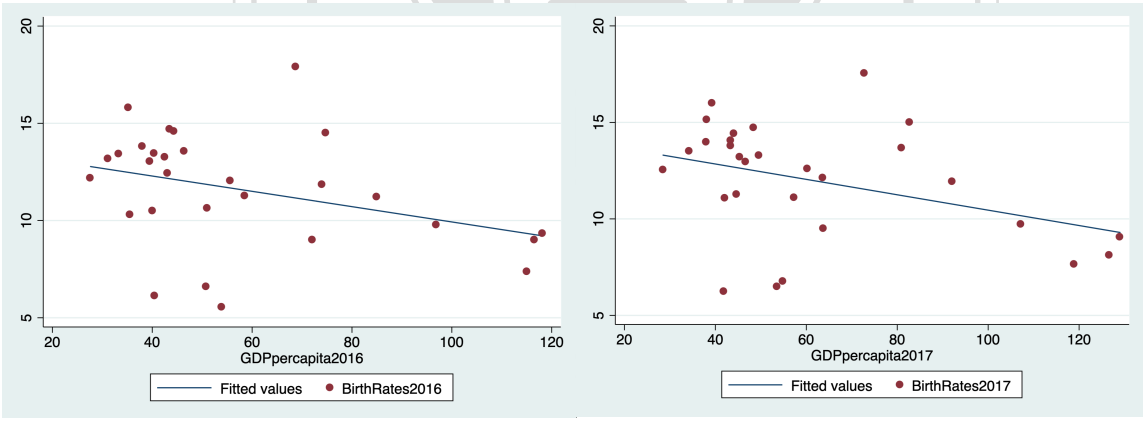


(a)2012 Slope: -0.068, Standard Error: 0.02, P>|t|: 0.002* (b)2013 Slope: -0.071, Standard Error: 0.019, P>|t|: 0.001**



(c)2014 Slope: -0.061, Standard Error: 0.018, P>|t|: 0.002* (d)2015 Slope: -0.058, Standard Error: 0.022, P>|t|: 0.013*



(e)2016 Slope: -0.04, Standard Error: 0.02, P>|t|: 0.061+ (f)2017 Slope: -0.04, Standard Error: 0.02, P>|t|: 0.042*

Figure 10. The correlation between birth rate and Chinese provincial / municipal GDP per capita from the year 2013 to 2017

Source: National Health Commission of China, http://www.nhc.gov.cn/wjw/sjcx/sjcx.shtml, reorganized by author.

Note: 1. Unit of GDP per capita: 1,000 RMB 2. *p<0.05, **p<0.01, ***p<0.001, +p<0.1

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According to figure 8 which shows the tendency of the correlation between the Chinese provincial/municipal birth rates and regional GDP per capita, Chinese provinces and municipalities follow the world trend, which is that the decrease of population comes with the industrialization and the increase of average salary (Liang, Li, & Huang, 2014). However, the general one-child policy which came into effect in the year 1979 forbidding Chinese couples to have more than one child did have much influence on the Chinese birth rate. Therefore, the intention of whether Chinese couples want more than one baby can be observed from the increase of the provincial / municipal birth rates after the cancellation of one-child policy and the implementation of the two-child policy.

The two-child policy was implemented in the year 2016 to stimulate the decade-long low birth rate of China. However, not all the provinces and municipalities had positive change after the implementation of two-child policy. According to figure 5, the birth rates in the year 2016, most of the Northern provinces, which were mainly the less developed provinces did not have much increase in comparison with the provinces in the South. A similar result can be observed in figure 6 as well.

According to figure 5 and figure 6, which are the graphs made with the adjusted data of the Chinese provincial / municipal birth rates before and after the implementation of general two-child policy. The classification of the provinces and municipalities can be divided into two different groups which are based on the changes of the birth rates in the year 2016 and 2017 respectively. The first level contains Shandong, Zhejiang, Jiangsu, Fujian, Shaanxi, and Guangdong, the six regions with the most prominent changes in birth rates in both years. There are seven regions in the second level, which are Anhui, Jiangxi, Sichuan, Heilongjiang, Liaoning, Hunan and Qinghai. They are the regions with the least prominent increase in birth rates.

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Before the Two-child policy came into force, the implementation of One-child policy had lasted decades and had given great negative impact on the Chinese birth rates. The Chinese birth rates were disproportionate to the regional GDP per capita, which is similar to that of the international society. The higher the GDP per capita are, the lower the birth rates are; the lower the GDP per capita are, the higher the birth rates are. While the cancellation of one-child policy and the implementation of two-child policy led to other results. By observing figure 5 and figure 6, which have taken the fluctuation of the yearly birth rates into consideration, it can be told that the birth rates of the provinces with good economic development have prominent increase in the year 2016 and 2017. The birth changes of birth rates were more prominent in regions with good economic development, the changes in the relatively less developed regions, on the other hand, were not obvious. The increase of birth rates shows that the Chinese provincial birth rates in relatively more economic developed regions were repressed by the one-child policy, and it was released after the implementation of two-child policy.

It is known that Chinese people have a rather strong birth intention. If the One-child policy is to be abolished earlier, the Chinese birth rate, under the circumstance of having few burdens on the shoulder of Chinese people, the birth rate could have gone double (Zhai, Zhang, & Jin, 2014). The level of salary is higher in provinces with better economic performance, therefore, it can attract more labor force (Wang, Zeng, Zhou, & Wang, 2018). The provinces with higher GDP are the ones with better economic performance, and with the better economy, these provinces can offer better social welfare to the people who legally move in. Thus, people in the more developed region, with an expected vision of having better social welfare system and higher salary are more willing to have babies (Zhang L. , 2011). The universal Two-child policy happened to act as an opened pressure regulating valve that released the pressure of the eagerness of having more than one baby.

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The relation between Chinese GDP per capita and the living cost can be concluded into the Figure 11. It can be divided into two different parts. In the first part, the higher the GDP per capita is, the higher the birth rate increase would be. In the second part, however, when the living cost increase, the birth rate would be dragged down by the high living cost of the most developed cities. It shows that the Owo-Child Policy suppressed the intention of having second child in China in developing region, while as the economy develops, the intention of having more babies will also decrease in Chinese society, like what was observed in other regions in the world.

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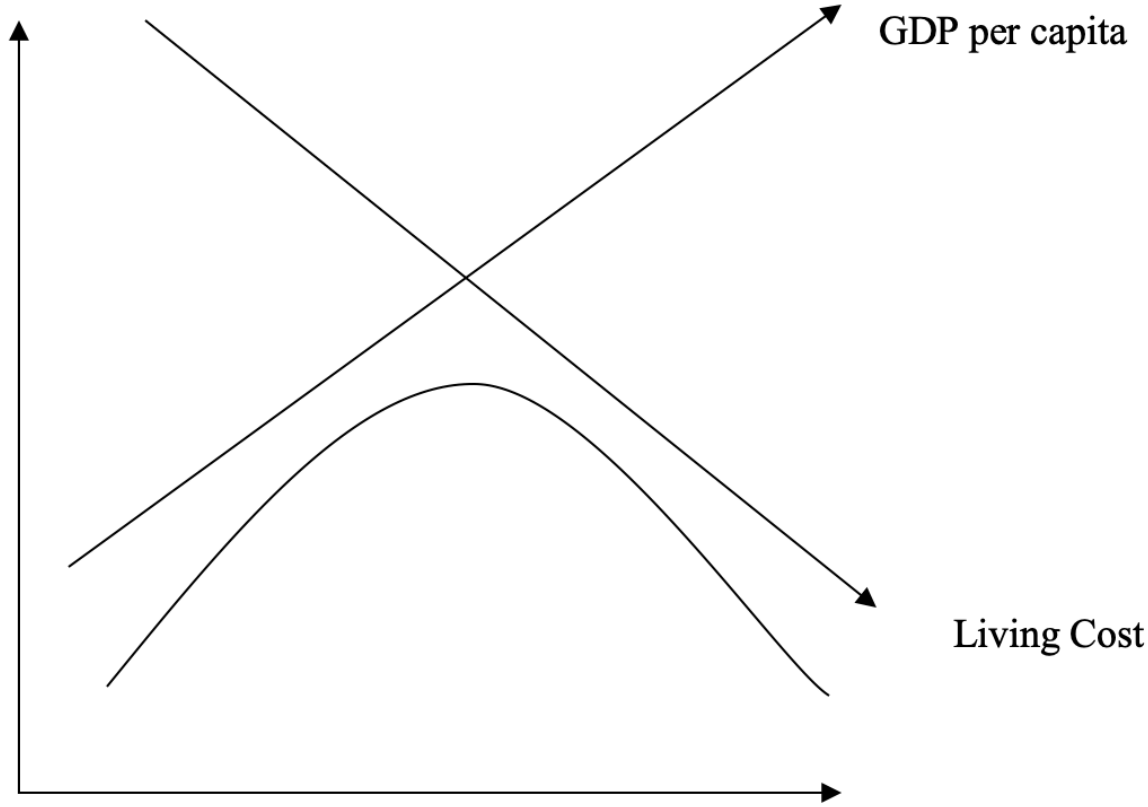
Figure 11. The relations between GDP per capita and living cost of Chinese provinces



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3.4 Conclusion

Similar to the world tendency, the Chinese provincial birth rates were low in well-developed regions and high in less developed regions. However, obvious positive changes in birth rates was shown in provinces with better economic development, and less prominent changes in the ones with less economic development after the implementation of two-child policy.

Chinese people have the intention of having many babies and big families (Zheng, 2007). The more resources a family has, the stronger the intention of having a second child would be (Zhang, 2011). The result shows the increase of birth rates in the comparatively wealthy provinces, which are the ones that can offer more resources to kids. The increase of birth rates in the relatively wealthy regions after the implementation of the two-child policy indicates the stronger intention of having a second child in the regions after the cancellation of suppression of one-child policy on the intention of having babies in wealthy regions.

The widespread of education raised the quality of human resources and decrease the intention of having babies for women worldwide. However, in the case of China it works different. The more developed provinces with higher GDP per capita are the ones that offer more education of high quality and attract more skilled labors. As getting higher education leads to the raise of salary and can indirectly lift the living standard into upper levels, it is found that the ones who received longer education tend to have more babies in China, under the circumstances of being raised in salary. So, offering Chinese people education of good quality and remove the obstacles on their way to build family becomes important when considering stimulating the population.

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The next chapter, Chapter 4 will discuss the situation of the provinces with less prominent changes after the implementation of two-child policy. The special case of the tendency of the municipalities in China will be discussed in Chapter 4 as well.

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Chapter 4 The Provinces with Less Prominent Changes after the Implementation of Two-child Policy

The one-child policy had been implemented for decades and led to low birth rates and series of problems that were hard to bear for China. The two-child policy was passed in the year 2015 and implemented in the following year, 2016, to solve the problems. The previous chapter examines the changes of the provinces with positive changes after the policy implemented. This chapter examines the situations of the provinces and municipalities with less prominent changes in China after the policy came into force.

This chapter, alike Chapter 3, focuses on the possible main factors that may impact the intention of Chinese people of having more babies. Since the Chinese culture, governmental policy, as discussed in the previous chapter, did not have much influence on the change of birth rates of China after the universal two-child policy, this chapter mainly discusses the economic factor that influences the growth of birth rates of the regions with less prominent or negative growth. The difference of regional economic development may lead to the difference of migration and education budget distribution, Thus, migration and education are mentioned in Chapter 4 to strengthen the influence of economic development on the Chinese regional birth rates. The first part of the chapter talks about the economic factors, then followed by educational factor.

Municipalities in China are the big cities that receive much resources from the Chinese government. The special development of the birth rates in the regions will be discussed specifically at the end of this chapter.

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4.1 The Influence of Economic Factors on the Less Influenced Regions

According to figure 8, which shows the relations between provincial GDP per capita and birth rates, the birth rates of the Chinese regions are correlated to their GDP per capita. It can be found in the figures that the birth rates in Chinese provinces are high in relatively less developed regions. Which means that the birth rates of Chinese provinces are proportionate to the economic development of Chinese economy.

While after the implementation of the universal two-child policy came into force, the relations between the provincial birth rates and the development of economy had changed. Heilongjiang, Liaoning, Hunan, and Qinghai provinces had the least prominent changes after the policy came into force. The slopes with bigger values indicate steeper line; the slopes with smaller values indicate less steep line. Figure 12 and figure 13 show the relations between birth rates and the economic development of Chinese provinces after the implementation of two-child policy. The slopes of both figures became less steep after the policy came into force which means that after the implementation of the policy, the birth rates of the more economic developed had increased much, yet the birth rates of the less economic developed regions did not have much increase. Figure 5 and figure 6 show that the coastal regions in the South East side of China are the ones with prominent positive birth rate changes after the implementation of the two-child policy while many of the non-coastal regions had obvious negative birth rate changes after the two-child policy came into force.

The policy did not stimulate the intention of having babies in the less economic developed regions, indicating that two-child policy was less effective in the less economic developed regions.

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The Relation between Migration Population and Birth Rate

Migrant workers had always been the most important source of labor force in the relatively developed regions in China after the economic reform announced by Deng, Xiaoping. Migrants move from one place to another in pursue of higher salary and better life. The development of South-East coastal provinces had been the engine of the development of Chinese economy since the start of economic reform in 1978. Migrant workers are the main force raising up the birth rates of the comparatively developed regions in China.

Table 6 shows the average amount migrant flow of Chinese regions from the year 2011 to the year 2015, which was the year before the policy came into force. It can be observed in Table 7 that the regions with least prominent birth rate growths are the ones of less economic development and with more migrant out-flow. It shows that the trend that the birth rates of the regions with more migration inflow rise when the number of migrants rises. The more migrants there are, the higher the birth rates of the regions would have. It indicates that young working force moved from less developed regions to more developed regions in pursuit of better life. They tend to have their own family and settle down in the regions with abundant resources.

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Table 7
The average net migration of Chinese provinces year 2011-2015

Regions	Average Net Migration Population
Beijing	21005.2
Tianjin	4655.6
Chongqing	-7223.6
Shanghai	28066.2
Hebei	-5678
Shanxi	-506
Inner Mongolia	770.4
Liaoning	109
Jilin	-1597.6
Heilongjiang	-3872.2
Jiangsu	12035.6
Zhejiang	46963
Anhui	-33716.2
Fujian	2770.2
Jiangxi	-18107.2
Shandong	-8432.8
Henan	-17268.6
Hubei	-14323.8
Hunan	-20781.6
Guangdong	60565
Guangxi	-8860.8
Hainan	647.2
Sichuan	-21960.8
Guizhou	-8312.4
Yunnan	-773.4
Xizang	313.8
Shaanxi	-2973.8
Gansu	-2019
Qinghai	136.8

Source: Migrant Population Service Center, National Health Commission P.R. China, http://chinaldrk.org.cn/wjw/#/data/classify/exist , Recalculated by author

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4.2 The Influence of Education on the Provinces with Less Changes in Birth Rates

The intention of having babies may be influenced by different factors. Education is one of the factors that greatly influences the birth rates of a country.

The ideal number of kids, for the more educated ones, which are also the comparatively economic-privileged group of people are higher than the less educated people (Zhang, 2011). Education influences the number of children when couples make decisions. The economic development of a region directly influences provincial budget that spent on the education sector. The provinces with more general budget may have more to spend on the education of the people of the provinces, while the provinces with less general budget have less money to spend on the education of their people. Thus, after the two-child policy went into force, the increase of birth rates was not seen in the provinces of less economic development.

The degree of education is proportionate to the ideal number of kid (Cheng, 2014). That is to say, the more developed a region is, the more resources the government can spend on the people of the region. The more educated the people of the region are, the stronger the intention of having second child will be.

China's city population had reached 800 million, which is about 58.5% of the total population in the year 2016 (Zhang, 2019). And it is still growing. So, in the long run, as more and more people pouring into cities, the average education level of Chinese population is going to rise continually. The birth rates of the Chinese cities and municipalities will rise accordingly if the factors that may stop the birth rate growth in cities is under control.

The provinces the Two-Child policy works the best are those with low level of development, which can be supported by the discussions in regard of migration and education.

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4.3 The Decrease of the Birth Rate in Municipalities

The notorious one-child policy had implemented for decade before the two-child policy came into force. Before the implementation of the two-child policy, the least developed and the comparatively more developed regions are the regions with higher birth rates. After the policy came into force, it is clearly shown that the birth rates in the regions with worse economic development did not have much positive change; the changes of the birth rates in the more developed regions, on the other hand, were more obvious. So, it is known that, in China, the more resourceful a place is, the bigger increase the place may have in birth rate for the abundance in resources can keep Chinese families in stability.

In this research, I find that the two-child policy works the best in provinces with the best economic development, however, the Chinese municipalities, Beijing, Shanghai, Tianjin, Chongqing, the four big municipalities which are the most prosperous cities that have more than 10 million people of population are exceptions.

The goal of this section is to explain why the second-child policy does not work as effective as it in provinces with the best economic developments.

The prosperity of the cities should have attracted much young labor from the whole country and the high birth rates should have been observed in the cities for they receive much support from the government. However, the birth rates were not high before and after the implementation of the two-child policy. When observing table 8, it can be found that in the adjusted data which had taken the fluctuation into consideration, three out of four cities had negative number in both the year 2016 and 2017. It means that the burden on the shoulder of the people in the four municipalities was too enormous which left them with no intention to have more babies.

The high cost of living, including the living fee, unbearable price of real estate, and the cost of raising kids had brought people who live in mega cities too much pressure. Therefore, the

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two-child policy did not work well in first-tier cities in comparison with other regions with good economic performance.

Among all the spending in the composition of per capita expenditure of urban household, residence stands the highest, especially in the Chinese municipalities. In the year 2017, residence stands for 33.1% in Beijing and 34.9% in Shanghai, while it was 23.5%, 21.2%, 12.4% in Guangdong, Shandong, and Jiangsu provinces respectively (HKTDC RESEARCH, 2019). The high living cost, especially the housing price have become a very become problem that make people unable to establish their own family.

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Table 8
The data of (2016-2014) / standard deviation of four tier one cities

Tier 1 Cities	(2016-2014) / Standard Deviation	(2017-2014) / Standard Deviation
Beijing	-0.33	-0.52
Tianjin	-1.73	-1.14
Chongqing	-0.21	0.13
Shanghai	0.44	-0.17

Source: National Bureau of Statistics of China, http://www.nhc.gov.cn/wjw/sjcx/sjcx.shtml , Recalculated by author

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Table 9 shows the monthly provincial and municipal minimum of China. The regions with better economic development usually have relatively higher minimum wage. So, the difference of minimum wage can be taken as the difference of the economic development. Among all the regions shown in table 9, provinces with lower minimum wage overlap many of the provinces in level 2, such as Anhui, Jiangxi, Sichuan and Heilongjiang. The provinces with higher birth rates, on the other hand, overlap the ones with higher minimum wage. The municipalities, especially Beijing, Tianjin and Shanghai have the highest minimum wage in China. The monthly minimum wage of Shanghai is 2420 RMB while it does not have the highest birth rate in China (The Regional Minimum Wage of China, 2018). The data, once again, shows the phenomenon of municipalities having relatively good economic development and low birth rates and low birth rate changes after the two-child policy came into force.

The intention of having babies is strong in economic developed regions but the rising living cost and housing price suppresses the "need" of having more children. It is fairly obvious that birth rates were not high in municipalities, and did not change after the policy came into force. The government ought to face the problem and find a solution for it, or the birth rates in the growing municipalities will never go up and more problems will come out thereafter.

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Table 9
The provincial / municipal minimum wage of China

Unit: RMB

Region	Date of Implementation	Minimum Monthly Wage				
		Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
Beijing(北京)	2017.09.01	2000				
Tianjin(天津)	2017.07.01	2050				
Hebei(河北)	2016.07.01	1650	1590	1480	1380	
Shanxi(山西)	2017.10.01	1700	1600	1500	1400	
Inner Mongolia(内蒙古)	2017.08.01	1760	1660	1560	1460	
Liaoning(遼寧)	2018.01.01	1620	1420	1300	1120	
Jilin(吉林)	2017.10.01	1780	1680	1580	1480	
Heilongjiang(黑龍江)	2017.10.01	1680	1450	1270		
Shanghai(上海)	2018.04.01	2420				
Jiangsu(江蘇)	2017.07.01	1890	1720	1520		
Zhejiang(浙江)	2017.12.01	2010	1800	1660	1500	
Anhui(安徽)	2015.11.01	1520	1350	1250	1150	
Fujian(福建)	2017.07.01	1700	1650	1500	1380	1280
Jiangxi(江西)	2018.01.01	1680	1580	1470		
Shandong(山東)	2018.06.01	1910	1730	1550		
Henan(河南)	2017.10.01	1720	1570	1420		
Hubei(湖北)	2017.11.01	1750	1500	1380	1250	
Hunan(湖南)	2017.07.01	1580	1430	1280	1130	
Guangdong(廣東)	2015.05.01	1895	1510	1350	1210	
Shenzhen(深圳)	2017.06.01	2130				
Guangxi(廣西)	2018.02.01	1680	1450	1300		
Hainan(海南)	2016.05.01	1430	1330	1280		
Chongqing(重慶)	2016.01.01	1500	1400			
Sichuan(四川)	2015.07.01	1500	1380	1260		
Guizhou(貴州)	2017.07.01	1680	1570	1470		
Yunnan(雲南)	2018.05.01	1670	1500	1350		
Xizang(西藏)	2018.01.01	1650				
Shaanxi(陕西)	2017.05.01	1680	1580	1480	1380	
Gansu(甘肅)	2017.06.01	1620	1570	1520	1470	
Qinghai(青海)	2017.05.01	1500				
Ningxia(寧夏)	2017.10.01	1660	1560	1480		
Xinjiang(新疆)	2018.01.01	1820	1620	1540	1460	

Source: Ministry of Human Resources and Social Security of the People's Republic of China, http://www.mohrss.gov.cn/ldgxs/LDGXqiyegongzi/LDGXzuidigongzibiaozhun/201807/t20180731_298258.html , Note: Bold ones are municipalities

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4.4 Excluded Other Rival Explanation

A few explanations toward the change of the Chinese birth rates had been made in the existed cases. But not all of them can describe the changes of the birth rates after the Universal Two-Child Policy came into effect. In cultural field, Liu, Deng, and Tang (2009) propose the idea of "the more children, the more blessing" in China and state that Chinese people tend to have big families with many people. However, the increase of the birth rates was not seen in all the Chinese provinces after the policy was announced. Plus, the culture of China is overwhelmingly dominated by Han, the influence of the difference of culture cannot be observed in this research. Liu, et al. (2009) mention that people tend to have more babies in agrarian society and care much more about the "quality" instead of the "quantity" after entering non-agrarian society. However, the increase of the Chinese birth rates can be seen mostly in the relatively developed regions in China after the implementation of the policy. Merrigan and St. – Pierre (1998) reckon that the decline of fertility rate in young female generation is related to the uprising opportunity cost of having babies in Canada. But the provinces with the most prominent increase in birth rates happened to be the ones with the best economic development in China which opportunity cost of female having babies is comparatively high.

4.5 Conclusion

The idea of "children are blessings", and "the more children, the more to be blessed" are deeply rooted into the mind of Chinese people. Especially in the least developed regions with bad social welfare system, the children in the family are literally the strength to ensure the parents to be supported even when they lose the ability to labor (Zheng W.-D. , 2007). Thus, before the implementation of the two-child policy, those were the places with the highest birth rates. In the most developed regions, on the other hand, the numbers were comparatively low

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before the two-child policy, while the ones who want, and have the ability to have second child got their second kid after the cancellation of the one-child policy.

And it is shown that the birth rates of the most developed regions in China are proportionate to the amount of the inflow migrant workers. The numbers of birth rates are high in developed regions for the more developed regions offer more opportunities and resources for their people. And these make them attract even more young labor force from all over China to cluster in, which lead to the obvious difference of the birth rates between developed regions.

Education has been proved to be one of the most important factors that may lead to the change of the birth rates. It is found that the more education people have, the higher chance they get married and they are of comparatively low divorce rate in comparison with the least educated people for the more educated ones are the ones that are of economic-privileged (Cheng, 2014). While the budget for education is related proportionate to the general budget, so the more economic developed a region is, the more money it can spend on the education. So the education, after all is highly related to economic development.

It can be seen that the birth rates in the comparatively more developed changed positively after the announcement of the two-child policy in the year 2016. The regions with great economic development are the ones with much support from the Chinese government and the regions where migrant workers from less developed regions move to. The migrants from the less developed regions are mainly consists of young working force that came to more developed regions in pursuit of a better life. They and the local people who enjoy the abundant resources of the regions became the main people who gave birth to their second babies after the two-child policy came into force in economically developed regions. However, the strict concentration of people, wealth and wrong policy can be counterproductive. The four municipalities failed to have high birth rates when one-child policy was implemented. The

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burden was so big and the incentive was so weak that the birth rates did not get stimulated after the two-child policy came into force.

The government should raise the birth rates in the less economic developed regions by setting proper industries and releasing policy that can reduce the cost of living in municipalities, so that labor force will not pour into certain provinces and municipalities too fast which made the government unable to adjust the path of national development.

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Chapter 5 Conclusion

The population of a country is one of the most important elements of its national power. A huge population does not only offer a great amount of labor force to the national labor market, but also being a consumption source. If an economy wants to keep growing, the consumption of it needs to grow steadily. The growth of needs leads to the growth of supply, and the balance of growing need and growing supply is vital to a growing economy. Therefore, in a growing economy, the bigger the population is, the brighter the future the country would have. On the other hand, the decrease of the population may have a bad influence on every aspect, from the development of the economy to the social welfare system, none can avoid being impacted.

The Chinese government had realized the problem caused by the one-child policy that had led to the damage on the national interests in the long run. So, it announced universal two-child policy in 2015 to try to stimulate the low birth rate of the country.

The universal two-child policy which was announced in the year 2016 was to replace the decades-long one-child policy that had limited the number of babies that Chinese people could have had. While after the implementation of the two-child policy, it was not shown that all of the Chinese provinces and municipalities had positive change in their birth rates. Some had positive changes, some fluctuated in certain ranges, others had negative change. The purpose of the study is to find out what led to the differences of the result of the effect of the Chinese two-child policy and see what more Chinese government can do to increase the low birth rates of the country.

The policies of the government, the education and the development of the economy are the three main elements that influence the birth rate of a country (Zhai, et al., 2012). Social welfare should be the main support for parents when starting a new family and having babies (Yu & Lee, 2016). Yet, the Chinese social welfare system is not strong enough to cover most of the direct spending that Chinese people spend on raising kids. It is found that the amount of the

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parental leave and subsidy offered by Chinese central and regional government are not proportionate to the regional birth rates. That is to say, the subsidy and the parental leave are not strong incentives that can make much difference in regional birth rates. They fail to stimulate the birth rates.

Economic development is found to be deeply related to the change of birth rates after the implementation of the universal two-child policy. After the two-child policy came into force, the provinces with better economic development were found to be the ones with more prominent positive changes in birth rate, specifically Shandong, Zhejiang, Jiangsu, Fujian, Shaanxi, and Guangdong, which are the provinces with the highest GDP per capita. The increase of the birth rate is related to the economic development of the regions. The provinces with better economic performance have much increase in the birth rates since the implementation of the two-child policy, while the provinces with worse economic development have comparatively less obvious increase in birth rate, such as Anhui, Jiangxi, Sichuan, Heilongjiang, Liaoning, Hunan, and Qinghai provinces. It can be concluded that Chinese people want to have more kids if they can offer more resources to their kids. People in comparatively economic developed regions expect that they can offer more to their second kids so they have a second child after the one-child policy was cancelled and the two-child policy was implemented.

However, the two-child policy was not as effective in the municipalities as in the most developed provinces in China. Chinese municipalities are the regions that get the biggest support from Chinese government. The birth rates grow much higher when the economies perform well, yet the cases of the Chinese municipalities did not follow the rule**.** The living cost in the enormous cities which have abundant resources is too high that suppress the intention of having more babies. The ideal number of kids in Shanghai for the educated is two while the intention of having more babies decrease when the issue of the high cost of raising

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kids is taken into consideration (Zhang, 2011). The cost of living in mega cities is way too high that people do not have extra money to spend on having more children. Take Shanghai as example, the Shanghai urban household expenditure of residence was 9% in the year 2000 while it soared up to 34.9% in the year 2017 which strongly compress the spending of Shanghai people on “recreation, cultural & education”, “food, tobacco & liquors”, “clothing”, and household articles (HKTDC RESEARCH, 2019). The items mentioned above are the necessities of life while the expenditure of residence had risen nearly four times in less than twenty years. People have no choice but to cut down the expenditure on things other than residence which led to the decrease of spending on education, food, clothing and household articles. This made the fortune concentrated in the hands of only a few people and greatly, directly decrease the intention of the mass public of having more babies.

What Chinese Government Can Do

As the birth rate of China had dropped to a fairly low level, the government should take more active actions to stimulate the low birth rate of the country for the low birth rate which lead to the shrinking economy, lack of labor force will be a big threat to the country.

The ownership of house plays a rather important role in Chinese marriage. People tend to buy a house before getting married; and getting married before having babies. However, the high mortgage compresses the household spending on other things and many, therefore, postpone the plan of having babies (Peng & Tsai, 2012). Chinese government should strongly regulate the market of real estate for owning a house is one of the most important necessities for Chinese people. Affordable accommodation decreases the pressure on the shoulder of Chinese people and may raise the birth rates efficiently.

Besides, instead of giving more subsidies, Chinese government should use its limited budget more wisely. The subsidies offered by the government do not matter much for the

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subsidies are not good enough in comparison with the money spent on raising a child in a long term (Yu & Lee, 2016). It should give Chinese people more direct support such as affordable and reliable day care center and schools of better quality so that parents can reduce the opportunity cost of having babies to the minimum and do not need to send their kids to cram school after class.

To encourage Chinese people to have more babies, Chinese government should think about creating a baby-friendly environment and raise the right of Chinese women (Yi, 2013). It can implement laws to protect the benefit of pregnant women in labor market by setting feeding room and giving parental leave to the father of babies. It should also promote the value of family and encourage husbands to do more chores to release the pressure of mothers.

Last but not the least, immigration. China is not an immigration society, the immigration from other countries has never been a big issue in modern China. The low birth rate may lead to the lack of labor force in labor market and other related problems to the society. Having lack of labor force and importing young talents from other less developed countries is quite common in most of the advanced economies. The Chinese government should start to think about immigration which can deal with the domestic problem of the lack of labor force and the problem of excessive labor force in other comparatively less developed countries at the same time.

The number of babies couples have is a dynamic, may change any time. It does not solely determined by their willingness but the value and the institution of the society, the ideology of the families and the culture (Zhang, 2011). The idea of having only one baby in each family had become a norm since the one-child policy had been implemented for decades. If it is not changed, soon, it may be a culture which rooted into the mind of the younger generations. And that will make it even harder for the Chinese government to stimulate the birth rate. So, whatever the action the government wants to take, it needs to be done fast and efficient.

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It takes much time for parents to make the decision of whether having a second child or not. The further research in the future can have the time of evaluating the effect of the policy longer. Therefore, it will be more clearly whether the two-child policy stimulates the birth rates in the long run.

The research has two limitations, the accessibility and the liability of the data used in the research. Due to the lack of data of certain years, the research can only use the attainable data to picture the tendency of the Chinese regional birth rates. The liability of Chinese official data is often doubtable for Chinese governments usually make up its data for political reasons. The future research can prolong the time span and take other elements and more data into consideration. They can also expand with in depth interviews in rural and urban areas on how economic factors influence the wish to have one or multiple children to make the research more complete.

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