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Who Really Benefit from the One Child Policy: an Analysis of the Impact the One Child Policy has on Marital Prospects of Han Chinese and Ethnic Minorities in China

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by

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Abstract

Over the past 35 years, the One Child Policy (OCP) has had enormous influences on almost every aspect of Chinese society. The exacerbated unbalanced sex ratio and the unequal implementation of the OCP between Han Chinese and ethnic minorities have brought some interesting changes to China's marriage market. This paper explores the differences between the marital prospects of Han Chinese and ethnic minorities under the influence of the OCP. Using 2007 China Household Income Project (Data) and 2010 Chinese Population Census Data, this paper finds that under the circumstances of the OCP, Han Chinese, especially Han women, enjoy more advantages in the marriage market than ethnic minorities. This paper also finds that ethnic minority population share of a city starts to play an important role in determining individual's marital prospect since the implementation of the OCP, and Han Chinese are more likely to be married in cities with high ethnic minority population shares.

Key Words: the One Child Policy • Marriage Market • Ethnicity

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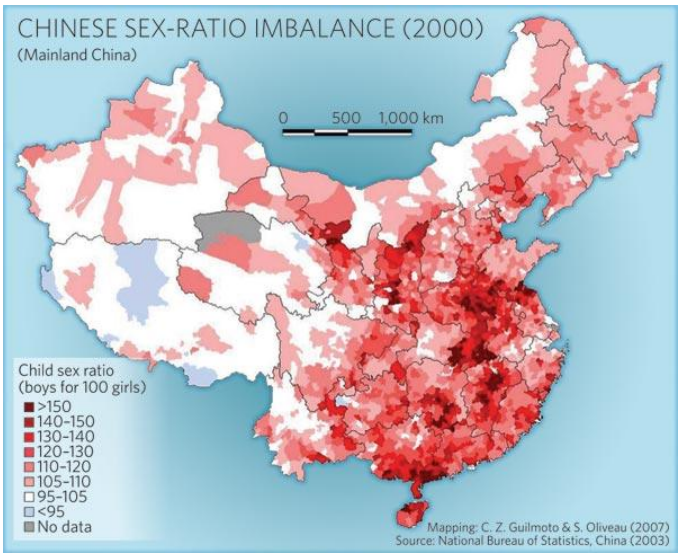
Chapter One: Introduction

Initially introduced and implemented in 1979, China's One Child Policy (OCP) has been the focus of attention for the past 35 years. This policy by the government of People's Republic of China aims at controlling the overall population growth while increasing the population quality as a whole. To curtail population growth and to mitigate the huge pressure the large population posed on the society, economy and environment, the One Child Policy restricts couples of urban residency to have only one child, while permitting second child or more children in cases such as twins, urban residency couples with birth-defect first child, couples who both lack siblings themselves, couples of rural residency, and ethnic minority population. Residents of the Special Administrative Region of Hong Kong and Macau as well as foreigners living in China are exempt from this policy.

Considering the fact that China is a country with diversified ethnic groups, the One Child Policy has also become a part of Chinese government's policies towards ethnic groups. Chinese government, when implementing the One Child Policy, formulated different population control policies for ethnic majority and ethnic minorities. Han Chinese, the largest ethnic group that takes up 91.5% of the total population in China, is the main target of the One Child Policy. Han couples with of urban residency are restricted to have only one child. Most of the population belonging to ethnic minority groups are automatically granted second child permission, and those belonging to ethnic minority groups such as Tibetan, Daur,

Evenks and Oroqen are exempted from the population control policy, being allowed to have as many children as they want.

One Child Policy has received wide concerns for the unintended negative consequences it brings to Chinese society. One of the consequences that have long been criticized is the unusual high sex ratio (fraction of males to females in the Chinese population) in China's population. The map (Ball, 2008) below presents an overview of China's sex ratio in 2000, 21 years after the enforcement of the One Child Policy.



The extremely high sex ratio has led to the marriage market squeeze for the male population in China. It is predicted that in 2020, approximately 26 million male populations from 22 years old to 34 years old will be unable to find a spouse (Women's Rights in China, 2013). However, since the One Child Policy is unequally implemented by ethnic identities, the influences it has on sex ratio also differ among

ethnic groups. Ethnic minorities, who are less affected by One Child Policy, have less distorted sex ratio than the Han Chinese, and thus face less severe marriage market squeeze.

Although there are various literatures regarding how One Child Policy affects the sex ratio and gender equality in contemporary China, hardly any research has been conducted on the influences One Child Policy has on marriage prospects of different ethnic groups. In my research, I want to find out how One Child Policy, mainly through sex ratio, differently affects the marriage prospects of people who are Han Chinese and who are ethnic minorities, a topic that has not been fully explored in earlier research and literatures. Here are 3 major questions I want to tackle in my research:

1. What role do sex ratio plays in marriage market and how does it differently affect the marriage prospects of Han Chinese and ethnic minorities?
2. How do the marriage prospects differ between male and female population in China? Does the shortage of female population give women advantages in marriage market and make women more likely to be married?
3. Considering the fact that the One Child Policy leads to different sex ratios between Han Chinese and ethnic minorities, and ethnic minorities are allowed to have more than one child, does ethnic minority identity give one advantages in marriage market and make one more likely to be married?

Knowing the effects the One Child Policy has on the marriage prospects of

population with different ethnic identities plays an important role in understating China's marriage market and evaluating China's ethnic policies. Different marriage prospects of Han Chinese and ethnic minorities not only reflect the changes in China's interethnic relations, but also reveal the discrepancies the One Child Policy creates between the ethnic majority group and ethnic minority groups. Discrepancies revealed in this research could be used as reference for Chinese government in terms of future amendments to China's population control policy and ethnic policies.

Chapter Two: Literature Review

There are various existing literatures on how the One Child Policy contributes to China's distorted sex ratio, how sex ratio affects marriage market, what factors influence interethnic marriage, and what factors determine one's marriage prospect. In the literature review section, I will discuss some of the papers that play a key role in inspiring my research, and further motivating my study on the influences the One Child Policy has on China's marriage market.

Gary S. Becker (1974) proposes two principles that explain why people marry, and why the marriage market exists. Principle one explains the reason for getting married: marriage is expected to raise the utility level above that of remaining single for those who choose to be married. Principle two, which argues that men and women compete when they seek mates, explains the existence of marriage market.

Becker points out that the change in utility level is associated with cost of and gains from marriage. For individuals to determine whether the marriage is worthwhile, gains from marriage has to be balanced against the cost, such as the cost of looking for a mate. The greater the gains from marriage, the more incentive individuals have to get married. Generally speaking, a man and a woman choose to get married and share the same household if the household production exceeds the sum of productions when both man and woman are staying single.

Productions of marriage have a wide variety of contents, and are not limited to financial gains such as wage income and property. Productions of marriage are classified into two categories: marketable product, such as wage income and property,

and nonmarketable product, such as quality of meals, love, companionship and health status. Traits of individuals in marriage market, such as beauty, education, race and religion, can affect marketable as well as nonmarketable products of marriage. Therefore, when determining whether to get married, people have to think about not only the marketable and nonmarketable products they will produce after the marriage, but also the traits of their potential spouses.

Interestingly, Becker points out that an obvious explanation for men and women to get married is the desire to produce their own children. Child is a unique gain, as well as product, of marriage, and being able to have a child, or more than one child, may give individuals advantage in the marriage market. China's One Child Policy limits most Han Chinese to have only one child, while permitting more children for ethnic minorities. Therefore, Han Chinese and ethnic minorities face different situations in marriage market due to the unequal implementation of the One Child Policy, which affects the number of offspring different Chinese are allowed to have.

Following Becker's theory, several key products of marriage and traits of potential spouse, as well as other factors that can affect individual marital status, will be further discussed in this section.

Butera (2012), considering that China's One Child Policy is unequally implemented between Han Chinese and ethnic minorities, gives detailed examination on variables that may influence China's interethnic marriage and tries to determine what variables significantly affect people's interethnic marriage decisions. Variables

discussed in Butara's paper include number of biethnic households, population by ethnicity, population of never married male/ female, unemployment due to disability, GDP per capita/ per household, age groups, marriage migration, and education attainment level. Using centered interaction and OLS estimation, Butera in her paper investigates what ethnic groups are most affected in marriage market by these variables, and which part of the population is the driven force of China's interethnic marriage.

Empirical results in Butera's paper show that Han female is the main contributor to China's interethnic marriage, and women's decisions to choose interethnic marriage are largely determined by their gains from marriage. The fact that ethnic minorities are allowed to have more than one child due to the unequal implementation of One Child Policy increases gains associated with interethnic marriage and encourages Han Chinese, especially Han women, to marry people who are ethnic minorities.

Butera's paper is extremely important because it is the initial inspiration of my research. Butera's findings imply that ethnic minority identity may become an advantage in marriage market, since the unequal enforcement of the One Child Policy increases gains from interethnic marriage by granting couples privileges such as permissions to have more than one child. In my research, I want to take Butera's study one step further, and investigate how the privileges ethnic minorities enjoy and the different sex ratios created by the unequal implementation of the One Child Policy affect the marital status of Han Chinese and ethnic minorities.

It is commonly believed that the abnormally high sex ratio, which is fraction of males to females in the Chinese population, is linked to the enforcement of One Child Policy. Bulte, Heerink and Zhang (2011), by analyzing 2000 Chinese Population Census Data, discover that there is a statistically significant positive correlation between sex ratio and the implementation of One Child Policy. Bulte, Heerink and Zhang argue that strong son preference in Chinese society leads to the gender gap, and the implementation of the One Child Policy exacerbates the imbalanced gender ratio by stimulating the sex-selective abortions. Son preference has long been prevalent in Chinese society, and sex-selective induced abortions have been made possible by employing the ultrasound B technology to identify the gender of the fetuses. Under the One Child Policy, couples with strong son preference choose to abort the female fetuses to guarantee the birth of sons, an action that leads to a more skewed sex ratio in Chinese population.

Zheng, Tu, Gu, and Li (1993) further strengthen the argument raised by Bulte, Heerink and Zhang. By analyzing data gathered from a project on surveillance for birth defects in eight provinces and cities conducted by Beijing Medical University, Zheng, Tu, Gu, and Li find out that the sex ratio, which is the number of aborted male fetus to number of aborted female fetus, is 94.6 of the 500 aborted fetus in rural and 96.8 of the 1,226 aborted fetus in urban. This sex ratio of the aborted fetuses whose gender is identifiable is significantly lower than the normal fetus sex ratio of 106, implying that some of the pregnant women underwent prenatal sex identifications and gender-specific abortions.

Considering the fact that the One Child Policy is unequally implemented between Han Chinese and ethnic minorities, the One Child Policy not only leads to high sex ratio in Chinese population, but also contributes to the sex ratio differences between Han Chinese and ethnic minorities. Bulte, Heerink and Zhang in their paper also observe how provincial sex ratio varies with the number of Han Chinese in that province. They find out that following the implementation of One Child Policy, gender ratios are more distorted in provinces with more Han population, who are the main subjects of the One Child Policy, and more balanced in regions where ethnic minority population concentrate. This finding implies that unequal enforcement of the One Child Policy affects sex ratio of Han Chinese more than that of ethnic minorities.

Papers by Bulte and Zheng build the foundation of my research by demonstrating that the One Child Policy is the main contributor to China's imbalanced sex ratio, and that this population control policy leads to the sex ratio difference between Han Chinese and ethnic minorities. My research will take their arguments one step further, and investigate how the distorted sex ratios created by the unequal enforcement of One Child Policy differently affect the marriage market of Han Chinese and ethnic minorities.

The extremely high sex ratio has led to the marriage market squeeze for the men in China. A recent report from Women's Rights in China (2013) predicts that in 2020, approximately 26 million male populations from 22 years old to 34 years old will be unable to find a spouse, and the marriage market squeeze will extend beyond 2030. Meanwhile, a lot studies have been devoted to how imbalanced sex ratios affect

the marriage pattern in a society.

South and Lloyd (1992) in their paper discuss what effects imbalanced sex ratio has on women's marriage opportunities and how women's marriage opportunities influences women's decisions on family formation. The most interesting point in South and Lloyd's research is that two different methods are used to measure women's marriage opportunities. One measurement is the availability ratio: a fraction with numerator being the number of suitable men to women of a particular age, race and education level, and denominator being the average number of women suitable for the men in numerator. Availability ratio that is greater than 100 shows that there are more suitable men than suitable women in marriage market, suggesting that women enjoy preferences in marriage market. Another measurement is the sex ratio, which is the fraction of male population to female population of a specific age group. By employing OLS regression equation, South and Lloyd observe that marriage opportunities by different measurements present similar relation with female marriage rate: an oversupply of men in marriage market tends to increase women's marriage rate. South and Lloyd conclude that in the marriage market where gender ratio is distorted, preference and advantage are shifted to the gender with less population. Relative surplus of one gender, which includes abundant alternatives to the other gender's current spouses, tends to increase the probability that the other gender will be married.

Angrist (2002), by analyzing marriage rate and sex ratio of the first and second immigrant generations in the United States, also finds out a positive association

between sex ratio and female marriage rate. Angrist uses the increased availability of potential spouses to explain the observed positive relation. Angrist also discovers that the effect sex ratio has on marriage is stronger among ethnic groups in which endogamy is more prevalent. Papers by South and Angrist shed light on how marriage market for Han Chinese and ethnic minorities can be affected by the different sex ratios of Han Chinese and ethnic minority population, a consequence of the unequal implementation of the One Child Policy.

Besides gender ratio, Butera's paper also discusses how education and income affect China's interethnic marriage. Other economists have also investigated how these two factors affect marriage market and interethnic marriage decisions, especially for female population. Furtado and Theodoropoulos (2011) explore the role education attainment plays on interethnic marriage decisions. By analyzing data on education attainment levels and interethnic marriage of different ethnic groups in the United States, Furtado and Theodoropoulos discover that higher education attainment in general decreases people's possibility to marry within the same ethnic group, and the significance of the impact education has on interethnic marriage differs across population with different cultural and educational backgrounds. Furtado and Theodoropoulos' paper, together with Butera's paper, inspired me to include education variable in my empirical framework to more accurately estimate change in marital status.

Gyimah (2009), by analyzing data from the 1988, 1993, 1998 and 2003 Ghana Demographic and Health Survey, discovers that women with higher education

attainment spend longer time on their transition to first marriage. Gyimah concludes that higher education attainment on the one hand provide women with better job opportunities and more stable economic status, so women with higher education attainment are able to conduct longer and more demanding searches for better spouses. One the other hand, higher education attainment decreases women's gains from getting married, so women with high education attainment may simply choose to stay single if they do not expect substantial gains from marriage. It will be interesting to look at Gyimah's findings in terms of China's marriage market, where sex ratio is more imbalanced than that of Ghana.

In addition to education attainment level, income is another factor that affects individual's marital prospect and marital status. Burgess, Propper and Aassve (2003) proposed two opposite effects income has on marriage related decisions: self-reliance effect and good-catch effect. Self-reliance effect suggests that higher earning decreases one's gains from marriage, therefore increases one's probability to stay out of marriage. Good-catch effect suggests that higher earning makes one more desirable in marriage market, therefore brings one more offers of marriage. Burgess, Propper and Aassve find out that the effect income has on men's and women's marital prosepcts is very different. The dominant effect marriage has on male population is good-catch effect: higher income increases the possibility for men to get married. On the contrary, women are largely affected by the self-reliance effect, and higher income is associated with lower marriage rates of female population. Burgess, Propper and Aassve's paper partly explains why separate regressions are run for male and female

population in my research: opposite effect income has on one's marital status may be observed between male and female population.

Papers discussed in this section not only motivate my research, but also become the academic foundations of my study and inspire the choices of variables in my research. Previous literatures have indicated that age, sex ratio, products from marriage such as income and employment status, and personal traits such as education all affect individual's marital status. However, earlier research has not fully investigated how the One Child Policy and ethnicity are linked in the marriage market. By incorporating into existing theory the ethnic identity, I plan to explore that depending on individual's gender and ethnic identity, how individual marital status is affected by sex ratio, a variable which is largely influenced by the One Child Policy, and population share of ethnic minority, which affects the marital status of Han Chinese and ethnic minorities differently. Here are a few of the hypotheses I want to test in my research:

(1) In general, the high sex ratios in China give women advantage in marriage market, and make women more likely to be married than men regardless of ethnicity.

(2) Ethnic minority women in general face more competition in marriage market than Han women, while ethnic minority men have more advantage in marriage market than Han men. Therefore, Han women and ethnic minority men are more likely to be married than Han men and ethnic minority women, respectively.

(3) Due to the more balanced sex ratio, women in cities with larger ethnic minority population share have less advantage in marriage market, and thus are less likely

to be married than women in cities with smaller ethnic minority share. On the contrary, the chances are higher for men to be married in cities with larger ethnic minority population shares, since there are more potential spouses available.

Based on previous literatures, variables included my empirical framework are: marital status, gender, age, income, education, employment status, ethnic identity, sex ratio, ethnic minority population share, and OCP effect. These variables and their implications in my research will be further discussed in Data Description and Variable Definition chapter.

Chapter Three: Data Description and Variable Definitions

Data for my research are compiled from 2007 China Household Income Project (CHIP) Data and 2010 Chinese Population Census Data. The 2007 CHIP Data is obtained from China Institute for Income Distribution. In the 2007 CHIP Data, Dataset One, Two and Three of Urban Individual Income, Consumption and Employment Data, and Dataset One, Two and Three of Rural Individual Income, Consumption and Employment Data, are chosen for data on the following variables: *marital status*, *gender*, *age*, age^2, *income*, *education*, *employment*, *Han* and *OCP dummy*. Data on the variables *sex ratio* and *ethnic minority population share* are gathered from 2010 Chinese Population Census Data, which is available on the official website of National Bureau of Statistics of China. Therefore, the model seems to examine how these variables are related to individual marriage status.

Part 1: Dependent Variable

Marital status

The dependent dummy variable *marital status* is used to define individual's marital status. CHIP Data specifies individual marital status to be never married, with spouse, divorced, and widow/widower. The variable *marital status* takes the value of zero if an individual has never married and the value one if individual is in situation of with spouse, divorced, and widow/widower.

Part 2: Independent Variables

Gender

According to CHIP Data, the variable *gender* takes the value one if individual is male, and the value two if individual is female. This variable will not be included in the regression equations, but separate regressions will be run for male and female population. According to the existing literatures, variables such as *sex ratio*, *ethnic minority population share* and *income* have different effects on the marital status of men and women. Therefore, running separate regressions for male and female population better captures the discrepancies between the marital prospects of male and female population.

Age and Age^2

The variable *age* takes the value of individual's age in 2007, the year the CHIP Survey was conducted. According to Goodkind's claim that the age of first marriage for Chinese men is between 23 and 27, and Tien's claim that the age of first marriage for Chinese women is between 23 and 25 (Goodkind, 2006 and Tien, 1983), it is possible that the effect age has on marital status is not a linear variable. Individuals' chances of being married increase with age, but the rate of increase gradually decreases as individuals get old. Therefore, in order to capture the diminishing rate of increase in chances of being married, the variable age^2, which equals age * age, is also included in the regressions.

Also, considering the average age of first marriage of Chinese population, data

used in this research only include individuals from 15 to 55 years old. Individuals who are below 15 years old or beyond 55 years old are excluded from the dataset.

Income

The variable *income*, in CHIP Data, initially takes the value of each individual's monthly income. The monthly income is measured in Yuan, which is the base unit of Chinese currency. According to the economic theory of marriage, economic factors play an important role in marriage decisions. Economic condition, which is assessed by individual's income, is another key variable people consider when choosing spouses. As suggested in the existing literatures, income has different impacts on male and female population in the marriage market. This is another reason why separate regressions are run for male and female population.

In order to eliminate the large number of zero after the decimal point, the variable *Income* used in the regressions is modified by dividing individual monthly income by 1000. In other words, *Income* = individual monthly income/1000.

Education level

The variable *education level* is defined as the highest education attainment individual has achieved. CHIP Data specified individual's education attainment into 25 levels from elementary school, grade 1 to phD, the fourth year. In this research, each education attainment level has its own dummy variable. For each education level, the variable *education level* takes the value one if the level is individual's highest

education attainment level. Otherwise, the variable *education level* will take the value zero.

Previous studies have revealed that while education attainment matters less to men, decline in marriage rates has been most pronounced in highly educated women (Raymo and Iwasawa 2005, Gyimah, 2009). This offers another explanation on why separate regressions are run for male and female population in this research.

Employment status

The variable *employment status* represents individual's employment status. In CHIP Data, individual's employment status is specified into the following ten categories:

(1) Employed (wage earner, farmer or self-employed)

(2) Reemployed retired worker

(3) Unemployed

(4) Retired

(5) Household worker

(6) Family worker

(7) Lost capacity to work

(8) In-school student/ preschool student

(9) Awaiting job assignment/ commencement of further education/ withdrawn from studies

(10) Others

Similar with education variable, each employment status category has its own *employment status* dummy variable, which takes the value one if individual's employment status belongs to this category and zero otherwise.

Ethnic identity

The variable *Ethnic identity* captures individual's ethnic identity. Ethnic identities in CHIP Data include:

(1) Han (the majority)

(2) Zhuang

(3) Hui

(4) Uygur

(5) Yi

(6) Miao

(7) Man

(8) Others

The variable *Ethnic identity* takes the value one if individual's ethnic identity is Han, and the value zero if individual belongs to other ethnic groups.

OCP

The variable *OCP* is used to estimate the effect the implementation of the OCP has on individual's marital status. This variable takes the value zero for individuals who reached their legal marriage age (22 for males and 20 for females) before the

implementation of the OCP, which started from 1979. If individuals did not reach their legal marriage age before the implementation of the OCP, the variable *OCP* takes the value one.

Sex ratio

The variable *sex ratio* is defined as the ratio of males to females in a population by age cohort in the city the individual resides. It measures the sex composition of the population, and is an independent variable commonly used to capture the squeeze of marriage market.

Considering the fact that marriage markets are local and most people choose their spouse from their community or nearby community, sex ratio at city level will have a stronger effect than sex ratio at national level on marriage market (Fossett and Kiecolt, 1991). Sex ratios of 77 cities where individuals in CHIP Data reside, including 18 urban cities and 59 rural cities, are used in the regressions. Formula for computing the sex ratio used in the regressions is:

$$Sex\ ratio = M/F$$

where M and F represent the population of male and female respectively in the city where the individual resides.

Sex ratio is calculated by age cohort with 5 years interval. For example, sex ratio used for individual who is 23 years old is the sex ratio of population between 20 to 25 years old in the city where the individual resides. Among the 77 cities included in this research, the city Fuyang in Anhui Province has the lowest age cohort sex ratio

of 0.79 and the city Xiantao in Hubei Province has the highest age cohort sex ratio of 1.62.

Ethnic minority population share

The variable *Ethnic minority population share* measures the proportion of ethnic minority population in cities where individuals reside. Due to the local marriage market theory, ethnic minority population share are calculated at city level using the formula:

Ethnic minority population share of city c where the individual i resides=

*(Ethnic minority population in city C/ Total population in city C)*100%*

It would be helpful if ethnic minority population share could be calculated by age cohort. However, the 2010 Chinese Population Census Data is not detailed enough for that to be done. In the 77 cities where the individuals reside, the city Bazhong in Sichuan Province has the lowest ethnic minority population share of 0.01%, and the city Chengde in Hebei Province has the highest ethnic minority population share of 43.6%.

Chapter Four: Empirical Framework

Cross-section analysis with a multiple linear regression model is used in my research. Interaction terms are also included to estimate the specific effects sex ratio, ethnic minority population share and the OCP have on marital status. Main variables included in the empirical framework are listed as below:

m_{ic}: Marital status (never married or ever married) dummy of individual i living in city c

EI_{ic}: Ethnic identity (Han or ethnic minority) dummy of individual i living in city c

Age_{ic} : Age of individual i living in city c

Age_{ic}^2 : Square of individual i's age

y_{ic}: Income of individual i living in city c

EDU_{ic}: Education level of individual i living in city c

EM_{ic}: Employment status dummy of individual i living in city c

OCP_{ic}: OCP dummy of individual i living in city c

SR_c: Sex ratio by age cohort in city c where individual i resides

EMS_c: Ethnic minority population share of city c where individual i resides

Part 1: Basic Regressions

The following estimating equation (Equation 1) will be used for the marital status dummy *m* (never married or ever married) of individual *i* living in city *c*:

$$m_{ic} = \beta_0 + \beta_1 Age + \beta_2 Age_{ic}^2 + \beta_3 y_{ic} + \beta_4 EDU_{ic} + \beta_5 EM_{ic} + \beta_6 SR_c + \beta_7 EMS_c + \varepsilon_0$$

where β_0 is the constant term and ε_0 is the error term

Using this equation, separate regressions are run for male and female population of Han and ethnic minorities.

Age is expected to be positively correlated with marital status: the older the individual gets, the more likely the individual to be married. Age_{ic}^2 is used to capture the diminishing rate of increase in individual's chance of being married, and it can be either positively or negatively correlated with marital status.

y_{ic} is expected to be positively correlated with the marital status of male population (good-catch effect) and negatively correlated with the marital status of female population (self-reliance effect).

EDU_{ic} is a dummy variable in the empirical framework. Higher education attainment level is usually associated with better marital prospects of male population, while it decreases women's probability of getting married by increasing their financial independence. It is possible that there exists a cutting point in education attainment level: education level increases women's possibility to be married below the point, and decreases women's possibility to be married beyond the point.

EM_{ic} is expected to be positively correlated with the marital status of male population: job brings one income, and therefore makes one more desirable in the marriage market. However, since being employed increases women's financial independence, EM_{ic} may be negatively correlated the marital status of female population.

SR_c is expected to be negatively correlated with the marital status of male

population and positively correlated with female population: preferences are shifted to female population in marriage markets where sex ratio is high, making female population more likely to find a spouse and male population less likely to be married. However, since the unequal enforcement of the OCP has led to different sex ratios of Han and ethnic minorities, the effect sex ratio has on marital status also differs between Han and ethnic minorities. Therefore, an interaction term between individual ethnic identity and city level sex ratio is included in the later regressions.

The influence EMS_c has on marital status may differ not only between male and female population, but also between Han Chinese and ethnic minorities. Therefore, an interaction term between individual ethnic identity and ethnic minority population share of the city the individual resides is later included in the estimation equation.

Part 2: Regressions with Interaction Terms on Sex Ratio and Ethnic Minority Population Share

To find out whether city level cohort sex ratio differently affects the marital status of Hans and ethnic minorities, an interaction term between individual ethnic identity and city level cohort sex ratio is added to Equation 1, and the following regression will be run for male and female population separately:

$$m_{ic} = \beta_0 + \beta_1 Age + \beta_2 Age_{ic}^2 + \beta_3 y_{ic} + \beta_4 EDU_{ic} + \beta_5 EM_{ic} + \beta_6 SR_c + \beta_7 EMS_c + \beta_8 EI_{ic} + \beta_9 EI_{ic} * SR_c + \varepsilon_0$$

The different effect city level cohort sex ratio has on marital status of Hans and ethnic minorities can be estimated by taking the cross-partial derivative of the

equation above:

$$\frac{\partial m_{ic}}{\partial SR_c} = \beta_6 + \beta_9 EI_{ic}$$

Similarly, to estimate how city level ethnic minority population share differently affects the marital status of Han Chinese and ethnic minorities, an interaction term between individual ethnic identity and city level ethnic minority population share is added to Equation 1, and the following regression will be run for male and female population separately:

$$m_{ic} = \beta_0 + \beta_1 Age + \beta_2 Age_{ic}^2 + \beta_3 y_{ic} + \beta_4 EDU_{ic} + \beta_5 EM_{ic} + \beta_6 SR_c + \beta_7 EMS_c + \beta_8 EI_{ic} + \beta_9 EI_{ic} * EMS_c + \varepsilon_0$$

The different effect city level cohort sex ratio has on marital status of Hans and ethnic minorities can be estimated by taking the cross-partial derivative of the equation above:

$$\frac{\partial m_{ic}}{\partial EMS_c} = \beta_7 + \beta_9 EI_{ic}$$

To test how sex ratio and ethnic minority population share together differently affect the marital status of male and female population, an interaction term between city level cohort sex ratio and city level ethnic minority population share is included in Equation 1, and the following regression is run for male and female population separately:

$$m_{ic} = \beta_0 + \beta_1 Age + \beta_2 Age_{ic}^2 + \beta_3 y_{ic} + \beta_4 EDU_{ic} + \beta_5 EM_{ic} + \beta_6 SR_c + \beta_7 EMS_c + \beta_8 SR_c * EMS_c + \varepsilon_0$$

Part 3: OCP Effect on Marital Status

To take into account the effect the OCP has on marital status, the OCP dummy variable and an interaction term between OCP dummy and city level ethnic minority population share are added to Equation 1, and the following regression is run for male and female population separately:

$$m_{ic} = \beta_0 + \beta_1 Age + \beta_2 Age_{ic}^2 + \beta_3 y_{ic} + \beta_4 EDU_{ic} + \beta_5 EM_{ic} + \beta_6 SR_c + \beta_7 EMS_c + \beta_8 OCP_{ic} + \beta_9 OCP_{ic} * EMS_c + \varepsilon_0$$

The different effects ethnic minority population share has on marital status before and after the implementation of the OCP can be estimated by taking cross-partial derivative of the equation above:

$$\frac{\partial m_{ic}}{\partial EMS_c} = \beta_7 + \beta_9 OCP_{ic}$$

Chapter Five: Empirical Results

The results of regression analysis are presented in this chapter. This chapter consists of three sections: Part 1 discusses the empirical results of the basic regression models. Part 2 includes interaction terms, which are used to estimate the different impacts sex ratio and ethnic population share have on the marital status of male and female population of Han and ethnic minorities. Part 3 captures the effect of OCP on marital status by including OCP dummy variable and an interaction term between OCP and ethnic minority population share to investigate whether the effect OCP has on marital status started even before the sex ratio started to change.

Part 1: Empirical Results of Basic Regressions

Table 1 exhibits the OLS estimates of the effects age, income, education level, employment status, sex ratio and ethnic minority population share have on the marital status of male and female population of Han and ethnic minorities.

Han Population

Column (1) and column (2) present the regression results of male and female Han population respectively. Age is positively correlated with marital status of both Han men and Han women, and age squared is negatively correlated with Han men's and Han women's marital status. Regression results on age and age squared are all statistically significant at the 1% level. Generally speaking, increase in age makes it more likely for Han individuals to be married, but the magnitude of the likelihood

gradually decreases as individuals get old. The effect age has on Han Chinese's chance of being married is larger on Han women than Han men: increase in age gives Han women higher chances to be married than Han men.

Income is positively correlated with marital status of both Han men and Han women, suggesting that Han individuals with higher income are more likely to be married than Han individuals with lower income. The higher income coefficient of Han women suggests that the effect income has on individual's chance of being married is larger on Han female than Han male.

Education level in general increases individual's chance of being married for both genders. It is worth noticing that this positive correlation between Han individual's education level and chance of being married only exists below certain education levels. If one keeps pursuing higher education attainment above the certain level, the higher education level one attains, the less likely that one is to be married.

Being employed is positively associated Han population's marital status, for both male and female population. In other words, Han individuals who are employed are more likely to be married than those who are not.

Previous literatures suggest that in the marriage market where sex ratio is distorted, preference and advantages are shifted to the gender with less population. Therefore, an increase in the amount of marriageable men tend to increase women's chance of being married (South and Llyod, 1992). The regression result of Han women supports the conclusion in existing literature review: the positive female Han's sex ratio coefficient, which is statistically significant at the 1% level, suggests

that as Han women's chance of being married increases as sex ratio increases. However, sex ratio and marital status of Han men are also positively correlated at the 1% statistically significant level, implying that an increase in sex ratio also increases Han men's chance of being married. It is even more interesting to notice that the sex ratio coefficient of Han men, which is 1.118, is larger than the 0.982 sex ratio coefficient of Han women, suggesting a larger impact increase in sex ratio has on Han men's chance of being married.

One of the hypotheses raised in my research is that due to the more balanced sex ratio, women in cities with larger ethnic minority population share have less advantage in marriage market, and thus are less likely to be married than women in cities with smaller share of ethnic minority population. On the contrary, the chances for men to be married are higher in cities with larger ethnic minority population share due to the increase in potential spouse supply. The hypothesis is supported by the positive coefficient of ethnic minority population share in Han men regression: increase in ethnic minority population share is associated with more balanced sex ratio and higher female population, decreasing the competition Han men face in marriage market and increasing Han men's chances of being married. However, the regression result of Han women is telling a different story. Positive coefficient of ethnic minority population share in Han women regression suggests that in cities with higher ethnic minority population share, Han women also have a higher chance of being married.

The positive effect higher ethnic minority population share on Han women's

chance of being married can be explained by the relation between marriage decision and potential gains from marriage discussed in the literature review chapter: increase in gains associated with marriage gives women more incentives to choose getting married (Becker, 1974). Han women, by marrying ethnic minority men, can be allowed to have more than one child, which is regarded as gains from marriage. In cities where there are larger shares of ethnic minority population, there are more available ethnic minority men to Han women. Therefore, seeing the potential gains from marriage, more Han women may choose to form families with ethnic minority men, increasing Han women's chance of being married.

Ethnic Minority Population

Column (3) and column (4) present the regression results of male and female ethnic minority population respectively. Similar with results from Han population regression, age is positively correlated with marital status of both ethnic minority men and ethnic minority women, while age squared is negatively correlated with marital status of ethnic minority men and ethnic minority women. The age coefficient is statistically significant at the 5% level and the age squared coefficient of statistically significant at the 10% level for ethnic minority men, while regression results of age and age squared are not statistically significant for ethnic minority women.

Income is positively correlated with marital status of both ethnic minority men and ethnic minority women, but the income coefficient is statistically insignificant for both ethnic minority men and ethnic minority women.

Regression results do not show a clear pattern how education level affects the marital status of ethnic minority men. However, education level is negatively associated with the marital status of ethnic minority women: higher education level decreases ethnic minority women's chances of being married.

There are a lot of missing values of the employment status of ethnic minorities. The lack of data makes it hard to conclude what effect employment status has on ethnic minorities' chances of being married.

Sex ratio is positively correlated with marital status of ethnic minority men, and negatively correlated with marital status of ethnic minority women. However, these coefficients are not statistically significant; therefore, it is hard to conclude how sex ratio differently affects the marital status of ethnic minority men and women.

Not having enough number of observations may be the major cause of insignificant regression results of ethnic minority population. There are only 82 ethnic minority men and 60 ethnic minority women, which are very small numbers of observations compared to 9796 Han men and 6563 Han women in the Han population regression. Therefore, it is more reasonable to conclude that lack of number of observations leads to the insignificant regression results than arbitrarily conclude that variables such as income and sex ratio are not correlated with the marital status of ethnic minority population.

However, there is still some significance in the ethnic minority share coefficients. Tough it is initially hypothesized that men in cities with high ethnic minority population share are more likely to be married while women in such cities

are less likely to be married, regression results for ethnic minority population suggest some interesting facts which are different from the initial hypothesis. Ethnic minority population share is negatively correlated with the marital status of both ethnic minority men and ethnic minority women at the 1% statistically significant level, implying that ethnic minority men and women are less likely to be married in cities with higher ethnic minority population share than in cities with lower ethnic minority population share. This is due to the fact that the ethnic minorities gradually lose their competitive advantages in marriage markets as the ethnic minority population share increases. With the increasing number of ethnic minorities in marriage market, ethnic minority men and women start to face more competitions within the ethnic minority group, and therefore become less likely to be married.

The effects sex ratio and ethnic minority population share have on the marital status of Han Chinese and ethnic minorities will be further discussed in the next section, in which interaction terms are included in the regressions.

Part 2: Empirical Results of Regressions with Interaction Terms on Sex Ratio and Ethnic Minority Population Share

Table 2, in addition to displaying the OLS estimates of coefficients of independent variables from Part 1, also presents regression results of interaction terms between:

(1) ethnic identity and sex ratio

(2) ethnic identity and ethnic minority population share

(3) sex ratio and ethnic minority population share

to specifically look at how sex ratio and ethnic minority population share differently affect the marital status of Han Chinese and ethnic minorities. Discussion in this section is focused on interpreting the interaction terms.

Interaction Term between Ethnic Identity and Sex Ratio

Column (1) and column (2) present the regression estimates of the basic regression model with ethnic identity dummy, and an interaction term between ethnic identity and sex ratio, which is used to investigate how the effects sex ratio has on marital status differ between Han Chinese and ethnic minorities. Column (1) displays the regression results of male population, and column (2) displays the regression results of female population. The interaction term generated in the regressions is presented in the following equations:

Male Population

m_{ic}= -1.333 + T_1 + 0.853SR_c - 0.454EI_{ic} + 0.310EI_{ic}*SR_c

Female Population

m_{ic}= -0.569 + T_2 - 0.348SR_c - 1.516EI_{ic} + 1.372EI_{ic}*SR_c

where T_1 and T_2 sum up, for male and female population respectively, the regression results of age, age squared, income, education level, employment status and ethnic minority population share, which are qualitatively similar with the results from regressions in Part 1.

After including the interaction term, the effect sex ratio has on marital status becomes 0.853+0.31EI_{ic} for men and -0.348+1.372EI_{ic} for women. The interaction term coefficient of male population does not show any statistical significance, suggesting that according to the data, the effects sex ratio has on Han men and ethnic minority men's marital status do not differ significantly.

Interaction term coefficient of female population is statistically significant at the 5% level, suggesting significantly different effects sex ratio has on the marital status of Han women and ethnic minority women. The effect sex ratio has on marital status of Han women, for whom EI_{ic}= 1, is -0.348 + 1.372*1= 1.024. For ethnic minority women, whose EI_{ic}= 0, the effect sex ratio has on marital status is -0.348+1.372*0= -0.348. In general, Han women are more likely to be married than ethnic minority women in cities with higher sex ratios, and the likelihood of being married increases as sex ratios increase. On the contrary, increase in sex ratio decreases ethnic minority women's likelihood of being married.

Interaction Term between Ethnic Identity and Ethnic Minority Population Share

Column (3) and column (4) present the regression results of the interaction term between ethnic identity and ethnic minority population share, which is used to investigate how the effects ethnic minority population share has on marital status differ between Han Chinese and ethnic minorities. Column (3) and column (4) display the regression results of male population and female population respectively. The interaction term generated in the regressions is presented in the following equations:

Male Population

m_{ic}= -1.456 + T_3 - 0.0105EMS_c - 0.293EI_{ic} + 0.0184EI_{ic}*EMS_c

Female Population

m_{ic}= -1.806 + T_4 - 0.00618EMS_c – 0.231EI_{ic} + 0.0190EI_{ic}*EMS_c

where T_3 and T_4 sum up the regression results of age, age squared, income, education level, employment status and sex ratio for male and female population. These results are qualitatively similar with results from Part (1).

Results on interaction term between ethnic identity and ethnic population share are statistically significant at the 1% level for both male and female population. With interaction term included in the regression, the effect ethnic minority population share has on marital status becomes -0.0105+ 0.0184EI_{ic} for male population and -0.00618+ 0.0190EI_{ic} for female population.

By substituting EI_{ic} = 1 for Hans and EI_{ic} = 0 for ethnic minorities, we get the effects ethnic minority population share has on marital status:

Male Han

$\frac{\partial m_{ic}}{\partial EMS_c}$ = -0.0105+0.0184*1 = 0.0263

Male Ethnic Minorities

$\frac{\partial m_{ic}}{\partial EMS_c}$ = -0.0105+0.0184*0 = -0.0105

Female Han

$\frac{\partial m_{ic}}{\partial EMS_c}$ = -0.00618+0.0190*1 = 0.01282

Female Ethnic Minorities

$\frac{\partial m_{ic}}{\partial EMS_c}$ = -0.00618+0.0190*0 = -0.00618

Results of the interaction term are in accordance with the findings in Part 1. Ethnic minority population share is positively correlated with marital status of Han Chinese, suggesting that Hans more likely to be married in cities with higher ethnic minority population shares. On the contrary, ethnic minority population share has a negative effect on marital status of ethnic minorities, and being in cities with higher ethnic minority population decreases ethnic minorities' chances of being married.

Interaction Term between Sex Ratio and Ethnic Minority Population Share

The regression results of interaction term between sex ratio and ethnic minority population share are presented in column (4) and column (5) for male and female population respectively. This interaction term is used to test how sex ratio and ethnic minority population share together differently affect the marital status of male and female population. The following two equations summarize the interaction term generated in the regressions:

Male Population

m_{ic}= -1.827 + T_5 + 1.196SR_c + 0.0236EMS_c – 0.0233SR_c*EMS_c

Female Population

m_{ic}= -2.040 + T_6 + 0.981SR_c – 0.0126EMS_c + 0.0159SR_c*EMS_c

where T_5 and T_6 represent the regression results of age, age^2, income, education level, and employment status and sex ratio for male and female population. These results are qualitatively similar with results from Part (1).

However, the regression results on the interaction term are not statistically

significant for neither male nor female population. Therefore, it is hard to conclude how the effects sex ratio and ethnic minority population share together have on marital status differ between male and female population.

Part 3: Empirical Results of OCP Effect on Marital Status

Table 3 presents the OLS regression results of the interaction term between the OCP and ethnic minority population share. The main purpose of including the interaction term is to estimate how the effect ethnic minority population has on marital status changed after the implementation of the OCP. Regression results of male and female population are summarized in column (1) and column (2) respectively. Interaction term generated in the regressions is illustrated in the following equations:

Male Population

m_{ic}= -1.773 + T_7 $-0.00647EMS_c$ $-0.0147OCP_{ic}$ $+0.00679OCP_{ic}*EMS_c$

Female Population

m_{ic}= -2.064 + T_8 $-0.00606EMS_c$ $-0.0346OCP_{ic}$ $+0.0107OCP_{ic}*EMS_c$

where the effects of age, age^2, income, education level, employment status and sex ratio are summarized in T_7 and T_8. These effects are qualitatively similar with the findings in Part (1).

The regression result on the interaction term is significant at the 5% level for male population and the 1% level for female population. The effect ethnic population

share has on marital status, when interaction term is included, becomes -0.00647 +0.00679OCP_{ic} for men and -0.00606+0.0107OCP_{ic} for women. To take a closer look at how the OCP affects marital status, substitute OCP_{ic}=0 for males and females who turned legal marriage age before the implementation of the OCP, and OCP_{ic}=1 for males and females how turned legal marriage age after then implementation of the policy:

Males who turned eligible marriage age before the OCP implementation:

$\frac{\partial m_{ic}}{\partial EMS_c}$ = -0.00647 +0.00679*0 = -0.00647

Females who turned eligible marriage age after the OCP implementation:

$\frac{\partial m_{ic}}{\partial EMS_c}$ = -0.00647 +0.00679*1 = 0.00032

Females who turned eligible marriage age before the OCP implementation:

$\frac{\partial m_{ic}}{\partial EMS_c}$ = -0.00606 +0.0107*0 = -0.00606

Males who turned eligible marriage age before the OCP implementation:

$\frac{\partial m_{ic}}{\partial EMS_c}$ = = -0.00606 +0.0107*1 = 0.00464

The regression results show that the effect ethnic population share has on marital status differs significantly before and after the implementation of OCP. The negative coefficients when OCP_{ic}=0 suggest that ethnic minority population share is negatively correlated with marital status of people who turned legal marriage age before the implementation of OCP. In other words, before the implementation of the OCP, they are less likely to be married in cities with higher ethnic minority population shares. After the implementation of the OCP, ethnic minority population share started

to have a different effect on people's marital status, which is reflected by the positive coefficient of the interaction term. Starting from the year 1979, in which the OCP came into effect, individual's chance of being married increases as the city level ethnic population level increases. However, it should be noticed that among the 9879 male individuals and the 6623 female individuals included in the regressions, there are only 82 ethnic minority men and 60 ethnic minority women. Due to the small portion of ethnic minority population, the effects estimated in this section are mainly the effects the OCP has on the marital status of Han population.

Chapter Six: Conclusion and Suggestions for Future Research

Part 1: Summary of Findings

Using 2007 CHIP Data and 2010 Chinese Population Census Data, this paper attempts to investigate how marital status of Han and ethnic minorities differ under the circumstance of OCP, a topic which has not been fully explored by previous research and literatures.

This paper finds that after the OCP has been implemented, ethnic identity started to play a more influential role in determining individual's marital status. High sex ratio, which resulted from the implementation of the OCP, has a larger effect on female population than male population, making Han women in general more popular in marriage market and decreasing ethnic minority women's chances of being married.

This research also finds that city level ethnic minority population share has a large impact on individual's marital status, especially since the implementation of the OCP. After the implementation of the OCP, Han Chinese are more likely to be married in cities where there are high ethnic minority population shares, while the large shares of ethnic minority population decrease ethnic minorities' advantages in the marriage market, making them less likely to be married in cities with high ethnic minority population shares.

Part 2: Policy Implications

Though ethnic minorities are exempted from the OCP and granted the right

to have more than one child, which adds the gains associated with the marriage, they actually do not seem to benefit from the OCP in terms of marriage market. According to the findings in this research paper, the unequal implementation of the OCP actually brings more advantages to Han Chinese, especially Han women, rather than ethnic minorities in the marriage market. The high sex ratio resulted from the OCP makes Han female, instead of ethnic minority females, more desirable in the marriage market, and even though living in cities with large ethnic minority, ethnic minorities are still not as competitive as Han Chinese.

It is foreseeable that the effect OCP has on marital status will grow more influential and profound as time goes by, and the marital prospect gap of between Han Chinese and ethnic minorities will gradually widen over time. Therefore, Chinese government should start consider the possible social consequences brought by the marital prospect gap, and think about making necessary adjustments to the OCP.

Part 3: Suggestions for Future Research

The first generation that was born under the OCP was born in the year 1980, a year after the OCP was implemented. Individual data used in this research comes from the 2007 CHIP Data. By the time the 2007 CHIP Survey was conducted, the first OCP generation was only 27 years old, and the following generations were even younger. Therefore, the 2007 Data may not fully reflect the effects the OCP has on marital status of the generations that were influenced the policy. Since the CHIP Survey is conducted every five years, future research can better estimate the effects

the OCP has on marital status by applying the 2012 CHIP Survey Data, which is not available to the public at this point.

In addition to the age limitation, 2007 CHIP Survey was conducted in cities in east part of China. Cities in west China, especially northwest China where large ethnic minority population concentrate, were not covered by the survey. This leads to the low number of observations of ethnic minority individuals in the data. If future research could conduct a more comprehensive survey which covers most of the provinces in China, the data would be more useful and accurate when analyzing the effects the OCP has on marital status.

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Appendix

Table 1 Empirical Result of Basic Regressions

Dependent Variables				
	(1)	(2)	(3)	(4)
	Male Han	Female Han	Male Ethnic	Female Ethnic
Independent Variables	Married	Married	Married	Married
	OLS	OLS	OLS	OLS
Age	0.0289***	0.0534***	0.0510**	0.0636
	(11.81)	(16.64)	(2.022)	(1.240)
Age^2	-0.000302***	-0.000628***	-0.000675*	-0.000847
	(-9.058)	(-13.54)	(-1.944)	(-1.247)
Income	0.030370***	0.042121***	0.061507	0.064814
	(3.821)	(3.685)	(1.517)	(1.454)
Education level	Yes	Yes	Yes	Yes
Employment status	Yes	Yes	Yes	Yes
Sex ratio	1.118***	0.982***	0.179	-0.207
	(21.53)	(17.27)	(0.183)	(-0.149)
Ethnic minority population share	0.00790***	0.0127***	-0.0153***	-0.00970**
	(3.508)	(4.516)	(-6.291)	(-2.640)
Constant	-1.748***	-2.050***	-0.548	0.377
	(-20.36)	(-24.49)	(-0.552)	(0.227)
Number of observations	9,796	6,563	82	60
R-squared	0.403	0.422	0.703	0.500

Note:

1. Robust t-statistics in parentheses. For OLS regressions, the values in the table represent the coefficients for each independent variable
2. ***Statistically significant at the 0.01 level; **statistically significant at the 0.05 level; *statistically significant at the 0.1 level
3. Education level and employment status variables are included in the regressions

Table 2 Empirical Result of Regressions with Interaction Terms on Sex Ratio and Ethnic Minority Population Share

Dependent Variables						
	(1)	(2)	(3)	(4)	(5)	(6)
	Male	Female	Male	Female	Male	Female
Independent Variables	Married	Married	Married	Married	Married	Married
	OLS	OSL	OSL	OSL	OSL	OSL
Age	0.0293***	0.0543***	0.0291***	0.0539***	0.0295***	0.0541***
	(11.95)	(16.83)	(11.96)	(16.76)	(12.07)	(16.72)
Age^2	-0.000307***	-0.000641***	-0.000304***	-0.000636***	-0.000310***	-0.000639***
	(-9.233)	(-13.75)	(-9.200)	(-13.70)	(-9.327)	(-13.67)
Income	0.030559***	0.042703***	0.0304395***	0.042216 ***	0.0306***	0.0425***
	(3.823)	(3.738)	(3.830)	(3.723)	(3.817)	(3.726)
Education level	Yes	Yes	Yes	Yes	Yes	Yes
Employment status	Yes	Yes	Yes	Yes	Yes	Yes
Sex ratio	0.853	-0.348	1.117***	0.977***	1.196***	0.981***
	(1.154)	(-0.452)	(21.53)	(17.22)	(19.72)	(13.63)
Ethnic minority population share	-0.00246*	0.00194	-0.0105***	-0.00618**	0.0236	-0.0126
	(-1.840)	(0.945)	(-7.157)	(-2.302)	(1.380)	(-0.510)
Ethnic identity dummy (Han)	-0.454	-1.516*	-0.293***	-0.231***	-	-
	(-0.582)	(-1.907)	(-5.325)	(-3.296)	-	-
Han * Sex ratio	0.310	1.372*	-	-	-	-
	(0.418)	(1.781)	-	-	-	-
Han * Ethnic minority population share	-	-	0.0184***	0.0190***	-	-
	-	-	(6.836)	(4.879)	-	-
Ethnic minority population share * Sex ratio	-	-	-	-	-0.0233	0.0159
	-	-	-	-	(-1.383)	(0.644)
Constant	-1.333*	-0.569	-1.456***	-1.806***	-1.827***	-2.040***
	(-1.711)	(-0.715)	(-14.24)	(-16.57)	(-19.95)	(-20.91)
Observations	9,878	6,623	9,878	6,623	9,879	6,623
R-squared	0.402	0.420	0.405	0.421	0.402	0.419

Note:

1. Robust t-statistics in parentheses. For OLS regressions, the values in the table represent the coefficients for each independent variable
2. ***Statistically significant at the 0.01 level; **statistically significant at the 0.05 level; *statistically significant at the 0.1 level
3. Education level and employment status variables are included in the regressions

Table 3 Empirical Result of Regressions with Interaction Term between OCP Dummy and Ethnic Minority Population Share

Dependent Variables	(1) Male	(2) Female
Independent Variables	Married OLS	Married OLS
Age	0.0297***	0.0557***
	(8.874)	(13.63)
Age^2	-0.000313***	-0.000664***
	(-6.343)	(-10.52)
Income	0.030526***	0.042543***
	(3.823)	(3.739)
Education level	Yes	Yes
Employment status	Yes	Yes
Sex ratio	1.154***	1.012***
	(22.14)	(17.81)
Ethnic minority population share	-0.00647**	-0.00606*
	(-2.420)	(-1.716)
OCP dummy	-0.0147	-0.0346
	(-0.649)	(-1.157)
OCP dummy * Ethnic minority population share	0.00679**	0.0107***
	(2.389)	(2.655)
Constant	-1.773***	-2.064***
	(-20.27)	(-24.48)
Number of observations	9,879	6,623
R-squared	0.402	0.419

Note:

1. Robust t-statistics in parentheses. For OLS regressions, the values in the table represent the coefficients for each independent variable.
2. ***Statistically significant at the 0.01 level; **statistically significant at the 0.05 level; *statistically significant at the 0.1 level.
3. Education level and employment status variables are included in the regressions.

Table 4 Variable Summary

Variable	Mean	Std. Dev.	Min	Max
age	36.92338	54.07383	15	55
income	1747.61	1972.156	0	100000
sex ratio	1.035518	0.0893156	0.79	1.62
ethnic population share (%)	1.805978	4.022801	0.01	43.16