

Better Hukou, Better Spouse?

Tradeoffs in Chinese Marriage Market

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Abstract

Researchers found that marriage sorting can affect long run inequality of a society. This paper uses the Hukou system in China to demonstrate how institutions affect marriage sorting and inequality. Hukou is a household registration system in China that constrains the free mobility between rural and urban areas. I found that in the Chinese marriage market, urban Hukou can compensate for personal disadvantages such as income and education. This paper directly calculates the compensation effect an urban Hukou has using a marriage matching model and data from 2010 Chinese Family Panel Studies. From the female's perspective, the marginal rate of substitution between a male's Hukou and his log income is around 4, but it is inconclusive from the male's perspective. My result suggests that Hukou system not only creates inequality by giving urban Hukou residents more privileged status but also increases long term inequality of the society through the marriage sorting channel. My paper also contributes to the ongoing debates over Hukou system reform.

JEL Classification: J12; C7; E63

Keywords: Marriage Market; Matching; China; Inequality

1 Introduction

Researchers found that marriage sorting can affect long run inequality of a society ([Fernandez and Rogerson, 2001](#)). For example, in an economy where rich men only marry rich women, the income inequality of the next generation will be much larger than the current generation. Marriage sorting is usually based on socioeconomic status like income and education, but it can also be affected by institutions. This paper uses the *Hukou* system in China to demonstrate how institutions create marriage sorting and affect long term inequality of the society.

A *Hukou* is a record in the system of household registration required by law in P.R.China. It divides Chinese citizens into two unequal tiers—the privileged urban and the underprivileged rural. Specifically, Hukou is a household record of an individual’s (1) registration classification (be it rural or urban), and (2) registration location, both of which are usually passed from one generation to the next. Registration classification refers to the ‘non-agricultural’ and ‘agricultural’ categories; registration location refers to where a person’s Hukou resides, which essentially records where he/she belongs.” ([Fan, 2002](#))

There is extensive discussion on the influence of Hukou system on China’s labor market ([Tao Yang and Zhou, 1999](#); [Knight et al., 1999](#); [Hertel and Zhai, 2006](#); [Meng and Zhang, 2001](#)). They found that Hukou impeded rural-urban migration, created “outsiders” in urban society, and contributed to labor market segmentation. However, little attention had been brought to the effect of Hukou on broader social phenomena such as marriage matching. There are at least the following two reasons that makes Chinese residents prefer marrying an urban Hukou individual. First, current policies give more privilege to urban Hukou residents which will indirectly benefit their spouses and the whole family. For example, there are different policy requirements in labor market opportunity, children’s schooling opportunity, pension and health insurance. Second, rural Hukou is a strong signal for rural family background which is discriminated against in current Chinese society. In China, *mianzi* (Chinese for face,

vanity) is highly valued and marital relationship is one of the most important relationships in social network. Since rural Hukou usually indicate peasant parents, uneducated relatives, and poor social network, it's considered to be bad to be connected to a rural family. Thus Hukou can be considered as a combination of access to urban social services (potential economic benefit) and ascriptive characteristics, both are valued in the marriage market.

Xing and Nie (2010) used a policy change in 1998 to show that with the removal of the requirement that a child's Hukou needs to be the same as his/her mother's, the possibility of a rural women marrying to a urban men significantly increased. This proves that Hukou system interfered marriage market and impeded free migration. Besides affecting actual mobility, Hukou system can also have an effect on social mobility through marriage sorting. Fernandez and Rogerson (2001) showed that positive marriage sorting is positively correlated with long run inequality, then if Hukou system affects marriage sorting, it can also affect long term inequality of the society.

In this paper, I want to first check whether Hukou plays a role in the marriage sorting process. If so, I want to further measuring the effect directly, i.e. how important is Hukou compared to other characteristics people care about in the marriage market, e.g. income and education level. In another word, how much can an urban Hukou compensate for a disadvantage in socioeconomic attributes. If urban Hukou indeed has a big compensation effect, people are more discouraged to marry rural Hukou person, which will create more urban-urban marriage and increase positive assortative mating level. Thus this paper contributes not only to the understanding of Chinese marriage market, but also the literature of marriage and long run inequality.

I'm going to focus on the marriage market in Chinese cities, because currently rural-rural marriage consists 97.58% of households living in rural area so there is not enough variation in marriage types. I'm also going to focus on the newly married couples, which I define to be married within the last 3 years. This is because characteristics can change over time which makes current situation very different from when the couple made their marriage decision.

In China’s case, it’s especially important since individuals can change Hukou status to their spouse’s type which can not be observed in the dataset I’m using. However, paperwork usually takes a long time and 3 year can be considered as a safe estimation.

The rest of the paper is organized as follows: Second 2 introduces the institutional background of Hukou system. Section 3 presents the data and Section 4 illustrates the model. Section 5 specifies the econometric assumptions and gives empirical results. Section 6 concludes.

2 Institutional Background

The concept of Hukou existed in ancient China, but the detailed forms varied from dynasty to dynasty (Wang, 2004). In the framework of P.R.China, Hukou system was officially implemented in 1958.¹ The policy documents released in 1958 and the next few years formed the principle that the movement of population should be strictly controlled, especially from rural area to urban area.²

There are two theories for the origin of the Hukou system in P.R.China. Some scholars, such as Wu (1994) and Zhao (2005), believe that at the time of its introduction, Hukou system wasn’t intended to control the mobility of the people, but only gradually tightened because of food shortage following the Great Leap Forward. Other people, including Lin et al. (2003) and Fan (2001), argue that Hukou system was created because the government want to anchor the peasants to the countryside in order to use “scissors gap”—setting the prices of agricultural goods low and the prices of industrial goods high—to accomplish industrialization cheap.

¹In this paper, if not otherwise specified, “Hukou” only refers to Hukou system in P.R.China.

²The legislation that passed in 1958 is called “Hukou Registration Regulations of People’s Republic of China”, rule No.10 of which states specific requirements for movement from rural areas to urban areas but it is extremely hard to meet for most rural people. Other related documents include “Notification on Specific Implementation of Hukou Registration Provisions”(1958), “Preliminary Notification on the Implementation of Hukou Registration” (1958) and “Suggestions on the enforcement of Hukou Administration” (1962), all released by the Police Department.

Using Hukou, Chinese government allocated housing and jobs, and rationed food and other necessities. People who worked outside their authorized domain or geographical area would bear the consequences of fines and refusal of social services. In this way, migration became a part of planning system and both rural and urban residents were deprived of their freedom of mobility. Despite the strict regulation, the incentives for Chinese rural residents to migrate remain high. On one hand, the presence of a large rural-urban wage gap created a *pull* factor, on the other hand, the prevalent rural labor surplus created a *push* factor. The result is a massive amount of “floating workers” in the cities—people with rural hukou who stay in the city but can’t enjoy the welfare that is provided to urban Hukou residents.³ [Fan and Qie \(2002\)](#) estimated the number of “floating workers” in the city in 2001 to be roughly 19% of its total labor force, but the exact number is open to dispute.

Starting from 1992, the country began to seek Hukou reform, and Hukou trading became very popular. One can buy a “blue print urban Hukou” with minimal requirements. Some other ways to change one’s Hukou include employment transfer, transfer to spouse’s residence/type, transfer to parent’s residence/type, and transfer to child’s residence/type. ([Yin and Yu \(1996\)](#)) The eligibility requirements vary from city to city, based on the popularity of the destination. For example, currently in Beijing, transferring to spouse’s Hukou type requires a minimum of 5 year marriage length; For Shenzhen, it’s 3 years; For most small cities, there is no requirement for marriage length.

Reforms had be taken place continuously in the past decade, although slowly. In 2007, pilot sites were set in 12 provinces to eliminate the distinction between rural and urban Hukou, calling them residence Hukou only. For cities still have rural-urban Hukou separation, the restriction on population flow are getting less strict. According to the Police Department, there are 25 million people who switched from “rural” to “urban” between 2010 and 2012, which is 2.2 times more than the switch between 2007 and 2009. Just one month ago, at the 18th China Communist Party Central Committee conference, the most important CCP

³One can think those floating workers in the cities as an analog of illegal immigrants in the US.

conference which was held once every five years, the party leaders announced the launch of a new reform on Hukou system.

3 Data

The data I'm going to use is 2010 Chinese Family Panel Studies (CFPS). It's designed and conducted by the Institute of Social Science Survey, Peking University, China. The pilot survey was done in 2008 and 2009, and the most updated 2010 data is its first nationwide survey which includes 14,960 sample households in 25 provinces in China. The summary statistics for adult population is provided in Table 3.1.

Table 3.1: Summary Statistics for Adult Population

| | Male | Female | Urban Hukou | Rural Hukou | Urban Region | Rural Region | Total |
|--------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| Age (year) | 45.83 (16.46) | 45.22 (16.35) | 46.6 (16.54) | 45.06 (16.31) | 45.63 (16.44) | 45.41 (16.38) | 45.51 (16.41) |
| Education (year) | 7.52 (4.75) | 5.95 (5.17) | 9.88 (4.69) | 5.4 (4.56) | 8.02 (4.93) | 4.78 (4.49) | 6.71 (5.03) |
| Income (RMB) | 12932 (23333) | 5717 (11889) | 15667 (25312) | 6576 (14371) | 13349 (23193) | 5657 (12666) | 9211 (18696) |
| Marriage rate (%) | 79.03 | 80.08 | 78.31 | 80.12 | 86.58 | 86.99 | 79.87 |
| Hukou urban-rural ratio | 0.4404 | 0.3911 | | | 1.2597 | 0.0691 | 0.4146 |
| Region urban-rural ratio | 0.8452 | 0.8840 | 7.4561 | 0.4088 | | | 0.4146 |
| male-female ratio | | | 1.0231 | 0.9087 | 0.9183 | 0.9604 | 0.9406 |
| Observation | 16286 | 17314 | 9826 | 23702 | 15584 | 18016 | 33600 |

Standard deviation in parentheses.

The significant pattern in this table is that the wealthier and more educated groups are males, people living in the city, and people with urban Hukou, while the poorer and less educated groups are females, people living in the countryside, and people with rural Hukou. This is consistent with the literature on inequality in China and shows the inequality between rural and urban residents, defined by both geography and Hukou status.

Table 3.2 gives the characteristics of newly married couples (i.e. couples married between 2007 and 2010) living in the city, which is the sample I'm studying in this paper. I separate families into four categories using different Hukou types: urban male marrying urban female, urban male marrying rural female, rural male marrying urban female, and rural male marrying rural female. Respectively, they consist 39.49%, 11.68%, 7.86%, and 40.98% of the population. We can see that there are more within type marriage (i.e. urban-urban marriage and rural-rural marriage) than mixed type marriage. The correlation between the couple's education level are more than 0.6 and significant. Those are all evidences of positive assortative mating, which is consistent with the marriage matching literature. The correlation between the couple's income level is close to 0 and insignificant for rural wives. This is very likely to be caused by the endogenous employment choice of women. Some women stop working after getting married and this is more likely to happen for rural women since their potential income is significant less than their urban husband. Thus, later in the empirical analysis, I'll use education level of females, instead of income, as the proxy for socioeconomic attribute.

Table 3.2: Characteristics for newly married couple in the city

| | Urban(M) Urban(F) | Urban(M) Rural(F) | Rural(M) Urban(F) | Rural(M) Rural(F) |
|-------------|----------------------|----------------------|----------------------|----------------------|
| Percentage | 39.49% | 11.68% | 7.86% | 40.98% |
| Corr edu | 0.8099*** | 0.7005*** | 0.6519*** | 0.6260*** |
| Corr income | 0.497*** | 0.1415 | 0.6448*** | 0.0438 |

Urban (M) Rural (F) represents a urban hukou male married a rural hukou female. Similar for the other combinations.

Some preliminary evidence of the compensation effect of urban Hukou is given in Table 3.3. Here I calculate the average education level and income level of different types of people given their spouse's type. We can see that, for example, the average education level of a rural male who married an urban female is 9.27, which is 2.21 year more than his counterpart who married a rural female, and the difference between them is significant. This shows that urban

girls are matched with the “better” men, while rural girls are matched with the less educated men. One might argue that this is because urban females are more educated themselves so it can just be a positive assortative matching rather than a compensation effect of urban Hukou. Thus in the next section, I’ll formalize a model and show that even after controlling for education level (or income level), the compensation effect of urban Hukou is still significant.

Table 3.3: Difference in Characteristics for newly married couple

| | With urban spouse | With rural spouse | Difference | p-value |
|--|-------------------|-------------------|------------|---------|
| <i>Panel A: Education level</i> | | | | |
| Urban male | 11.13 | 10.76 | 0.37 | 0.2598 |
| Rural male | 9.27 | 7.06 | 2.21 | 0.0066 |
| Urban female | 11.06 | 10.14 | 0.92 | 0.1591 |
| Rural female | 9.53 | 6.34 | 3.19 | 0.0000 |
| <i>Panel B: Income level</i> | | | | |
| Urban male | 34205.7 | 26100 | 8105.7 | 0.1099 |
| Rural male | 28195.9 | 16797.1 | 11398.8 | 0.0255 |
| Urban female | 17869.9 | 16554.3 | 1315.6 | 0.3729 |
| Rural female | 10989.3 | 7942.9 | 3046.4 | 0.1346 |

4 Model

The model I present here is following [Chiappori et al. \(2012\)](#), which calculated the tradeoffs between socioeconomic characteristics, such as income and education, and anthropometric characteristics, such as BMI.

Let’s consider a finite population of men and women of size N_m and N_w . Each potential wife can be characterized by a vector $X_j = (X_j^1, X_j^2, \dots, X_j^L)$ of observable characteristics, and some unobservable characteristic ϵ_j . ϵ are randomly drawn from a continuous and atomless distribution. Let χ denotes the space of female characteristics and χ_C denotes the space of observable female characteristics, i.e. $(X, \epsilon) \in \chi$ and $X \in \chi_C$. For people choose not to

marry, define the augmented spaces $\chi^A = \chi \cup \{\emptyset_X\}$. Similar assumptions are given to men (Characteristics are described by $Y_i = (Y_i^1, Y_i^2, \dots, Y_i^K)$ and η_i . $(Y, \eta) \in \Gamma$, $\Gamma^A = \Gamma \cup \{\emptyset_\Gamma\}$).

In order to illustrate more clearly, I chose a specific matching mechanism—matching with non-transferable utility, but [Chiappori et al. \(2012\)](#) shows that the model can be generalized to other mechanisms including matching with transferable utility and search model.

Gain from marriage is defined as follows: If Ms. j married to Mr. i , her utility is $W_{ij} = \Psi(Y_i, \eta_i, X_j, \epsilon_j)$ and his is $M_{ij} = \Phi(Y_i, \eta_i, X_j, \epsilon_j)$. For those who remain single, their utilities are $W_{0j} = \Psi_0(X_j, \epsilon_j)$ and $M_{i0} = \Phi_0(Y_i, \eta_i)$. With finite population, there exists at least one stable matching ([Chiappori and Reny \(2006\)](#)), which is described as a mapping \mathcal{F} from χ^A to Γ^A . Define mapping \mathcal{H} from χ_C^A to Γ_C^A to be stable-compatible for the draw (ϵ, η) if $(Y_i = \mathcal{H}(X_j), \eta_i) = \mathcal{F}(X_j, \epsilon_j)$ for all i, j at the stable matching. We say \mathcal{H} is stable-compatible if there exists at least one such draw.

There are two crucial assumptions: Assumption S (Separability) and Assumption CI (Conditional Independence).

Assumption S *The functions $\Psi, \Psi_0, \Phi, \Phi_0$ are weakly separable in the observable characteristics $X = (X^1, X^2, \dots, X^L)$ and $Y = (Y^1, Y^2, \dots, Y^K)$. i.e. there exist two index functions $J = J(X^1, X^2, \dots, X^L)$ and $I = I(Y^1, Y^2, \dots, Y^K)$ s.t.*

$$\Psi(Y_i, \eta_i, X_j, \epsilon_j) = \tilde{\Psi}(I(Y_i^1, Y_i^2, \dots, Y_i^K), \eta_i, J(X_j^1, X_j^2, \dots, X_j^L), \epsilon_j) \quad (4.1)$$

$$\Phi(Y_i, \eta_i, X_j, \epsilon_j) = \tilde{\Phi}(I(Y_i^1, Y_i^2, \dots, Y_i^K), \eta_i, J(X_j^1, X_j^2, \dots, X_j^L), \epsilon_j) \quad (4.2)$$

$$\Psi_0(X_j, \epsilon_j) = \tilde{\Psi}_0(J(X_j^1, X_j^2, \dots, X_j^L), \epsilon_j) \quad (4.3)$$

$$\Phi_0(Y_i, \eta_i) = \tilde{\Phi}_0(I(Y_i^1, Y_i^2, \dots, Y_i^K), \eta_i) \quad (4.4)$$

Assumption CI *Conditional on the index $J = J(X^1, X^2, \dots, X^L)$, the distribution of ϵ is atomless and independent of (X^1, X^2, \dots, X^L) . Similar for Y and η .*

Assumption S implies that there exist two indices (one for men, one for women), and

the impact of a spouse's observable characteristics on the couples welfare is fully summarized by the corresponding index. It is a very strong assumption, which requires everyone in the society to evaluate characters in the same way. There are concerns that this might not be a reasonable assumption here, since rural residents might value having an urban spouse more than urban residents since they can change their original Hukou to urban after several years of marriage. However, on the other hand, an urban Hukou resident should value marrying a person with urban Hukou more because he/she doesn't want to be connect to a rural family. So I think it's not unreasonable to consider, that overall urban and rural Hukou residents value urban Hukou spouses at a similar degree. *Assumption CI* implies that for two women with the same index, they are equally likely to draw any specific vector of unobservables. These two assumptions together give us the proposition below:

Proposition⁴ *Assume that Assumptions CI and S are satisfied. Take any two vectors $X_j = (X_j^1, X_j^2, \dots, X_j^L)$ and $X_{j'} = (X_{j'}^1, X_{j'}^2, \dots, X_{j'}^L)$ of female observable characteristics, such that $J(X_j) = J(X_{j'})$. Then for any vector Y_i of male observable characteristics, the probability that X_j is matched with Y_i at a stable matching is equal to the probability that $X_{j'}$ is matched with Y_i at a stable matching. Similar statement for Y_i and $Y_{i'}$.*

This implies that the distributions of wives for two men with the same index are identical. We can also say that the distribution of i 's wives only depends on the index $I(Y_i^1, Y_i^2, \dots, Y_i^K)$, thus any of its moments of this distribution also only depend on the index I . Then we can write the expected value of the s th characteristic of the wife, conditional on the vector of characteristics of the husband, as:

$$E[X^s | Y_i^1, Y_i^2, \dots, Y_i^K] = \phi_s[I(Y_i^1, Y_i^2, \dots, Y_i^K)] \quad (4.5)$$

Assuming I to be differentiable, the marginal rate of substitution between characteristics r

⁴This is the same as Proposition 1 in [Chiappori et al. \(2012\)](#).

and t for male i can be defined as:

$$MRS_i^{r,t} = \frac{\partial I / \partial Y_i^t}{\partial I / \partial Y_i^r} = \frac{\partial \phi_s^{-1}[E(X^s|Y_i)] / \partial Y_i^t}{\partial \phi_s^{-1}[E(X^s|Y_i)] / \partial Y_i^r} = \frac{\partial E(X^s|Y_i) / \partial Y_i^t}{\partial E(X^s|Y_i) / \partial Y_i^r} \quad (4.6)$$

Similarly, we have the marginal rate of substitution between characteristics r and t for female j to be:

$$MRS_j^{r,t} = \frac{\partial E(Y^s|X_j) / \partial X_j^t}{\partial E(Y^s|X_j) / \partial X_j^r} \quad (4.7)$$

In my paper, I want to measure the MRS between Hukou and socioeconomic attributes. Let Y^t denote the Hukou of husband, which is a binary variable with 1 indicating urban, and let Y^r denote the log income of husband. If Y^t is a binary variable, the above formula doesn't apply any more. As a solution, I write the numerator as the difference of $E(X^s)$ evaluated at $Y^t = 1$ and $Y^t = 0$, and the denominator as a weighted average of the derivative:

$$\begin{aligned} MRS_i^{r,t} &= \frac{E(X^s|Y_i^t = 1) - E(X^s|Y_i^t = 0)}{\frac{\partial E(X^s|Y_i)}{\partial Y_i^r} |_{weighted}} \\ &= \frac{E(X^s|Y_i^t = 1) - E(X^s|Y_i^t = 0)}{prob(Y_i^t = 1) \left(\frac{\partial E(X^s|Y_i)}{\partial Y_i^r} |_{Y_i^t=1} \right) + prob(Y_i^t = 0) \left(\frac{\partial E(X^s|Y_i)}{\partial Y_i^r} |_{Y_i^t=0} \right)} \end{aligned} \quad (4.8)$$

The right-hand side can be generate from the data, which I'll show in the next section. Notice that the ratio remains unchanged when varying s , so I have an over-identification problem, which requires checking consistency.

5 Empirical Results

In this section, I'm going to measure the marginal rate of substitution (MRS) between Hukou and socioeconomic attributes using CFPS 2010 data. For the proxy of socioeconomic attributes, I use log of income for husband and education level for wife because of women's

endogenous employment choice.

Given the formula in the last section, a natural approach is non-parametric estimation. Alternatively, in a parametric spirit, one can also use some linear assumptions and simultaneously estimate the MRS. I'll take the latter approach for now.

Assume I and J are linear (similar to [Hitsch et al. \(2010\)](#)):

$$I(Y_i^1, Y_i^2, \dots, Y_i^K) = \sum_k f_k Y_i^k \quad (5.1)$$

$$J(X_j^1, X_j^2, \dots, X_j^L) = \sum_l g_l X_j^l \quad (5.2)$$

Assume moreover that ϕ_s and φ_s are linear as

$$\begin{aligned} E[X_j^s | Y_i^1, Y_i^2, \dots, Y_i^K] &= \phi_s[I(Y_i^1, Y_i^2, \dots, Y_i^K)] \\ &= b^s I(Y_i^1, Y_i^2, \dots, Y_i^K) \\ &= b^s \sum_k f_k Y_i^k \end{aligned} \quad (5.3)$$

$$\begin{aligned} E[Y_i^s | X_j^1, X_j^2, \dots, X_j^L] &= \varphi_s[J(X_j^1, X_j^2, \dots, X_j^L)] \\ &= a^s J(X_j^1, X_j^2, \dots, X_j^L) \\ &= a^s \sum_l g_l X_j^l \end{aligned} \quad (5.4)$$

Then we have:

$$MRS_i^{r,t} = \frac{E(X^s | Y_i^t = 1) - E(X^s | Y_i^t = 0)}{\frac{\partial E(X^s | Y_i)}{\partial Y_i^r} |_{weighted}} = \frac{f_t}{f_r} \quad (5.5)$$

$$MRS_j^{r,t} = \frac{E(Y^s | X_j^t = 1) - E(Y^s | X_j^t = 0)}{\frac{\partial E(Y^s | X_j)}{\partial X_j^r} |_{weighted}} = \frac{g_t}{g_r} \quad (5.6)$$

If regressing the k th male attribute on the wife's characteristics for sample of married

couples, it'll take the form of:

$$Y_i^k = \sum_l \gamma_l^k X_j^l + \alpha_i^k \quad (5.7)$$

Here $\alpha_i^k = Y_i^k - E[Y^k | X_j^1, X_j^2, \dots, X_j^K]$, which can be correlated across k . So we can characterize marriage by running Seemingly-Unrelated-Regression (SUR) for married couples.

Notice that theory predicts that $\frac{\gamma_t^k}{\gamma_r^k} = \frac{\gamma_t^s}{\gamma_r^s} = \frac{g_t}{g_r}$ for all (k, s, t, r) . In order to address this problem, I'm going to run regressions of one's characteristics on spouse's Hukou and socioeconomic attribute, then check whether MRS is constant across equations. The regressions are as follows (i for male and j for female):

$$Hukou_i = \beta_0^1 + \beta_1^1 Hukou_j + \beta_2^1 Edu_j + \beta_3^1 Control_j + u_i^1 \quad (5.8)$$

$$Log(income)_i = \beta_0^2 + \beta_1^2 Hukou_j + \beta_2^2 Edu_j + \beta_3^2 Control_j + u_i^2 \quad (5.9)$$

$$Hukou_j = \alpha_0^1 + \alpha_1^1 Hukou_i + \alpha_2^1 log(income)_i + \beta_3^1 Control_i + v_j^1 \quad (5.10)$$

$$Edu_j = \alpha_0^2 + \alpha_1^2 Hukou_i + \alpha_2^2 log(income)_i + \beta_3^2 Control_i + v_j^2 \quad (5.11)$$

I separate control variables into two groups: Standard controls and extra controls. Standard controls include age, province fixed effect, and occupation fixed effect⁵; Extra controls include own parents' education levels, and own ethnic group.

In order to check that MRS is constant when estimated using different spousal characteristics. I use a non-linear t-test on the following hypotheses:

1. $\frac{\beta_1^1}{\beta_2^1} = \frac{\beta_1^2}{\beta_2^2}$ and $\frac{\alpha_1^1}{\alpha_2^1} = \frac{\alpha_1^2}{\alpha_2^2}$ (within column)
2. $\beta_1^1 * \beta_2^2 = \beta_2^1 * \beta_1^2$ and $\alpha_1^1 * \alpha_2^2 = \alpha_2^1 * \alpha_1^2$ (across column)

The regression results and testing results are summarized in Table 5.1 and Table 5.2.

⁵I use Erikson and Goldthorpe's Class Categories (EGP) which groups all the occupations into 10 categories: Higher controllers, Lower controllers, Routine nonmanual, Self-employed with employees, Self-employed without employees, Manual supervisor, Skilled manual, Semi-unskilled manual, Agricultural laborers and Self-employed agricultural workers. For details, refer to [Erikson and Goldthorpe \(2002\)](#).

Table 5.1 shows the tradeoffs for a Chinese female when she faces potential husbands. She would prefer a guy with urban Hukou and with higher income, and the MRS between Hukou and log income is around 4. This means that if everything else are equal, in order for a rural Hukou man to win over an urban Hukou man with an average income (32,222 Chinese yuan in my sample), he needs to have an annual income of 1,202,604 Chinese yuan. This result shows the high compensation effect of an urban Hukou, and also explains the low marriage rate between rural Hukou and urban Hukou population. However, the ratio seems to be too big that such high income person can't be observed in this sample. The existence of a rural Hukou person with 1,202,604 yuan annual income is rare even considering the whole population. One explanation for this is that the ratio is estimated when holding other things equal between the two groups of people, while in reality rural Hukou male can compensate his disadvantage in Hukou using other characters that might not be included in my estimation, including being more considerate, taking more responsibility in housework etc.

Table 5.2 shows the tradeoffs for a Chinese male when he faces potential wives, but half of the coefficients are insignificant. This might be because I didn't include in my regression some unobservable characteristics that valued greatly in the marriage market for wives, such as beauty. It is well established that, in partner choice, men value traits that are associated with female fecundity while women value financial security (Edlund, 2005; Buss, 1994). It might also be because of the simplified linear estimation. To solve this problem, I can either add more terms to the current estimation equation to make it more realistic, or I can choose the nonparametric approach.

6 Conclusion and Discussion

In this paper, I confirmed the effect of Hukou on marriage market in Chinese cities, and directly calculated the compensation effect an urban Hukou has using Chinese Family Panel Studies 2010 data. From the female's perspective, the marginal rate of substitution between

Table 5.1: SUR regression of wife's characteristics on husband's characteristics

| | (1a) | (1b) | (2a) | (2b) |
|---------------------|----------------------|---------------------|----------------------|--------------------|
| | Wife Hukou | Wife Edu | Wife Hukou | Wife Edu |
| Husband hukou | 0.463*** (0.0550) | 2.023*** (0.465) | 0.396*** (0.0703) | 1.400** (0.569) |
| Husband log(income) | 0.0593** (0.0291) | 0.454* (0.246) | 0.0696* (0.0386) | 0.395* (0.313) |
| Extra Controls | No | No | Yes | Yes |
| Observations | 307 | 307 | 201 | 201 |
| R-squared | 0.476 | 0.578 | 0.494 | 0.457 |
| <i>Wald Test:</i> | | | | |
| Within columns: | 7.847 | 4.456 | 5.739 | 3.544 |
| p-value | | 0.3753 | | 0.5178 |
| Across columns: | 0.210 | 0.119 | 0.156 | 0.097 |
| p-value | | 0.4067 | | 0.6053 |

Table 5.2: SUR regression of husband's characteristics on wife's characteristics

| | (1a) | (1b) | (2a) | (2b) |
|-------------------|----------------------|-----------------------|---------------------|----------------------|
| | Husband Hukou | Husband Log(income) | Husband Hukou | Husband Log(income) |
| Wife Hukou | 0.489*** (0.0699) | 0.137 (0.136) | 0.474*** (0.125) | 0.0354 (0.241) |
| Wife Edu | 0.00257 (0.00965) | 0.0879*** (0.0189) | 0.0101 (0.0173) | 0.0738** (0.0322) |
| Extra Controls | No | No | Yes | Yes |
| Observations | 211 | 208 | 121 | 120 |
| R-squared | 0.541 | 0.518 | 0.558 | 0.581 |
| <i>Wald Test:</i> | | | | |
| Within columns: | 244.500 | 1.575 | 47.400 | 0.479 |
| p-value | | 0.7949 | | 0.566 |
| Across columns: | 0.043 | 0.000 | 0.035 | 0.000 |
| p-value | | 0.0004 | | 0.0635 |

a male's Hukou and his log income is around 4, while it's inconclusive from the male's perspective. Part of this compensation effect is created because of the underprivileged policy given to rural Hukou which deprives them the right to get full access to public goods and social services, including education, pension and health insurance. In this way, Hukou system encourages urban-urban marriage, which increases the level of positive assortative mating. Since positive marriage sorting is associated with long run inequality ([Fernandez and Rogerson, 2001](#)), Hukou system not only creates inequality by giving urban Hukou residents more privileged policy, but also increases long term inequality of society.

This paper contributes to the literature in the following two aspects. First, as an application contribution, it confirms the importance of Hukou on the marriage market in China, which expands the scope of sorting criteria, and it adds to the literature of marital sorting and long run inequality. The different results from the male perspective and the female perspective also shed light on the inequality of gender status in the marriage market. Second, as a theory contribution, it expands the [Chiappori et al. \(2012\)](#) model that works with continuous data to one with mixed data—both categorical data and continuous data.

This paper also fits into the on-going discussion about Hukou reform. At the 18th China Communist Party Central Committee conference which was held in November 2013, the party leaders decided to deepened Hukou reform which aims at eliminating the policy difference between urban and rural residents. My next step is to add the new waves of CFPS data to test whether Hukou reform truly made a difference and was internalized in the marriage market.

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