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Differential Treatment in the Chinese Labor Market. Is *Hukou* Type the Only Problem?[†]

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Abstract

Differential treatment towards minority groups in labor markets may be both a result of a governmental registration system that foster unequal rights based on the origins of individuals, and a result of a disadvantageous attitude of both local employers and the general population towards non-locals. We test for differential treatment in the Chinese labor market towards rural migrants with and without urban registration, using data from the Rural to Urban Migration Survey in China. The findings indicate that despite its often-assumed large impact on the differential treatment towards rural migrants, the type of household registration (*hukou*) is not entirely responsible for the local-migrant differences in total hourly incomes which are not attributable to personal characteristics. The results suggest that even the complete abolishment of the *hukou* system may at most eliminate only a portion of the disadvantageous treatment towards rural female migrants which is not attributable to differences in personal characteristics, and may even have no measurable impact on rural male migrants working in the paid-employment sector in Chinese urban labor markets.

Keywords: rural migrants, *hukou* registration, *hukou* conversion, unexplainable treatment, total hourly compensation.

JEL Classification: J71, J78, O15, R23

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Introduction and Literature Review

Differential treatment faced by minority groups in labor markets is one of the most important issues in labor economics, with immigrant groups (both internal and external) at destinations in the labor markets being one of the minorities most studied by empirical researchers (Vink, Prokic-Breuer and Dronkers, 2013; Meng and Zhang, 2001). The importance of such research is in its potential application to citizenship and naturalization policy evaluations, one of the hottest topics in the era of Globalization.

In China, differential treatment of minorities became very important after 1978 when economic reforms were launched and internal migration, which used to be strictly prohibited, was allowed. According to the National Bureau of Statistics of China, the total number of rural-urban migrant workers reached around 200 million in 2008 and this number continues to grow. However, despite the reforms of the *hukou* (household or residential regulation) system in the 1980s and 1990s, migrant workers from rural areas in China are still having difficulty in acquiring local urban *hukou* registration and are very often treated disadvantageously in urban labor markets by employers and governmental policies (Lu and Song, 2006).

Several studies have investigated the segmentation of the Chinese urban labor market based on the type of *hukou* registration, gender, occupational differences, type of business ownership, and income quintiles in the aggregate population (Meng and Zhang, 2001; Lee, 2012; Zhang and Wu, 2012). In accordance with the related international literature, the findings of most empirical studies suggest that the Chinese labor market is also segregated based on the gender and race of workers (Magnani and Zhu, 2012). Moreover, applying standard wage decomposition techniques and slightly adjusted versions of Mincer's (1958) wage equation on various data samples from China, most empirical studies in the field have also shown the existence of differential treatment towards rural *hukou* holders in urban labor markets (Song, 2013; Lee, 2012; Meng and Zhang, 2001; Zhang and Wu, 2012). However, the magnitude of such differential treatment varied highly based on the chosen outcome variables, data sources, and market sectors. For example, using data from the population mini-census of China in 2005 and employing hourly income as the outcome variable, Zhang and Wu (2012) showed that around 20% of earnings disadvantages of rural

hukou holders are attributable to occupational segregation. On the other hand, using data from five large cities in China, Lee (2012) found that when adding bonuses and insurance contributions to the outcome variables, the difference in earnings unexplained by personal characteristics increases from 10% to 28%. Both of these empirical studies as well as most of the other related empirical literature, suggested the abolishment of the *hukou* system as a solution for elimination of differential treatment. However, there is still a gap in the literature that needs to be filled in order to evaluate the actual impact of registration policies on labor market integration of rural migrants in urban China.

In particular, it has not yet been empirically tested whether the differential treatment towards rural-urban migrants in the urban labor markets is limited only to that imposed by governmental policies based on the type of *hukou* registration, or if this kind of treatment would still exist even after abolishment of the *hukou* system. According to the results of a survey conducted by the Chinese Academy of Social Science, nearly one third of Shanghai's population show personal intolerance against migrants in that they would not like to live next door to a migrant (The Economist, 2014). Such evidence may suggest that differential treatment towards rural-urban migrants in China is not entirely the result of the *hukou* registration system.

However, there are very few empirical studies of differential treatment that consider more than two possibilities of *hukou* holders. For example, Cheng, Guo, Hugo and Yuan (2013) compared employment attainments and wage differentials between rural migrants, urban migrants and urban locals, and concluded that compared to urban locals, rural migrants suffer both employment and wage discrimination, whereas urban migrants suffer only wage discrimination. A similar study was conducted by Gagnon, Xenogiani and Xing (2014), and the authors also concluded that both rural migrants and urban migrants are treated disadvantageously compared to urban locals, but this result was significant only outside of the formal labor market. Both these findings contribute to the idea that the type of registration, even though it is important, does not guarantee elimination of disadvantageous treatment not-attributable to differences in personal characteristics. However, the results of these papers regarding the impact of the type of registration may not be very robust, since, despite the fact that urban migrants are urban *hukou* holders, they are still different from urban natives and *hukou* converters by the place of their registration

(local vs. non-local), which also imposes some governmental restrictions and policy-based differential treatment (Song, 2014).

Qiheng and Gustafsson (2014) conducted perhaps the first empirical study of the characteristics that influence *hukou* conversion, and analyzed the economic well-being of the *hukou* converters by comparing them to those left behind in rural areas, and migrants who have kept their rural *hukou*. The authors concluded that there is a large incentive for the *hukou* conversion due to the high share of the differences in their incomes not related to their productivity. However, the authors did not conduct decomposition analyses to compare the urban locals to the *hukou* converters. The main difference between our study and the past literature is that we test for the existence of differential treatment towards those rural migrants that converted their *hukou* type to local-urban, and through that fully eliminated the disadvantageous treatment caused by governmental policies. We also compare the magnitude of this treatment to the one imposed on other rural migrants, thus obtaining an estimate of the pure “value” of residential registration.

In respect of general migration theory, the possible implications of the results of this study may go beyond China. To our knowledge, this paper presents one of the first attempts at differentiation between the negative attitude towards migrants imposed by governmental policies through the residential registration systems, and the personal negative attitude of the local employers and the local population. During recent decades, the question of immigrant naturalization has become very popular in migration and labor market literature (Vink, Prokic-Breuer and Dronkers, 2013; Steinhardt, 2012). However, because of the difficulties associated with the acquisition of data regarding the non-registered migrants, estimates of the premiums from naturalization may very often be biased. This problem may be solved with the use of Chinese datasets and *hukou* registration system, which is similar to the citizenship registration systems in many European and western countries.

The *Hukou* System

With the creation of a formal *hukou* system in China in 1958, the whole population was segmented into either rural or urban *hukou* holders, and there was a strict physical

separation between the two groups. However, after the economic reforms of the 1980's and 1990's, the physical separation was eliminated and people were free to move between areas and change the category of their *hukou* (Song, 2014). Nevertheless, rural *hukou* holders in urban areas still have difficulties in attaining urban *hukou* and are very often unfairly treated by employers and governmental policies in urban labor markets (Meng and Zhang, 2001).

According to Song (2014), based on the type of *hukou* registration in urban areas in China, all workers may be segmented into three major groups: those with permanent urban *hukou* registration; those with permanent rural *hukou* registration; and those who changed their *hukou* registration type. The latter can be further divided into those who changed their registration from urban to rural or rural to urban. However, despite the theoretical possibility of the former, it is very seldom observed in practice because of the many advantages granted to urban *hukou* holders in the cities. Moreover, the segmentation also continues based on the place of registration (local vs. non-local) meaning that a local urban *hukou* holder in one city may also face some governmental restrictions in the labor market of another city (Song, 2014).

Local urban *hukou* holders in Chinese cities are granted advantageous social benefits by the city governments compared to rural or non-local *hukou* holders. These social benefits may, in general, be summarized as differences in access to certain labor positions, education, public retirement benefits, and medical and unemployment insurance (Démurger and Xu, 2013). However, these benefits are frequently changed and they vary from city to city, which makes it impossible to obtain a country representative measure of the differences in benefits.

The advantageous treatment towards the local urban *hukou* holders tempts rural migrants to convert the type of their *hukou* from rural to local urban. However, despite the numerous refinements in the household registration system in China, there are still very low possibilities for rural migrants to obtain urban *hukou*. Quheng and Gustafsson (2014) summarize the three general routes of urban *hukou* attainment for rural migrants, which, however, are not fully sufficient for the *hukou* conversion and do not guarantee attainment of an urban *hukou*. These routes are: 1) Career routes through education, promotion, or joining the People's Liberation Army or the Chinese Communist Party; 2) the so called

“collective conversion”, which appears in cases when the agricultural land that belongs to individuals converts to urban use; 3) through joining the family of a local urban *hukou* holder, which is mostly applicable for women through marriage (Wong and Wai-Po, 1998). A few more recent routes that are effective in several cities are through a purchase of a house or even a direct purchase of *hukou*, but these routes are used very seldom and the information regarding the full set of requirements is not freely available (Zhang and Treiman, 2013).

“Collective converters” may be argued to be the most exogenous and random sample of the population compared to other converters. Moreover, “collective conversion” is the most commonly used route for *hukou* conversion, and even in our data sample around half of the *hukou* converters reported using this route. Table 1a presents the average observable characteristics of *hukou* converters of working age in our data sample who changed their *hukou* status after 1990, by the route of their conversion. Unfortunately, information regarding the 3rd route is missing from the questionnaire.

Table 1a: Descriptive Statistics of Average Group Characteristics by the Route of *Hukou* Conversion.

Route of <i>Hukou</i> Conversion	Group Characteristics				Employment Status				N (as % of total converters)
	Age	Years of Education	Healthy	Female	Employed	Un-employed	Student	Home-maker	
Education/Promotion/ Army/Communist Party	30.93	13.50	86.97%	40.17%	88.88%	1.28%	8.13%	1.71%	467 (28.56%)
"Collective Conversion"	39.60	9.22	82.57%	50.33%	85.44%	4.55%	4.04%	5.97%	769 (46.92%)
Other	37.85	10.26	77.11%	55.97%	80.10%	7.21%	0.50%	12.19%	402 (24.52%)

In addition to being the most randomly chosen group of *hukou* converters, the average observable characteristics of collective converters are also mostly in between those of the permanent urban population and migrants with rural *hukou*, indicating the high suitability of this group for our analyses. Moreover, living on the borders of cities, these individuals represent a group of non-locals that is naturally integrated into the urban areas (since most probably they continued living their ordinary lives after the conversion of their *hukou* registration), which is also of benefit to our analyses.

Methodology

The theoretical model employed in our analyses is that proposed by Oaxaca and Ransom (1994), which is heavily employed in economic literature to measure differential treatment in labor markets (Christofides, Polycarpou and Vrachimis, 2013; Song, 2013). The general procedure of our application of this model can be summarized in 3 steps. Firstly, the hourly income structures are separately estimated for individuals belonging to each of the three groups based on *hukou* registration type. In the second step, we estimate the “fair” hourly income structure of individuals, which is often referred to as the non-discriminatory income structure in the literature. Finally, we conduct decomposition analyses in order to measure the unexplainable component of the differences in hourly incomes.

The empirical model used to estimate the hourly income structures is similar to those widely employed in earnings decomposition analyses (Meng and Zhang, 2001; Song, 2013), that are mainly based on Mincer’s (1958) general capital earnings equation which may be specified as:

$$\ln(Y_j) = \beta_0^j + \beta_1^j E + \beta_{12}^j E^2 + \beta_2^j TE + \beta_{22}^j TE^2 + \beta_3^j T + \beta_4^j O + \beta_5^j C + \beta_{6k}^j Other_k + \beta_{7l}^j PI_l + e_j, (1)$$

where $j=u, c, \text{ or } r$ represents the sample groups of permanent urban *hukou* holders, *hukou* converters, and permanent rural *hukou* holders respectively; Y is the total hourly earnings (including bonuses); E is the years of education; TE is the current job tenure; T is a binomial dummy variable for training for the current job; O is the type of occupation (principal, technician, clerk); C is the type of employment contract (permanent, long-term); $Other$ is a vector of other individual personal characteristics (k) including marital status, height, weight, health condition and ethnicity; PI is a set of binomial dummy variables for provinces and industries; and e is the error term.

One concern regarding this regression model may be the possibility that labor force participation for the majority or minority groups would be non-random. This would mean that there is a selection bias since we observe only the wages of those people who are working in the urban labor market and holding a certain type of *hukou* registration. Three types of selection bias may arise in the proposed analyses: (1) selection in *hukou* conversion among rural migrants, since they represent a sub-sample of migrants who chose to and

succeeded in converting their *hukou*; (2) pre-migration selection, since the migrants represent a sub-sample of the rural population that chose to migrate; (3) selection into employment, since employed individuals represent a sub-sample of the potential labor force who chose to work. Selection bias may cause inconsistency in the results since the expected value of the error term in equation (1) may not be zero, given the fact of sub-sample selection.

The first type of selection bias is corrected through the use of only those *hukou* converters who obtained an urban *hukou* as a result of conversion of their agricultural land to urban use (“collective converters”). It is visible from our data (Table 1a) that *hukou* converters who use other conversion routes, are on average younger individuals with a higher level of education and with selection patterns in terms of gender and employment status. Whereas “collective converters” represent a more exogenous group, with average observable characteristics close to that of rural migrants (Table 1c).

In order to correct for the second type of selection we use the two-stage Heckman procedure for estimation of the income structure of migrants with rural *hukou*, incorporating those individuals who are left behind in rural areas. In the first stage, latent variables associated with the migration decision are used in order to estimate the associated parameter vectors, for which, in the second stage, the inverse mills ratios are then computed and included in the equation (1) for the group of rural *hukou* holders. In accordance with the related theoretical literature, we then take the estimated mills-term to the left hand side of the regression equation and obtain the selectivity corrected income structure of migrants with rural *hukou*. Failure to control for migration selectivity which has been often found by empirical literature (Xing, 2010), will result in an “unfair” comparison of rural migrants with the urban *hukou* holders, since the observable and unobservable characteristics of migrants that contribute to their migration decision may influence their incomes and result in overestimated returns to personal characteristics.

Finally, because of the high employment rates for all three groups, we concluded that selection into employment should not present as much of a problem, and that control for this type of selection is unnecessary. Selection into employment might have been a concern for our analyses if employment rates were significantly different between the three groups.

The groups of rural *hukou* holders do experience measurably higher levels of employment (Table 1b) for both genders, but we consider this a result of migration selection rather than employment selection, and we already control for this through the procedure described earlier. For the other two *hukou* possibilities, there is only a slight (1%) difference in the employment rates for males, and a 6.52% difference for females, which may indicate that females with converted *hukou* registration may be more positively selected to employment. Even though, we do not observe much selection in the observable characteristic of this group (Table 1c), this possibility shall also be taken into consideration for more thorough interpretation of the results.

The decomposition analyses cannot be operational without some assumptions about the structure of a “fair” (nondiscriminatory) estimate (β^*). The fair income structure is generally assumed to be something in between the structures of advantaged and disadvantaged groups and it may be represented by the following weighted equation:

$$\beta^* = \theta \hat{\beta}_u + \delta \hat{\beta}_c + (1 - \theta - \delta) \hat{\beta}_r, \quad \text{with } \theta, \delta \geq 0, \text{ and } \theta + \delta \leq 1, \quad (2)$$

where θ and δ are the weights, and any assumption about β^* may be reduced to an assumption about θ and δ . The theory proposes four general structures or values of the weights that may clearly affect the resulting magnitude of differentials. Oaxaca (1973) proposes the adoption of either majority income structure or minority income structure as the fair estimates. On the other hand, Cotton (1988) proposes weights adjusted for the fractions of the groups included in the sample, reasoning that the fair structure should be more similar but not equal to that of the majority group. Finally, Oaxaca and Ransom (1994) suggest that the fair estimate should be the one obtained from the pooled sample of all groups. In our decomposition analyses we use the pooled method for the structure of “fair” income, since this method is favored by the theoretical literature and widely used in the empirical literature.

Finally, the logarithmic decompositions of the (selectivity corrected) gross hourly income differentials at the means will have the following forms:

$$\ln \bar{Y}_u - \ln \bar{Y}_r = (\bar{X}_u - \bar{X}_r)' \beta^* + \bar{X}'_u (\hat{\beta}_u - \beta^*) + \bar{X}'_r (\beta^* - \hat{\beta}_r), \quad (3)$$

$$\ln \bar{Y}_u - \ln \bar{Y}_c = (\bar{X}_u - \bar{X}_c)' \beta^* + \bar{X}'_u (\hat{\beta}_u - \beta^*) + \bar{X}'_c (\beta^* - \hat{\beta}_c), \quad (4)$$

$$\ln \bar{Y}_c - \ln \bar{Y}_r = (\bar{X}_c - \bar{X}_r)' \beta^* + \bar{X}_c' (\hat{\beta}_c - \beta^*) + \bar{X}_r' (\beta^* - \hat{\beta}_r), \quad (5)$$

where \bar{Y}_u , \bar{Y}_r and \bar{Y}_c are the hourly mean total incomes of urban, rural, and converter workers respectively; β^* is the “fair” hourly wage structure estimated by equation (2); \bar{X}'_u , \bar{X}'_r and \bar{X}'_c are the vectors of mean values of the overall regressors from equation (1) respectively for urban, rural and converter workers; and $\hat{\beta}_u$, $\hat{\beta}_r$ and $\hat{\beta}_c$ are the conforming vectors of coefficients estimated by equation (1) for the corresponding data samples.

The first terms in the right-hand side of equations (3), (4) and (5) present estimates of productivity differentials or the income gap caused by different individual characteristics of the corresponding groups. The second terms estimate the unexplained advantage of permanent urban *hukou* holders due to different returns to personal characteristics of the corresponding groups. Finally, the third right-hand side terms in equations (3), (4) and (5) estimate the unexplained disadvantages of the minority groups which together with the second terms are generally considered to show the discrimination in the labor markets.

Data Description

For our empirical analyses we used one wave (2008) of the Longitudinal Survey on Rural Urban Migration in China (RUMiC¹) data, which consists of three parts: the urban, rural and migrant household surveys. We considered 2008 more appropriate in order for our results to be more comparable with other studies on RUMiC data that mostly used this wave and in order to avoid the effect of a small positive shock in the level of unemployment which China experienced in 2009. A migrant is defined in these surveys as an individual who has a rural *hukou*, but who is living in an urban area at the time of the survey. RUMiC was designed to serve as a dataset for research that aims to observe migration patterns in China, and it covers

¹ The Longitudinal Survey on Rural Urban Migration in China (RUMiC) consists of three parts: the Urban Household Survey, the Rural Household Survey and the Migrant Household Survey. It was initiated by a group of researchers at the Australian National University, the University of Queensland and the Beijing Normal University and was supported by the Institute for the Study of Labor (IZA), which provides the Scientific Use Files. The financial support for RUMiC was obtained from the Australian Research Council, the Australian Agency for International Development (AusAID), the Ford Foundation, IZA and the Chinese Foundation of Social Sciences. More information can be found at Akgüç et al. (2014). “The RUMiC longitudinal survey: fostering research on labor markets in China”. *IZA Journal of Labor & Development*, 3:5.

the period 2008-2013 (only waves 2008 and 2009 are available) with annually conducted surveys. It includes information concerning demographic characteristics, occupations, incomes, physical and mental health and education of 18 000 urban, rural, and migrant households who were surveyed in each year using similar questionnaires. This dataset has a very large coverage of 9 provinces situated in the South-Eastern part of China, which experiences the highest flows of internal migration.

Table 1b: Employment Status of Individual of Working age by Gender and the Type of *Hukou*.

	<i>Hukou</i> Type	Employed	Un- employed	Student	House- maker	N
Males	Urban <i>Hokou</i>	92.72%	6.84%	0.06%	0.35%	3450
	Rural <i>Hukou</i>	99.06%	0.49%	0.32%	0.12%	4055
	Converted <i>Hukou</i>	93.72%	3.40%	1.05%	1.83%	382
Females	Urban <i>Hukou</i>	83.52%	9.58%	0.20%	6.67%	2955
	Rural <i>Hukou</i>	94.21%	1.56%	0.20%	3.86%	2954
	Converted <i>Hukou</i>	77.00%	5.68%	1.03%	16.28%	387

For the purposes of our study the data sample was restricted to include only those individuals of appropriate working age (16-60) excluding retired and unemployed individuals. Separate regression and decomposition analyses were performed for the sub-samples of males and females, as well as self-employed individuals². The observations from the rural household survey were used only in order to correct for the migration selectivity of migrants. Finally, the whole sample of the urban work-force was divided into three sub-samples based on the *hukou* type as described in the methodology section. Table 1b presents some descriptive statistics regarding the composition of the data by the type of *hukou* and gender.

The main outcome variable in the regression analyses is the natural logarithm of hourly total income compensation, which is computed by dividing the sum of total monthly wages and bonuses of individuals to the total amount of monthly hours worked. Unfortunately, when limiting the data sample to employed individuals who have no missing values of all variables used in our regression models, the number of observations decreased significantly, but it was still enough to obtain robust results. As expected, the individuals with

² The self-employed individuals are observed separately because of the possibility that the wage structure of self-employed individuals may be very different from that of individuals employed in paid employment jobs (Hamilton, 2000).

the highest average total hourly incomes are those with permanent urban *hukou*, while the migrants with rural *hukou* experience on average the lowest hourly incomes among the three groups. The average values of the main set of explanatory variables which describe the characteristics of individuals and are used in the regression analyses are presented in Table 1c. This set includes length of tenure at the current job, school performance and health condition of individuals, which are both represented as 5-scale values with 1 standing for very good and 5 standing for very poor.

Table 1c: Descriptive Statistics of Average Individual Characteristics of Workers in Paid-employment Sector by Gender and Self –employed Individuals by the Type of *Hukou*.

	<i>Hukou</i> Type	Log of Income	Years of Education	School Performance	Age	Health	Current Tenure	N
Males	Urban <i>Hokou</i>	2.41	12.36	2.33	41.38	2.07	14.29	2063
	Rural <i>Hukou</i>	1.81	9.44	2.86	30.03	1.71	3.41	2171
	Converted <i>Hukou</i>	2.01	9.87	2.48	39.44	1.66	8.68	217
Females	Urban <i>Hukou</i>	2.21	12.44	2.29	38.35	2.10	11.14	1744
	Rural <i>Hukou</i>	1.65	9.21	2.76	28.85	1.80	2.59	1274
	Converted <i>Hukou</i>	1.83	9.29	2.51	37.63	1.82	7.66	188
Self-employed	Urban <i>Hukou</i>	2.28	10.54	2.56	40.16	2.04	9.13	278
	Rural <i>Hukou</i>	1.80	8.34	2.86	35.05	1.79	5.63	392
	Converted <i>Hukou</i>	2.19	9.87	2.60	38.13	2.12	6.57	27

Empirical Results

In the first step of our analyses the wage equations were estimated for migrants with rural *hukou* (Rural), migrants with converted *hukou* type (Converted) and individuals with permanent urban *hukou* (Urban), separately for males and females as well as self-employed individuals.

We started by dealing with the issue of migration selectivity for migrants without urban *hukou* registration, the results of which are reported in Table 2a for individuals in paid-employment sector, and in the 2nd and 3rd columns of Table 2b for self-employed individuals. The dependent variables in all earnings equation models are the natural logarithms of total hourly earnings (including bonuses). The exclusion restriction variables that were used in the first stage of the Heckman selectivity correction are the number of adult children (older than

20 years), and the number of elder siblings. The presence of children at the time of migration is generally considered to be an obstacle for migration, and we try to proxy this by the number of adult children at the time of the survey. However, the presence of elder siblings is supposed to have a positive effect on the probability of migration by eliminating the obstacle of leaving the parents alone in the rural areas. The exclusion restriction variables were additionally tested to have no direct significant effect on the hourly incomes.

The positive sign and significance of the coefficients of inverse mills ratios show that, first of all, the observable and unobservable characteristics of individuals that induce the migration decisions of the rural population positively influence their incomes in urban labor markets. Secondly, we find that the control for migration selectivity is necessary for both paid-employment sector and self-employed individuals.

The second step of our analyses was to estimate the income structures for the other two groups based on their *hukou* status, the results of which are reported in Table 2c for the paid-employment sector and in the 1st columns of Table 2b for self-employed individuals. The regression outputs show that the income structures of the observed groups are very different from one another and the separation of the data based on gender and employment sector are also necessary to obtain unbiased results.

The coefficients of the important explanatory variables are mostly highly significant and have the expected values suggested by other empirical literature. The values of R squared are reasonable indicating that the income structures obtained are sufficient for use in income decomposition. The main differences between the total income determination for urban residents and rural migrants with and without urban *hukou* registration are as follows. First of all, when analyzing the paid-employment sector, we can notice that the constant terms are measurably lower for the rural migrants without urban *hukou*, indicating that there may be disadvantageous differential treatment towards them. Secondly, the return to current job tenure is higher for rural migrants without urban *hukou* registration, which could be due to the fact that the current job tenure is evaluated highly during the first years after the job attainment and rural migrants had very limited job experience in urban areas. Finally, the return to physical abilities (expressed by age, body mass index, height and health of individuals) are mostly significant and measurably higher for migrants with rural *hukou*,

Table 2a. Heckman Correction 1st and 2nd Stage Regression Results for Migrants with Rural *Hukou* by Gender.

VARIABLES	(1) Rural (M)	(2) 1 st Stage (R-M)	(3) Rural (F)	(4) 1 st Stage (R-F)
Years of Education	-0.013 (0.020)	-0.022 (0.045)	0.057*** (0.022)	0.039 (0.042)
Years of Education square	0.003*** (0.001)	0.006*** (0.002)	-0.000 (0.001)	0.004* (0.002)
Ethnic Minority	-0.030 (0.062)	-0.242 (0.163)	-0.132 (0.095)	-0.631*** (0.164)
School Performance	0.020 (0.016)	0.272*** (0.037)	-0.015 (0.021)	0.132*** (0.040)
Married	-0.040 (0.028)	-0.286*** (0.072)	-0.180*** (0.039)	-0.366*** (0.081)
Health	-0.037*** (0.014)	-0.132*** (0.034)	-0.016 (0.018)	-0.094*** (0.035)
Body Mass Index (bmi)	0.010 (0.006)	-0.065*** (0.015)	-0.015* (0.008)	-0.061*** (0.016)
Height	1.385*** (0.226)	5.100*** (0.454)	1.065*** (0.273)	0.222 (0.509)
Age	0.041*** (0.008)	-0.005 (0.019)	0.051*** (0.012)	0.094*** (0.021)
Age square	-0.001*** (0.000)	0.000 (0.000)	-0.001*** (0.000)	-0.002*** (0.000)
Recent Training	0.055*** (0.021)		0.056* (0.029)	
Current Tenure	0.040*** (0.005)		0.040*** (0.009)	
Current Tenure square	-0.001*** (0.000)		-0.001 (0.001)	
Number of Adult Children		-0.695*** (0.083)		-0.432*** (0.074)
Number of Elder Siblings		0.091*** (0.018)		0.072*** (0.016)
Mills Term	0.670*** (0.154)		1.006*** (0.139)	
Constant	-1.779*** (0.445)	-7.327*** (0.925)	-1.225** (0.534)	-0.826 (1.004)
Observations	2,171	6,605	1,274	7,509

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: all regression models also include sets of binomial dummy variables including occupations, industries, job sectors and provinces.

Table 2b. OLS and Heckman Correction 1st and 2nd Stage Regression Results for Self-employed Individuals by their Type of *Hukou* Registration.

VARIABLES	(1) Permanent Urban	(2) Permanent Rural	(3) 1 st Stage
Years of Education	0.0615** (0.0311)	0.022 (0.06)	-0.008 (0.049)
Years of Education square	-0.00139 (0.00103)	0.000 (0.004)	0.000 (0.003)
Ethnic Minority	0.140 (0.375)	-0.516* (0.284)	-0.462** (0.216)
School Performance	-0.0287 (0.0609)	0.131** (0.057)	0.116*** (0.045)
Married	0.385** (0.172)	0.360*** (0.134)	0.306*** (0.102)
Health	-0.0119 (0.0587)	-0.184*** (0.052)	-0.182*** (0.040)
Body Mass Index (bmi)	0.0104 (0.0234)	-0.036* (0.022)	-0.052*** (0.017)
Height	1.592** (0.622)	-2.742*** (0.990)	-5.753*** (0.448)
Age	0.0583 (0.0415)	0.078** (0.040)	0.156*** (0.026)
Age square	-0.000875* (0.000506)	-0.001** (0.001)	-0.002*** (0.000)
Recent Training	0.0874 (0.114)	0.073 (0.113)	
Current Tenure	0.0367** (0.0173)	0.025* (0.015)	
Current Tenure square	-0.000474 (0.000527)	-0.001* (0.001*)	
Number of Adult Children			-0.325*** (0.073)
Number of Elder Siblings			-0.009 (0.017)
Mills Term		1.400*** (0.243)	
Constant	-2.804** (1.295)	3.927*** (1.505)	6.671*** (0.913)
Observations	278	392	4825
R-squared	0.408		

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Note: all regression models also include sets of binomial dummy variables including occupations, industries, job sectors and provinces.

Table 2c. OLS Regression Results for Individuals with Permanent Urban *Hukou* and Rural Migrants with Converted *Hukou* Type by Gender.

VARIABLES	(1) Urban (M)	(2) Urban (F)	(3) Converted (M)	(4) Converted (F)
Years of Education	0.0649*** (0.0135)	0.0796*** (0.0146)	-0.0460 (0.0567)	0.0714 (0.0601)
Years of Education square	-0.00114** (0.000459)	-0.00176*** (0.000467)	0.00206 (0.00263)	-0.00264 (0.00315)
Ethnic Minority	-0.0848 (0.109)	0.148 (0.126)	-1.112** (0.492)	-0.488 (0.693)
School Performance	-0.0433*** (0.0165)	-0.0529*** (0.0184)	-0.103* (0.0583)	0.0280 (0.0590)
Married	0.147*** (0.0396)	0.0275 (0.0366)	-0.102 (0.147)	-0.0249 (0.148)
Health	-0.00932 (0.0169)	0.00459 (0.0179)	0.0900 (0.0547)	0.0461 (0.0557)
Body Mass Index (bmi)	0.0190*** (0.00695)	-0.0166** (0.00728)	0.0194 (0.0207)	-0.00991 (0.0246)
Height	0.0155 (0.237)	0.563** (0.270)	0.713 (0.709)	-0.305 (0.769)
Age	0.00240 (0.0117)	0.0133 (0.0132)	0.00828 (0.0359)	-0.00125 (0.0396)
Age square	-0.000106 (0.000140)	-0.000213 (0.000168)	-0.000227 (0.000432)	-0.0000482 (0.000505)
Recent Training	0.0175 (0.0238)	0.115*** (0.0254)	-0.0354 (0.0770)	0.202** (0.0908)
Current Tenure	0.0200*** (0.00439)	0.0213*** (0.00444)	0.0115 (0.0134)	-0.00780 (0.0188)
Current Tenure square	-0.000342*** (0.000116)	-0.000371*** (0.000129)	0.000144 (0.000396)	0.000204 (0.000728)
Permanent Contract	0.470*** (0.0402)	0.357*** (0.0420)	0.233 (0.164)	0.0722 (0.170)
Long-term Contract	0.339*** (0.0346)	0.199*** (0.0335)	0.135 (0.111)	-0.0662 (0.103)
Constant	0.585 (0.495)	0.152 (0.534)	0.643 (1.490)	1.866 (1.562)
Observations	2,063	1,744	217	188
R-squared	0.434	0.428	0.408	0.428

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: all regression models also include sets of binomial dummy variables including occupations, industries, job sectors and provinces.

whereas the returns to mental abilities (expressed by years of education and school performance) are mostly significant and higher for urban *hukou* holders (both permanent and converters). This may indicate that migrants with rural *hukou* registration are mostly concentrated in the market sector where physical abilities are evaluated higher, whereas urban *hukou* holders are concentrated in the market sector which evaluates mental abilities more highly.

For self-employed individuals, we get roughly similar results (Table 2b). Unfortunately, the small number of observations does not allow us to obtain income structures by gender as well as that of self-employed *hukou* converters, and conduct three level income decomposition based on the type of *hukou*. So, we conduct only a two level (Urban-Rural) income decomposition for the sample of self-employed individuals with no gender differentiation. However, since the advantages granted by *hukou* registration are mostly bound to the paid-employment sector, we think that the possible disadvantageous treatment imposed solely by governmental restrictions based on the type of *hukou* would be very low for this sample, and we also do not expect much gender differentiation in this sector.

The next step in our decomposition analyses was to estimate the “fair” income structure or the income structure that would have existed in the absence of any sort of unexplainable disadvantageous treatment. The literature suggests four general possibilities for estimation of the “fair” income structure but we focus only on joint income decomposition model, since we believe that it presents the most realistic results. The results of the joint regression models may be found in Table 4 in the Appendix.

Finally, the last step of our analyses is the hourly total income decomposition itself. Table 3 presents the results of the decomposition analyses for all 3 sub-samples, and with the separation based on the employment sector and gender in the paid-employment sector. First of all, we can see that the Urban-Rural differences in total hourly income for females employed in the paid-employment sector are higher than those for males, and that they are almost equally divided between the Urban-Converted and Converted-Rural couples. For males working in the paid-employment sector, a higher part of the difference in Urban-Rural total incomes is captured by the Urban-Converted difference, which may indicate that the

type of *hukou* registration has a more measurable impact on incomes of females rather than males.

Table 3. Total Income Decomposition Results.

VARIABLES	Paid-employment (Males)			Paid-employment (Females)			Self-employed
	Urban - Rural	Urban - Converted	Converted - Rural	Urban - Rural	Urban - Converted	Converted - Rural	Urban - Rural
	(1)	(2)	(4)	(5)	(6)	(7)	(8)
Prediction_1	2.442*** (0.014)	2.442*** (0.014)	2.036*** (0.036)	2.242*** (0.015)	2.242*** (0.015)	1.850*** (0.038)	2.281*** (0.045)
Prediction_2	1.734*** (0.041)	2.036*** (0.036)	1.734*** (0.041)	1.421*** (0.045)	1.850*** (0.038)	1.421*** (0.045)	1.801*** (0.019)
Difference	0.707*** (0.044)	0.406*** (0.039)	0.302*** (0.055)	0.821*** (0.048)	0.392*** (0.041)	0.429*** (0.059)	0.480*** (0.049)
Explained	0.584*** (0.016)	0.306*** (0.030)	0.278*** (0.029)	0.570*** (0.018)	0.302*** (0.030)	0.268*** (0.031)	0.390*** (0.040)
Unexplained	0.124*** (0.041)	0.0993*** (0.033)	0.024 (0.051)	0.251*** (0.044)	0.0895** (0.036)	0.161*** (0.056)	0.0895*** (0.029)
Observations	4,234	2,280	2,388	3,018	1,932	1,462	670

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

When observing the explainable and unexplainable parts of the differences between the three groups, we can see that for females working in the paid-employment sector there is a high unexplainable component in Urban-Converted difference, but a higher share of the unexplained component of the Urban-Rural difference is captured by the Converted-Rural group. This may indicate that the governmental restrictions based on the type of *hukou* are responsible for some share of the unexplainable disadvantageous treatment in their hourly incomes. However, this may also be a result of positive selection to employment of this group that was discussed in the methodology section. When looking at the results of males working in the paid-employment sector, we can also see that there is a very small unexplained component in the Converted-Rural income differences, which is not even statistically significant. This indicates that the differential treatment against the rural migrants belonging to this group is not a result of the imposed governmental restrictions

based on the type of *hukou* registration, and is rather a result of personal attitude of urban employers towards non-locals.

This finding may also be supported by the results obtained from the sample of self-employed individuals, if we assume that the Urban-Rural difference for this sample does not capture the impact of governmental restrictions based on the type of *hukou* registration. The treatment toward this group of individuals in the Chinese labor market has not been studied enough by the past literature, and our findings suggest that origin-dependent differential treatment exists even here.

The type of *hukou* registration of rural migrants does have an influence on their total hourly incomes especially for the females working in the paid-employment sector. However, the *hukou* registration system is not entirely responsible for the emergence of an unexplained component in the income differences and even the abolishment of this system would at most be able to eliminate only one share of the differential treatment towards migrants.

Conclusion

We introduce a new dimension for income decomposition in China, which will add to the understanding of the possible effects of changes in governmental policies on differential treatment in urban labor markets in China. In particular, we test whether there is differential treatment towards those individuals in urban China who converted the type of their official registration (*hukou*) to local-urban registration, and how it differs from the treatment towards those who did not convert their registration type.

The findings indicate that in the given population representative data sample, the type of *hukou* is not entirely responsible for the unexplainable disadvantageous treatment towards migrants working in paid-employment sector, since the unexplained components in the total income differences persist for the Converted-Rural couples for workers of both genders (males and females). Moreover, the results suggest that unexplainable disadvantageous treatment against migrant males working in the paid-employment sector may even not decrease at all after their *hukou* registration is converted from rural to urban.

One explanation for this phenomenon may be a possibility that conditional on the conversion of their *hukou* status, this group tends to become employed in such a sector of urban market that experiences softer differential treatment. However, the construction of our data does not allow us to test this hypothesis.

Despite its huge assumed impact on the differential treatment towards rural migrant workers in urban China, the type of *hukou* registration is not fully responsible for unexplainable disadvantageous treatment towards non-locals. This means that reforms in the *hukou* registration system or even the complete abolishment of this system, which was one on the main recommendations of past empirical researchers, will not actually cause the elimination of the differential treatment in Chinese labor markets.

The *hukou* system is generally considered to have many similarities to migrant registration systems of various European countries. These similarities open a huge variety of prospects for research and generalization of the results both from Chinese to European markets and the opposite. However, for generalization of results of a complicated issue such as differential treatment, additional analyses need to be conducted for European countries as well.

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Appendix

Table 4. OLS Regression Results for the Joint Samples with All 3 *Hukou* Possibilities.

VARIABLES	(1) Joint (Male)	(2) Joint (Female)	(3) Joint (Self-employed)
Years of Education	0.0447*** (0.00844)	0.0630*** (0.00898)	0.0380** (0.0161)
Years of Education square	-0.000372 (0.000330)	-0.00118*** (0.000336)	-7.02e-05 (0.000692)
Ethnic Minority	-0.0299 (0.0530)	0.0767 (0.0725)	-0.00712 (0.145)
School Performance	-0.0267** (0.0104)	-0.0486*** (0.0125)	-0.00623 (0.0263)
Married	0.0471** (0.0224)	-0.0378 (0.0244)	0.0917 (0.0633)
Health	-0.00756 (0.0101)	-0.00369 (0.0114)	-0.0195 (0.0232)
Body Mass Index (bmi)	0.0178*** (0.00438)	-0.00958* (0.00497)	0.00766 (0.0102)
Height	0.519*** (0.141)	0.787*** (0.176)	1.131*** (0.254)
Age	0.0255*** (0.00550)	0.0262*** (0.00700)	-0.0148 (0.0158)
Age square	-0.000390*** (7.02e-05)	-0.000395*** (9.42e-05)	0.000124 (0.000205)
Recent Training	0.0218 (0.0154)	0.0804*** (0.0178)	0.166*** (0.0546)
Current Tenure	0.0256*** (0.00271)	0.0239*** (0.00323)	0.0175** (0.00753)
Current Tenure square	-0.000388*** (7.80e-05)	-0.000417*** (0.000101)	-0.000261 (0.000295)
Permanent Contract	0.210*** (0.0222)	0.215*** (0.0260)	
Long-term Contract	0.169*** (0.0172)	0.155*** (0.0193)	
State Owned Enterprises	0.0482** (0.0190)	0.0370* (0.0221)	
Constant	-0.377 (0.276)	-0.301 (0.333)	-0.329 (0.544)
Observations	4,660	3,660	1,408
R-squared	0.467	0.453	0.201

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: all regression models also include sets of binomial dummy variables including occupations, industries, job sectors and provinces.

Abstrakt

Rozdílné zacházení se skupinami menšin na trhu práce může být jak výsledkem vládního registračního systému, který podporuje nerovná práva na základě původu jednotlivců, tak také znevýhodňujícího postoje místních zaměstnavatelů a všeobecné populace vůči cizím obyvatelům. Testujeme přítomnost rozdílného zacházení na čínském trhu práce vůči venkovským migrantům s a bez městské registrace s využitím dat z průzkumu migrace z venkova do měst v Číně. Zjištění ukazují, že i přes často předpokládaný velký dopad na rozdílné zacházení vůči venkovským migrantům, typ registrace domácností (*hukou*) není zcela zodpovědný za rozdíly v celkových hodinových příjmech u lokálních migrantů, které nelze přičíst osobním charakteristikám. Výsledky naznačují, že i plné odstranění *hukou* systému může maximálně eliminovat pouze část znevýhodňujícího přístupu vůči venkovským migrujícím ženám, které nejsou způsobeny rozdíly v osobních charakteristikách, a nemusí mít dokonce žádný měřitelný vliv na venkovské mužské migranty pracující v sektoru výdělečných činností na čínských městských trzích práce.

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