Migration premium?

The economic returns to youth inter-province

migration in post-reform China

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Abstract

Every year, millions of young people migrate away from their home provinces for higher education and employment in China. However, less is known about the extent to which Chinese young people may benefit economically from their migration. Analyzing nationally representative data from the new China College Student Survey, this paper examines the impact of inter-province migration on the starting salaries of Chinese young people after undergraduate studies. Utilizing the method of propensity score matching, this research reveals differences in the economic returns to migration for higher education and for work, and between young people of rural and urban *hukou* origins. The economic premium attached to inter-province education migration is largely mediated and thus explained by socioeconomic disparities across Chinese provinces. By contrast, young people's work migration generates a positive economic premium, over and above the wage disparity between sending and host provinces. Underlining the context-dependent nature of the migration premium, the results draw attention to China's institutional features—i.e. the structural configurations of education and work migration and the *hukou* system—in shaping the economic returns to youth migration. Rural and urban young people's differential access to the migration premium may also exacerbate socioeconomic inequalities in post-reform China.

Keywords

INTRODUCTION

Every year, millions of young people migrate for higher education and employment (World Bank 2017). Youth migration has become an increasingly important feature of regional and international migration in today's world (Faggian, McCann, and Sheppard 2007; Du 2017). Youth migration—particularly away from the parental home—also represents a crucial stage of life-course transition into adulthood (Liu et al. 2016; Roberts et al. 2016). There is a growing body of research on youth migration. Many researchers investigate the extent to which young people benefit socioeconomically from their geographical mobility (Faggian, Corcoran, and Rowe 2017). In Western developed countries, it has been widely observed that youth migration for education and employment generates pecuniary benefits, over and above economic returns to the accumulation of human, social, cultural and political capital (Jewell and Faggian 2014; Kazakis and Faggian 2016). An explanation put forward by economists and geographers is that young people are able to exercise individual agency to maximize economic returns by moving around in neoliberal markets (Becker 1962; Sjaastad 1962; Faggian, McCann, and Sheppard 2007). However, less is known about whether a similar migration premium may exist in post-reform China, where centralized state-control and market forces combine to configure the consequences of youth migration (Fan 2002).

In China, it is crucial to comparatively assess the economic returns to education and work migration. Efforts to disentangle the two have been sparse in Western research (Faggian, McCann, and Sheppard 2007; Cintio and Grassi 2013), in part because education migration and work migration similarly take place in a neoliberal market (Kazakis and Faggian 2016). In China, the contexts of education and work migration differ considerably. Despite drastic social, economic and educational transformations after China's 1978 reforms, the migration of young people for higher education is still closely regulated by state-prescribed admission policies, quota and assignment systems (Tam and Jiang 2015). By contrast, the rise of a state-coordinated market economy and the abolishment of a centralized job assignment system

have given individual youth more freedom and choices than before to migrate for work (Bai 2006; Liu et al. 2016). This motivates us to explore differences in economic premiums attached to young people's education and work migration, which contributes to a better understanding of how structural configurations may condition economic returns to youth migration.

Young people of different rural and urban *hukou* (household registration) origins may benefit from the process of migration to different degrees. *Hukou* limits citizens' access to welfare resources to their rural or urban places of registration (Chan and Zhang 1999). Against the backdrop of rapid yet segmented socioeconomic development in urban as opposed to rural China following the 1978 reforms, *hukou* has become a major cause of socioeconomic inequality as well as cultural and symbolic segregation between rural and urban Chinese (Wu and Treiman 2004). While participation in higher education is widely believed to be an equalizer that reduces the socioeconomic gap between rural and urban *hukou* holders (Xiao and Bian 2018), it remains unclear whether the migration premium may differ by young people's *hukou* origin and thus mitigate or exacerbate existing inequalities. To answer these questions, this research systematically conceptualizes, compares, measures and models the economic returns to youth inter-province migration for rural-origin and urban-origin Chinese in both education and work, drawing on nationally representative data from the 2010, 2013 and 2015 China College Student Survey.

THEORETICAL CONSIDERATIONS AND HYPOTHESES

Theorizing migration premium

A growing body of evidence suggests that young people benefit economically from migration (Jewell and Faggian 2014; Kazakis and Faggian 2016). To explain potential mechanisms underlying the migration premium, the human capital perspective posits that individuals migrate to maximize lifetime utility at different life stages (Sjaastad 1962).

Migration for higher education and work is thought to be an investment in human capital, which consequently generates positive economic returns as a result of enhanced human capital (Becker 1962; Faggian, McCann, and Sheppard 2007). The human capital perspective has enjoyed extensive empirical support in developed countries such as Italy (Cintio and Grassi 2013) and the USA (Kazakis and Faggian 2016).

Further to the human capital perspective, scholars such as Kaufmann, Bergman and Joye (2004) explicitly conceptualized the capacity to be geographically mobile as a form of capital. The authors indicated that, despite possessing similar levels of human capital, migrants enjoy *additional* economic returns compared with those who stay put. This conceptualization usefully acknowledges the value of migration—not as a means to an end (of gaining human capital), but as an end in itself, above and beyond human capital. Instead of considering individuals' "capability" to be mobile as a reified capital (cf. Kaufmann, Bergman, and Joye 2004), Bourdieu (1986) usefully conceptualized capital as a relational construct: the generation of capital is dependent on social practices (e.g. geographical mobility) that "match" one's dispositions to the specific "field" in which such dispositions are valued (Bourdieu 1986, 241). Therefore, if young people actively *mobilize* their dispositions and capital (e.g. human, cultural, social, political and symbolic) through migration to find a most suitable place for education and work (Bourdieu 1986, 241; Leung 2012), we would expect such mobilization to entail favorable economic returns.

Hypothesis 1 (migration premium): Youth migration is associated with a positive economic return, net of pre-existing human, social, political and cultural capital.

Youth mobility in China: Education and work migration

Similar to their Western counterparts (Faggian, McCann, and Sheppard 2007), internally mobile young people are faced with two major migration decisions at distinct life stages in China (Liu et al. 2016). First, on graduation from high school, they decide where to attend

higher education. Then, on graduation from university, they decide where to start their career. Youth migration in post-reform China is governed by a complex interaction between centralist state-control and market forces; and the interaction has followed divergent paths in the higher education sector and the labor market. While the former continues to be closely shaped by state control and regulations (Tam and Jiang 2015), the latter has become increasingly privatized and decentralized, despite a certain level of state coordination (Bai 2006; Liu et al. 2016).

Higher education sector. In the past several decades, China's drastic social transformation has had important implications for the development of the higher education sector and university-bound migration. Post-socialist reforms have entailed the devolution of higher education funding from the central government to regional, provincial and municipal authorities (Mok 2000; Wang 2011). While the ability of local authorities to establish a university has become closely tied to the socioeconomic resources held within their region, the reformed funding policy, coupled with segmented economic development, means that the distribution of prestigious universities has become uneven across Chinese regions (Wang 2011). Consequently, 59% of the national key universities—prestigious and well-funded higher education institutions—are located in eastern China (Yao et al. 2010), which enrolled 65% of university-bound migrants between 2000 and 2005 (Liu et al. 2016). The uneven geographic spread of universities serves as a major driver for many young people to migrate in order to pursue higher education at a prestigious institution (Liu et al. 2016).

Despite the financial devolvement, the central government continues to exert tight control over higher education admissions. Most high school graduates are required to take the College Entrance Examination (CEE)—a nationally standardized assessment that forms an integral part of the university admissions system (Wang 2011). Meanwhile, the central and regional governments also impose a quota system, restricting the number of students a university and a specific subject area is allowed to recruit from different provinces (Tam and

Jiang 2015). Under the system, different CEE scores are required for admissions to different subjects in the same university and to different universities, and the CEE thresholds also vary with the place where students take the CEE. The state also runs an assignment system: candidates falling short of the CEE scores required for their preferred subjects and universities are often assigned a place in a less popular discipline or less selective university (Yao et al. 2010). Given the economic and time demands associated with re-sitting the CEE and that a university degree is highly valued in the labor market, many students are seen to accept the government's assignment (Liu 2015). Although students are afforded some freedom to strategize where and what to study, their mobility often represents the result of state allocation or else a compromise between one's CEE score, desire to attend a prestigious institution, and a preferred and suitable subject area, in response to state intervention (Tam and Jiang 2015).

Graduate labor market. China's socioeconomic reform has given young people greater freedom than before to navigate their employment in the graduate labor market. Before the 1990s, the state was largely responsible for the costs of higher education and for graduate job assignment (Bai 2006). Upon graduation from universities, young people did not file job applications or make employment arrangements themselves. They were automatically assigned a stable, permanent job by the government, usually in the state sector (Fan 2002; Wu and Treiman 2004). As China's economic reforms matured, the size of the state sector shrank considerably. Between 1995 and 2002, the number of state sector employees fell from 109.5 million to 69.2 million (Frazier 2006). By contrast, the number of private sector employees increased from 3.5 million in 1995 to 120.8 million in 2016 (Statista 2017). In the 1990s, against the backdrop of the mass expansion of higher education (Chan 2015), the centralized job assignment system was abolished. The government no longer act as a broker between students and employers. Instead, individual graduates need to seek work themselves by filing job applications and making employment arrangements directly with potential

employers, irrespective of the sector (Fan 2002; Li et al. 2012). As a result, Chinese young people enjoy considerable freedom in navigating their own paths in an increasingly decentralized labor market (Yan 2009). Today, young people in China often actively migrate between provinces in order to secure appropriate employment opportunities and maximize their economic returns (Bai 2006).

On balance, compared with the increasingly decentralized and privatized graduate labor market, China's higher education sector is subject to continuing state control of admissions, quota allocation and student assignment. As migration choices are more limited for education than for work and young people have greater freedom to navigate their work migration as opposed to being institutionally channeled to migrate for higher education (Liu et al. 2016), we expect greater economic returns to Chinese young people's work than education migration.

Hypothesis 2 (context difference): Work migration generates a higher level of migration premium than migration for higher education.

Migration premium: *Hukou* difference

China's *hukou* (household registration) policy plays an important role in stratifying citizens in socioeconomic, cultural and symbolic terms (Wu and Treiman 2004). The *hukou* system was initially established in 1958 to control population migration to ensure sufficient provision of labor in the industrial and agricultural sectors (Fan 2002). Today, *hukou* has developed into an internal "passport" system in China (Chan and Zhang 1999). As a person's access to welfare resources (e.g. social insurance, medical care, (un)employment benefits, children's access to schools, etc.) is closely tied to their rural or urban place of *hukou* registration, segmented economic and urban development in China has undermined the status of rural *hukou* relative to its urban counterpart. *Hukou* origin has become a major source of social inequality in post-reform China (Wu and Treiman 2004).

The *hukou* policy has helped shape youth migration. Given the disproportionate concentration of educational (i.e. good universities) and socioeconomic resources (e.g. appropriate job opportunities) in urban centers (Yao et al. 2010; Tam and Jiang 2015), young people from large cities do not necessarily have to migrate to be able to access abundant local educational and employment opportunities in their urban places of *hukou* origin. However, given the scarcity of higher education and non-agricultural employment opportunities in rural areas, migration is often the only option for rural young people to participate in higher education and non-agricultural work (Wang 2011). Notably, although young people who migrate for higher education are able to transfer *hukou* to their universities, such transfer is only temporary and is limited to the duration of studies (Li and Zhang 2010). Only a small proportion of rural-origin students are able to obtain a permanent urban *hukou* (Xiao and Bian 2018).

Negative stigmas attached to rural *hukou* origin are widely documented in the Chinese labor market (Bai 2006; Li 2016; Li et al. 2012; Li & Zhang; 2010; Liu et al. 2016). Compared with highly educated urban-origin graduates, similarly qualified rural-origin graduates are faced with considerable income disadvantage, workplace discrimination, and limited promotions opportunity (Li 2016). Such disadvantages are not found to diminish as rural-origin graduates obtain a permanent urban *hukou* (Li 2016). By contrast, urban-origin young people are relatively less likely to encounter similar negative stigmatization and discrimination in the labor market. Although urban-origin young people from under-developed provinces may face a certain level of discrimination in developed provinces and municipals such as Beijing and Shanghai (Cheng, et al. 2013; Wang, Wei, and Deng 2017), their rural-origin counterparts may be doubly disadvantaged by their province and *hukou* origins (Yao et al. 2010). Compared with their urban-origin counterparts, the negative stigmas and labor market discrimination faced by rural-origin young people may limit or offset the economic premium associated with their migration.

Hypothesis 3 (*hukou* difference): Migration generates a greater economic premium for young people of urban *hukou* origin than for young people of rural *hukou* origin.

DATA AND METHOD

Data and sample

We used data from the 2010, 2013 and 2015 China College Student Survey (CCSS) (see https://ccss.applysquare.com/index for more information). The CCSS is a nationally representative cross-sectional survey conducted by the China Data Center at Tsinghua University. A stratified probability-proportional-to-size random sampling strategy was used. In the three sweeps, a total of 16,154 students from 60 higher education institutions located in 23 provinces participated in the survey in the last term of the final, fourth year of undergraduate studies. The sample was stratified by the location (Beijing, Shanghai, Tianjin, and northeastern, eastern, central and western China) and type of universities (Project 211 and others). The survey response rates were around 70% for the three years (Shi et al. 2014).

Since our focus is on migration for higher education and for work, we first limited our analytical sample to students with no migration experience prior to university attendance ($N = 13,358$). Second, we excluded those who did not seek employment ($N = 4,344$) and those who looked for work but secured no offer at the time of survey ($N = 2,788$). It is common for university students who do not plan to pursue a postgraduate degree to seek employment in the final year of undergraduate studies (Li et al. 2012). Thus, for those who had received at least one job offer when surveyed, information such as location and salary of the highest-paying offer was collected. Therefore, it is worth noting that we used the prospective measure of the respondents' employment as a proxy for their actual work migration behavior. Given the high rate of graduate mobility and the difficulty of accessing a representative sample of higher education students once they leave university, surveying students approaching university graduation provides an optimal way of capturing university graduates' early labor

market outcomes in the Chinese context (Shi et al. 2014). After eliminating 320 cases with missing values on our key variables such as starting salary and *hukou* origin, our final analytical sample contains 5,906 respondents. The Little's test (1988) confirmed that the missing cases were deleted completely at random.

It is possible that sorting into having looked for work and secured at least one job offer may be non-random. To ensure our results are unbiased by potential non-random selection into employment, we fitted Heckman's (1979) two-step sample selection models to cross-validate the robustness of our results. In the first step, a probit model was fitted to estimate the selection into our analytical sample, based on which the inverse Mill's ratio, λ, was calculated (Flippen 2013). In the second step, the λ parameter was included in the model predicting starting salary. As the sample selection parameter played no statistically significant role in predicting the graduates' starting salary or affecting the interpretation of other variables, we report the results based on the analytical sample of 5,906 students (see online supplemental Tables S1 and S2 for results of the sample selection tests). Despite the robustness tests, sample selection bias may not have been completely ruled out. Both migration and job seeking behaviors can be influenced by unobserved attributes such as personality and self-efficacy (Fernández-Reino 2016), although these attributes may have been partly captured by observable traits such as academic and extra-curricular performance included in our analysis.

Analytical framework and migration categories

Based on three variables on the respondents' pre-university province, university province, and employment province (i.e. the province of the highest-paying job offer), we devised a five-fold typology to distinguish inter-province education migration and work migration, based on prior studies (Cintio and Grassi 2013; Jewell and Faggian 2014; Hu 2016; Kazakis and Faggian 2016). As depicted in Figure 1, the five groups are non-migrant (neither

migrated for education nor for work), late migrant (migrated for work but not for education), return migrant (migrated for education and then returned to one's province of origin for work), college stayer (migrated for education and stayed in the province of university attendance for work), and repeat migrant (migrated for education and then migrated to a third province for work).

Although a lack of systematic theoretical and empirical developments in existing scholarship prevents us from devising specific hypotheses on how the economic impact of distinct types of education or work migration might vary, we are careful in treating the different types of migration as heterogeneous, for example, in the timing and order of mobility (Cintio and Grassi 2013), by conducting separate, fine-grained sets of comparisons in our analysis. Building on previous research conducted in Western contexts (Cintio and Grassi 2013; Kazakis and Faggian 2016), we devised six sets of inter-group comparisons to explore the impact of inter-province migration on young people's starting salary:

[Insert Figure 1 Here]

Education migration:

    (A) College stayers (treated) versus non-migrants (control)

    (B) Return migrants (treated) versus non-migrants (control)

Work migration:

    (C) Late migrants (treated) versus non-migrants (control)

    (D) Repeat migrants (treated) versus college stayers (control)

    (E) Return migrants (treated) versus college stayers (control)

    (F) Repeat migrants (treated) versus return migrants (control)

Based on the six sets of comparisons, we adopted a counterfactual framework and specifically the propensity score matching (PSM) method in our analysis (Jewell and Faggian 2014). According to Guo and Fraser (2014), PSM enables the measurement of the "initial difference between the treatment and control groups in the absence of treatment, [and] the

difference between groups in the potential effect of treatment" (Winship and Morgan 1999, 703). PSM allows for the estimation of potential outcomes if the untreated group were to receive the same treatment, i.e. work and education migration (Heckman, Ichimura, and Todd 1997, 647).

Variables

Dependent variable. Our outcome variable of interest is the salary of the highest-paying job offer received by a student, measured in the unit of Chinese *yuan*. In the last term of undergraduate studies, the respondents who had looked for work and secured at least one job offer were asked to report information on their job offer with the highest salary. Although some students may not necessarily take up the highest-paying offer, our estimates reflect the upper-bound of the premium attached to migration or the maximum economic returns if the students were to accept the offers. Previous research has proven the reliability of young people's self-reported salaries (Li et al. 2012). Due to the skewed distribution, we applied log-transformation to the variable before inclusion in our analysis.

Treatment variables. The treatments were recorded using a series of dummy variables, which distinguished control groups (0) from treatment groups (1) for each of the six sets of comparisons specified in the previous section.

Hukou origin. To measure the students' *hukou* origin (Li and Zhang 2010), we used pre-college *hukou* status, distinguishing rural and urban types.

Matching covariates. Based on previous research on youth migration (Kazakis and Faggian 2016; Du 2017), we included a wide range of measures on individual and family attributes, educational performance, and human and cultural capital as covariates in the PSM procedure. We included dummy variables for the survey year. We controlled for the respondents' age and gender. As ethnic minorities may suffer from a wage penalty in the Chinese labor market (Campos, Ren, and Petrick 2016), we distinguished ethnic minority

students using a dummy variable. We differentiated between those who were only children and those who had siblings, as those without siblings may enjoy different family and educational resources and develop distinct migration aspirations under the one-child policy (Hu and Shi 2018). Because there was a high level of correlation between the mother's and father's education, we measure parental education using the years of schooling completed by the mother or the father, whichever is longer. As family socioeconomic status plays a crucial role in determining both the migration patterns and life chances of Chinese young people (Du 2017), we controlled for the respondents' family income *per capita* in the year preceding the survey.

We took account of the students' academic and extra-curricular performance at different stages (Li et al. 2012; Du 2017). We controlled for CEE score, as it is a key criterion for university admission. We also distinguished between "natural sciences" (0) and "liberal arts" (1) types of CEE. We standardized and controlled for undergraduate Grade Point Average (GPA) by university to measure the respondents' academic performance. We controlled for Communist Party membership to account for political capital (McLaughlin 2016). Participation in extra-curricular activities and related achievements are known to result in positive labor market outcomes (Hu and Wolniak 2010). We took account of whether a student participated in student organizations and won any awards, respectively. English proficiency is viewed favorably in the Chinese labor market (Guo and Sun 2014). We took account of whether a student held a College English Test Band 4 (CET-4) certificate, which is widely recognized by Chinese employers. Salary may also vary by field of study. Based on the standard prescribed by China General Administration of Quality Supervision (2009), we controlled for five subject areas: natural sciences, engineering science and technology, agronomy, medicine and pharmaceutics, humanities and social sciences.

Graduates from prestigious institutions tend to enjoy higher salaries than their peers from less prestigious ones (Li et al. 2012). We took account of university types, distinguishing

between those included in Project 211 (i.e. key universities) and other non-key institutions (Yang and Chen 2016). As university admission quotas are centrally managed by the government (Tam and Jiang 2015) and high-school leavers can only take the CEE in the province of their *hukou* registration, home province prior to the CEE has a decisive influence on university admissions (Yang and Chen 2016). To account for inter-province heterogeneities in the composition and characteristics of young people, we included fixed effects for province of origin prior to the CEE. For the analysis of work migration after prior education migration, we also included fixed effects for province of university attendance.

Analytical procedure

Propensity score matching was used to estimate the average treatment effect on the treated (ATT), i.e. the average impact of migration on young people's starting salary. Let Y_i^T be the starting salary for the individual if s/he is treated, and Y_i^C be the outcome for the same individual if untreated, then ATT is computed as in Equation (1), where D_i=1 if being treated and 0 otherwise. As it is impossible for respondents to be treated and untreated simultaneously, in reality only one of the two outcome values (Y_i^T or Y_i^C) can be observed. Therefore, to infer ATT, the assumption must be satisfied that the respondents must have the probability for the receipt of a given treatment if they are matched on a set of observed characteristics (Guo and Fraser 2014). In the PSM procedure, this is achieved by limiting the matching procedure to cases falling in the region of common support where individuals with the same set of observed matching covariates have a positive probability of being both participants and non-participants in the treatment (Heckman, LaLonde, and Smith 1999). Let X denote the set of observed matching covariates, the conditional independence assumption in Equation (2) is satisfied if X applies equally to the treated and untreated groups. ATT then could be estimated in Equation (3), where Pr(D=1|X) is the probability of being treated conditional on X.

$$\text{ATT} = E(Y_i^T \mid D_i{=}1) - E(Y_i^C \mid D_i{=}1) \tag{1}$$

$$E(Y_i^C \mid X, D{=}1) = E(Y_i^C \mid X, D{=}0) = E(Y_i^C \mid X) \tag{2}$$

$$\text{ATT} = E[Y^T \mid D{=}1, \Pr(D{=}1|X)] - E[Y^C \mid D{=}0, \Pr(D{=}1|X)] \tag{3}$$

We first employed PSM to estimate the impact of education migration and work migration on the salary outcome in the whole sample. We then applied PSM to disaggregated samples according to *hukou* origin. Lastly, we applied the ordinary least squares regression adjustment (RA) to the matched sample by including the fixed effects for the province of employment (Guo and Fraser 2014). If migration is a selection process during which people move across provinces to study or work and have different results in the labor market due to socioeconomic differences between provinces, RA may reduce or eliminate any inter-group differences remaining after PSM.

In the PSM procedure, we first fitted a series of logistic regression models to estimate the propensity scores for the receipt of treatment. To ensure the robustness of the results, we then used multiple methods to match on the propensity scores: nearest-neighbor, kernel and local linear regression. Following Cintio and Grassi (2013), we present the results from kernel matching with a radius of 0.06. The *psmatch2* package in Stata was used. As the treatment effect is only inferred at the group level (Guo and Fraser 2014), the results should be interpreted as the aggregate impact of youth migration.

RESULTS

Descriptive results

Table 1 presents the unmatched summary statistics for the key variables used in our analysis, disaggregated by migration status and *hukou* origin. The results reveal considerable differences in the demographic, educational and familial traits between various migrant and non-migrant groups. On average, the starting salary of rural-origin graduates ($M = 2{,}675.83$) is substantially lower than their urban-origin counterparts ($M = 2{,}918.63$). Compared with

those of rural origin, young people of urban *hukou* tend to be younger (M_{rural} = 23.16, M_{urban} = 22.74), without siblings (Rural = 14%, Urban = 61%) and have better-educated parents (M_{rural} = 8.81, M_{urban} = 11.76). Not surprisingly, annual family income *per capita* is also higher among young people from urban rather than rural families (M_{rural} = 2.40, M_{urban} = 3.12). Further *t*-tests have shown that the rural-urban differences are statistically significant at the 0.1% level for all these variables. Compared with men, a higher proportion of young females are of urban rather than rural *hukou* origin in our sample of university graduates. This is consistent with the observation that urban families are more likely than their rural counterparts to invest in daughters' education (Hu and Shi 2018), due to the persistence of patriarchal values in rural China (Hu 2016).

In terms of academic performance, such as CEE score and undergraduate GPA, no statistically significant difference (at the 5% level) is found between rural-origin and urban-origin students, which is consistent with previous research (Li and Zhang 2010). It is also worth noting that urban-origin young people are more actively engaged in student organizations but less likely to have obtained a CET-4 certificate than students of rural origin. As "Project 211" universities are highly selective for both rural-origin and urban-origin young people, it is not surprising that the majority of students are from non-key universities.

The pattern of youth migration roughly corresponds to that of Western countries (Cintio and Grassi 2013). About half of the young people were non-migrants. The migration patterns also differ by *hukou* origin. Compared with urban-origin young people, a larger proportion of rural-origin young people are late migrants (Rural = 22%; Urban = 12%), and a smaller proportion of rural-origin young people are return migrants (Rural = 9%; Urban = 13%).

Propensity score matching results

Table 2 presents the treatment effects (ATT) of education and work migration on the young people's starting salary, before and after regression adjustments for the provinces in

which the jobs under examination are located. In addition, because the estimated ATT is based on the logarithm form of salary, we also report the percentage of change in salary between the treatment and control groups based on the unlogged salary to aid our interpretation of the effect size. Sample balancing checks indicated that the PSM procedure performed well and considerably reduced the bias between the control and treatment groups. To conserve space, we present the results for the logistic regressions estimating the propensity scores and the sample balance tests in the online supplement (Tables S3–S6).

Migration premium. The PSM results for the whole sample support Hypothesis 1, that youth migration—for education and for work—is associated with positive economic returns. When the differences in individual and family traits, higher education experiences, and human, political and cultural capital are balanced out in the PSM procedure, the young people's work migration and education migration are both associated with positive economic returns. However, migrant selection is not only based on observed traits that are controlled for in our PSM procedure, it is also influenced by unobserved attributes such as self-efficacy and risk-taking tendency (Fernández-Reino 2016). Therefore, it is worth noting that the size of migration premium net of unobserved migrant selection may be smaller than what we observe.

Specifically, we find that those who migrated for higher education enjoy a starting salary 12.0% higher than young people who stayed in their provinces of origin for higher education (ATT = 0.113, $p < .001$). The young people's work migration is associated with a 14.0% premium in their starting salary (ATT = 0.131, $p < .001$), compared with non-migrants. Meanwhile, for those who migrated for education, repeat migration for work is associated with a 12.0% premium in starting salary (ATT = 0.113, $p < .01$), compared with college stayers. Similarly, return migration—i.e. migrating back to one's province of origin for work after out-migration for education—is also associated with an economic premium of 10.3% in starting salary (ATT = 0.098, $p < .05$), compared with college stayers.

Education vs. work migration. The results lend support to Hypothesis 2, that work migration is associated with a higher level of economic return than education migration. Although compared with non-migrants, education migration entails an economic premium, the premium is largely explained by differential wage levels across Chinese provinces, because the regression adjustment for province of employment largely mediated the treatment effect of education migration (ATT = –0.034, *ns*). Therefore, education migration does not seem to entail a statistically significant premium over and above the "place premium" resulting from rapid economic development in some provinces as opposed to others. By contrast, holding constant the province of employment (i.e. inter-province difference in wage levels), work migration is still associated with positive economic returns. After the regression adjustment for employment province, late migration for work is associated with a 6.4% economic premium (ATT = 0.062, $p < .10$), compared with non-migrants. Compared with college stayers, return migration back to one's province of origin for work is associated with an economic premium of 8.2% (ATT = 0.079, $p < 0.05$). Moreover, compared with return work migration, repeat migration—i.e. migrating to a third province for work after education migration—is associated with a wage premium of 5.8% (ATT = 0.056, $p < .05$). Although previous research suggests that considerable regional disparities in economic development across China has given rise to a "place premium" that is primarily responsible for income inequalities (Xie and Zhou 2014), our results clearly show that work migration generates a positive economic premium over and above the wage difference between sending and host provinces.

Hukou difference. Hypothesis 3, which states that urban-origin young people enjoy a greater migration premium than those of rural origin, is partly supported by the results. On the one hand, rural-origin young people have benefitted little from migrating for higher education, particularly after adjusting for the province of employment. Compared with their non-migrant counterparts, rural-origin college stayers (–0.1%) and return migrants (0.4%)

received hardly any premium from their education migration (ATT = –0.001 and 0.004, respectively, *ns*). In contrast, compared with urban non-migrants, the return work migration of urban youth after prior education migration is associated with a 9.9% wage premium (ATT = 0.094, $p < .05$). On the other hand, both rural-origin and urban-origin migrants seem to benefit economically from work migration. Compared with their non-migrant counterparts, rural-origin young people's late work migration is associated with a net premium of 8.0% (ATT = 0.077, $p < .05$). For rural-origin young people, repeat migration to a third province for work is associated with a 7.4% premium in starting salary (ATT = 0.071, $p < .05$), compared with rural-origin return migrants. Urban-origin young people are seen to enjoy a premium as high as 25.4% from return migration (ATT = 0.226, $p < .001$), compared with their college stayer counterparts. This may in part be because urban young people's return work migration may involve the mobilization of favorable familial resources in securing high-status jobs with considerable economic returns (Du 2017). Rural-origin young people were not found to benefit economically from return migration. This may be because their return migration partly reflects their experiences of marginalization and discrimination in the urban space rather than the mobilization of their human capital and resources to leverage maximum economic returns (Song 2016).

CONCLUSIONS AND DISCUSSION

In post-reform China, it is common for young people to migrate for education and work (Liu et al. 2016). For many, such migration, usually involving leaving the parental home and developing a sense of individuality, has become a crucial part of their transition into adulthood (Roberts et al. 2016; Du 2017). Research in Western societies suggests youth migration may be partly driven by expected economic benefits, and indeed such migration often generates positive pecuniary returns (Cintio and Grassi 2013; Kazakis and Faggian 2016). There is a paucity of research examining the theory of migration premium in post-

reform China, where the market economy coexists with centralist state control (Fan 2002; Liu et al. 2016). In this research, we have addressed this lacuna in scholarship by answering a number of important questions: Is there an economic premium attached to education migration and work migration in China? If yes, do all young people benefit equally from the migration premium? In other words, is the migration premium an equalizer that helps reduce socioeconomic disparities or a stratification apparatus that entrenches pre-existing inequalities?

The findings confirm the existence of a youth migration premium in the Chinese context. Our results show that youth migration, particularly for work, generates positive economic returns beyond the accumulation of human, political and cultural capitals, even after controlling for wage disparities across Chinese provinces. Indeed, the concept of migration premium derives from the idea that what determines the economic return to migration is not the fixated capabilities and capitals possessed by an individual but rather the active mobilization of such capabilities and capitals throughout the process of migration (Bourdieu 1986; Kaufmann, Bergman, and Joye 2004; Leung 2012).

In addition to demonstrating the existence of the migration premium at an aggregate level, our findings also shed light on the nuanced ways in which this premium is contingent on the context in which migration takes place (cf. Bourdieu 1986). The education migration of Chinese young people is largely structured by the uneven geographic distribution of universities and channeled by a state-controlled system of examination, admissions, quota allocation and student assignment (Liu 2015; Tam and Jiang 2015). By contrast, young people in China are afforded greater freedom and more choices in navigating their geographic mobility in the labor market (Bai 2006; Liu et al. 2016). In this context, we found that Chinese young people enjoy a greater migration premium in the increasingly devolved and privatized graduate labor market than in the higher education sector. Unlike in many Western societies, where both the higher education sector and the graduate labor market have become

predominantly characterized by neoliberalism (Faggian, McCann, and Sheppard 2007; Kazakis and Faggian 2016), China's post-reform market transition is a segmented and plural process. Therefore, we urge scholars to treat education and work migration as potentially distinct experiences and examine them in a comparative light.

Chinese young people of different *hukou* origins benefitted unequally from the migration premium, which may serve to entrench pre-existing socioeconomic inequalities between rural and urban *hukou* holders (Wu and Treiman 2004). Scholars and policymakers have long argued that participation in higher education presents an equal-opportunity route for Chinese young people to achieve upward social mobility (Xiao and Bian 2018). Chinese young people and their families aspire that participation in higher education will "change their fate" for the better (Tam and Jiang 2015). However, this has not been the case for some young people. We found that young people of urban origin enjoy a higher level of economic return to their education migration than their rural-origin counterparts. Although the education migration premium is largely explained by inter-province wage disparities, the results suggest that urban-origin young people may be better able to navigate their geographical mobility and thus access the "place premium" by moving between provinces. Differentiated access to the education migration premium for rural-origin and urban-origin young people comes on top of the fact that urban-origin young people enjoy a substantially higher baseline starting salary than those of the same migration status but of rural origin. Thus, far from being a "grand equalizer," migration for higher education may exacerbate existing socioeconomic disparities and structural inequalities caused by *hukou* by stratifying the degree to which young people of rural and urban *hukou* origins can benefit socioeconomically from the process of migration.

While our study sheds new light on the socioeconomic consequences of youth migration in China, the scope of this research could be usefully extended in several directions in future research. First, our analysis only provided a static snapshot of young people's starting salary,

and we used the prospective measure of expected employment as a proxy for actual work migration behavior. Future efforts should be made to collect longitudinal data that trace a representative sample of higher education leavers after graduation in order to capture the actual behavior of work migration and to compare the short-term and long-term benefits of education and work migration. Second, while our analysis only focused on the majority of young people who entered the labor market after undergraduate studies, young people who continued to pursue postgraduate studies and did not seek work may have different unmeasured migration and work orientations. Future research could build on this study and examine the relationship between migration and income among highly skilled postgraduates in China. Third, we specifically examined the economic impact of youth migration. While salary is indicative of the social and economic status of a job, young people's migration and job choices may also be guided by non-pecuniary factors and personal preferences.

The limitations of this research suggest a few important data collection and research needs. Due to data limitation, we only focused on inter-province migration. In China, youth migration involves spatial complexities in terms of distance, direction and boundary-crossing. As small moves may make a big difference, future scholars should analyze more fine-grained data to fully capture the intricate spatial dynamics of the migration premium. As migration represents a complex process of exogenous and endogenous selection (Du 2017), unobserved traits, such as personality and risk-taking tendency, may explain part of the observed migration premium (Fernández-Reino 2016). Although the observed traits such as academic and extracurricular performance included in our analysis may have indirectly captured part of the unobserved heterogeneities, future studies should more fully measure and decompose such unobserved characteristics. Despite its limitations, this study makes a timely contribution to scholarship by revealing the ways in which geographical mobility may generate economic benefits and young people's differentiated access to such benefits may

exacerbate socioeconomic inequalities, against the backdrop of large-scale youth migration in China.

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Table 1. Sample characteristics (unmatched).

Variable	All	Rural *hukou* origin					Urban *hukou* origin				
		Non-migrant	Late migrant	College stayer	Return migrant	Repeat migrant	Non-migrant	Late migrant	College stayer	Return migrant	Repeat migrant
Log (starting monthly salary) [a, b]	7.80	7.71	7.88	7.73	7.75	7.85	7.80	7.89	7.82	7.90	8.00
	(0.49)	(0.48)	(0.41)	(0.61)	(0.47)	(0.41)	(0.49)	(0.49)	(0.59)	(0.45)	(0.52)
Age [a, b]	23.00	23.13	23.28	23.12	23.07	23.17	22.72	22.74	22.72	22.66	23.02
	(1.02)	(1.04)	(1.02)	(0.97)	(1.00)	(1.13)	(0.90)	(0.99)	(1.10)	(0.78)	(1.01)
Female [a, b]	.47	.52	.27	.50	.41	.29	.61	.31	.65	.48	.27
Ethnic minority [a, b]	.06	.03	.05	.11	.06	.07	.07	.03	.09	.10	.06
One-child family	.32	.14	.12	.15	.20	.16	.63	.52	.57	.67	.55
Parental education [a, b]	9.94	8.63	8.52	9.57	9.30	9.16	11.70	11.36	11.60	12.51	11.83
	(3.61)	(3.42)	(3.42)	(3.12)	(2.88)	(3.24)	(3.27)	(3.13)	(3.50)	(3.27)	(2.94)
Log (annual family income *per capita*) [b]	2.68	2.43	2.36	2.32	2.46	2.36	3.10	3.10	3.18	3.24	3.07
	(0.82)	(0.69)	(0.62)	(0.65)	(0.65)	(0.60)	(0.78)	(1.13)	(1.09)	(0.73)	(0.72)
Missing [a, b]	.12	.14	.08	.06	.11	.08	.12	.10	.15	.14	.12
CEE score [a, b]	506.20	509.98	521.82	502.06	507.33	528.48	488.21	508.04	496.74	492.88	516.85
	(59.01)	(56.13)	(43.71)	(65.24)	(61.93)	(61.07)	(56.28)	(54.18)	(75.15)	(75.13)	(57.22)
Missing [a, b]	.09	.08	.07	.07	.10	.07	.10	.08	.14	.10	.14
CEE type (Liberal arts) [a, b]	.32	.34	.17	.32	.28	.18	.43	.23	.43	.33	.31
Standardized undergraduate GPA	−.00	.01	.06	−.02	.04	.10	−.04	.03	.01	−.27	−.06
	(0.87)	(0.86)	(0.85)	(0.95)	(0.87)	(0.88)	(0.85)	(0.84)	(0.77)	(1.04)	(0.85)
Missing [a, b]	.22	.21	.17	.29	.21	.21	.24	.20	.31	.18	.23
CCP member	.29	.29	.34	.31	.25	.40	.24	.40	.25	.16	.32
Student organization participation [a, b]	.64	.61	.64	.69	.58	.69	.64	.71	.64	.66	.77
Awards [b]	.59	.58	.64	.63	.60	.68	.51	.69	.60	.57	.73
CET−4 certificate [a]	.91	.92	.95	.94	.91	.92	.87	.91	.89	.87	.92
Field of study [b]											
Natural sciences	.06	.08	.07	.06	.06	.08	.05	.03	.04	.05	.07
Engineering science and tech.	.41	.35	.62	.32	.45	.65	.29	.59	.23	.43	.55
Agronomy	.03	.05	.01	.00	.00	.00	.05	.00	.01	.00	.00
Medicine and pharmaceutics	.07	.06	.02	.18	.12	.03	.06	.01	.16	.04	.03
Humanities and social sci.	.43	.47	.29	.44	.37	.23	.55	.36	.56	.49	.36
Type of university (Project 211) [b]	.03	.02	.03	.04	.03	.07	.02	.04	.07	.04	.05
N	5,906	1,554	677	423	328	482	1,239	290	345	315	253

Note: CCP = Chinese Communist Party. CEE = College Entrance Examination. GPA = Grade Point Average. Column proportions may not sum to 1 due to rounding. Standard deviations in parenthesis for continuous variables. Weighted percentages with unweighted sample sizes (design and sampling weights were used).

[a] Between-group difference for rural-*hukou* origin youths significant at the 5% level or below.

[b] Between-group difference for urban-*hukou* origin youths significant at the 5% level or below.

Table 2. Propensity score matching estimating the average treatment effect on the treated, with regression adjustments, using kernel matching.

Treatment group (*n* matched)	Control group (*n*)	Matched			RA		
		ATT	(S.E.)	% of impact	ATT	(S.E.)	% of impact
All							
Education migration							
College stayer (598)	Non-migrant (2,438)	0.113***	(0.031)	+12.0	–0.034	(0.027)	–3.4
Return migrant (194)	Non-migrant (2,784)	–0.065	(0.052)	–6.3	0.047	(0.032)	+4.8
Work migration							
Late migrant (9,65)	Non-migrant (2,702)	0.131***	(0.021)	+14.0	0.062†	(0.033)	+6.4
Repeat migrant (696)	College stayer (764)	0.113**	(0.040)	+12.0	0.022	(0.031)	+2.2
Return migrant (601)	College stayer (768)	0.098*	(0.040)	+10.3	0.079*	(0.036)	+8.2
Repeat migrant (727)	Return migrant (630)	0.148***	(0.033)	+16.0	0.056*	(0.023)	+5.8
Rural *hukou* origin							
Education migration							
College stayer (341)	Non-migrant (1,398)	0.072	(0.043)	+7.5	–0.001	(0.025)	–0.1
Return migrant (103)	Non-migrant (1,540)	–0.110	(0.073)	–10.4	0.004	(0.043)	+0.4
Work migration							
Late migrant (677)	Non-migrant (1,383)	0.144***	(0.025)	+15.5	0.077*	(0.033)	+8.0
Repeat migrant (451)	College stayer (422)	0.037	(0.057)	+3.8	0.002	(0.035)	+0.2
Return migrant (285)	College stayer (420)	0.017	(0.052)	+1.7	0.023	(0.039)	+2.3
Repeat migrant (446)	Return migrant (317)	0.136***	(0.041)	+14.6	0.071*	(0.028)	+7.4
Urban *hukou* origin							
Education migration							
College stayer (248)	Non-migrant (1,003)	0.193***	(0.051)	+21.3	–0.098	(0.065)	–9.3
Return migrant (95)	Non-migrant (1,195)	0.041	(0.068)	+4.2	0.094*	(0.042)	+9.9
Work migration							
Late migrant (274)	Non-migrant (1,162)	0.099*	(0.038)	+10.4	0.025	(0.055)	+2.5
Repeat migrant (228)	College stayer (339)	0.137*	(0.070)	+14.7	0.034	(0.079)	+3.5
Return migrant (272)	College stayer (341)	0.177*	(0.073)	+19.4	0.226***	(0.062)	+25.4
Repeat migrant (246)	Return migrant (302)	0.176**	(0.059)	+19.2	–0.001	(0.049)	–0.1

Notes: Kernel matching restricted to region of common support, with a radius of 0.06. RA = regression adjustment for the province of employment (full results for the estimation of propensity scores see Supplemental Tables S3, S4 and S5, for sample balancing properties see Supplemental Table S6, and for results for post-matching regression adjustments see Supplemental Tables S7, S8 and S9). Matching covariates include all characteristics listed in Table 1, plus fixed effects for the provinces of origin prior to the CEE and fixed effects for the province of university attendance for group comparison between return migrant and non-migrant, repeat migrant and college stayer, return migrant and college stayer, and repeat migrant and return migrant. Propensity score matching for *hukou* for the whole sample, and exact matching for *hukou* for the disaggregated models by *hukou* origin.
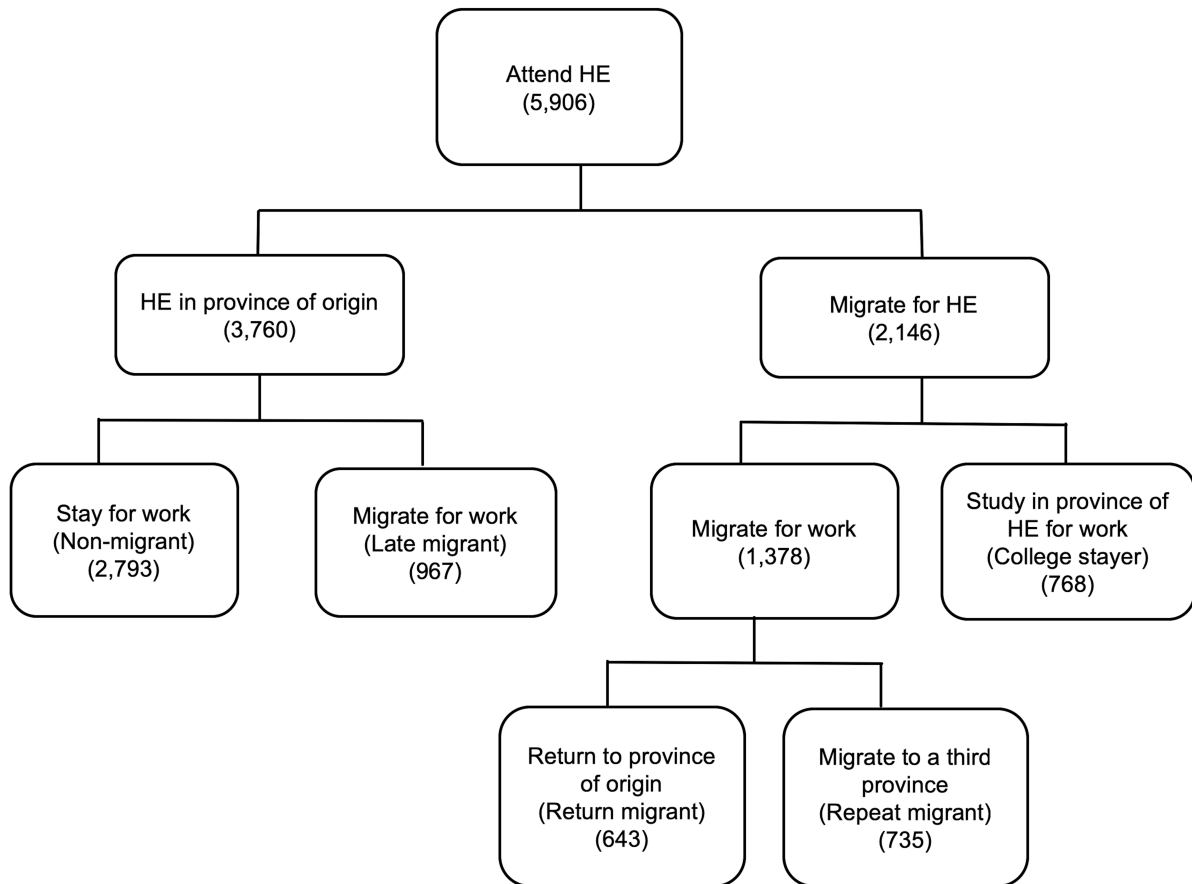† *p* < .10. * *p* < .05. ** *p* < .01. ** *p* < .001.

Figure 1. A five-fold typology of youth migration in China

Notes: Group sample sizes in parenthesis. HE = Higher Education.