


Toward Job or Amenity? Evaluating the Locational Choice of Internal Migrants in China

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Abstract

This study provides new evidence on the debate of job opportunities versus urban amenities in determining the locational choice of migrants. We employ a conditional logit model to generate credible estimates, using two large representative data sets on China's internal migrants. Our findings confirm that both job opportunities and amenities play consistent and salient roles in the geographical choice of internal migrants, while highly skilled migrants tend to attach more importance to urban amenities. Additionally, China's household registration system seems to play an undeniable role: migrants are increasingly shunning cities providing better quality public services that are still largely inaccessible to temporary migrants in China.

Keywords

internal migration, job opportunity, urban amenity, conditional logit model, China

City growth is closely tied to its ability to attract and retain people, while internal migration has a profound impact on regional shifts in labor supply and the urban concentration of human capital. Initiated in the late 1980s, China's gradual relaxation of the household registration system (Hukou) has ushered in an unprecedented

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era of internal migration. Based on the 2017 Report by the National Bureau of Statistics of China (NBSC), the “floating population” in China—those who don’t have a Hukou in the place where they are residing—has exceeded 250 million people, with 67.6 percent of the group moving as rural–urban migrant workers. The past three decades have witnessed substantial labor force redistribution across regions in China and the increasing impetus for local governments in luring new migrants.

Both skilled and unskilled migrants appear to be vital for local economic development in China. Some researchers claim that China has reached the “Lewis turning point,” where the supply of cheap rural labor runs out as the working-age population shrinks and labor shortages begin to be observed in cities (Garnaut and Song 2006). On the other hand, the destination choice of skilled workers is also crucial since numerous studies have recognized human capital accumulation and knowledge spillovers as salient regional and urban growth engines (Lucas 1988; Romer 1990; Mankiw, Romer, and Weil 1992; Glaeser, Kolko, and Saiz 2001; Beckstead, Brown, and Gellatly 2008; Su and Liu 2016). In this study, we make inquiries as to what makes a city attractive from the perspective of internal migrants in a large developing economy. Specifically, to promote the understanding of both researchers and policy makers on the socioeconomic pulling forces of domestic demographic transition, we evaluate the relative importance of pecuniary job-related conditions and nonpecuniary amenities in determining migration destinations. Our findings contribute to the design and implementation of regional and urban policies that aim to enhance urban density, reduce migration costs, and attenuate the rural–urban division in modern China.

To put our study in context, there exists institutional hindrance for people migrating within China. China’s Hukou system, initiated in 1958 by the Ordinance of Household Registration, by its birth and very nature, was designed to provide domestic households with a formal identity, to define social benefits attached to individuals, and to restrict internal rural–urban migration. Since the Reform and Open-up in 1978, the migration restriction posed by Hukou system was gradually relaxed. In 1985, rural migrants were legally allowed to reside in cities as “temporary urban residents.” In 1992, rural migrants in cities were, for the first time, treated as “nonrural and permanent urban residents” in designated small cities, holding the special Blue Print Hukou. The commencement of the Hukou reform in large cities dates back to 2001 in the city of Shijiazhuang (capital city of Hebei province), where over 400,000 urban Hukou were granted to rural migrants based on housing ownership and formal employment. The subsequent decade witnessed the evolution of city-specific criteria pertaining to the acquisition of an urban Hukou, including investment (in industry or housing), formal employment, educational degree and professional credentials, and kinship (Zhang and Tao 2012).

Traditionally, income differentials and employment opportunities are conceptualized as the primary driver for migration (Greenwood 1975). In recent decades, the role of amenities in shaping migration patterns has received increasing attention.

Rappaport (2007a, 2007b) suggested that people are more likely to migrate to regions with higher quality of living conditions such as cooler summers and warmer winters, while wages played a less important role in the migration decision. In particular, Rappaport (2007b) pointed out several lines of future research: first, to see “the extent to which migration to nice weather has occurred or can be expected to occur in *nations and regions other than the United States*.” Second, to see “the extent to which migration to places with high levels of *other consumption amenities* has occurred.” Our article aims to shed some light on these two questions using representative data from China. Intuitively, we expect urban amenities to become increasingly important in migration decisions since people demand more of these “normal goods” as incomes rise (Glaeser, Kolko, and Saiz 2001). However, we notice few studies have focused on the effects of city-specific amenities on Chinese migrants’ locational choices, especially at a disaggregated individual level. Our article intends to fill this gap.

Early works stressed the role of amenities in the location choices of migrants. Graves (1976) pointed out the importance of climate in the migration decision, meanwhile confirming the importance of usual economic variables (e.g., income, unemployment rates). In his further studies, Graves (1979, 1980) continued to focus on the effect of climate on migration within the life cycle framework, paying special attention to a host of temperature variables. He found heterogeneous effects of amenities by race and age. In particular, Graves (1980) emphasized that amenity-oriented research is likely to be of increasing relative importance in the years to come. Further, Graves and Regulska (1982) examined the effects of a host of amenities on migration, such as proximity to oceans, rivers, lakes, or mountains, as well as pollution, violence, or property crimes. Viewing the potential issues associated with using too many amenity variables, Graves (1983) used housing rent as a proxy for amenities. He found housing rent has a significant effect on migration, and incorporating it in the empirical model increases the explanatory power substantially.

Graves’s viewpoints gained support from other studies (Schachter and Althaus 1989; D. E. Clark and Cosgrove 1991; Mueser and Graves 1995; Glaeser, Kolko, and Saiz 2001; T. N. Clark et al. 2002; Florida 2002; Ferguson et al. 2007; Bayer, Keohane, and Timmins 2009; Partridge 2010; Stephens and Partridge 2015; Hong 2016; Gao and Sam 2017). However, there are just as many studies arguing that amenities are, at best, secondary concerns compared to job opportunities in migration decisions (Greenwood and Hunt 1989; Reichert 2002; Chen and Rosenthal 2008; Arntz 2010; Niedomysl and Hansen 2010; Storper and Scott 2009; A. J. Scott 2010; Liu and Shen 2014). We hence emphasize that to date, there has been no consensus on the relative importance of “economic opportunities” versus “location-specific amenities” on migrant’s destination choices.

Apparently, empirical results can differ by the stages of a migrant’s life cycle. For instance, some studies showed that elderly people toward their retirement years tend to place more importance on amenities (Graves and Knapp 1988; D. E. Clark and

Hunter 1992; D. E. Clark, Knapp, and White 1996; Chen and Rosenthal 2008; A. J. Scott 2010). However, Goetzke and Rave (2013) found younger people value amenities higher, while middle-aged people and East Germans prefer regions with low unemployment. The empirical findings also seem to vary by country and migrant characteristics. For instance, A. J. Scott (2010) provided evidence that US engineers prioritize job prospects over amenities. Based on Canadian data, migrants from urban areas and more educated migrants tended to value jobs more than amenities (Ferguson et al. 2007; Brown and Scott 2012). Using data from Germany and Sweden, Arntz (2010) and Niedomysl and Hansen (2010) also supported the predominance of job considerations. Using data from the Netherlands, Rijnks, Koster, and McCann (2018) emphasized that there exists spatial heterogeneity in that the impacts of amenities on migration vary across regions. Focusing on the migration of households displaced by violent conflicts in Colombia, Lozano-Gracia et al. (2010) find that more populated regions are more attractive as they provide a sufficient level of fulfillment of basic needs.

Most existing studies on the job-versus-amenity debate use data from developed countries; the volume of literature investigating this issue using data from developing countries is rather small. This article is closely related to two studies: Liu and Shen (2014), focusing on interprovincial migration of highly educated migrants, provided evidence that China's skilled workers place more priority on job opportunities. Xia and Lu (2015), focusing on intercity migrants in China, stressed the role of public goods, particularly basic education and medical services, in the location choice of migrant workers.

This article adds to the literature in the following aspects: first, we provide new empirical evidence on the job-versus-amenity debate using high-quality data from a fast-growing developing country. Although many studies using data from developed countries suggest that amenities play an important role in migration, it remains unclear whether such evidence can be validated in the context of China. Second, more aligned with similar US literature that commonly uses metropolitan statistical area attributes, this article utilizes prefectural-level city attributes to examine the location choice of China's internal migrants because there is substantial variation both in economic conditions and local amenities across cities within a province, and most migrants are concentrated in a few cities in a given province. Third, we employ a sampling strategy on city alternatives based on the seminal work of McFadden (1978), which yields consistent estimates while substantially reducing estimation time. Last but not least, we enrich our analyses using a more recent nationally representative data set—the 2014 China Migrants Dynamic Survey (CMDS), which helps illustrate migrants' preference toward jobs and amenities in recent years.

Overall, our results confirm that job-related factors consistently play critical roles in the locational decisions of the migrants. Among the economic variables, size of population and per capita gross domestic product (GDP) have the most consistent and positive effect on the attractiveness of a city. Amenity-related factors such as climate (temperature, rainfall), urban green areas, and recreational facilities

(theaters) also shape the demographical distribution of migrants. Housing price, when used as a proxy for overall amenities, conveys a clear message that the skilled, urban, female, and young migrant workers tend to attach more importance to amenities and quality of life in their migration decisions. Using the 2014 CMDS, we find that amenity factors related to natural environment and climate continue to exert strong impacts on the locational decision of migrants in recent years, especially for those with a higher level of educational attainment and urban Hukou. Public services, however, seem to play an increasingly deterrent role, which is likely driven by China's Hukou system, under which temporary migrant workers and their families have no access to urban public services such as basic education and medical services.

The remainder of this article is structured as follows: the next section delineates our estimation strategy on conditional logit modeling. We then set up a section to present data arrangements and descriptive statistics. Detailed estimation results and associated interpretations are given in the subsequent Empirical Results section. The final section concludes the study.

Estimation Strategy

Basic Conditional Logit Modeling

We use a conditional logit model to evaluate the relative importance of jobs versus amenities in determining migrants' locational choices. The conditional logit model, developed based on the random utility model, is particularly appropriate when micro data sets are in use. The model has a solid microeconomic foundation and enables us to identify how an individual makes locational decision in a utility maximization framework. Especially, the conditional logit model produces more credible estimates when the set of feasible choices is rather large.

Conditional logit model estimation differs from a regular logit model in that the data need to be grouped and matched. An alternative methodology known as the multinomial logit (MNL) model is similar to the conditional logit model in basics, while the former places more emphasis on individual characteristics and the latter on choice-specific attributes. In the context of our study, we prefer using a conditional logit model since our primary focus is on city-specific attributes and their impacts on individuals' locational decisions.

Built on the merit of the previous works, this study examines the migrant's locational choices within a utility maximizing, discrete choice model that incorporates personal attributes of the migrant, job and location-specific amenity variables at the alternative destination cities, and a vector of control variables. The utility an individual i derives by choosing destination j takes the form:

$$U_{ij} = V_{ij} + \varepsilon_{ij}. \quad (1)$$

Let the deterministic component of the utility function for individual i , V_{ij} , be a function of personal and location-specific characteristics,

$$V_{ij} = F(X_i, E_j, A_j, Z_{ij}), \quad (2)$$

where X_i is a vector of individual characteristics such as age, gender, Hukou status, and education; E_j represents a vector of employment-related city characteristics such as GDP per capita, population size, and unemployment rate; A_j stands for a set of amenity attributes such as climate, green areas, theaters, and public goods; Z_{ij} is a set of variables dependent on both one's origin and city destination, such as the distance between the origin and destination, and an interprovincial dummy indicating whether a migrant moved beyond the boundary of his or her home province. Note that although distance is usually pinpointed as deterring migration, the cost of migration goes beyond what is captured by distance alone. There are other unobserved factors related to the cost of long-distance moving such as psychological costs and informational costs. Since social connections appear to be stronger within the origin province, we include an interprovincial dummy to reflect the additional costs associated with moving beyond one's province of origin.¹

Representative migrant choose a city j that maximizes his or her random utility function:

$$U_{ij} \geq U_{ik}, \quad \forall k \neq j. \quad (3)$$

According to McFadden (1974), if the residual in equation (1) has a type 1 extreme value (Weibull) distribution, then the probability that city j is chosen by individual i is the conditional multinomial logit:

$$\text{Prob}(\text{chosen}_{ij} = 1) = \frac{\exp(V_{ij})}{\sum_{k=1}^J \exp(V_{ik})}, \quad (4)$$

$$\text{where } V_{ij} = X_i' \alpha + E_j' \beta + A_j' \gamma + Z_{ij}' \delta,$$

and

$$\text{chosen}_{ij} = \begin{cases} 1 & \text{if city } j \text{ is chosen by migrant } i \\ 0 & \forall k \neq j \end{cases}.$$

Alternative Sampling

Two issues are associated with utilizing the full sample in the alternative destinations for migrants. First, each observation is multiplied by the number of city alternatives, which leads to computationally burdensome estimations when the set of alternatives is large. Second, the independence from irrelevant alternatives (IIA) property is most likely to be violated since not all the studied cities are potential destinations for a specific migrant.²

To illustrate the point that most migrants are concentrated in a few cities for a given province, Figure 1 depicts the geographical patterns of migrants from two major migrant-providing provinces. A clear pattern can be identified: migrants, regardless of which province they are from, prefer to move to the capital or major cities within their home province, while the others are scattered along the coastal region with the highest concentration existing in a few prominent cities, namely, Guangzhou, Shanghai, and Beijing.

For instance, Sichuan province, with a total population of 87 million, claims to be one of the most populous provinces in the country. Sichuan has been singled out in several studies concerning rural–urban migration as the chief provider of migrant workers. Despite the impressive volume of migrant workers from Sichuan registered all over the country, Figure 1A indicates that the vast majority of areas have a negligible proportion (0–0.02 percent) of migrant workers from Sichuan. About 1–5 percent of migrants from Sichuan chose to go to Chengdu, the capital city of Sichuan, and Chongqing, a municipality proximate to Sichuan. Around 5–10 percent of Sichuan migrants chose Guangzhou, and about 10–21 percent chose Shanghai and Shenzhen. Among the remaining cities, only Beijing and Tianjin attracted more than 1 percent of Sichuan migrants.

The locational distribution of migrants from Henan province demonstrates a similar pattern. As Figure 1B shows, around 1–5 percent of migrants from Henan chose Zhengzhou, the capital city of Henan. Around 5–10 percent of migrants chose Guangzhou, due to its proximity to Henan province. A large proportion of migrants chose Beijing, Shanghai, and Shenzhen.

Based on the seminal work of McFadden (1978), consistent estimator can be obtained by taking a random sample of alternatives from the full choice set (see Ben-Akiva and Lerman [1985] for an elaboration on this topic). By doing so, the precision of the estimation increases greatly. Consistency holds provided that first, IIA holds, which is ensured by the MNL model, and second, if an alternative is included in a assigned set, then it has the logical possibility of being an observed choice from that set, which is satisfied because random selection satisfied the “uniform conditioning property” (McFadden 1978).

This sampling procedure is commonly used in the discrete choice literature. For example, Train, McFadden, and Ben-Akiva (1987) examined the demand for local telephone service by defining a portfolio of calls as a particular number and average duration of calls at each time of day to each distance zone. Since the set of portfolios among which the household chooses is large, they selected a random sample of portfolios according to the observed portfolios in the sample of households. Guimaraes, Figueiredo, and Woodward (2000) constructed a choice set for each individual consisting of the actual choice and thirty-nine other randomly selected choices to examine the locational choice of foreign direct investment in Portugal. To examine household preferences for schools and neighborhoods, Bayer, Ferreira, and McMillan (2007) constructed a subset that consists of a household’s chosen house and a random sample of the remaining alternatives. Parsons and Kealy (1992)

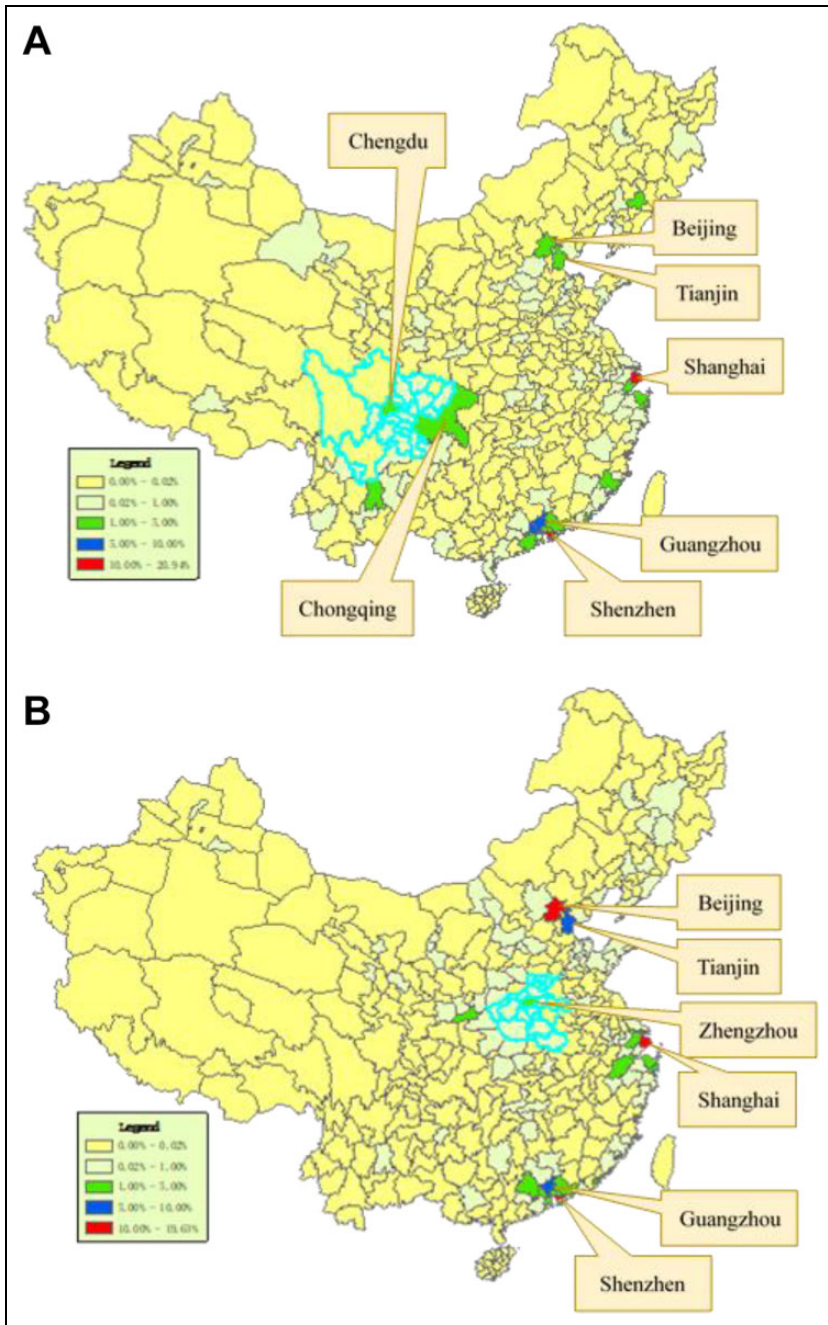


Figure 1. Geography distributions of migrants from Sichuan and Henan province. (A) Geographic distribution of migrants from Sichuan. (B) Geographic distribution of migrants from Henan.

dealt with a large number of recreation sets by using each person's chosen site plus a randomly drawn opportunity set for as few as eleven sites when hundreds are available.

No consensus has been reached on how many alternatives should be included in the conditional logit estimation. Some studies have used ten—the actual destination and nine randomly selected alternative destinations (D. M. Scott, Coomes, and Izyumov 2005; Brown and Scott 2012), some used twelve (e.g., Parsons and Kealy 1992; Ioannides and Zabel 2008), and Guimaraes, Figueiredo, and Woodward (2000) used up to forty alternatives in their study. For our study, we opt to use fifteen alternatives. Thus, each individual faces a subset of fifteen cities, consisting of the one city that the migrant actually chose plus fourteen other cities generated through the random sampling procedure. We can show that the subset of fifteen city choices represents a migrant's locational choices well in the sense that migrants from the same source province are concentrated in a few cities. We have experimented using ten and twenty alternatives and find that the results are consistent and qualitatively similar in terms of signs and statistical significance.

Additionally, we assign each city a sampling weight that is based on the distribution of actual choices of the migrants in our sample. In other words, for each individual, we select a set of cities based on the proportion of migrants from the same home province choosing city j to form an individual-specific alternative set S . In this case, the probability of individual i choosing city j among subset S is given by:

$$P_{j|S} = \frac{P_{S|j}P_j}{\sum_{k \in S} P_{S|k}P_k}, \quad (5)$$

which exists if $P_{S|k} > 0$ for all $k \in S$. This property, referred to as the positive conditioning property, is established by McFadden (1978) to ensure the consistency of estimates when the alternative sampling strategy is used. We suppress i in the subscript for brevity.

Rewrite equation (4) under subset S :

$$P_{j|S} = \frac{\exp(V_{ij} + \ln P_{j|S})}{\sum_{k \in S} \exp(V_{ik} + \ln P_{k|S})}. \quad (6)$$

It has been demonstrated in McFadden (1978) that, under normal regularity conditions, maximizing the log-likelihood function will yield consistent estimates.

Data Arrangements and Descriptive Statistics

The primary data source for our empirical investigation is China's 1% population sample survey conducted in November 2005 (hereafter 2005 census). It is a large-scale, nationally representative survey initiated by the State Council of China and carried out by the NBSC. The 2005 census has sampled over 13 million people in

which more than 2.5 million individual records are used to construct our working sample. To capture more recent trends in migrants' locational preferences, we also use the 2014 CMDS conducted by the National Health and Family Planning Commission of China.³ We collect detailed socioeconomic information on age, gender, educational attainment, marital status, as well as migration status, employment status, occupation, and other work-related variables. City attributes, meant to capture various aspects of city characteristics in terms of job opportunities and amenities, are extracted from the *City Statistical Yearbook of China*, the *Statistical Yearbook of Regional Economy*, and the *Environmental Annual of China*.

To make migrants largely comparable based on the 2005 census and the CMDS, we restrict our samples to migrants who were fifteen to fifty-nine years of age at the time of surveys, working in a prefecture-level city, and had moved at least beyond a county's boundary. We define a migrant as an individual whose current location is different from his or her household registration (Hukou) place at the county level.⁴ Further, we keep only those who had migrated for the purpose of work or business and those who at the time were holding a job and receiving a positive income, students excluded. A caveat though, one limitation of our measurement for migrants is that it leaves out some skilled workers who had obtained a local Hukou. As a result, our samples contain only those who hadn't changed their Hukou registration after they migrated, thus a higher percentage of temporary migrants.⁵

Our working samples contain 80,789 migrants from the 2005 census and 66,519 migrants from the CMDS. We would like to make it clear from the outset that the results based on these two data sources are not presented for strict comparison purposes since these two data are drawn from different populations with different sampling methodologies.⁶ Rather, we rely on the 2005 census as our main analytical results, while using the 2014 CMDS to reflect the preference of migrants toward jobs versus amenities more recently. Meanwhile, using CMDS for supplementary analyses helps us check whether our empirical implementation generates largely consistent results based on different data sets and whether there is evidence revealing that migrants' preferences toward certain location attributes have changed drastically.

The descriptive statistics of working samples are presented in Table 1. Based on the 2005 census, migrants are on average 30 years old with 58 percent of the sample being male, consistent with the fact that young male laborers are more likely to conduct internal migration than their female counterparts in China. The average educational attainment is 9.5 years, half a year longer than the mandated 9-year education enforced by the Compulsory Schooling Law. The majority of migrants are married (61 percent) and have completed a junior high school education (56 percent). In addition, approximately 80 percent of intercounty migrants are long-term migrants who left their household registration place for more than 1 year. Finally, 82 percent of the studied intercounty migrants are rural migrants with possession of a rural Hukou.

Table 1. Descriptive Statistics of Migrants.

Variable	2005 Census					2014 China Migrants Dynamic Survey				
	Observations	Mean	Standard Deviation	Minimum	Maximum	Observations	Mean	Standard Deviation	Minimum	Maximum
Age	80,789	30.16	9.234	15	59	66,519	33.98	8.923	15	59
Male	80,789	0.58	0.493	0	1	66,519	0.63	0.483	0	1
Married	80,789	0.61	0.489	0	1	66,519	0.76	0.428	0	1
Short-term	80,789	0.21	0.404	0	1	—	—	—	—	—
Interprovincial	80,789	0.72	0.449	0	1	66,519	0.41	0.492	0	1
Rural	80,789	0.82	0.388	0	1	66,519	0.81	0.397	0	1
Education (years)	80,789	9.56	2.732	0	19	66,519	10.64	2.935	0	19
Illiterate	80,789	0.02	0.129	0	1	66,519	0.01	0.083	0	1
Primary school	80,789	0.14	0.345	0	1	66,519	0.08	0.267	0	1
Junior high	80,789	0.56	0.496	0	1	66,519	0.48	0.500	0	1
Senior high	80,789	0.21	0.404	0	1	66,519	0.25	0.432	0	1
Some college	80,789	0.05	0.224	0	1	66,519	0.12	0.320	0	1
Bachelor's	80,789	0.03	0.156	0	1	66,519	0.06	0.242	0	1
Master's or above	80,789	0.00	0.045	0	1	66,519	0.01	0.076	0	1

Source: China's 2005 1% population sample survey (2005 Census) and 2014 China Migrants Dynamic Survey.

Note: Short-term (dummy) can't be constructed based on 2014 China Migrants Dynamic Survey.

The city attributes under consideration in this study are summarized in Table 2. Marked differences are identified in the job-related dimension of city characteristics. The income per capita of the richest city is fifty-three times that of the poorest. Some cities are gaining population, while others are losing population, with the population size of the largest city being over ninety times that of the smallest. Some cities have virtually no unemployment, while at the other end of the distribution, some cities' unemployment rate reaches as high as 56 percent. Cities also differ substantially in their amenity attributes. To gauge the quality of public services, we constructed an index for basic education (based on a principal component analysis incorporating teacher–pupil ratio of primary schools and secondary schools in 2004) and another index for medical services (based on a principal component analysis incorporating beds per capita, doctors per capita, and hospitals per capita in 2004). It is shown that public services vary substantially across cities, especially for basic education. When it comes to housing price, a key indicator for quality of life, the average housing price of the most expensive city is over forty times that of the least expensive ones. All these variations justify our use of city-level data instead of data at more aggregate levels.

To perform the proposed conditional logit estimation, our data are structured in a way that each individual faces fifteen alternative cities from which to choose. The main dependent variable takes the value of one for the city actually being chosen and a value of zero for the rest of the candidate cities. Hence, there are fifteen rows in the data array for each individual. Rational individuals compare the utility derived from each alternative and choose the migration destination that yields the highest utility level.

Note that our data contain both individual- and city-specific characteristics. The individual attributes, such as age, gender, and education, are fixed within each individual thus are dropped when the conditional logit model is estimated. However, we can incorporate individual attributes in the estimation by constructing a set of dummy variables that differentiate individuals and interacting the dummies with city attributes. The conditional logit model then provides the heterogeneous effects of city attributes on the probability of migrating to a location for individuals with different personal characteristics.

Empirical Results

Results Using 2005 Census Data

Table 3 presents our baseline estimation of the conditional logit model including various city attributes that reflect the economic factors and amenities. In column (1) of Table 3, we include the baseline variables that are commonly selected in the migration literature. The first three variables serve to reflect the employment opportunities of a city, assuming that cities with more population, higher per capita GDP, and lower unemployment rates tend to be more economically attractive for

Table 2. Descriptive Statistics of City Attributes.

Variable	Description	N	Mean	Standard		Minimum	Maximum	Data Source
				Deviation				
Job variables								
Population	Size of population at the end of 2004 (10,000,000)	286	0.123	0.148	0.014	1.289	<i>China Urban Statistical Yearbook, 2005</i>	
Per capita GDP	Per capita GDP in 2004 (1,000 Yuan)	284	20.15	14.54	1.84	97.49	<i>China Urban Statistical Yearbook, 2005</i>	
Unemployment rate	Share of unemployed persons registered in 2004	285	0.075	0.055	0.006	0.561	<i>China Urban Statistical Yearbook, 2005</i>	
Amenity variables								
Green areas	Per capita green area in 2004 (m ² per 1,000 persons)	286	0.027	0.042	0.001	0.591	<i>China Urban Statistical Yearbook, 2005</i>	
Theaters	Number of theaters in 2004 (1,000)	283	0.009	0.021	0.001	0.221	<i>China Urban Statistical Yearbook, 2005</i>	
Temperature variation	Annual average of daily temperature maximum minus temperature minimum (°C)	197	9.391	2.246	5.000	15.000	http://www.tianqihoubao.com .	
Rainfall	Historical annual rainfall (millimeter, in log)	197	6.671	0.611	4.394	7.747	http://www.tianqihoubao.com .	
Basic education	Principal component score based on teacher pupil ratio of primary schools and secondary schools in 2004	285	3.000	1.229	0.279	16.624	<i>China Urban Statistical Yearbook, 2005</i>	
Medical services	Principal component score based on hospital bed per capita, doctor per capita and hospital per capita in 2004	286	7.000	1.372	4.278	12.467	<i>China Urban Statistical Yearbook, 2005</i>	
Control variables								
Fixed asset investment (FIXED)	Gross fixed asset investment as a share of GDP in 2004	285	0.498	0.199	0.126	1.606	<i>China Urban Statistical Yearbook, 2005</i>	

(continued)

Table 2. (continued)

Variable	Description	N	Standard		Minimum	Maximum	Data Source
			Mean	Deviation			
Human capital	Average years of schooling	285	8.515	0.948	4.750	10.632	China's 2000 census
Secondary industry employment ratio	Share of workers employed in secondary industry	283	0.465	0.148	0.138	0.819	<i>China Urban Statistical Yearbook, 2005</i>
Tertiary industry employment ratio	Share of workers employed in tertiary industry	283	0.512	0.141	0.163	0.858	<i>China Urban Statistical Yearbook, 2005</i>
Housing price	City's commercial housing sales divided by sales areas in 2004, (Yuan/1,000 m ²)	256	1.592	0.859	0.168	6.759	<i>China Statistical Yearbook for Regional Economy, 2005</i>
Distance	Geographical distance between chosen city and Hukou city (1,000 km)	80,789	0.614	0.501	0	3.741	Computation using STATA based on longitudes and latitudes of cities
Squared distance	Square of distance	80,789	0.628	0.963	0	13.997	Computation based on distance
Interprovincial	Equal to 1 if chosen city and Hukou city are in the different provinces and 0 otherwise	80,789	0.720	0.449	0	1	Computation based on 2005 census

Table 3. Conditional Logit Estimates for the City Choices of Internal Migrants.

	Nonstandardized Coefficients		Standardized Coefficients	
	(1)	(2)	(3)	(4)
Job variables				
Population	0.258*** (0.030)	1.398*** (0.065)	0.091*** (0.011)	0.494*** (0.023)
Per capita GDP	0.002*** (0.000)	0.018*** (0.001)	0.029*** (0.008)	0.324*** (0.016)
Unemployment rate	-7.108*** (0.215)	-1.537*** (0.234)	-0.270*** (0.008)	-0.058*** (0.009)
Amenity variables				
Green areas		1.727*** (0.080)		0.243*** (0.011)
Theaters		8.115*** (0.282)		0.467*** (0.016)
Temperature variation		-0.075*** (0.007)		-0.135*** (0.013)
Rainfall		-0.251*** (0.038)		-0.129*** (0.020)
Basic education		0.008 (0.010)		0.008 (0.010)
Medical services		0.035*** (0.010)		0.045*** (0.014)
Control variables				
Fixed asset investment	-1.252*** (0.048)	0.192*** (0.056)	-0.196*** (0.008)	0.030*** (0.009)
Human capital	0.710*** (0.009)	-0.014 (0.016)	0.540*** (0.007)	-0.011 (0.012)
Secondary industry employment ratio	1.107*** (0.353)	-0.279 (0.403)	0.139*** (0.044)	-0.035 (0.050)
Tertiary industry employment ratio	1.887*** (0.355)	-0.674 (0.415)	0.231*** (0.043)	-0.082 (0.051)
Distance	-3.293*** (0.030)	-3.414*** (0.032)	-1.755*** (0.016)	-1.820*** (0.017)
Squared distance	0.858*** (0.012)	0.859*** (0.013)	0.988*** (0.014)	0.988*** (0.015)
Interprovincial	-0.019 (0.018)	-0.093*** (0.019)	-0.019 (0.018)	-0.093*** (0.019)
Log likelihood	-182,135	-145,863	-182,135	-145,863
Pseudo R ²	.138	.170	.138	.170
Provincial fixed effects	Yes	Yes	Yes	Yes
No. of individuals	79,228	71,887	79,228	71,887
No. of observations	1,143,022	836,799	1,143,022	836,799

Source: 2005 census.

Note: Provincial fixed effects are included in all estimations. GDP = gross domestic product.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

job-searching migrants. Our control variables include the gross fixed asset investment as a share of GDP (as a proxy for the physical capital accumulation rate), the average educational attainment of workers (as a proxy for the level of human capital in that city), secondary and tertiary industry employment shares to reflect a city's industry structure, distance between the current working city and one's Hukou registration place to capture the pecuniary and psychological moving costs, and an interprovincial dummy to capture the additional costs incurred by migrating beyond the boundary of one's home province due to loss of information, social network, or social benefits.

Consistent with the findings of most existing literature, all three key job opportunity indicators are statistically significant at the 1 percent level with expected signs. Overall, people are drawn to cities with greater population, higher income level, and lower unemployment rate, which confirms that job opportunities are key determinants in migrants' locational decisions in China's transitioning economy.⁷

In column (2) of Table 3, we add a set of amenity-related variables established in the literature. We include green areas (for environmental amenities), theaters (for recreational amenities), climate (temperature variation, rainfall), and public services (basic education, medical services). While the three job-related variables remain operating in migration decisions, our results indicate that both green areas and theaters have a positive and statistically significant effect on the probability of a city being chosen, suggesting that a city's natural and recreational amenities play a positive role in attracting migrants. Conforming to our expectation, temperature variation, measured by the annual average range of daily temperatures, has a negative and statistically significant coefficient, indicating that extreme temperature is undesirable from the perspective of migrants. Annual rainfall is also found to have a significant discouraging effect on migrants' location choices. Basic education, constructed based on teacher-pupil ratio of both primary and middle schools, has no significant effects on the locational choices of migrants. One plausible explanation for the insignificant coefficient is that the majority of migrants in our sample are rural migrants who are largely "floating population" and have limited access to urban public schools for their children. However, medical services, constructed based on hospital beds per capita, doctors per capita, and hospitals per capita, seem to play a positive and significant role on migrants. Taken together, migrants seem to respond to education and medical services differently.

It's worth pointing out that public services are quite different from the other amenity variables in the sense that unlike climate and green areas, which are available for all people, public services are not equally accessible for migrants and local urbanites. Thus, the coefficients on public services need to be interpreted in the context of China's unique Hukou system, under which migrant workers and their families are considered only temporary residents with no rights to urban public services. As reported by China's Ministry of Human Resource and Social Security, only 17 percent of the migrant workers are covered by urban medical insurance; even in 2016, we expect that this rate was even lower back in 2005. For migrants

without medical insurance, urban medical services can be stunningly expensive relative to rural medical treatments.

Additionally, our results show that, controlling for a city's economic conditions and amenities, investment rate has a significant positive effect on migration. Human capital, on the other hand, has an insignificant effect on the probability of a city being chosen for migration, which is probably due to the fact that the majority of migrants in our sample have a relatively low education level. However, we expect that high-skilled migrants are attracted to cities with a high concentration of human capital. The theory of human capital externalities proposes that the concentration of skilled workers boosts urban productivity by increasing the exchange of knowledge and face-to-face interactions that people experience, thereby generating learning and knowledge spillovers. Industrial structures, measured by the secondary and tertiary industry employment shares, are both statistically insignificant, suggesting that cities' industrial structure didn't play a major role in the first half of 2000s. As expected, distance from home province has a strong deterrent effect on migration, but this effect attenuates as distance increases, indicated by the positive squared-distance coefficient. The estimated coefficient on the interprovincial dummy is negative and statistically significant, indicating that there is an additional deterrent effect from moving beyond one's home province. This is consistent with Su, Tesfazion, and Zhao (2018), which explored the role of culture, institutional barriers, and dialect in explaining a pronounced "border effect" found in internal migration in China.

To further assess the relative importance of job opportunities versus amenities in determining the locational choices of migrants, we standardize all independent variables to have a standard deviation of one and repeat the estimations in columns (1) and (2). Standardization identifies the impact of a one-standard-deviation increase in a city attribute on the likelihood of a city being chosen by migrants, without altering the direction or statistical significance of the estimates. Results presented in columns (3) and (4) of Table 3 indicate that if we rank the importance of city-specific attributes based on the magnitude of coefficients, the most influential factors in determining locational choices of migrants (in descending order) are population size, theaters, per capita GDP, green areas, and climate. In contrast, unemployment rate and public services seem to carry a much smaller weight in migrants' location considerations. Thus, full-sample results provide supportive evidence that amenities are equally important in attracting migrants.

We move on to examine the heterogeneities among individual's locational choice by introducing a set of dummy variables that differentiate the decision makers: skilled versus unskilled (skilled defined as those who have at least finished high school), urban-Hukou migrants versus rural-Hukou, female versus male, and young migrants versus elder (elder refers to those above fifty-five years of age). Table 4 reports the estimated coefficients on the interaction terms between the individual differentiators (the skilled, the urbanites, the female, and the young) and city attributes as labeled. All regressions include a full set of city attributes as well as

Table 4. Heterogeneous Locational Preferences by Individual Attributes.

	(1)	(2)	(3)	(4)
	Skilled vs. Unskilled	Urban vs. Rural	Female vs. Male	Young vs. Old
Job variables				
# Population	0.261*** (0.019)	0.313*** (0.022)	0.070*** (0.016)	-0.512*** (0.062)
# Per capita GDP	-0.264*** (0.023)	-0.437*** (0.027)	0.153*** (0.020)	0.632*** (0.080)
# Unemployment rate	-0.142*** (0.014)	-0.093*** (0.016)	-0.047*** (0.012)	-0.034 (0.041)
Amenities variables				
# Green areas	0.157*** (0.021)	0.089*** (0.032)	0.056*** (0.024)	-0.031 (0.137)
# Theaters	-0.109*** (0.014)	-0.098*** (0.016)	-0.035*** (0.013)	0.304*** (0.049)
# Temperature variation	-0.106*** (0.021)	-0.033 (0.023)	-0.231*** (0.019)	-0.047 (0.066)
# Rainfall	0.123*** (0.024)	0.113*** (0.027)	-0.068*** (0.021)	0.039 (0.081)
# Basic education	-0.060*** (0.018)	-0.071*** (0.020)	0.025* (0.015)	-0.034 (0.046)
# Medical services	0.065*** (0.020)	0.194*** (0.023)	-0.001 (0.019)	-0.112* (0.068)*
Control variables				
# Fixed asset investment	0.044*** (0.015)	0.030* (0.017)	0.019 (0.013)	0.129*** (0.049)
# Human capital	0.130*** (0.020)	0.106*** (0.023)	-0.028* (0.017)	0.059 (0.063)
# Secondary industry employment ratio	0.298** (0.137)	0.040 (0.119)	0.110 (0.098)	-0.218 (0.223)
# Tertiary industry employment ratio	0.494*** (0.137)	0.240** (0.120)	0.076 (0.098)	-0.119 (0.221)
# Distance	0.204*** (0.014)	0.219*** (0.015)	-0.142*** (0.014)	0.143*** (0.054)
# Interprovincial	-0.403*** (0.034)	-0.369*** (0.038)	-0.090*** (0.031)	0.055 (0.113)
Log likelihood	-144,763	-145,139	-145,541	-145,705
Pseudo R ²	.176	.174	.171	.170
Provincial fixed effect	Yes	Yes	Yes	Yes
No. of individuals	71,887	71,887	71,887	71,887
No. of observations	836,799	836,799	836,799	836,799

Source: 2005 census.

Note: This table reports the coefficient estimates on the interaction terms between city attributes (following the # sign) and individual attribute dummies, that is, in column (1), skilled = 1 for high school graduates or above and 0 otherwise; in column (2), urban = 1 for migrants with an urban Hukou and 0 otherwise; in column (3), female = 1; in column (4), young = 1 if < fifty-five years old and 0 otherwise. All specifications include all city characteristics previously included in Table 3. Provincial fixed effects are included in all estimations. GDP = gross domestic product.

*p < .10.

**p < .05.

***p < .01.

provincial dummies. Estimates in column (1) indicate that skilled migrants gravitated toward cities with more population and lower unemployment rates, consistent with the literature that finds high human capital workers favor locations with “thick labor markets” (Florida 2002). However, skilled migrants seem to be less concerned about income, as suggested by a negative coefficient on per capita GDP. With respect to amenity-related variables, the results suggest that skilled migrants are attracted to places with more green areas, but not necessarily more theaters; they are attracted to agreeable weather, but not necessarily deterred by more rainfall. Thus, our results yield a rather mixed picture regarding amenity attribute that matters for the skilled migrants. In general, we find that green areas and nice weather are salient factors in attracting skilled workers.

As expected, skilled migrants are attracted to cities with a higher level of human capital, evidenced by a positive and significant coefficient on the average educational attainment of the city, which is consistent with the human capital externalities theory: skilled laborers tend to cluster to benefit from a positive learning externality. Besides, skilled migrants prefer cities with higher investment rate, stronger secondary and tertiary industries; in other words, more employment opportunities. Meanwhile, our results reveal that skilled workers are more mobile and less discouraged by distance, as reflected by the positive coefficient on the distance from their household registration place. However, these migrants tend to have a stronger preference to stay within their home province, thus more reluctant to undertake inter-provincial migration compared with unskilled migrants.

Results in column (2) of Table 4 indicate that migrants with urban Hukou, compared with rural migrants, demonstrate similar locational preference as skilled migrants. Column (3) shows that female workers, compared with their male counterparts, are more likely to choose locations with better climate and more green areas; meanwhile being less willing to undertake long-distance migration, possibly due to their need to bear more household chores and child-rearing tasks. When it comes to the results of younger workers relative to the elder migrants in column (4), it is clear that in the early stage of their earning life cycle with the burden of taking back remittances, income is of priority in choosing the migration location (Hua and Yin 2017), whereas amenities are in general unimportant. Interestingly, young migrants are attracted to places with more recreational facilities (theaters) but place less weight on other amenity attributes.

Amenities can be capitalized into wages, rents, or other local prices, which reflects the implicit value that a society places on amenities (Knapp and Graves 1989). Thus, rents and housing prices are used in the literature as proxies for amenities. Glaeser, Kolko, and Saiz (2001) used housing prices to form an “amenities index.” Housing prices are viewed as a rough measure of the present value of housing rents. As forcefully argued in Knapp and Graves (1989), there are several advantages of using a single proxy variable instead of a host of amenity variables. First, it reduces multicollinearity associated with using a large number of separate

amenity variables, which could yield imprecise estimates. Second, it preserves degrees of freedom. Third, it mitigates potential systematic measurement errors.

Hence, following the method by Glaeser, Kolko, and Saiz (2001), we regress housing prices on per capita GDP and use the residuals to construct an “amenity index.”⁸ Based on this amenity index, the top ten high amenity cities are Beijing, Wenzhou, Sanya, Shanghai, Hangzhou, Shenzhen, Guangzhou, Zhoushan, Xiamen, and Nanjing, which corresponds well with our predictions of high amenity cities. The estimation results on heterogeneous preferences among migrants are presented in Table 5. The results show that the coefficients on the “amenity index” are positive and statistically significant in all specifications, indicating that skilled, urban, female, and young migrants tend to attach more importance to amenities compared to their respective counterparts. Thus, our results confirm that amenities are important in migrants’ location decisions.

Results Using 2014 CMDS Data

Our analyses based on the 2005 census data reflect the locational choice of migrants in the first half of the 2000s in China. However, migration patterns might have undergone a significant change in the recent decade. To shed light on the determinants of migration decision in more recent years, we utilize another nationally representative data source known as the China Migrants Dynamic Survey (CMDS). Due to the differences between 2005 census and the CMDS data as acknowledged earlier, we tend not to compare the relative size of estimated coefficients; rather, we pay attention to the consistency of coefficient estimates, reversal of signs, and noticeable changes in significance levels.

The 2014 CMDS sample contains 66,519 migrants between fifteen and fifty-nine years old, with a Hukou different from their current location at least at the county level, and having stayed in their current location for at least one month. The right panel of Table 1 presents summary statistics of intercounty migrants based on the CMDS data. On average, migrants are older, with a higher percentage of male workers relative to the sample from 2005 census. In addition, migrants from the CMDS have a higher level of educational attainment; the share of interprovincial migrants indicates a significant drop—decreasing from 72 percent to 41 percent, suggesting that more migrants chose to seek employment near their hometowns in recent years.

As shown in Table 6, most results based on the CMDS are largely consistent with those generated from the 2005 census. First, migrants strongly prefer cities with more population and higher income; however, unemployment rate shows an unexpected sign. A possible explanation for this result is that migrants are attracted by expected wage differentials, not actual ones. In their seminal works, Harris and Todaro (1970) put forward conceptual models that attempt to explain the continuous flow of rural–urban migrants in the face of high levels of urban unemployment. They pointed out that rural migrants make their decisions based on the *expected* wage

Table 5. Heterogeneous Preferences with Amenity Index.

	(1)	(2)	(3)	(4)
	Skilled vs. Unskilled	Urban vs. Rural	Female vs. Male	Young vs. Old
Job variables				
# Population	0.019 (0.018)	0.139*** (0.020)	-0.031** (0.015)	-0.418*** (0.056)
# Per capita GDP	-0.012 (0.017)	-0.200*** (0.020)	0.147*** (0.015)	0.521*** (0.058)
# Unemployment rate	-0.131*** (0.013)	-0.103*** (0.014)	-0.023** (0.011)	-0.009 (0.032)
Amenities variables				
# Amenity index	0.144*** (0.015)	0.065*** (0.017)	0.090*** (0.014)	0.305*** (0.058)
Control variables				
Control variables	Y	Y	Y	Y
Log likelihood	-164,721	-165,064	-165,538	-165,604
Pseudo R ²	.164	.162	.159	.159
Provincial fixed effect	Yes	Yes	Yes	Yes
No. of individuals	75,848	75,848	75,848	75,848
No. of observations	1,024,177	1,024,177	1,024,177	1,024,177

Source: 2005 census.

Note: This table reports the coefficient estimates on the interaction terms previously defined in Table 4. Amenity index is the residual after regressing housing price on per capita GDP. Provincial fixed effects are included in all estimations. We control for the same set of control variables as in previous Table 4 in all specifications. GDP = gross domestic product.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

Table 6. Conditional Logit Estimates for the City Choices of Internal Migrants.

	Nonstandardized Coefficients		Standardized Coefficients	
	(1)	(2)	(3)	(4)
Job variables				
Population	1.578*** (0.047)	1.513*** (0.084)	0.615*** (0.018)	0.590*** (0.033)
Per capita GDP	0.002*** (0.000)	0.002*** (0.000)	0.157*** (0.010)	0.193*** (0.024)
Unemployment rate	0.967*** (0.151)	0.945*** (0.305)	0.039*** (0.006)	0.038*** (0.012)
Amenity variables				
Green areas		2.551*** (0.256)		0.150*** (0.015)
Theaters		1.172 (0.775)		0.066 (0.044)
Temperature variation		-0.078*** (0.007)		-0.163*** (0.015)
Rainfall		-0.099*** (0.031)		-0.059*** (0.019)
Basic education		-0.203*** (0.016)		-0.306*** (0.025)
Medical services		-0.019** (0.009)		-0.023** (0.011)
Control variables				
Fixed asset investment	0.064** (0.028)	0.241*** (0.042)	0.018** (0.008)	0.069*** (0.012)
Human capital	0.266*** (0.010)	0.183*** (0.015)	0.231*** (0.009)	0.159*** (0.013)
Secondary industry employment ratio	6.872*** (0.476)	7.933*** (0.577)	0.990*** (0.069)	1.142*** (0.083)
Tertiary industry employment ratio	6.461*** (0.487)	7.440*** (0.595)	0.904*** (0.068)	1.041*** (0.083)
Distance	-1.137*** (0.032)	-1.306*** (0.038)	-0.739*** (0.021)	-0.849*** (0.024)
Squared distance	0.243*** (0.012)	0.338*** (0.016)	0.389*** (0.020)	0.541*** (0.025)
Interprovincial	-0.899*** (0.018)	-0.899*** (0.020)	-0.899*** (0.018)	-0.899*** (0.020)
Log likelihood	-119,970	-88,411	-119,970	-88,411
Pseudo R ²	.097	.111	.097	.111
Provincial fixed effects	Yes	Yes	Yes	Yes
No. of individuals	52,879	43,653	52,879	43,653
No. of observations	657,896	433,062	657,896	433,062

Source: 2014 China Migrants Dynamic Survey.

Note: Provincial fixed effects are included in all estimations. GDP = gross domestic product.

*p < .10.

**p < .05.

***p < .01.

differentials rather than the actual wage differentials. Rural to urban migration will persist as long as rural wages stay below the expected urban wage. For example, in the 1990s, there were large waves of rural migrants in China, mostly driven by the sizable rural–urban income gap, while urban unemployment rates were surging.⁹

Second, both temperature variation and rainfall have a significant deterrent effect on the attractiveness of a city, which confirms that more amenable weather exerts a significant effect on recent migrants. Green areas still have a positive and significant effect on the attractiveness of a city, whereas theaters cease to play an important role in migrants' location decisions. Overall, our results provide supportive evidence that amenities play a major role in shaping migration patterns in the recent past.

A number of findings are worth noting. Based on the data from the CMDS, migrants are strongly inhibited from choosing cities that provide better basic education and health services, usually the ones with high living costs. This finding, however, is intuitive in that migrants have very limited access to public services under China's Hukou system. Although this may serve to reduce the pressure on public goods in major cities to some degree, it can impose a potentially detrimental effect on cities' long-term economic growth, especially if cities are driving away high human capital workers. Thus, our results indicate that the Hukou system does play a pivotal role in restraining the flow of migrants, and such effects become more pronounced when a more recent data set is used. Meanwhile, cities' investment rates and industry structure play a more prominent role in attracting migrants, suggesting that employment is the primary driver for recent migration. Further, human capital has a significant pulling effect on migrants, indicating that people gravitate toward more educated workers as they become more educated themselves. In addition, though recent migrants seem to be less deterred by distance compared to those in 2005, the coefficient on the interprovincial dummy is negative and has much larger magnitudes. Hence, migrants are increasingly unwilling to move long distance from their provinces of origin, likely due to shrinkage in the income gap between inland and coastal regions as more adjacent employment opportunities become available for them such as township and village enterprises. This certainly has a profound effect on the geographical distribution of China's labor force, which warrants the objective of this article that is focus not only on interprovincial migrants but on intraprovincial ones and examine their location choices at a more disaggregated level.

Table 7 present findings regarding individual heterogeneities. Again, the results are remarkably consistent with previous results based on 2005 census. We find amenities matter: skilled migrants and those with an urban Hukou place more importance on theaters and green areas and are more discouraged by extreme temperature and rainfall compared with their respective counterparts. However, both basic education and medical services have a strong deterrent effect on skilled migrants, a result we find particularly alarming. Female migrants and young migrants do not exhibit discernable differences in their preferences for environmental amenities; however, they generally prefer cities with better climates. Overall, our

Table 7. Heterogeneous Preferences by Individual Attributes.

	(1)	(2)	(3)	(4)
	Skilled vs. Unskilled	Urban vs. Rural	Female vs. Male	Young vs. Old
Job variables				
# Population	0.248*** (0.025)	0.376*** (0.030)	0.079*** (0.025)	-0.178* (0.104)
# Per capita GDP	-0.343*** (0.035)	-0.156*** (0.045)	-0.222*** (0.036)	0.043 (0.139)
# Unemployment rate	-0.073*** (0.020)	0.032 (0.027)	-0.051** (0.020)	-0.188*** (0.070)
Amenities variables				
# Green areas	0.067*** (0.023)	0.096*** (0.030)	-0.038 (0.024)	-0.105 (0.100)
# Theaters	0.256*** (0.023)	0.166*** (0.028)	0.035 (0.023)	0.118 (0.093)
# Temperature variation	-0.191*** (0.021)	-0.167*** (0.027)	-0.126*** (0.021)	-0.228*** (0.079)
# Rainfall	-0.017 (0.023)	-0.069** (0.029)	0.022 (0.023)	-0.221** (0.092)
# Basic education	-0.430*** (0.034)	-0.129*** (0.044)	-0.114*** (0.034)	-0.102 (0.134)
# Medical services	-0.044* (0.018)	-0.033 (0.023)	0.046*** (0.018)	-0.170*** (0.061)
Control variables				
# Fixed asset investment	-0.100*** (0.016)	-0.028 (0.021)	-0.069*** (0.017)	-0.064 (0.061)
# Human capital	0.120*** (0.018)	-0.062** (0.024)	0.018 (0.018)	0.257*** (0.075)
# Secondary industry employment ratio	0.729*** (0.178)	-0.134 (0.183)	0.661*** (0.177)	0.827** (0.382)
# Tertiary industry employment ratio	0.700*** (0.177)	-0.074 (0.183)	0.608*** (0.176)	0.783** (0.384)
# Distance	0.023 (0.018)	0.094*** (0.021)	0.005 (0.019)	-0.078 (0.074)
# Interprovincial	-0.209*** (0.032)	-0.112*** (0.041)	-0.103*** (0.033)	0.177 (0.134)
Log likelihood	-87,458	-87,507	-88,313	-88,379
Pseudo R ²	.121	.120	.112	.112
Provincial fixed effect	Yes	Yes	Yes	Yes
No. of individuals	43,653	43,653	43,653	43,653
No. of observations	433,062	433,062	433,062	433,062

Source: 2014 China Migrants Dynamic Survey.

Note: This table reports the coefficient estimates on the interaction terms between city attributes (following the # sign) and individual attribute dummies, that is, in column (1), skilled = 1 for high school graduates or above and 0 otherwise; in column (2), urban = 1 for migrants with an urban Hukou and 0 otherwise; in column (3), female = 1; in column (4), young = 1 if < fifty-five years old and 0 otherwise. All specifications include all city characteristics previously included in Table 6. Provincial fixed effects are included in all estimations. GDP = gross domestic product.

*p < .10.

**p < .05.

***p < .01.

Table 8. Heterogeneous Preferences with Amenity Index.

	(1)	(2)	(3)	(4)
	Skilled vs. Unskilled	Urban vs. Rural	Female vs. Male	Young vs. Old
Job variables				
# Population	0.173*** (0.021)	0.362*** (0.026)	0.010 (0.022)	-0.132 (0.095)
# Per capita GDP	0.007 (0.014)	0.048*** (0.017)	-0.022 (0.014)	0.167** (0.068)
# Unemployment rate	-0.065*** (0.013)	-0.085*** (0.018)	-0.001 (0.012)	-0.084*** (0.032)
Amenities variables				
# Amenity index	0.066*** (0.005)	0.010* (0.006)	0.031*** (0.005)	0.013 (0.020)
Control variables				
	Y	Y	Y	Y
Log likelihood	-116,374	-116,436	-117,264	-117,310
Pseudo R ²	.103	.102	.096	.096
Provincial fixed effect	Yes	Yes	Yes	Yes
No. of Individuals	51,994	51,994	51,994	51,994
No. of observations	636,306	636,306	636,306	636,306

Source: 2014 China Migrants Dynamic Survey.

Note: This table reports the coefficient estimates on the interaction terms previously defined in Table 7. Amenity index is the residual after regressing housing price on per capita GDP. Provincial fixed effects are included in all estimations. We control for the same set of control variables as in previous Table 7 in all specifications. GDP = gross domestic product.

* $p < .10$.

** $p < .05$.

*** $p < .01$.

results indicate that skilled, urban, and female migrants tend to be less concerned with income and more concerned with amenities, especially climate.

When the “amenity index” is used in the regressions, as previously defined, Table 8 shows that the skilled as well as female migrants, in particular, attach more importance to amenities relative to income. Younger migrants, on the other hand, put an unambiguous priority on income while being on average insensitive to amenity attributes, similar to migrants with an urban Hukou. Thus, our results based on more recent data by and large confirm the value of amenities in migrants’ locational choices. Overall, our results provide supportive evidence that amenities exert an important influence on the locational choices of internal migrants, with heterogeneous effects by migrants’ individual characteristics.

Concluding Remarks

In this study, we provide new evidence on the role of job opportunities and city amenities in affecting the locational choices of internal migrants in a large developing economy. We employ a conditional logit modeling strategy to produce credible estimates using two large representative data sets on Chinese migrants. We find that population size, GDP per capita, and unemployment rate have significant impacts on the location decisions of internal migrants, while amenities matter in the destination choices especially for the skilled, urban-registered, female, and young migrants. For the subsample heterogeneity analyses, migrants with higher levels of educational attainment are more attracted by the urban stock of human capital. Urban-registered migrants tend to place more value on a city’s public services, whereas rural migrants don’t find urban public benefits particularly relevant. Female migrants are more concerned about climate and overall amenities, while younger migrants are much less concerned about public services and more about recreational amenities compared to their elderly counterparts.

Our research has raised some novel implications for local policy makers in contemporary China who recognize that additional benefits can be generated by enhancing urban density, reducing migration costs and dismantling rural–urban division. Social planners should be noticing that urban economic growth powered by localization economies in the early stage of China’s Reform and Open-up is now gradually switching to a new growth path driven by urbanization economies that place more emphasis on urban diversity and quality of life. It would be effective to attract both the unskilled laborers and talented workers by comprehensively promoting a city’s pecuniary opportunities and natural/cultural amenities, with more targeted policy design on amenity-side improvements. In addition, regional policy makers need to be aware that denying migrants access to public services is exerting an increasingly discouraging impact on migration. Measures need to be taken to ensure equity and accessibility to public services for all urban residents to some extent, which is essential for sustained growth and economic development of a city.

Lastly, we address several limitations associated with this work. First, our modeling strategies are not intended to establish a solid causal relationship between city attributes and locational choice of migrants, partially due to the paucity of longitudinal data. Second, as the national CMDS program was initiated in 2011, the two adopted data sets are not strictly comparable due to different sampling schemes. Third, in the current work, we omit in-depth testing and discussion of the mechanisms associated with the identified locational choice patterns. We expect our findings to trigger future works that build on more delicate data sets and more rigorous identification strategies.

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Notes

1. These costs are incurred by the availability of social benefits, medical care, and access to basic education that can substantially affect migration decisions.
2. In the family of logit model, independence from irrelevant alternatives property requires that probability ratio P_{ij}/P_{ik} is independent of other probabilities. This property states that for a specific individual, the ratio of the choice probabilities of any two alternatives in the choice set is unaffected by the systematic utilities of any other alternatives in the choice set, namely, alternatives are assumed to be independent of one another.
3. The most recent population survey is China's 2015 1% population survey, but the individual-level data are not publicly available.

4. Therefore, we eliminate within-county migrants because our primary interest is to examine what attributes make a city attractive from the viewpoint of a medium and longer-distance mover.
5. Many previous studies focused on interprovincial migrants, excluded those who moved within their home provinces and treated them as “nonmigrants.” But, various data sources clearly indicate that intraprovincial migrants have always outnumbered their interprovincial counterparts in China. As our article aims to analyze what attributes make a city appealing from the perspective of all migrants, we obviously don’t want to exclude intraprovincial migrants, especially those who moved from less prominent cities to capital/major cities within their home provinces.
6. To be specific: first, the 2005 1% population survey drew its sample from the entire population of the citizens of People’s Republic of China, whereas the China Migrants Dynamic Survey (CMDS) drew its sample from migrants who were aged fifteen to fifty-nine years and had migrated to their current residence for at least one month. Second, the CMDS includes migrants who lived at locations such as temporary construction sites, abandoned factories, streets, and other informal sites, thus containing a higher percentage of “floating population.” Third, the 2005 1% population survey used household as sampling unit, whereas the CMDS used individuals within village/neighborhood committee as sampling unit.
7. In this article, we use the terms “gross domestic product per capita” and “income” interchangeably.
8. Median housing price is usually used as a proxy for amenities in the literature. But it is not available at the prefectural level in China. We use city-level average housing prices in 2005 instead.
9. Focusing on interprovincial skilled migrants in China, Liu and Shen (2014) also found that urban employment rate has a positive and significant effect on the attractiveness of provincial attributes. They explained this positive coefficient by saying that “this unexpected sign may be partial because skilled migrants are more competitive and have greater flexibility than their less educated counterparts in seeking new employment, thus being more risk-taking in their location decisions.”

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