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The impact of labor mobility with fellow townsmen on the wages of rural migrants: evidence from China

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Labor mobility is an inherent component of economic development and labor market changes. With globalization and urbanization, labor mobility is on the rise in many developing countries, and it is of great significance to study the economic outcomes and poverty alleviation effects of this phenomenon. This paper explores the impact of labor mobility on the wages of rural migrants when they move out with their fellow townsmen (folks from the same county). The study uses the China Migrants Dynamic Survey (CMDS) data and applies the Propensity Score Matching (PSM) method for empirical analysis. Our results suggest that labor mobility with fellow townsmen significantly increases the wages of rural migrants. The paper shows two promotion mechanisms: mobility with fellow townsmen affects the wages of rural migrants by improving their ability to search for information and negotiate wages. Heterogeneity analysis indicates that mobility with fellow townsmen significantly increases the wages of rural migrants engaged in producer service, consumer service, blue-collar occupations, and working in state-owned and private enterprises. Furthermore, it has a more positive impact on the wages of older rural migrants from an intergenerational perspective. Interestingly, rural migrants may “give up” part of their wages to care for their families when they move with their spouses, parents, or children. Therefore, the government needs to take effective policy measures to promote the employment service system and improve the labor rights and interests protection mechanism for rural migrants.

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Introduction

The link between labor mobility and wages has received extensive attention and research. Along with urbanization and economic development, the movement of people from rural to urban areas has begun to take shape in different countries around the world. For decades, the persistent urbanization of populations has shaped societies around the globe (UN, 2015; Rye, 2018). In the scenario of China, with the rapid urbanization and relaxation of the Chinese Hukou system (The household registration system of China), many rural laborers have chosen to work outside the countryside in search of more employment opportunities and higher-income jobs. They have become the so-called “rural migrants”. Chinese rural migrants are those who used to be farmers but left the countryside and found jobs in cities due to China’s economic reform and rapid development (Li and Li, 2007; Zhu, 2016). They have significantly contributed to China’s booming labor market and urbanization and have played an important role in accelerating the transition from Planned Economy to Market Economy. According to the Report of the National Bureau of Statistics of China (CNBS), the total number of rural migrants, including outgoing rural migrants and local rural migrants, was 292.51 million in 2021. The number of outgoing rural migrants was 171.72 million, accounting for 58.71% of the total rural migrants. It is evident that moving from rural to urban areas to become rural migrants is still the main choice of most rural residents today. Simultaneously, the number of labor mobility is still growing.

When rural migrants choose to go out to work, deciding whom to move with is a critical question. In China’s rural “vernacular society”, the concept of “human kindness” is deeply rooted in people’s hearts and minds, thus forming a unique way of information exchange in rural China—rural migrants communicate information through human kindness (Liang, 2013). Chinese rural societies are networked with kinship as the main axis, forming a “differential order pattern” different from the West (Fei et al., 1992). As a result, they tend to rely on pre-given kinship or geopolitical ties to build and expand social networks and, in doing so, mitigate risk, seek employment, and adapt to urban life (Luo and Xu, 2010). When making mobility decisions, rural migrants choose to go out with their folks from the same county, which often serves to reduce costs and spread risks. However, does the joint mobility of rural migrants and their townsmen affect the wages of rural migrants? Currently, there are also different views on the relationship between rural migrants’ mobility and their wages.

Some scholars believe that gathering rural migrants from the same town can help increase rural migrants’ wages. The gathering not only maintains the emotional cohesion of rural migrants from the same region but also promotes the increase of rural migrants’ wages. The more rural migrants tend to congregate in the same group, the higher the income return from the congregation (Zhang and Xie, 2013a). Studies of cohort aggregation have found that ethnic minorities organized in cohort aggregations can obtain relatively equitable economic opportunities in cohort economies (Portes and Rumbaut, 2006; Castles, 2002). Studies of spatial dispersal policies among migrants in Denmark have found that an increase in the size of congruence in migrant agglomerations significantly increases migrants’ annual earnings and that the ethnic networks formed by migrants can improve the quality of migrant-job matches by disseminating information about jobs, thereby increasing migrants’ hourly wage rates (Damm, 2009).

Conversely, it has also been argued that the agglomeration of fellow townsmen results from social divisions and is likely to have a negative economic impact on vulnerable groups such as rural migrants (Wei, 2016). And a series of studies have demonstrated the negative association between minority agglomeration and

economic outcomes (Lewin-Epstein and Semyonov, 1994). Ethnic agglomeration is usually associated with lower income levels. Employment in the ethnic economy is generally associated with lower earnings than employment outside the ethnic labor market (Lewin-Epstein and Semyonov, 1994). Using the historical migration data of Norwegian migrants, Eriksson (2020) finds that ethnic agglomeration negatively affects the occupational earnings of migrants from Norway to the United States. In addition, ethnic agglomeration is detrimental to assimilation or social integration, and at the same time, this agglomeration process also involves employers exploiting migrants by race or blood ties (Liu and Wang, 2023; Bonacich, 1987). The clustering of ethnic groups increases the probability of crime, and when conflicts arise with employers, they tend to act “aggressively” and are prone to social security cases (Wei, 2016).

However, empirical studies on the agglomeration and rural migrants’ wages resulting from “moving with fellow townsmen” are still in the initial stage. Although the networks of fellow townsmen are an important source of social capital for rural migrants, it still needs further exploration and study. The potential relationship between the informal network of fellow townsmen and labor mobility behavior cannot be ignored in a Chinese culture that values interpersonal relationships. Thus, the employment earnings of rural migrants may be positively influenced by mobility with fellow townsmen activities, mainly because extensive prior research has identified the advantages of social capital for migrant employment and economic status. In addition, the evidence on the impact of mobility with fellow townsmen on earnings needs to be more extensive, especially in identifying causal effects. Although studies have provided various perspectives to understand better the positive impact of social networks on migrant employment earnings, within the mainstream theoretical framework, studies have largely ignored the group-differentiated characteristics of “followers” and the migration characteristics of migrant employment sectors. However, there is still little research on the possible differential effects of moving with fellow townsmen on migrants’ employment and earnings levels from the perspective of labor mobility and urbanization.

Moreover, from existing studies, empirical research on the impact of rural migrants’ mobility on employment wages in China has been limited to factors such as the migrant’s own individual, family, and external environment. However, the results of some existing studies may have different answers due to the quality of the methodology used; if not, most of the existing studies on this relationship need to be fully robustly validated, considering the reliability of the survey data used in the analysis. In addition, most studies neglect to discuss empirical causal effects in the relationship. In addition, a potential problem that may arise in the empirical study of mobility with fellow townsmen of rural migrants in China is that an a priori study is needed to control for sample selection bias, which may lead to inconsistent estimates and potentially misleading conclusions. Therefore, more research and prudent research methods are needed to determine how the different contexts of labor mobility affect the employment earnings of rural migrants.

Since no consensus has been reached on the relationship between labor mobility and wages for rural migrants, this paper’s research may help extend or contribute to existing research on rural migrants’ wages. The potential marginal contribution of this paper is that: First, the research perspective is relatively novel. According to the authors’ literature, there are relatively few empirical studies in the current literature on the effects of mobility with fellow townsmen on rural migrants’ wages in the Chinese context. Only some literature has explored the economic effects of hometown

associations and the aggregation of rural migrants. This paper contributes to the existing literature by examining the impact of mobility with fellow townsmen on Chinese rural migrants' wages based on different mobility situations, such as moving with their family members, classmates, and siblings. Second, the detailed and specific information of CMDS 2017 data provides fertile ground for this paper to identify the potential mechanisms by which mobility with fellow townsmen affects Chinese rural migrants' wages. The unique context of CMDS 2017 data with information on the characteristics of the migrant population and information of fellow townsmen allows us to fully understand how mobility with fellow townsmen affects Chinese rural migrants' wages and to accurately estimate this causal relationship in conjunction with other good covariates. Third, this paper considers the possible endogeneity problem in the CMDS 2017 data. To ensure the reliability and accuracy of the study, we use various methods, such as descriptive statistical method, ordinary least squares (OLS) method, and propensity score matching (PSM) method, to empirically analyze the relationship between rural migrants' mobility with fellow townsmen and wages. Also, we verify the robustness of the finding. The PSM method was chosen to estimate such a relationship because it can alleviate the sample selection bias associated with cross-sectional data. Fourth, this paper's research extends the depth of existing studies. This paper provides an in-depth analysis of the mechanism of the impact of rural mobility on rural migrants' wages from the perspectives of information search and wage negotiation. Meanwhile, this paper investigates the heterogeneous effects of labor mobility on rural migrants' wages from different dimensions, such as occupation, employment enterprise, and generation.

Therefore, this paper's research helps expand and enrich the literature on labor mobility with fellow townsmen and employee wages. On the one hand, understanding and analyzing this potential impact can inform labor market policy improvements in China. On the other hand, with the rising trend of global population migration across the country and the region, mobility with fellow townsmen will become common and frequent. The research in this paper can provide a research reference for this pattern of mobility with fellow townsmen based on geography and blood ties. In addition, this mobility pattern with fellow townsmen has similarities and higher replication value in East Asia and Southeast Asia areas, which are deeply influenced by Confucian culture. This paper's research has some applicability to the study of labor mobility in the areas mentioned above and can provide possible references for other studies.

The remainder part of this paper is as follows: The "Literature review" section systematically reviews the theories and empirical studies on the relationship between wages and labor mobility of rural migrants. The "Theoretical framework" section discusses the relevant theories of migrant assimilation and human capital. It also introduces the Mincer equation and presents three theoretical hypotheses. The "Methodology" section discusses the content about the data acquisition and processing, variable and definitions, model specification, and estimation methods used. The "Empirical analysis" section introduces the results of descriptive statistics and results of the impact of rural migrants' mobility with fellow townsmen on wages. The "Mechanism analysis" section discusses two mechanisms by which labor mobility affects rural migrants' wages. The "Conclusion and discussion" section summarizes the findings of this paper and puts forward the policy suggestions, limitations, and future research scope of this paper.

Literature review

A study of the economic assimilation of rural migrants in the context of rural migrants moving together with their fellow

townsmen has broad exploratory value. Migrant assimilation is an important topic in migration research, which refers to the time and extent to which migrants can integrate economically and culturally into the host society (Alba and Nee, 1997). Two main theories explain the assimilation process of migrants in international migration research: the straight-line assimilation theory and the segmented assimilation theory. The linear assimilation theory suggests that migrant assimilation is a natural and inevitable process (Nagel, 2002; Rumbaut, 1997). In this process, migrants from different countries work overtime to gradually reject the culture of their origin, accept the local culture of their new country and eventually converge with natives regarding economic opportunities (Portes and Rumbaut, 2006; Castles, 2002). Studies of immigration in the United States have shown that the assimilation process of migrant children and children of migrants becomes more difficult due to the diversity of racial and ethnic backgrounds, differences in socioeconomic status, and immigration policy constraints (Zhou, 1997a). Large-scale immigration, structural shifts in the hourglass economy, the emergence of new racist and anti-migrant sentiments, inequalities in the public education system, and media stereotypes of minorities make the assimilation process more difficult and outcomes more uncertain for second-generation migrants after 1965 (Zhou, 1997b). Therefore, the single assimilation path described by linear assimilation theory was difficult to describe and explain the new migrant problem, and in this context, segmented assimilation theory was developed (Portes and Zhou, 1993).

Segmented assimilation theory provides a theoretical basis for studying Chinese rural migrants' homogeneous mobility. The theory states that while migrants try to adapt to the society of the country they migrate to, their adaptation and assimilation are constrained by specific social conditions and contexts that are related to migrants' ethnic group attributes and ethnic characteristics (Rumbaut, 1997; Kim, 2017; Zhang and Xie, 2013b; Mai and Wang, 2022; Lin et al., 2022). The assimilation process of migrants is selective, and they may have the possibility of being assimilated by the middle and upper classes as well as by the lower social classes, i.e., migrants economically converge to the natives but retain the ethnic and cultural characteristics of the place of emigration (Portes and Zhou, 1993). In reality, migrants are vulnerable to discrimination and exclusion in assimilation and cannot enter the national labor market (Wei, 2016). To avoid various disadvantages, migrants tend to adopt agglomeration of ethnic groups to give themselves fair economic opportunities (Xie and Gough, 2011; Zhou, 1997b). Against all odds, migrants organizing in ethnic agglomerations help to counteract the adverse effects of the underlying American subculture on the socialization of migrant offspring and provide relatively equitable economic opportunities in a same-race economy (Zhou, 1997b).

In addition, the choice of ethnic agglomeration can lead to higher earnings for migrants (Zhang and Xie, 2013a, 2013b; Chen, 2019). Massey (1986) studied the assimilation process of Mexican migrants in the US and found that as Mexican migrants gained experience in the US, social and economic ties were formed, and Mexican migrants gained more stable, better-paying jobs. Enclaves increased the hourly earnings of non-rural migrants by 50.8% (Ye, 2021). On the one hand, population migration creates clusters of people and "ethnic groups" and constructs networks of social relationships based on geographic, ethnic, and cultural factors (Castles, 2003; Kipgen and Panda, 2019). The informal institution of social networks reflects the interconnectedness of members or specific groups and the flow, transmission, and sharing of various types of resources within the network. Recent economics studies have shown that social networks linked by kinship, geography, etc., are important channels for rural migrants to conduct job searches and achieve

employment (Portes, 1998; Bertrand et al., 2000; Liu and Wang, 2023). The role of social networks is both instrumental and normative in that the reciprocity principles and trust contained in the networks facilitate access to and sharing of information and resources and in that social networks can constrain and regulate the behavior of their members and create a sense of identity, belonging, and solidarity among them (Portes, 1998). Numerous commentators have explored the impact of social networks on labor mobility and earnings, and all agree that social networks positively impact the group of rural migrants (Granovetter, 1973; Portes, 1998; Ye and Zhou, 2010; Kipgen and Panda, 2019).

On the other hand, rural migrants are often left at a disadvantage in the urban labor market due to problems such as education, a dualistic labor market system, and information asymmetry (Wu, 2007; Rye and Andrzejewska, 2010; Chan and Wei, 2019). There is still a gap between their income and local urban residents (Wu, 2007). Moreover, their lack of formal representation and language barriers make it difficult for them to negotiate effectively with employers, leaving rural migrants usually in a weak position in wage negotiations (Rye and Andrzejewska, 2010). Rural migrants in large cities fail to achieve the same treatment as urban residents regarding labor and employment, public services, and social security (Zhu, 2016). The situation of rural migrants in China is similar to that described by migrant segmentation and assimilation theory in the United States. However, this gap is narrowing, and although they have some characteristics of urban workers, they still retain some peasant characteristics and culture (Yao, 2019; Chan and Wei, 2019).

Theoretical framework

The neoclassical school of economics extends the traditional theory of individual rational choice to the group and macro level by studying earnings and wage discrimination in labor (Becker, 1993). The school argues that market mechanisms and market forces are determinants of wages and the allocation of labor resources, that wages reflect the true price of a labor force, and that the equilibrium real wage level is equal to the marginal productivity of labor. However, labor mobility between different sectors is hampered by internal labor markets and other institutional factors, creating labor market segmentation (Pfeffer and Cohen, 1984; Zhou, 1997b). This makes the labor market inefficient, and workers' earnings may vary considerably (Pfeffer and Cohen, 1984). Such differences are partly due to factors that cannot be observed or measured but have an impact on productivity and, more often, due to differences in the bargaining power of labor in the market and differences in human capital (Becker, 1962; Mincer, 1958; Mincer, 1974).

Schultz (1961) first introduced the human capital theory and attributed the substantial increase in workers' wages to the investment in human capital. Mincer's research found that individuals' education, training, and work experience can be considered an investment. Based on this, he proposed the classic model for studying human capital theory—Mincer equation (Mincer, 1958, 1974). Countries can promote economic development through investment and accumulation of human capital, and workers can increase individual productivity and labor market competitiveness through investment and accumulation of human capital, thus increasing their wages (Mincer, 1958, 1974; Becker, 2009). Mincer (1958) included factors such as years of education and work experience into the model to quantify the effect of human capital on wage levels and proposed the Mincer equation. This equation suggests that all else being equal, individuals with more years of education and years of work experience typically have higher wage levels. In addition, the regression

coefficients can be used to measure the extent to which each variable affects the level of wages. Mincer's findings profoundly impacted subsequent research in labor economics and became one of the models commonly used by researchers to analyze issues such as income disparity and returns to education in the labor market.

The human capital theory provides a theoretical basis for studying mobility phenomena with fellow townsmen and ethnic agglomeration. It has been argued that migrants are more economically rewarded for engaging in the ethnic economy or working for the same ethnic employer (Zhang and Xie, 2013b). Ethnic agglomeration provides migrants with relatively equal economic opportunities and higher employment income (Castles, 2002; Portes and Rumbaut, 2006; Damm, 2009). Many studies have confirmed that migrant agglomerations create different levels of human capital spillovers depending on the quality of human capital within the community (Ye, 2021). Ethnic agglomeration not only provides migrants with social support and solidarity but also provides migrant employers and self-employed individuals with informal access to resources such as labor, capital, and markets to engage in economic activities (Portes and Bach, 1985; Zhang and Xie, 2013a, 2013b). In addition, agglomeration economies provide migrants with employment opportunities beyond the secondary labor market and protection from discrimination in the external labor market (Light, 1984; Semyonov, 1988).

Similarly, the aggregation of Chinese rural migrants from the same county is a social network established according to the birthplace of rural migrants (the place of origin marked by the household registration system), which has similar characteristics to ethnic group aggregation (Zhang and Xie, 2013a, 2013b; Wei, 2016; Chen, 2019; Ye, 2021). However, the mobility with fellow townsmen of Chinese rural migrants is not only a spatial gathering of specific migrant worker groups from the same county but also a manifestation of the mobility characteristics of common labor migration and work. Rural migrants often rely on networks in their urban-rural migration (Zhang and Xie, 2013a; Ye and Zhou, 2010; Ye, 2021). Employers often use the network of fellow townsmen among migrants to recruit and manage employees (Lee, 1998). The use of social ties for fellow townsmen by both migrant workers and employers leads to the consolidation and expansion of the network of fellow townsmen, one consequence of which is the clustering of migrant workers from the same place of origin in terms of work or residence (Lee, 1998; Zhang and Xie, 2013b). It has been found that employers and managers are more likely to hire and promote rural migrant employees from the same hometown and to offer better jobs to them and that frequent reciprocal activities among employees from the same hometown are more likely to occur (Zhang and Xie, 2013b). Such reciprocal activities among fellow townsmen help to reduce rural migrants' vulnerability in job search and enhance their wage bargaining power (Li and Deng, 2021). Thus, rural migrants move with their townsmen, increasing employment, social resources, and economic opportunities. Rural migrants who move with their townsmen can obtain more resources, assistance, and protection from the network of fellow townsmen than those who move solitarily, so the first hypothesis of this study is:

Hypothesis 1: Rural migrants who move with their fellow townsmen receive higher wages than those who move solitarily.

Social networks are about collections of resources, relationships, and rewards. Actors use social network mechanisms to secure their interests based on their membership in social networks or other social structures (Portes, 1998). Rural-urban migration can lead to higher incomes and better job opportunities, as well as access to social and educational resources provided by the city, thus increasing the income and living standards

of the migrant and their family (Lyu et al., 2019; Lagakos, 2020; Selod and Shilpi, 2021). As a resource allocation method, social networks can save costs and give people resources not available in formal channels, improve network members' quantity, quality, and speed of access to information, and significantly reduce information asymmetry (Dekker and Engbersen, 2014). Rural migrants working in cities are also profoundly affected by this ethnic agglomeration, especially by social networks. Therefore, the following hypothesis can be deduced:

Hypothesis 2: Rural migrants moving with their fellow townsmen are more likely to have access to more information and thus increase their wages.

Related research has found that unions are fighting for greater job security for workers, helping to raise workers' wages without reducing their chances of sustaining employment (Bellmann and Emmerich, 1992). Human capital is an important indicator of the wage bargaining power of workers (Mincer, 1958, 1974; Becker, 1962). In actual negotiations, low- and medium-skilled workers do not have significant wage bargaining power, while high-skilled workers have some wage bargaining power (Cahuc et al., 2006). In the Chinese context, the idea of "love and support from townsmen" has historical roots, a common culture, and ethnic ties to make a network of townsmen an important social relationship for rural migrants in the inflow area. The organization of this cross-regional social network is mainly in the form of hometown associations and other organizations, which are connected through the registration and activities of hometown associations. To a certain extent, such social networks can change the disadvantageous position of individual rural migrants in facing employers and provide resource support and risk sharing for rural migrants (Li and Deng, 2021). Strong ties with social organizations significantly increase wage bargaining power and optimize the outcome of wage negotiation (Seidel, et al., 2000). Based on hometown associations and other social organizations, the network of fellow townsmen can enhance the wage bargaining power of rural migrants, thus enhancing their wages. Therefore, the following hypothesis can be deduced:

Hypothesis 3: Rural migrants who move with fellow townsmen are likelier to have stronger wage bargaining power and acquire higher wages.

Methodology

Data acquisition and processing. This paper used the 2017 China Migrants Dynamic Survey (CMDS) data from the National Health Commission of the People's Republic of China (NHCPRC), obtained through a large-scale national floating population sampling survey. This is currently a large-scale authoritative database for studying the migration problem in China. The CMDS 2017 data was conducted among the migrant population aged 16 years or older who are not currently in their hometown county but have been living in the inflow area for more than one month. We requested the CMDS 2017 data from the Migrant Population Service Center of NHCPRC and received their official formal reply. We signed a data usage agreement with them to use this data to pursue our research.

This data is selected in this paper mainly for the following reasons: First, the database is initiated and organized by the NHCPRC, with a nationwide sample survey, and the data are authoritative and widely used in the research on migrant workers in China. Second, the database is relatively comprehensive, and the data are more authoritative and professional. The survey contains basic information on rural migrants' households and population, mobility and employment characteristics, as well as health care and social integration, which provides sufficient variables and data for the empirical study of this paper. Third, the

survey scale and coverage of the CMDS 2017 data are large, and the representativeness of the data is relatively high. The total survey sample is close to 170,000, and the survey data is sampled using a stratified, multi-stage, proportional-to-size PPS sampling method, making the survey results highly representative of China and its domestic provinces and municipalities.

Notwithstanding the many strengths of this data, there are some limitations. The data used in this paper are the cross-section survey data of the migrant population, but to a certain extent, our research using the CMDS 2017 data may suffer from a lack of timeliness of the data. Meanwhile, since the CMDS 2017 data only includes the group of rural migrants who move across counties (outgoing rural migrants), it does not include the group of rural migrants who move only within their own counties (local rural migrants). However, our study focuses on the effect of mobility with townsmen on rural migrants' wages. The lack of data on local rural migrants does not affect this paper's study of outgoing rural migrants' wages. In addition, since the database's problem is whether rural migrants move together with townsmen when they first migrate, the sample cannot cover all rural migrants who move together with townsmen.

According to China's National Bureau of Statistics' criteria for the definition of rural migrants and combined with the related research literature (Li and Li, 2007; Zhu, 2016), this paper limits the sample of rural migrants to: the nature of the household registration is agricultural household registration, rural transfer household registration, and the resident household registration. The flow time of the rural labor force is more than six months, and the age limit is 16–60. The dependent variable of this study is the wages of rural migrants. Thus, the samples with the employment status of "employer," "self-employed worker," and "other," and the samples with negative wages are deleted. Finally, this article only retains the samples in the questionnaire that coincide with "this movement time" and "the first time to leave the place of household registration" to exclude the interference of multiple flows. After deleting samples with missing values for key variables, 16,699 valid samples were finally obtained.

Variables and definitions

Dependent variable. The dependent variable in this paper is the wages of rural migrants. Following Mincer (1958, 1974), Xie and Gough (2011), Zhang and Xie (2013a, 2013b), and Liu and Wang (2023), this variable is obtained from the questionnaire "Your salary/net income from the previous month (or last employment)" and logarithmically processed the raw data of wages.

Independent variable. Based on the data on the first flow of rural migrants provided by the CMDS 2017 database, the independent variable of this paper is set as "whether this rural migrant is moving or not with fellow townsmen in the first flow". This variable is obtained through the following processing: according to the questionnaire of the CMDS 2017 database, the samples of rural migrants who answered that they did not move with their townsmen for the first time are assigned as 0. The samples who answered that they move with their townsmen for the first time but also with their spouse/parents/parents-in-law/children/siblings/relatives or classmates are assigned 0. The samples of rural migrants who only move with their townsmen are designated as 1. After processing, we can get samples that move only with fellow townsmen for the first time to avoid interference caused by flow experience and other unobservable factors.

Control variables. This paper's control variables include personal characteristics and job characteristics variables of rural migrants.

Following Mincer (1958), Damm (2009), Xie and Gough (2011), Zhang and Xie (2013a, 2013b), Ye (2021), and Liu and Wang (2023), individual characteristics of our research include years of education, work experience, gender, marriage, and the membership of the Chinese Communist Party (CCP). Among them, the number of years of schooling is calculated according to the education level of rural migrants in the questionnaire¹. Work experience is obtained by subtracting the time in 2017 when the rural migrants started their current job². The gender variable is obtained by assigning a male value of 1 and a female a value of 0. The marriage variable is to assign the value of first marriage, remarriage, and cohabitation to 1, and the other assignments to 0. The variable of CCP membership is obtained by assigning CCP members a value of 1 and others as 0. Job characteristics include industry, occupation, ownership, and inflow region of the rural migrants. The industry is divided into the primary, secondary, producer, and consumer services industries³, and the consumer services industry is taken as the control group. Occupations are divided into white-collar, business services, consumer services, blue-collar, and non-fixed occupations⁴, and the control group is the non-fixed occupations. Ownership is divided into state-owned enterprises, private enterprises, foreign-capital enterprises, and enterprises of other ownership⁵, and enterprises of other ownership are used as the control group. The inflow regions are divided into eastern, central, western, and northeastern regions⁶, with the northeast region as the control group.

Model specification. This paper analyzes the impact of mobility with fellow townsmen on rural migrants' wages by constructing an extended Mincer equation, and the model is as follows:

$$\ln wage_i = \beta_0 + \beta_1 flow_i + \beta_2 edu_i + \beta_3 exp_i + \beta_3 exp_i^2 + \delta X_i + \varepsilon_i$$

Where, i represents the individual rural migrant; $\ln wage_i$ is the logarithm of individual i 's wages; β_0 is the intercept term, $flow_i$ is whether individual i move with his fellow townsmen, and β_1 is its estimation coefficient; X is other characteristic vectors that affect individual i , including a series of control variables such as gender and occupation, and δ is the estimation coefficient vector of control variables; ε_i is a random error of the model.

Estimation techniques. First of all, this study uses descriptive statistics to understand the statistical characteristics of rural migrants. Secondly, in the benchmark regression section, this paper uses the ordinary least squares (OLS) method to explore the relationship between mobility with fellow townsmen and the wages of rural migrants in China. Finally, to verify the robustness of the conclusion, this paper also adopts the propensity score matching method (PSM) to correct the possible selection bias. It's a method of simulating random experiments. It estimates the probability of an individual receiving treatment through the characteristic variables of samples. Then it matches the samples of the treated group and the control group so that the characteristics of the two groups of samples are as close as possible to estimate the treatment effect. The average treatment effect of the treated group (ATT) is calculated as follows:

$$\begin{aligned} E(Y_i|D_i = 1) - E(Y_i|D_i = 0) &= E(Y_{1i}|D_i = 1) - E(Y_{0i}|D_i = 0) \\ &= \underbrace{E(Y_{1i}|D_i = 1) - E(Y_{0i}|D_i = 1)}_{ATT} + \underbrace{E(Y_{0i}|D_i = 1) - E(Y_{0i}|D_i = 0)}_{\text{Selection bias}} \end{aligned}$$

Among them, the formula in the first line on the right of the equal sign is ATT. When PSM performs sample matching based on observable variables, the result of the selection bias component is 0. At this time, the average difference between the treatment group and the control group is ATT.

Empirical analysis

Descriptive statistics. Table 1 shows the results of descriptive statistical analysis about rural migrants who move with their townsmen and rural migrants who are not in terms of each characteristic variable. It can be seen from the data in the table that the average logarithmic wages of rural migrants who move with their townsmen is 8.164, which is higher than that of rural migrants who move without their townsmen at 8.012. The mean difference test shows that this difference is significant at the significance level of 1%. The median logarithmic wages of rural migrants who move with their townsmen is 8.161, which is higher than the median logarithmic wages of rural migrants who move without their townsmen at 8.001. This indicates that there is indeed a significant difference in wages between the two groups of rural migrants.

Regarding other variables, rural migrants who move with their townsmen have fewer years of education than rural migrants who do not move with their townsmen. Their work experience is more abundant than rural migrants who do not move with their townsmen. Regarding gender, the proportion of rural male migrants who move with their townsmen is about 10 percentage points higher than that of rural migrants who do not move with their townsmen. The proportion of married rural migrants is about 20 percentage points lower than that of rural migrants who do not move with the same townsmen. Regarding political identity, the proportion of party members in the two groups is low and not much different. From the industry perspective, rural migrants who move with their townsmen have the highest proportion in the secondary industry, while rural migrants who do not move with their townsmen account for the highest proportion in the service industry. From the perspective of occupation, consumer services and blue-collar occupations are the most important occupations of the two groups, of which rural migrants who move with their townsmen are mainly blue-collar occupations, and rural migrants who are not move with their townsmen are mainly consumer services occupations. From the ownership perspective, the employment enterprises in both groups are mainly private enterprises, accounting for 70%, but the proportion of rural migrants who move with their townsmen is slightly higher than that of rural migrants who are not. The proportion of rural migrants who do not move with the same townsmen is higher in state-owned enterprises. From the perspective of inflow regions, the eastern region is the most important inflow region of the two groups, followed by the western region, and the central and northeastern regions account for a relatively low proportion.

Regression results. After describing the statistics, this paper further uses an econometric model to analyze the impact of rural mobility on the wages of rural migrants. Columns (1) to (3) of Table 2 report regression results after sequentially increasing the control variables. Among them, column (1) returns to the single variable of township mobility, and the results show that compared with rural migrants who are not in the same township, the wages of rural migrants in the same township are higher. However, other factors may be interfered with at this time and cause inaccurate estimates, so this paper further controls other factors that may affect income.

The results of column (2) show that after increasing the individual characteristic variables of rural migrants, the mobility of rural migrants can still significantly increase the wages of rural migrants. Column (3) further increases the characteristics of industries, occupations, ownership, and inflow regions. The results show that although the estimated coefficient of township mobility has decreased, it is still significant at the level of 1%, indicating that the conclusion that township mobility significantly

Table 1 Description of the variables.

Variables	Mobility with fellow townsmen				Solitary labor mobility			
	Mean	S.d.	Minimum	Maximum	Mean	S.d.	Minimum	Maximum
Logarithmic of wages	8.164	0.437	5.298	10.597	8.012	0.499	4.605	11.082
Years of schooling	9.212	2.664	0	16	9.533	3.102	0	19
Work experience	6.101	6.493	0	34	4.387	4.669	0	37
	Proportion (%)				Proportion (%)			
Gender	59.9				49.5			
Marriage	63.6				83.4			
CCP member	2.9				2.6			
Industry								
Primary industry	1.1				2.8			
Secondary industry	56.3				44.1			
Producer services industry	5.6				7.7			
Consumer services industry	37.0				45.4			
Occupation								
White-collar occupation	5.3				9.2			
Business services occupation	0.8				1.3			
Consumer services occupation	39.8				46.3			
Blue-collar occupation	49.6				35.2			
Non-fixed occupation	4.6				8.0			
Ownership								
State-owned enterprise	7.9				10.5			
Private enterprise	73.6				69.8			
Foreign-capital enterprise	8.5				4.8			
Other ownership	10.0				14.9			
Inflow regions								
Eastern region	71.6				44.9			
Central region	7.3				12.6			
Western region	15.9				30.6			
Northeast region	5.2				11.9			
Observations	655				16044			

Table 2 The impact of the mobility with fellow townsmen on wages of rural migrants.

Variables	(1)	(2)	(3)
Mobility with fellow townsmen	0.152*** (0.018)	0.157*** (0.017)	0.075*** (0.017)
Years of schooling		0.040*** (0.001)	0.034*** (0.003)
Work experience		0.029*** (0.002)	0.025*** (0.002)
Square of work experience		-0.001*** (0.000)	-0.001*** (0.000)
Gender		0.283*** (0.007)	0.282*** (0.016)
Marriage		0.135*** (0.010)	0.114*** (0.015)
CCP member		0.006 (0.028)	0.021 (0.026)
Industry	NO	NO	YES
Occupation	NO	NO	YES
Ownership	NO	NO	YES
Inflow region	NO	NO	YES
Constant term	8.012*** (0.004)	7.297*** (0.017)	7.086*** (0.039)
Observations	16,699	16,699	16,699
R-squared	0.003	0.175	0.267

Note: The standard errors are clustered at the province level; *** indicates statistical significance at 1%.

increases the wages of rural migrants has not changed, reflecting the robustness of the estimated results. In terms of other control variables, the estimates in column (3) show that an increase in years of schooling and work experience increases the wages of rural migrants and that work experience has an inverted U-shaped effect on the wages of rural migrants. Men and married rural migrants have higher wages than women and unmarried rural migrants. The estimation results of the control variables are consistent with the theoretical expectations and other existing studies, which shows that the estimates are credible.

Correction of selection bias. The results of the regression found a significant positive impact of the mobility with fellow townsmen on the wages of rural migrants, but the estimation process may face the problem of selection bias. The rural migrants who choose to go out to work with the same townsmen and the rural migrants who stay in the local area may have some differences in themselves. These different characteristics may lead to selection bias, and the linear relationship between the dependent and independent variables is not always true. The potential error in the model specification may also make the estimation results biased. Based on the above considerations, this paper uses the propensity score matching method (PSM) to solve these problems. In addition to the variables used for benchmark regression, the covariate variables used for matching have also added the “parent flow status” variable⁷. The migrant worker who has been out of the county (rural migrant’s hometown) with at least one parent is set to 1. The migrant worker who has not been out of the house by both parents is assigned a value of 0, regardless of the answer “flow since birth” and sample who “can’t remember”. Different matching methods are used to ensure the robustness of the

Table 3 Results from the PSM exercise for rural migrants.

Matching method	Process groups	Control groups	ATT	T-test
Neighbor matching	8.167	8.097	0.070	3.36***
Radius matching	8.167	8.089	0.077	4.13***
Kernel matching	8.167	8.065	0.102	5.57***

Note: In order to achieve a better matching effect, this paper adopts a matching distance of 1:4 in the neighbor match, and the matching radius is set to 0.01 according to the principle of 0.25 times the standard deviation of the propensity score in the radius match; ***Indicates statistical significance at 1%.

Table 4 Robustness tests of the mobility with fellow townsmen of rural migrants.

Variables	(1)	(2)	(3)
Mobility with fellow townsmen	0.067*** (0.019)	0.090** (0.033)	0.156*** (0.050)
Control variables	YES	YES	YES
Constant term	7.110*** (0.047)	7.191*** (0.054)	7.190*** (0.086)
Observations	12,759	5,896	1,190
R-squared	0.278	0.280	0.318

Note: The standard errors are clustered at the province level; ***, ** indicate statistical significance at 1% and 5%.

results. Table 3 shows the results of the tendency score matching, and the average treatment effect of the treated group (ATT) obtained by the three matching methods is positive and significant at the significance level of 1%, which shows that after correcting the possible selection bias and model setting bias, the improvement effect of the mobility with fellow townsmen on the wages of rural migrants still exist significantly. This further validates the conclusions drawn in the regression.

Robustness test. The above analysis concludes that the mobility of rural migrants with the same townsmen positively and significantly impacts their wages. When rural migrants go out to work, the social relationship network from their parents may also have an impact on rural migrants. In other words, the reason why rural migrants go out to work with their townsmen is that the wage level is higher is probably not due to the mobility with the townsmen but because of the social relationship network brought about by their parents' experience of rural migrants is transmitted to rural migrants from generation to generation, thus affecting their wages. To exclude this influence from the parents, this article deletes the sample of rural migrants in the sample who have both parents or either parent has the experience of going out to work. It does not consider the samples that answer "I was born as a migrant" and "can't remember clearly." After processing, the sample of rural migrants whose parents have not had the experience of going out to work is obtained. Table 4,1(1) returns to this part of the sample, and the results show that the positive impact of rural migrants' rural mobility on their wages is still significant after excluding the impact of the social relationship network brought about by the parents' migrant work, which further shows that the previous conclusion is stable.

After excluding the influence of parents, there is still a problem that the flow time does not match the time to obtain income. If rural migrants first went out to work many years ago, is it not credible to use the wages/net income of the last month (or the last employment) at the time of the survey to define whether rural migrants were migrant workers at that time. For example, when a migrant worker first moved in 2000, and the independent variable in this paper is the wages/net income of the last month (or last

employment) obtained from the CMDS 2017 survey data, the causal relationship between the first migration in 2000 and the income in 2017 may be in doubt. To verify the conclusion of this paper, based on excluding the impact of rural migrants' parents' going out to work, this paper further retains the samples with the first flow time of nearly five years. That is, rural migrants with the first flow time of 2012 and 2016, to narrow the time between this flow time and the survey time. Column (2) of Table 4 regresses the samples that have been moving for nearly five years. The results show that the earning level of rural migrants who moved with their townsmen from 2012 to 2016 is significantly higher than that of rural migrants who did not move with their fellow townsmen. To further verify the above results, column (3) of Table 4 only regresses the samples whose current flow time is 2016. The results show that the wages of rural migrants who flow with their townsmen for the first time in 2016 are higher than that of rural migrants who did not move with their fellow townsmen in 2016, which shows that after excluding the mismatch between the flow time and income, the conclusion that the migration with their townsmen significantly improves the wages of rural migrants is still tenable.

Mechanism analysis. The previous analysis shows that the movement of the same townsmen will significantly increase the wages of rural migrants, so why can the flow with the same townsmen increase the wages of rural migrants, and what is the mechanism behind it? Next, this paper will analyze the impact mechanism of rural mobility on the wages of rural migrants from the perspective of information search and wage negotiation.

Information search mechanism. As a country that values the tradition of "relationships", the network of "social relationships" is prevalent in China and has the function of sending information (Zhang et al., 2015). This can enhance communication between network members, while rural migrants can obtain mobility information and resources through the network of fellow townsmen in their outflow areas, establish social networks and obtain employment information (Zhang and Xie, 2013a, 2013b). Fellow townsmen can directly transmit employment information such as enterprise wages and benefits, working conditions, rent, and living costs to rural migrants (Liang, 2016). It reduces the time and search costs of rural migrants to find jobs, thereby helping rural migrants to find more suitable jobs. Therefore, this paper argues that the contact among rural migrants and the mobility with fellow townsmen can weaken the information asymmetry in the job search process of the urban labor market through the network of fellow townsmen, reduce the difficulty of job search, and enable rural migrants to find more suitable jobs, thus bringing a premium for wages.

To test this idea, this paper defines the network variable of fellow townsmen based on "Who do you contact most in your spare time locally". In this paper, we assign a value of 1 to the sample answering that they are most in contact with their fellow townsmen most in the local area. Thus, other assignments are 0, and we adopt the mediation effect model to this question (Wen et al., 2004). The estimation

Table 5 Results of the information search mechanism.

Variables	(1) Network of fellow townsmen	(2) Wages
Mobility with fellow townsmen	0.159*** (0.021)	0.071*** (0.017)
Hometown Association		0.022** (0.009)
Control variables	YES	YES
Constant term		7.082*** (0.040)
Observations	16,699	16,699
R-squared	0.044	0.267

Note: Column (1) reports the marginal effects of the Probit model, with the standard errors clustered at the province level; ***, ** indicate statistical significance at 1% and 5%.

Table 6 Results of the wage negotiation mechanism.

Variables	(1) Wage bargaining ability	(2) Wages
Mobility with fellow townsmen	0.117*** (0.018)	0.068*** (0.017)
Wage bargaining ability		0.052*** (0.011)
Control variables	YES	YES
Constant term		7.089*** (0.039)
Observations	16699	16699
R-squared	0.023	0.268

Note: Column (1) reports the marginal effects of the Probit model, with clustering standard errors at the province level; *** indicates statistical significance at 1%.

results of the mediation effect model in Table 5 show that the township network variable has a significant positive impact on the wages of rural migrants. There is also a significant positive relationship between mobility with fellow townsmen and the hometown network, which shows that mobility with fellow townsmen promotes establishing the network relationship between the rural migrants who come from the same county in the urban labor market. The information search function of this “relationship” network can enrich the employment information of rural migrants, thereby bringing a wage premium. This shows that mobility with fellow townsmen increases the wages of rural migrants through the information search mechanism.

Wage negotiation mechanism. Studies have shown that the bargaining power of both employers and employees plays an important role in wage decisions (Blanchard and Giavazzi, 2003). In the Chinese context, the idea of townsmen “getting closer and supporting each other” has historical origins, so the network of fellow townsmen has become an important social relationship of rural migrants where they move. To a certain extent, this network of fellow townsmen can change the weak position of individual rural migrants in the face of employers and provide resource support and risk sharing for rural migrants (Li and Deng, 2021). Thereby it enhances the wage bargaining ability of rural migrants, which in turn affects the wages of rural migrants. This cross-regional social network forms an organization tied to townsmen, mainly in organizations such as the “hometown association” (Li and Deng, 2021). Therefore, this paper assigns the sample answer “participated in the activities organized by the hometown association locally” to 1, and the others are assigned 0. And use this variable to characterize the wage bargaining ability of rural migrants using the mediation effect model (Wen et al., 2004) for analysis. The estimated results of Table 6 show that the bargaining power variable significantly increases the wages of rural migrants. At the same time, there is a significant positive relationship between the movement with fellow townsmen and the wage bargaining ability of rural migrants. This shows that the movement with fellow townsmen has improved their wage bargaining power by promoting the participation of rural migrants in the hometown association, making it more likely that rural migrants will gain the initiative in wage negotiations with their employers, thereby obtaining higher wages.

Heterogeneity analysis. Considering that the mobility of rural migrants from the same county may be affected by different occupations, this paper analyzes the heterogeneity of the impact of the movement of rural migrants in different occupations on the wages of

rural migrants. The results of Table 7 show that in business services, consumer services, and blue-collar occupations, mobility with fellow townsmen can play a role in increasing the wages of rural migrants. However, in the white-collar occupation, the impact of mobility with fellow townsmen on the wages of rural migrants is not statistically significant. The possible reason is that white-collar occupations mainly include the heads of state organs, CCP, mass organizations, state-owned enterprises and institutions, professional and technical personnel, civil servants, clerks, and related personnel in China. The occupational requirements of such occupations are generally higher, and the recruitment of employees is mainly through an open and strict selection mechanism. Thus, the impact of fellow townsmen on the wages of these occupations is very small. However, occupations such as housekeeping, cleaning, courier, construction, etc., have relatively low requirements. Compared with rural migrants who are not moving with fellow townsmen, there is a more obvious phenomenon of ethnic agglomeration and acquaintance introduction (Zhang and Xu, 2011; Huang, 2013; Lian and Li, 2019). The hometown association expands the collection of individual information and resources, which can compensate for the lack of individual bargaining power caused by the low level of human capital (Chen, 2019).

Table 8 further demonstrates the heterogeneity of ownership and generations. For rural migrants working in foreign-capital enterprises, mobility with fellow townsmen has not significantly increased their wages. However, for state-owned and private enterprises, the movement with fellow townsmen will significantly increase the wages of rural migrants, especially in private enterprises; this positive impact is more prominent. This may be due to the prevalence of employees being recommended by acquaintances or employed by employer-selected groups in private enterprises (Chen, 2001). From the perspective of intergenerational differences⁸, mobility with fellow townsmen significantly positively impacts the wages of the two generations of rural migrants. However, compared with the new generation of rural migrants, the effect of mobility with fellow townsmen on the wages of the older rural migrants is more obvious. The older generation of rural migrants in the city still continues their traditional circle of communication centered on blood and geography (Li, 2013), while the new generation of rural migrants is disconnected from traditional rural social relations, and their values are more self-centered (Zhang and Jiang, 2016). And their ability and integration into the city are more potent than those of the older generation of rural migrants. The proportion of white-collar rural migrants is also higher than that of the older generation of rural migrants, so the impact of mobility with fellow townsmen on the wages of rural migrants is weaker than that of the older generation of rural migrants.

Table 7 Results of heterogeneity for occupations.

Variables	(1) White-collar occupation	(2) Business services occupation	(3) Consumer services occupation	(4) Blue-collar occupation
Mobility with fellow townsmen	0.048 (0.051)	0.358** (0.151)	0.112*** (0.032)	0.043** (0.019)
Control variables	YES	YES	YES	YES
Constant term	7.122*** (0.128)	7.045*** (0.183)	7.214*** (0.041)	7.341*** (0.055)
Observations	1,517	209	7,682	5,980
R-squared	0.335	0.298	0.270	0.221

Note: The standard errors are clustered at the province level; ***, ** indicate statistical significance at 1% and 5%.

Table 8 Results of heterogeneity for employment enterprise types and generations.

Variables	(1) State-owned enterprise	(2) Private enterprise	(3) Foreign-capital enterprise	(4) Older generation	(5) New generation
Mobility with fellow townsmen	0.129* (0.067)	0.075*** (0.019)	-0.003 (0.037)	0.107*** (0.028)	0.045* (0.024)
Control variables	YES	YES	YES	YES	YES
Constant term	7.208*** (0.076)	7.205*** (0.042)	7.598*** (0.110)	7.200*** (0.043)	7.126*** (0.043)
Observations	1745	11,689	821	7303	9396
R-squared	0.296	0.278	0.174	0.267	0.275

Note: The standard errors are clustered at the province level; ***, * indicate statistical significance at 1% and 10%.

Table 9 Results of heterogeneity of different groups moving with rural migrants.

Variables	(1)	(2)	(3)
Spouse	-0.004 (0.009)		
Parents		-0.007 (0.018)	
Children			0.020 (0.030)
Control variables	YES	YES	YES
Constant term	7.090*** (0.039)	7.092*** (0.039)	7.089*** (0.039)
Observations	16,699	16,699	16,699
R-squared	0.266	0.266	0.266

Note: The standard errors are clustered at the province level; *** indicates statistical significance at 1%.

This paper further examines the impact of rural migrants moving with other different groups among fellow townsmen on their wages. Table 9 shows the specific results. As seen from Table 9, moving with parents, children, or spouses has not significantly increased the wages of rural migrants. This may be because rural migrants often prefer stable jobs for family care. When they are on the move with their spouses, parents, or children, and the salary level of stable jobs is generally lower than that of poorly stable employment, so rural migrants prefer to obtain a relatively stable job at the expense of part of their wages (Li et al., 2018).

Conclusions and discussion

Conclusions. This paper uses the data from the 2017 China Migrants Dynamic Survey to study the relationship between the mobility of rural migrants and their wages. The results show that mobility with fellow townsmen significantly increases the wages of rural migrants. It is still valid after using the Propensity Score

Matching method to correct the selection bias of the sample and excluding the interference from the parents’ outgoing mobility and longer periods of labor mobility, which suggests that the conclusion of this paper is stable and plausible. On the one hand, the reason for the above phenomenon is that mobility with fellow townsmen has enhanced the information search ability of rural migrants, alleviated the problem of information asymmetry in the process of rural migrants’ job search, and provided information convenience for rural migrants to find more suitable jobs, thus bringing about a premium for wages. On the other hand, the mobility of rural migrants through the network of fellow townsmen has enhanced the ability of rural migrants to negotiate wages, making it more likely that rural migrants will receive higher wages in negotiations with employers. Heterogeneity analysis from the perspective of occupation, employment unit type, and generational level found that for white-collar occupations with higher work requirements, the impact of mobility with fellow townsmen on the wages of rural migrants is not obvious.

In contrast, rural migrants’ mobility with fellow townsmen significantly impacts their wages in business services, consumer services, and blue-collar occupations. From the perspective of employment unit type, the movement of rural migrants in foreign-capital enterprises cannot enable rural migrants to obtain higher incomes. However, the mobility with fellow townsmen in state-owned and private enterprises has significantly increased the wages of rural migrants, of which the role of wage increase in private enterprises is more prominent. From an intergenerational point of view, mobility with fellow townsmen has a stronger positive impact on the wages of the older generation of rural migrants. Further analysis shows that when moving with spouses, parents, and children, rural migrants may choose stable jobs to care for their families and “give up” part of their wages.

Discussion. Although the data in this paper comes from China, the findings have obvious reference value and significance for the study of wages of rural migrants globally, especially in developing

countries. It is well known that China is the largest developing country in the world, and Chinese rural migrants are highly representative. The link between rural migrants' mobility and wage improvement in China is also the research focus on rural migrants' migration and mobility in most developing countries. Studying the labor mobility of Chinese rural migrants has implications for a series of underdeveloped countries and regions in the world to promote urbanization and increase the wages of rural migrants. In addition, this mobility pattern with fellow townsmen has similarities and higher replication value in East Asia and Southeast Asia areas, which are deeply influenced by Confucian culture. This paper's research has some applicability to the study of labor mobility in the areas above and can provide possible references in this field.

Considering that the issue of rural migrants' wages is a systematic, comprehensive, and huge scientific research project, this study still has some limitations. First of all, this paper only examines the impact of the first flow of rural migrants on their wages. This paper does not discuss the influence of the secondary flow of rural migrants. This also points out the direction for our next work: to explore the impact of the second flow of rural migrants on wages and the difference between the first and second flows. Secondly, this paper used the cross-section data of the migrant population in 2017, and the timeliness of the data needs to be enhanced. In addition, due to the limitation of existing research data, especially the scarcity of panel data, the dynamic effect of mobility with fellow townsmen on the wages of rural migrants still needs to be further discussed.

Promoting the urbanization of the agricultural transfer population is the primary task of China's new urbanization construction, and realizing the economic assimilation of rural migrants is the key content. The results of this paper show that mobility with fellow townsmen has increased the wages of rural migrants through the information transmission mechanism and wage negotiation mechanism. It is difficult for rural migrants to obtain job search information from official channels. Thus, they rely on informal information channels such as hometown networks and acquaintance introductions to seek jobs. Meanwhile, the lack of labor rights protection mechanisms for rural migrants forces them to rely on their fellow townsmen and townsmen association to protect their rights. Therefore, in the future, in promoting urbanization, it is necessary to improve the employment service system for rural migrants. It is recommended to build a government employment service information network platform and broaden the formal channels for rural migrants' information search by introducing employment intermediaries, holding special job fairs for rural migrants, and building labor cooperation bases so that rural migrants can obtain job recruitment information more conveniently and effectively. In addition, it is necessary to improve the protection mechanism for the rights and interests of rural migrants and realize the comprehensive coverage of the labor rights protection system for rural migrants. And further protect the legitimate rights and interests of rural migrants by improving the labor dispute mediation and arbitration system, unblocking the "green channel" for rural migrants' rights protection, and introducing trade unions and social welfare organizations.

Data availability

The data used in this article can be found in the National Health Commission of the People's Republic of China (NHCPRC) database, but a data use agreement with the data provider is

required. The China Migrants Dynamic Survey (CMDS) data use agreement states that our study will strictly comply with confidentiality obligations, protect and respect the respondents in the survey data obtained from the NHCPRC by properly storing the study data, and shall not disclose, distribute, or transfer the data in part or in whole (including in converted form) to any other third party in any form without permission. The datasets used and analyzed during the current study are not publicly available due to confidentiality obligations of the agreement. However, anyone wishing to access the data may visit the NHCPRC database website (<https://www.chinaldrk.org.cn/wjw/#/home>) and obtain permission to use the data through a reasonable request.

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Notes

- The sample with an education level of no schooling is converted to 0 years of education, primary schools are converted to 6 years of education, junior high schools are converted to 9 years of education, high schools are converted to 12 years of education, university specialties are converted to 15 years of education, undergraduates are converted to 16 years of education, and graduate students are converted into 19 years of education.
- Work experience units are years and are calculated by: $[(2017 - \text{year of start of this job}) \times 12 + (5 - \text{month of start of this job})] \div 12$.
- Agriculture, forestry, animal husbandry and fishery set as the primary industry; Mining, manufacturing, thermal production and supply of thermal coal, and construction set as secondary industries; Transportation, warehousing and postal services, finance, information transmission, software and information technology services, scientific research and technical services, leasing and business services industry set as producer services industry; Wholesale and retail, accommodation and catering, real estate, water conservancy, environment and public facilities management, resident services, repair and other services, education, health and social work, culture, sports and entertainment, public administration, social security and social organization set as the living services industry.
- Responsible persons of state organs, CCP and mass organizations, enterprises and public institutions, professional and technical personnel, civil servants, clerks and relevant personnel are white-collar occupations; Doing business and selling are commercial services; Catering, housekeeping, cleaning, security, decoration, courier and other commercial and service personnel for the life service industry; Agricultural, forestry, animal husbandry, fishery, water conservancy production personnel, production, transportation, construction, other production and transportation equipment operators and related personnel for blue-collar occupations; No fixed occupation and other job types of the sample are set for non-fixed occupations.
- State organs, public institutions, state-owned and state-controlled enterprises, collective enterprises, associations/private organizations as state-owned units; Joint-stock/associated enterprises, private enterprises, individual industrial and commercial households are private enterprises; Hong Kong, Macao and Taiwan wholly-owned enterprises, wholly foreign-owned enterprises and Sino-foreign joint ventures are foreign-funded enterprises; Other types are set as other ownership.
- It is divided according to the standards of the China's National Bureau of Statistics.
- This variable was derived from the questionnaire "Did your parents have any experience of working/doing business outside the home before you first moved/went out".
- According to the common practice of the existing literature, rural migrants are divided into the older generation of rural migrants and the new generation of rural migrants in 1980.

References

- Alba R, Nee V (1997) Rethinking assimilation theory for a new era of immigration. *Int Migr Rev* 31(4):826–874
- Becker GS (1962) Investment in human capital: A theoretical analysis. *J Polit Econ* 70(5):9–49
- Becker GS (1993) Nobel lecture: The economic way of looking at behavior. *J Polit Econ* 101(3):385–409
- Becker GS (2009) Human capital: A theoretical and empirical analysis, with special reference to education. Univ of Chicago press
- Bellmann L, Emmerich K (1992) Union bargaining, wage differentials and employment. *Labour* 6(2):19–30
- Bertrand M, Luttmer EF, Mullainathan S (2000) Network effects and welfare cultures. *Q J Econ* 115(3):1019–1055

- Blanchard O, Giavazzi F (2003) Macroeconomic effects of regulation and deregulation in goods and labor markets. *Q J Econ* 118(3):879–907
- Bonacich E (1987) “Making it” in America: a social evaluation of the ethics of immigrant entrepreneurship. *Social Perspect* 30(4):446–466
- Cahuc P, Postel-Vinay F, Robin JM (2006) Wage bargaining with on-the-job search: Theory and evidence. *Econometrica* 74(2):323–364
- Castles S (2002) Migration and community formation under conditions of globalization. *Int Migr Rev* 36(4):1143–1168
- Castles S (2003) Towards a sociology of forced migration and social transformation. *Sociology* 37(1):13–34
- Chan KW, Wei Y (2019) Two systems in one country: the origin, functions, and mechanisms of the rural-urban dual system in China. *Eurasian Geogr Econ* 60(4):422–454
- Chen L (2001) On Family Culture and Zhejiang Enterprise Organization. *Econ Rev* 111(5):120–124
- Chen Y (2019) The Impact of Hometown Gathering on Rural migrants of Ethnic Minorities Along the Border: Income Level and Status Gain. *Chin J Popul Sci* 191(2):87–98
- Damm AP (2009) Ethnic enclaves and immigrant labor market outcomes: Quasi-experimental evidence. *J Labor Econ* 27(2):281–314
- Dekker R, Engbersen G (2014) How social media transform migrant networks and facilitate migration. *Global Netw* 14(4):401–418
- Eriksson K (2020) Ethnic enclaves and immigrant outcomes: Norwegian immigrants during the Age of Mass Migration. *Eur Rev Econ Hist* 24(3):427–446
- Fei HT, Fei X, Hamilton GG, Zheng W (1992) From the soil: The foundations of Chinese society. Univ of California Press
- Granovetter MS (1973) The strength of weak ties. *Am J Sociol* 78(6):1360–1380
- Huang Z (2013) Self-Production Resumption: Neglected Forms of Labor: Two Types of Chinese Experiences from Peri-urban Farmland and Construction Sites. *Youth Stud* 2013(1):39–48
- Kim YY (2017) Cross-cultural adaptation. Oxford research encyclopedia of communication
- Kippen T, Panda B (2019) Migrants and Their Social Networks: A Study of Kuki Migrants in Delhi. *Sociol Bulletin* 68(3):342–356
- Lagakos D (2020) Urban-rural gaps in the developing world: Does internal migration offer opportunities? *J Econ Perspect* 34(3):174–192
- Lee CK (1998) Gender and the South China miracle: Two worlds of factory women. Univ of California Press
- Lewin-Epstein N, Semyonov M (1994) Sheltered labor markets, public sector employment, and socioeconomic returns to education of Arabs in Israel. *Am J Sociol* 100(3):622–651
- Li C, Wan H, Tian Z (2018) Mobility for education: The Impact of Education Policy Reform on rural migrants’ mobility. *J Fin Trade Econ* 39(1):132–146
- Li P, Li W (2007) Economic status and social attitudes of rural migrants in China. *China World Econ* 15(4):1–16
- Li Q (2013) An empirical analysis of the intergenerational differences in the collective action participation of rural migrants: Based on survey data from the Pearl River Delta. *Academics* 182(7):172–181
- Li S, Deng R (2021) Rural customs and subjective life quality of rural migrants: Empirica research based on dynamic monitoring data of floating population. *J Fin Econ* 47(11):109–123
- Lian S, Li Y (2019) Research on the influencing factors of urban courier brother’s willingness to stay: An investigation based on the perspective of self-determination theory. *Contemp Youth Stud* 362(5):25–31
- Liang H (2013) Interpersonal communication networks and urban integration of rural migrants in the process of information society. *China Popul-Resources Envir* 23(1):111–118
- Liang H (2016) The Occupational Search Process of Rural migrants and Its Impact on Occupational Upward Mobility: Based on search and matching theory. *Agric Tech Econ* 250(2):63–72
- Light I (1984) Immigrant and ethnic enterprise in North America. *Ethnic Racial Stud* 7(2):195–216
- Lin S, Wu F, Liang Q, Li Z, Guo Y (2022) From hometown to the host city? Migrants’ identity transition in urban China. *Cities* 122:103567
- Liu Q, Wang Y (2023) City size, social networks and rural migrants’ job search. *Fin Trade Econ* 44(3):150–164
- Luo T, Xu F (2010) The problem of rural migrants living in the same hometown from the perspective of social work. *Fujian Tribune* 219(8):145–150
- Lyu H, Dong Z, Roobavannan M, Kandasamy J, Pande S (2019) Rural unemployment pushes migrants to urban areas in Jiangsu Province. *China. Palgr Commun* 5(1):1–12
- Mai X, Wang J (2022) Situational differences, migratory duration, and social integration of internal migrants in urban China. *Cities* 125:103596
- Massey DS (1986) The settlement process among Mexican migrants to the United States. *Am Sociol Rev* 51(5):670–684
- Mincer J (1958) Investment in human capital and personal income distribution. *J Polit Econ* 66(4):281–302
- Mincer J (1974) Schooling, Experience, and Earnings. *Hum Behav Social Institutions* No. 2
- Nagel CR (2002) Geopolitics by another name: Immigration and the politics of assimilation. *Polit Geogr* 21(8):971–987
- Pfeffer J, Cohen Y (1984) Determinants of internal labor markets in organizations. *Admin Sci Quart* 29(4):550–572
- Portes A, Zhou M (1993) The new second generation: segmented assimilation and its variants. *Ann Am Acad Polit Ss* 530(1):74–96
- Portes A (1998) Social capital: Its origins and applications in modern sociology. *Annu Rev Sociol* 24(1):1–24
- Portes A, Bach RL (1985) Latin journey: Cuban and Mexican immigrants in the United States. Univ of California Press
- Portes A, Rumbaut RG (2006) Immigrant America: a portrait. Univ of California Press
- Rumbaut RG (1997) Paradoxes (and orthodoxies) of assimilation. *Sociol Perspect* 40(3):483–511
- Rye JF (2018) Labour migrants and rural change: The “mobility transformation” of Hitra/Frøya, Norway, 2005–2015. *J Rural Stud* 64:189–199
- Rye JF, Andrzejewska J (2010) The structural disempowerment of Eastern European migrant farm workers in Norwegian agriculture. *J Rural Stud* 26(1):41–51
- Schultz TW (1961) Investment in human capital. *Am Econ Rev* 51(1):1–17
- Seidel MDL, Polzer JT, Stewart KJ (2000) Friends in high places: The effects of social networks on discrimination in salary negotiations. *Admin Sci Quart* 45(1):1–24
- Selod H, Shilpi F (2021) Rural-urban migration in developing countries: Lessons from the literature. *Reg Sci Urban Econ* 91:103713
- Semyonov M (1988) Bi-ethnic labor markets, mono-ethnic labor markets, and socioeconomic inequality. *Am Sociol Rev* 53(2):256–266
- UN D (2015) World urbanization prospects: The 2014 revision. United Nations Department of Econ and Social Affairs, Popul Division: New York, NY, USA, 41
- Wei W (2016) A study on the income effect of self-selection, career development and rural migrants gathering in the same village. *Sociol Stud* 31(5):164–188
- Wen Z, Zhang L, Hou J, Liu H (2004) Mediation effect test procedure and its application. *Chin J Psychol* 36(5):614–620
- Wu X (2007) Household registration system and intergenerational occupational mobility in China. *Sociol Stud* 132(6):38–65
- Xie Y, Gough M (2011) Ethnic enclaves and the earnings of immigrants. *Demography* 48(4):1293–1315
- Yao S (2019) Peasants Entering cities: Individual and collective rights. *Theor Invest* 209(4):145–150
- Ye J (2021) Incomes and Migrant Workers’ Income: Evidence from CLDS. *J East China Normal University (Philosophy and Social Science Edition)* 53(2):146–163
- Ye J, Zhou Y (2010) Social capital conversion and rural migrants’ earnings - Evidence from a survey of rural migrants in Beijing. *Manag World* 205(10):34–46
- Zhang B, Hu J, Fan C (2015) Social Network, Information Access and Household Entrepreneurial Income: An Empirical Study Based on the Perspective of Urban-Rural Differences in China. *Econ Rev* 192(2):52–67
- Zhang C, Xie Y (2013a) Place of origin and labour market outcomes among rural migrants in urban China. *Urban Stud* 50(14):3011–3026
- Zhang C, Xie Y (2013b) The Power of Townsmen: The Impact of Townsmen Gathering on Rural migrants’ Wages. *Chin J Sociol* 33(1):113–135
- Zhang H, Jiang L (2016) The “delocalization” and “risk” of the new generation of rural migrants under the individualized change. *Chin Youth Stud* 239(1):49–56
- Zhang L, Xu A (2011) Protection of rights and interests of domestic workers and social support: A case study of Shanghai domestic service. *J Social Sci* 366(2):83–90
- Zhou M (1997a) Growing up American: the challenge confronting immigrant children and children of immigrants. *Annu Rev Sociol* 23(1):63–95
- Zhou M (1997b) Segmented assimilation: issues, controversies, and recent research on the new second generation. *Int Migr Rev* 31(4):975–1008
- Zhu P (2016) Residential segregation and employment outcomes of rural migrants in China. *Urban Stud* 53(8):1635–1656

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FM: Supervising; ZL: Data analysis; HL: Data curation, Software analysis; MAB: Proofread.

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Competing interests

The authors declare no competing interests.

Additional information

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