

Ethnic enclaves revisited: Effects on earnings of migrant workers in China

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Abstract

Among rural-to-urban migrants, migrant workers from the same origins tend to concentrate in the same workplaces. When this concentration in a workplace is sufficiently dense, we may consider it a native-place enclave. According to extensive literature on US immigrants, enclave participation may improve the economic well-being of immigrants. This study borrows the same reasoning to evaluate whether or not working in a native-place enclave affects earnings of migrant workers in urban China. We pay particular attention to heterogeneity, not only in how migrants who work in an enclave may differ from those who choose to work in the open economy, but also in varying earnings returns to enclave participation across different groups of migrant workers. Using data from a 2010 survey of migrant workers in the Pearl River Delta and the Yangtze River Delta, we match enclave workers and non-enclave workers with the same propensity to work in an enclave and then compare their earnings differences. We find a positive average earnings return to enclave participation, although this effect is smaller than that resulting from a naïve comparison. Moreover, we find that migrants with a high propensity to work in an enclave benefit more from enclave participation than those with a low propensity. Our findings generally support the enclave thesis and its role in internal migration in China.

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Introduction

In 2010, 17 young migrant workers from different factories owned by the Foxconn company tried to end their lives by jumping from factory dormitories within 6 months, causing 13 deaths and four injuries. So many suicide attempts by employees from the same company within a short period of time shocked the public and raised concerns over the working conditions of migrant laborers in China. Foxconn, the largest electronics contractor in the world, was soon blamed for its harsh, cold-blooded factory policies in dealing with employees. For example, the company strictly limited social contact among migrants from the same native place. The company intentionally assigned these migrant workers to different production lines and dormitories to prevent native-place networks from forming within the factory for fear that these networks would lead to labor protests and favoritism that could erode the iron-like factory discipline. This policy, which seemed to promote efficiency, ignored the psychological costs to the workers. Deprived of the social support they would have received from native-place fellow migrants, these workers developed feelings of loneliness, isolation, and helplessness. Foxconn considered native-place networks of migrant workers to be counterproductive and potentially harmful to productivity, while other companies saw the value of native-place networks and manipulated them to serve as a means of controlling migrant laborers. Ching Kwan Lee (1998) documented how a foreign-invested factory in Shenzhen effectively used a native-place network to recruit and discipline female migrant workers. As she described in her work in the 1990s, migrant female workers were intentionally assigned to hierarchical positions based on their native place. By doing this, the factory management created competition among workers from different native places. Lee (1998) named this kind of labor regime 'localism', highlighting the special role of native-place networks in controlling rural migrant laborers in China. Both the case of Foxconn and the localism practice described in Lee's ethnographic study showed that native-place networks figure prominently in the urban labor market in China. This is because migrant workers are largely organized by their native-place ethnicities. Migrant workers tend to interact with, connect to, and trust those who also come from the same place of origin as their own.

Native-place ethnicity has played an important role in internal migration in China, not only currently but also over a long history. Historically, internal migrants were organized by their native-place ethnicities (Cole, 1996; Honig, 1992, 1996; Perry, 1993). Migrants from particular native places specialized in certain occupations or monopolized certain industries or businesses, gaining great reputations for their native places. Well-known examples were Shanxi bankers, Ningbo salesmen, and Shaoxing private advisors. Between the 1850s and 1940s,

large numbers of refugees flowed into Shanghai to earn their living. The labor market in Shanghai at that time was highly segregated by native-place ethnicities of migrants. For example, skilled workers in the textile industry were exclusively migrants from Southern Jiangsu. Northern Jiangsu migrants were over-represented among dockers, coolies, and rickshaw pullers. Migrants from Yangzhou mainly worked in bathhouses and barber shops, while Cantonese migrants monopolized the shipbuilding industry (Honig, 1992).

After the People's Republic of China was founded in 1949, the influence of native-place ethnicity over employment weakened for a while as the government disbanded native-place associations (*tongxianghui*) and imposed restrictions on rural-urban migration through a rigid household registration system, the *hukou* system (Honig, 1992). With the emergence of mass rural-urban migration in the late 1980s, however, native-place networks regained their power in facilitating internal migration in China. With help from their native-place networks, rural migrants could settle down in an unfamiliar urban destination, obtain job information, make new friends, and get support and protection when they encountered trouble. Most importantly, native-place networks now provide urban employment opportunities, as many migrants work for an employer or a foreman from their own native place or in workplaces where most of their fellow workers come from their home provinces. The dense concentration of migrant workers from a particular geographic location could develop into a ghetto-like, co-ethnic migrant neighborhood, where migrants from a particular homeplace were over-represented among the residential and working population, and these migrants monopolized certain industries or businesses. Previous ethnographic works have described these co-ethnic migrant neighborhoods, such as *Zhejiang cun* (Wang, 1995; Wang et al., 1997), *Xinjiang cun* (Wang and Yang, 2008; Yang and Wang, 2008), *Henan cun* (Tang and Feng, 2000), and *Anhui cun* (Ma and Xiang, 1998) in Beijing, and *Pingjiang cun* (Liu, 2002) in Shenzhen. Migrant employment in both co-ethnic neighborhoods and firms outside of co-ethnic neighborhoods in which either the employer or most co-workers are co-ethnic shares a common feature in that native-place identity and ties exert great influence over various aspects of work, including recruitment, division of labor, wage and benefits, management, promotion, and turnover. In our study, we borrow the definition of ethnic enclave from Portes's (1981) work on US immigrants and define business entities with an employer or with the majority of employees from the same native place as 'native-place enclaves'.

Although Chinese migrant workers are known to have sought employment in native-place enclaves, the economic returns for working in these enclaves have rarely been examined in the previous literature. The previous case studies on co-ethnic migrant neighborhoods found both positive and negative consequences of working in native-place enclaves. Some highlighted the resources and opportunities transmitted through these enclaves, while others argued that they were the source of harmful competition and conflicts. Without a large number of observations and systematic comparisons of labor market outcomes between enclave and

non-enclave migrant workers, we still cannot confirm whether native-place enclave participation enhances or diminishes the economic well-being of migrant workers. In this article, we aim to evaluate the earnings impact of working in a native-place enclave and to explore the possible mechanisms involved in the enclave effect.

We begin by reviewing the enclave thesis in the US immigration literature and discussing its relevance to internal migration in China. We then develop hypotheses to explain how native-place enclaves affect the labor market outcome of migrant workers and what their competing mechanisms are. Next, we introduce survey data for migrant workers used in our analysis, with which we developed two measures for native-place enclaves. We then apply the propensity-score matching method to estimate the average treatment effect (ATE) of enclave participation and use heterogeneous treatment effect (HTE) models to explore how the enclave effect varies across migrant workers with different propensities to work in an enclave. Finally, we conclude with a discussion of our findings and their implications.

The enclave thesis and native-place enclaves in China

The role of ethnic enclaves for immigrant assimilation has been extensively studied in the US immigration literature. Portes and Zhou's (1993) segmented assimilation theory predicted that participation in ethnic enclaves would have beneficial socioeconomic outcomes. According to this theory, there have been three paths of assimilation among immigrants and their children. The first path of assimilation is that described by straight-line assimilation theory, an earlier theory based on observations of past generations of European immigrants in the USA. This theory describes the natural, straight path by which the mid-1920s European immigrants and their offspring were gradually assimilated into mainstream American society by learning about American culture and abandoning their cultures of origin. The classical assimilation theory quickly lost its explanatory power when applied to post-1965 immigrants, however, as these 'new' immigrants were more racially and ethnically diverse, coming mostly from Latin America and Asia. This meant that the new immigrants and their children faced unique challenges in overcoming cultural barriers and discrimination, which set them apart from the earlier, European immigrants (Alba and Nee, 1997). To make things even more difficult for them, a dramatic shift was taking place in the USA from a manufacturing- to a service-based economy, which has made it more difficult for post-1965 immigrants to find well-paid blue-collar jobs. Since most of these immigrants lack competitive skills in the US labor market, they tend to be concentrated in the secondary sector and to suffer disadvantages (Zhou, 1997a, 1997b). As a result, their path has become less straightforward, and new immigrants and their children are less likely than the earlier immigrants to become fully integrated into the white middle class. To make matters worse for them, downward assimilation can occur when new immigrants and their children mix with the native underclass. The children of immigrants are intensively exposed to underclass subculture and may acculturate and assimilate into it. However, Portes and collaborators suggested segmented assimilation as a third,

alternative path that new immigrants and their children can follow (Portes and Bach, 1985; Portes and Zhou, 1993; Wilson and Portes, 1980). That is, immigrants may advance economically while preserving their own ethnic cultures (Portes and Zhou, 1993). This theory emphasizes the stratified and unequal features of US society, in which different segments of society are available, into which immigrants may 'become Americans', and Americanization is, therefore, not necessarily beneficial (Zhou, 1997a).

For new immigrants, the third option seems to be more realistic. The ethnic enclave, an alternative to the mainstream economy, may offer immigrants business opportunities and allows them to receive a significant economic return to the human capital they acquired in their home countries (Wilson and Portes, 1980). Xie and Gough (2011) called the argument that immigrants economically benefit from enclave participation 'the enclave thesis'.

A large body of study has empirically tested the enclave thesis within and outside of US society. The findings are far from conclusive, however. Some studies have shown that immigrants in an enclave obtain higher earnings than those in the open economy (Lewin-Epstein and Semyonov, 1994; Light, 1984; Portes and Jensen, 1987; Semyonov, 1988; Waldinger, 1986), while other studies have found no such positive effect of enclave participation on earnings (Nee et al., 1994; Sanders and Nee, 1987). Moreover, critics of the enclave thesis argue that enclave employment has negative consequences over the long run. The isolated environments of enclaves discourage immigrants from learning English and being influenced by American culture. In addition, entrepreneurs in ethnic enclaves use ethnic solidarity to keep the wages of co-ethnic immigrants low and disguise their exploitation of co-ethnic laborers (Bonacich, 1987; Sanders and Nee, 1987).

However, we have noticed that the debate over the enclave thesis has rarely focused on the variation of effects of an enclave on assimilation outcomes. At present, we have little knowledge about how enclaves are formed (Xie and Gough, 2011). In other words, it is still unclear what kinds of immigrants are most likely to seek employment in an enclave. Since immigrants/migrants are not randomly assigned to enclave employment, many observed and unobserved characteristics affect the selection of immigrants/migrants into enclave participation, as well as its outcomes. When immigrants/migrants who are particularly strong in ethnic languages, knowledge of their native cultures, and social network ties to their native places opt to work in enclaves to avoid being trapped in the secondary labor market, the enclaves may reward them for their pre-immigration/migration education and give them a good start. On the other hand, when immigrants/migrants are forced to choose enclave employment because they can find no employment elsewhere in the open economy, the enclave serves only to shelter them. These two types of enclave workers are different and thus are not equivalent for comparison with non-enclave workers in terms of their potential productivity and resources. Without knowing the selection process for enclave participation, therefore, it is difficult to interpret the empirical findings on the enclave thesis.

For this study, we view the native-place enclave as a special type of ethnic enclave in which ethnicity is based not on race, as in the USA, but on native place (Honig, 1992; Zhang and Xie, 2013). Like the ethnic enclave in the USA, native-place enclaves in China emerged in the context of large-scale labor migration (Liang, 2001) and provided migrant workers with ethnic solidarity and employment opportunities. Moreover, the native-place enclave partly resulted from migrants' reactions to the household registration (*hukou*) system. The unfriendly environment that *hukou* imposes on rural migrants in their urban destination in China parallels the environment new immigrants encounter in the USA as a host society. Therefore, we borrow the enclave thesis to study native-place enclaves, extending the enclave thesis to internal migration in China.

In our earlier article on native-place enclaves in China, we found native-place enclave participation to be positively associated with economic outcomes for migrant workers (Zhang and Xie, 2013). However, the mechanism of the enclave effect as well as the selection process for enclave participation remains unexplored. According to the enclave thesis, the ethnic social network is the mechanism that explains higher economic returns to enclave employment. The enclave is not merely a concentration of a particular ethnic population; it also forms a dense social network based on ethnic membership. Through the ethnic social network, immigrants obtain access to valuable resources, economic opportunities, group identity, and feelings of belonging and solidarity (Portes, 1998). Co-ethnic ties are also very helpful for ethnic entrepreneurs seeking financial, labor, or business resources (Boswell and Curtis, 1984; Kim, 1981; Portes and Bach, 1985). In the context of internal migration in China, rural migrants rely on native-place network ties to initiate rural–urban migration and find urban employment (Lee, 1998). The reciprocity in the native-place ties further strengthens trust in the network and renders the native-place enclave more appealing to migrant workers. Consequently, an employer or a manager is likely to offer co-ethnic migrant employees better positions or assign them better-paying tasks in an enclave (Lee, 1998). Given the network mechanism implied by the enclave thesis, we hypothesize that

Hypothesis 1: Migrant workers in a native-place enclave earn higher earnings than migrant workers in an open economy.

As we discussed earlier, however, the enclave thesis rarely paid enough attention to the selection issue in enclave participation. A naïve comparison of earnings between enclave and non-enclave workers could be biased if the former systematically differ from the latter. For example, certain characteristics, such as a strong connection to the native-place social network, may positively affect both participation in a native-place enclave and economic outcomes. Net of selection, employment in an enclave may not improve migrants' earnings. From the above discussion, we propose the following competing hypothesis to Hypothesis 1: *The self-selection into enclave participation rather than the enclave itself explains the earnings gap between enclave and non-enclave workers.* Given that the

enclave effect could be confounded by selection bias, testing Hypothesis 1 requires the comparison of outcomes between enclave and non-enclave workers with the same likelihood of enclave participation.

Another way to explore the mechanism of the enclave thesis is to consider what kinds of migrants benefit most from enclave participation in terms of motivation. There are two possibilities. First, participation may result from rational choice, which is what the network mechanism emphasizes. By working in an enclave, advantaged migrant workers maximize their economic opportunities, while disadvantaged migrant workers seek protection. The tendency towards enclave participation is positively associated with gains from enclave participation. The more likely a laborer is to work in an enclave, the larger the benefit from enclave employment. This positive selection demonstrates the effectiveness of network mechanisms. Second, migrant workers may work in enclaves not primarily for economic interests, but for native-place identity or feelings of trust, belongingness, or attachment. If this is the case, the tendency for migrant laborers to work in an enclave will be negatively associated with economic returns to enclave participation. Given the above discussion, we develop our second hypothesis relating to the enclave thesis by hypothesizing utilitarian motives for enclave participation:

Hypothesis 2: Migrant workers who are more likely to work in a native-place enclave will benefit most from working in such an enclave (positive selection).

The following competing hypothesis to Hypothesis 2 focuses on non-economic explanations for enclave participation, such as native-place identity, trust, and emotional attachment, and predicts a finding of negative selection: *Migrant workers who are least likely to work in a native-place enclave will benefit most from enclave participation.* Testing Hypothesis 2 requires a comparison of outcomes among migrant workers with different levels of tendency to work in a native-place enclave.

Data, measurement, and method

We use data collected for a research project entitled 'Protecting the Rights of Migrant Workers: Theories and Practices' (09JZD0032), sponsored by the Philosophy and Social Science Foundation of the China National Ministry of Education. The survey was conducted in 2010 by Sun Yat-sen University. Over 4000 migrant workers in nine cities in the Pearl River Delta and 10 cities in the Yangtze River Delta were interviewed. The migrant workers were screened as urban employees who were cross- or within-province migrants, holding rural *hukou*, and with less than Bachelor-level education. Since a sampling frame of migrant workers was unavailable, the sample was drawn by quota sampling, with the quota computed from official statistical yearbooks.

Enclave participation was the key variable for this study. Since none of the existing surveys in China ever covered native-place enclaves, we developed our own measures for the survey. Previous measures of ethnic enclaves used in US

Table 1. Percentage distributions of migrants in native-place enclaves by native places of employer, manager, and over 50% co-workers.

	Employer		Manager		Over 50% co-workers	
	Frequency	Cumulative percentage (%)	Frequency	Cumulative percentage (%)	Frequency	Cumulative percentage (%)
Same village	199	4.9	211	5.2	198	4.8
Same county/city	151	8.5	257	11.5	65	6.4
Same province	129	11.7	286	18.6	668	22.5
Other provinces	3623	100.0	3303	100.0	3210	100.0
Sample size	4102		4057		4141	

immigration studies were based on either employer characteristics or residential characteristics, such as the location of residency (Sanders and Nee, 1987) or workplace (Portes and Jensen, 1989), the language used in the workplace (Xie and Gough, 2011), or employment in ethnic industries (Zhou and Logan, 1989). These measures, however, can be problematic because a high concentration of co-ethnics either in a residential place or a workplace does not guarantee an enclave. Given that the same ethnicity between employees and employer is the core feature of an enclave economy, these proxy measures may not capture the original formulation of the enclave thesis.

To address the above shortcoming, we constructed two measures of native-place enclave participation. In the survey, we asked the respondent if his/her employer was from his/her own native place. Moreover, since the concentration of co-ethnics could occur in a smaller establishment, such as a production line, team, or workshop, we also asked if the employer and the manager (or supervisor or foreman) shared the migrant's native-place ethnicity and the percentage of co-workers who shared the migrant's native-place ethnicity. We measured native-place co-ethnicity by same village, same county/city, and same province. Table 1 shows the percentages of migrants employed in native-place enclaves variously defined: native places of employers, managers, and over 50% of co-workers from the same village of origin, the same county/city of origin but another village, and the same province of origin but another county/city. If we use the province level of native place to define co-ethnics, 11.7% of migrant workers worked for a co-ethnic employer, 18.6% of them were supervised by a co-ethnic manager, and 22.5% of them were co-ethnic with over 50% of their co-workers.

Using the same provincial origin as the boundary of enclave would not be appropriate for all migrant workers, because migrants tend to narrow their perceived boundary of co-ethnics to a smaller area if they encounter a large supply of co-ethnics with origins geographically close to their own (Lee, 1998). Therefore, we used provincial origin as the boundary of co-ethnics for inter-province migrants. For intra-province migrants, we further changed the boundary to the same county/

city. For within-county/city migrants, we further narrowed the boundary to the village level. We defined native-place enclaves in two ways. One was based on information of an employer or a manager who might hire native-place co-ethnics to work for him/her. This is a typical enclave economy as described by the enclave thesis. Enclaves of this kind are likely to be found in a native-place migration community. The other way is to define enclave in terms of co-workers' ethnic composition. In this case, the owner or employer of a firm does not necessarily share the same place of origin with the employees, but migrants from a particular origin are over-represented among the employees. We constructed a variable to indicate working in an employer-/manager-based enclave where either the employer or the manager shared the same place of origin with a migrant, and another variable to indicate working in a coworker-based enclave where over 50% of co-workers were from the same native place as the migrant.

Table 2 describes the distribution of the variables used in our analysis, separately for the full sample, a subsample of migrants employed in employer-/manager-based enclaves, and a subsample of migrants employed in coworker-based enclaves. We observe substantial overlaps between employer-/manager-based enclaves and coworker-defined enclaves: 28% of migrants employed in a coworker-based enclave also worked for a co-ethnic employer or manager. Among migrants, 50% of those employed in an employer-/manager-based enclave were also employed in a workplace where over 50% of co-workers were co-ethnics. Regarding sociodemographic background, migrant workers in either kind of enclave were more likely to be male and older workers. Enclave workers were relatively less educated and trained (a lower percentage having a training certificate), but had worked for more years in the enterprise in which they were currently employed. About three-quarters of migrant workers in an employer-/manager-based enclave and about two-thirds of migrant workers in a coworker-based enclave found their jobs through family or friends. The enclave enterprises were smaller. Compared to the full sample, enclave workers on average enjoyed higher monthly earnings.

These descriptive statistics show that enclave workers differ from non-enclave migrant workers in sociodemographic characteristics. In other words, migrants with certain sociodemographic characteristics are more likely to work in an enclave. Ignoring this between-group difference in selection to enclave participation, a naïve comparison of earnings between the enclave and non-enclave groups would likely yield misleading results. When we test the hypothesis that enclave workers enjoy higher earnings than non-enclave workers, we need to control for these sociodemographic characteristics that affect their different levels of propensity to work in an enclave between the two groups. We use the method of propensity-score matching for this purpose. We begin by constructing a binary logistic model to estimate the probability of enclave employment, given observed covariates for each migrant worker. Based on the probabilities, we generate an individual-specific propensity score to indicate the level of each migrant worker's propensity for enclave participation. The higher the score, the more likely it is that the migrant works in an enclave. We then construct balanced propensity-score

Table 2. Descriptive statistics of variables.

	Full sample (N = 3409)		Migrants in employer-/ manager-based enclaves (N = 237)		Migrants in coworker- based enclaves (N = 429)	
	Mean	SD	Mean	SD	Mean	SD
Employment in employer-/manager-based enclaves	0.07	0.25			0.28	0.45
Employment in coworker-based enclaves	0.13	0.33	0.50	0.50		
Monthly earnings (RMB yuan)	1899	807.37	2066	1092.24	1982	931.76
Logged monthly earnings	7.48	0.37	7.52	0.45	7.51	0.39
Male	0.54	0.50	0.65	0.48	0.56	0.50
Age	30.36	9.66	32.09	11.28	31.49	10.25
Years of schooling	2.52	1.34	2.40	1.33	2.23	1.19
Years of work experience	8.01	6.51	8.47	7.36	8.51	6.71
Has any training certificates	0.16	0.37	0.12	0.32	0.11	0.32
Found this job through family or friends	0.50	0.50	0.74	0.44	0.64	0.48
Size of enterprise						
< 10 persons	0.06	0.25	0.27	0.44	0.11	0.32
10–29 persons	0.10	0.30	0.19	0.39	0.14	0.35
30–99 persons	0.16	0.37	0.14	0.34	0.17	0.38
100–299 persons	0.23	0.42	0.15	0.36	0.21	0.41
300–999 persons	0.20	0.40	0.14	0.35	0.19	0.39
1000–2999 persons	0.12	0.33	0.05	0.22	0.08	0.27
≥ 3000 persons	0.12	0.32	0.06	0.24	0.10	0.29
Destination provinces						
Shanghai	0.14	0.35	0.24	0.43	0.19	0.39
Jiangsu	0.19	0.39	0.14	0.34	0.15	0.36
Zhejiang	0.17	0.38	0.14	0.35	0.17	0.38
Guangdong	0.50	0.50	0.49	0.50	0.48	0.50

strata,¹ in each of which we match enclave workers to non-enclave workers who have the same average propensity scores. Under the assumption of ignorability, or no omitted confounders, the matched enclave and non-enclave groups in each stratum are comparable and only differ by actual enclave participation. We can simply compute the earnings difference between the two groups within each stratum and compute a weighted sum of these earnings differences across strata to obtain an ATE of enclave participation on earnings. The ATE (δ) and its variance will be estimated by the following formulas:

$$\delta = \sum_{k=1}^k \frac{n_k}{N} [\overline{Y}_{1k} - \overline{Y}_{0k}] \quad (1)$$

$$\text{Var}(\delta) = \sum_{k=1}^k \left(\frac{n_k}{N}\right)^2 \text{Var}[\overline{Y}_{1k} - \overline{Y}_{0k}] \quad (2)$$

In these formulas, k denotes the stratum. Y_{1k} denotes the earnings for enclave workers, and Y_{0k} denotes those for non-enclave workers.

Our second hypothesis examines the HTE of enclave participation on earnings. Testing this hypothesis requires a comparison of enclave effects among migrants with different levels of propensity to work in an enclave. We apply HTE models, developed by Xie et al. (2012). The HTE method uses a hierarchical linear model, which estimates propensity-score stratum-specific treatment effects within strata as level-1 estimates and evaluates the trend across propensity-score strata using variance-weighted least squares regression of the stratum-specific treatment effect (or level-1 estimates) on strata rank at level 2. A positive level-2 estimate indicates a positive selection, while a negative estimate indicates a negative selection.

Results

We begin by estimating binary logistic propensity-score models predicting the probability of enclave participation by various covariates described in Table 2, separately, by employer-/manager-based enclaves and coworker-based enclaves. Covariates in the models include gender, age of job entry, level of education, whether the job was the initial job, destination province, proportion of migrants from a particular provincial origin out of the total migrant population in a particular destination province,² and whether the migrant worker found the current job through family or friendship ties. Among these covariates, whether the migrant worker found the current job through family or friends is a proxy measure of the network resources of a migrant. Level of education measures a migrant's human capital. If less-educated migrants are more likely to work in enclaves, then enclaves serve as shelters for the disadvantaged, those who lack competitiveness in an open economy.

The results in Table 3 show that using family or friendship ties in job seeking increased the likelihood that a migrant works in an enclave of either kind, but its

Table 3. Logistic propensity-score models predicting enclave participation.

	Employer-/manager-based enclaves		Coworker-based enclaves	
	Coefficient	Std. error	Coefficient	Std. error
Male (Female = 0)	0.554***	0.153	0.172	0.110
Age at job entry	0.006	0.008	-0.004	0.006
Education attainment (≤Primary school = 0)				
Junior high	-0.374	0.203	-0.323*	0.144
Senior high	-0.042	0.219	-0.623***	0.170
Junior college	0.247	0.338	-0.738*	0.291
First job (No = 0)	0.240	0.152	0.133	0.114
Destination province (Shanghai = 0)				
Jiangsu	-0.811**	0.302	-0.218	0.210
Zhejiang	-0.456	0.262	-0.309	0.190
Guangdong	-0.249	0.217	-0.227	0.163
The share of migrant population from the origin province at the destination	0.011	0.006	-0.010*	0.005
Found this job through family or friends (No = 0)	1.348***	0.173	0.639***	0.112
Intercept	-3.781***	0.415	-1.622***	0.298
LR Chi-sq. (df = 11)	104.86		72.710	
Log likelihood	-737.44		-1202.51	

Note: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

effect is larger on employment in an employer-/manager-based enclave than in a coworker-based enclave. Education is negatively associated with entry into an enclave, but the effects are only statistically significant for coworker-based enclaves. We did not find that migrant workers with either junior high school or senior high school education were significantly less likely to work in employer-/manager-based enclaves than those with primary school education or less. Junior tertiary education even increased the likelihood of employment in an employer-/manager-based enclave, although this positive effect is not statistically significant. The above findings indicate that an employer-/manager-based enclave is more likely to be a concentration of migrant workers with good network resources, while a coworker-based enclave is more likely to have a concentration of migrant workers who lack human capital.

We then estimated the effects of employment in either kind of enclave on migrants' earnings. We first report results from ordinary least squares (OLS)

Table 4. The ordinary least squares regression of enclave participation ($N = 3409$).

	Employer-/manager-based enclaves		Coworker-based enclaves	
	Coefficient	Std. error	Coefficient	Std. error
Enclave (Non-enclave = 0)	0.090***	0.023	0.063***	0.017
Male (Female = 0)	0.198***	0.012	0.200***	0.012
Age	-0.006***	0.001	-0.006***	0.001
Years of schooling	0.026***	0.003	0.027***	0.003
Years of work experience	0.038***	0.003	0.038***	0.003
Squared years of work experience	-0.001***	0.000	-0.001***	0.000
Has any training certificates (No = 0)	0.071***	0.016	0.071***	0.016
Size of enterprise (<10 persons = 0)				
10–29 persons	0.097***	0.029	0.086***	0.029
30–99 persons	0.121***	0.027	0.106***	0.026
100–299 persons	0.130***	0.026	0.115***	0.026
300–999 persons	0.168***	0.026	0.153***	0.026
1000–2999 persons	0.172***	0.028	0.157***	0.028
≥3000 persons	0.213***	0.029	0.197***	0.028
Destination province (Shanghai = 0)				
Jiangsu	-0.055***	0.021	-0.056***	0.021
Zhejiang	-0.013	0.020	-0.016	0.020
Guangdong	-0.109***	0.017	-0.109***	0.017
Intercept	6.997***	0.045	7.002***	0.045
R^2	0.227		0.227	

Note: The dependent variables are logged monthly earnings. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

regression models, with logged monthly earnings as the outcome variable, reported in Table 4. We observe positive effects of enclave participation on migrants' monthly earnings. Controlling for the effects of gender, age, years of schooling, job training, size of enterprise, and destination province, working in an employer-/manager-based enclave increased migrants' monthly wage earnings by 9%, and working in a coworker-based enclave increased the earnings by 6%.

As we discussed earlier, however, the estimates from OLS models could be biased because enclave workers differ from non-enclave workers in so many respects that the two groups are not truly comparable. As we can see from the results shown in Table 3, migrants in an employer-/manager-based enclave tend to have better social connections, and migrants in a coworker-based enclave are less educated. The two groups may also differ in many other unobserved but relevant characteristics.

One problematic issue with the OLS approach is that it presumes a homogeneous treatment effect of participation in an enclave on earnings. Given high

variability in the migrant population, this assumption is unlikely to hold true in practice (Xie, 2013). In addition, to interpret the OLS coefficients as causal, one would need to assume that all relevant differences between enclave workers and non-enclave workers are captured by covariates. This assumption is commonly called the ignorability assumption. We do not have a credible instrumental variable with which to identify selection biases in our OLS results presented earlier. However, we can conduct an exercise of estimating HTEs by the propensity score for participation in an enclave, under the same ignorability assumption. Although this method does not directly estimate bias-corrected results if the ignorability assumption does not hold true, heterogeneity in estimated treatment effects using this method can be interpreted as evidence for selection (Xie and Wu, 2005; Xie et al., 2012; Zhou and Xie, 2016).

Specifically, we derive estimated propensity scores based on binary logistic regression models in Table 3 to indicate each individual's propensity to work in an employer-/manager-based enclave and a coworker-based enclave. Then we generate four balanced propensity strata by dividing propensity scores into four intervals. Within each stratum, migrants who actually worked in an enclave and those who did not were not significantly different in the average propensity score and the means of each covariate. Under the assumption of ignorability, we can attribute the earnings difference between the two groups to the enclave effect rather than to any other systematic factors. Stratum by stratum, we compute the mean of logged monthly wage earnings for enclave workers and non-enclave workers separately, and take the earnings difference between the two groups. We show the results in Table 5.

Table 5. The means of monthly earnings between enclave and matched non-enclave workers by propensity-score strata.

	N	Mean of logged earnings		
		(A) Enclave	(B) Non-enclave	(A) – (B)
Employer-/manager-based enclaves				
Stratum 1	1594	7.512	7.474	0.037
Stratum 2	945	7.480	7.445	0.035
Stratum 3	704	7.590	7.509	0.082
Stratum 4	18	7.720	7.460	0.260
Sample size	3261			
Coworker-based enclaves				
Stratum 1	1264	7.520	7.507	0.013
Stratum 2	1047	7.499	7.451	0.048
Stratum 3	723	7.526	7.453	0.073
Stratum 4	263	7.503	7.406	0.097
Sample size	3297			

We then calculate the ATE of enclave participation on earnings across all strata and its standard error using formulas (1) and (2). We obtain ATEs that are smaller than OLS estimates but still statistically significant for both kinds of enclave: enclave participation increases the earnings by about 4% in either an employer-/manager-defined enclave (coefficient = 0.047; SE = 0.006) or a coworker-defined enclave (coefficient = 0.043; SE = 0.001). Both of the estimates are statistically significant at the 0.01 level. In summary, results from both the OLS models and propensity-score matching analyses support our first hypothesis that enclave participation improves earnings for migrant workers.

Finally, we now examine the pattern of enclave effects across propensity-score strata based on the results of HTE models. The analyses are made separately for the two kinds of enclaves. In Table 6, we report the stratum-specific estimates (or the level-1 slopes) and the heterogeneous enclave effect as a linear function of strata ranks (or the level-2 slope) separately for employer-/manager-based enclaves and coworker-based enclaves. In order to visualize the pattern, we turn the estimates in Table 6 into Figures 1 and 2. In both figures, the horizontal axis represents the propensity-score strata ranks for working in a particular kind of enclave, and the vertical axis shows the enclave effects on earnings. If the enclave effect is a positive (or negative) function of propensity score, it will be a positive (or negative) selection. According to Figures 1 and 2, we find positive selection for employment in both employer-/manager-based and coworker-based enclaves, although the level 2 slope is statistically significant only for working in the employer-/manager-based enclave. Recall the earlier findings in the logistic model that migrant workers who had better social connections were more likely to work in an employer-/manager-based enclave. Here, the positive selection means that the more likely migrant workers were to work in an employer-/manager-based enclave, the higher the earnings return to enclave participation. In other words, migrant workers with better social connections used their network resources both to seek enclave employment from a co-ethnic employer or manager, and to increase their earnings. This finding supports the network mechanism we hypothesized for the enclave thesis.

Table 6. The effects of enclave on logged monthly earnings by propensity-score strata.

	Level-1 slopes				Level-2 slopes
	Stratum 1	Stratum 2	Stratum 3	Stratum 4	
Employer-/manager-based enclaves	0.037 (0.056)	0.035 (0.045)	0.090* (0.046)	0.392** (0.125)	0.062† (0.032)
Coworker-based enclaves	-0.006 (0.040)	0.060† (0.035)	0.077* (0.036)	0.090 (0.064)	0.034 (0.021)

Note: Numbers in parentheses are standard errors. ** $p < 0.01$; * $p < 0.05$; † $p < 0.1$

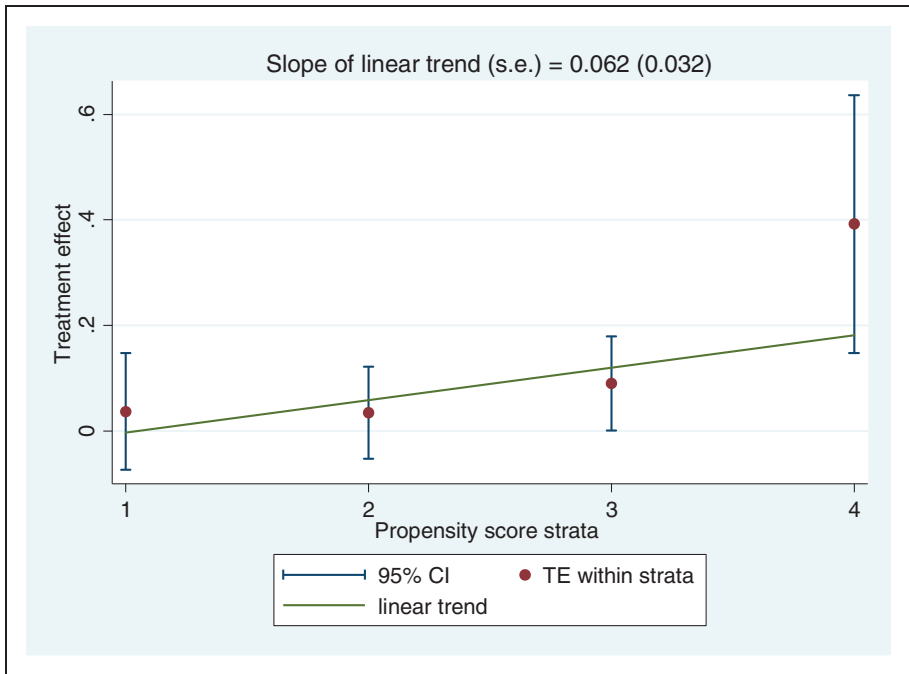


Figure 1. Hierarchical linear model of earning returns to working in employer-/manager-based enclaves.

Conclusion and discussion

Our study tests the enclave thesis, originally developed in the US immigration literature, within the context of internal migration in China. The native-place enclave we studied in this article is a special type of ethnic enclave, based on native place or place of origin. Generally speaking, our empirical findings support the enclave thesis that migrant workers can economically benefit from working in a native-place enclave. First, we found that enclave workers on average have higher wage earnings than non-enclave workers. Employment in either an employer-/manager-based enclave or a coworker-based enclave results in a 4% earnings premium. Second, migrant workers who are more likely to work in an employer-/manager-based enclave benefit more from enclave participation. Combining the finding that employer-/manager-based enclaves are a concentration of migrants with good social connections, the positive selection suggests that enclave participation is a rational, instrumental strategy by which migrant workers maximize their native-place network resources to enhance economic benefits. On the other hand, migrant workers who lack human capital are more likely to work in a

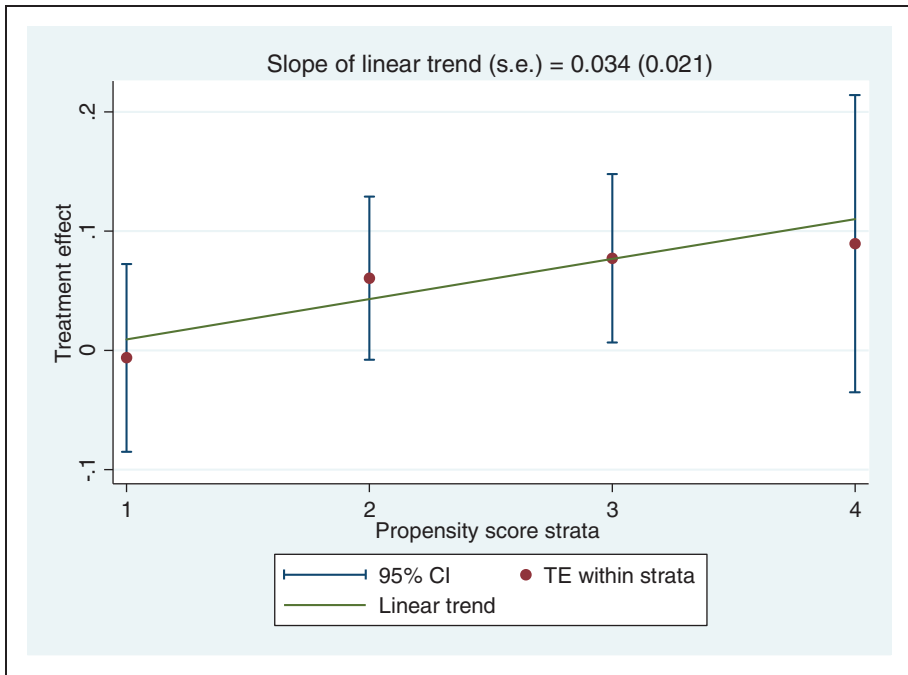


Figure 2. Hierarchical linear model of earning returns to working in coworker-based enclaves.

coworker-based enclave, and these migrants do not seem to benefit much from their enclave participation. This means that the coworker-based enclave serves as a shelter for disadvantaged migrant workers, who otherwise could not find employment or who would receive only very low pay in the open economy. Overall, our findings provide evidence not only for the enclave effect on earnings, but also for the network mechanism that explains the enclave effect.

To capture the original intent of the enclave thesis, we developed better measures of enclave participation in the survey data. We collected information about whether the employer, the manager, and co-workers shared the same native-place ethnicity with the migrant worker. The employer-/manager-based enclave and the coworker-based enclave refer to different kinds of concentrations of migrant workers via native-place networks. Migrant workers in the employer-/manager-based enclave are more likely to be those with good connections to native-place networks, while migrant workers in the coworker-based enclave are more likely to be those who are less competitive in terms of human capital. Therefore, it is unsurprising that migrant workers employed in employer-/manager-based enclaves do better than their counterparts in the open economy, while the migrant workers employed in coworker-based enclaves do not.

Nevertheless, our measurement and analysis still have limitations. Although our study included two kinds of enclaves, it did not cover all possible forms of native-place enclave in urban China. Since the survey only interviewed migrants who were formally employed, we know little about rural migrants who were informally employed or worked in underground economies. Enclave participation, however, was also prevalent among migrants in informal or underground economics. Another limitation of this study is that we only focused on the economic consequences of enclave participation. Due to the data limitation, we did not analyze the effect of enclave participation on other assimilation outcomes, such as social support, collective behaviors, and civil rights, which are also important to the well-being of migrant workers.

One contribution of this study is to introduce the perspective of the enclave thesis to the study of internal migration in contemporary China. The previous studies had observed that rural migrants were organized by native-place ethnicity in the urban labor market, but they rarely adopted the perspective of the enclave thesis so as to empirically understand this phenomenon (e.g. Zhang and Xie, 2013). A large body of sociological and demographic literature has documented the *hukou* barrier to the assimilation of migrant workers in China (e.g. Li and Li, 2007; Wang, 2007; Wei, 2012; Xie, 2007). The perspective emphasizing the stratification based on *hukou*, however, is concerned mainly with rural or non-local *hukou* holders in comparison with urban or local *hukou* holders. Migrant workers from different places of origin are treated as a homogenous group facing the same difficulties in urban China. This perspective overlooks heterogeneity in resources which are embedded in the native-place network, possessed by migrant workers from different native places.

This study combines the enclave thesis in the US literature and Emily Honig's earlier works on the role of native-place ethnicity in internal migration in China. Honig (1992) emphasized the relationship between place of origin and social stratification for understanding the process of urbanization. Occupational segregation, social interactions between migrants from various origins, and attitudes of natives towards migrants are all affected by migrants' places of origin. Our study follows Honig's work and provides empirical evidence that native-place enclave is a group strategy that enhances the economic opportunities of migrants.

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Notes

1. We use the Stata command 'pscore' to obtain balanced propensity score strata. See Becker and Ichino (2002) for an introduction to the pscore command.
2. Data is from the Department of Population, Social Science and Technology Statistics, National Bureau of Statistics, P.R.C. (2000).

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