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ABSTRACT

Language Premium Myth or Fact: Evidence from Migrant Workers of Guangdong, China

Using unique matched employer-employee data from China, we discover that migrant workers in the manufacturing industry who are proficient in the local dialect earn lower wages than those who are not. We also find that workers with better dialect skills are more likely to settle for lower wages in exchange for social insurance. We hypothesize that they are doing so in the hope of obtaining permanent residency and household registration status (hukou) in the host city where they work. Further tests show that the phenomenon of "exchanging wages for social insurance participation" is more pronounced among workers employed in smaller enterprises. Moreover, migrant workers with better language skills have a stronger desire to stay in the host city. Our conclusions are robust to different specifications, even after addressing the endogeneity issue for language acquisition. The present study provides a new perspective on the impact of language fluency on social integration among migrants, one of the most disadvantaged groups in developing countries.

JEL Classification: J32, J61, R23

Keywords: wages, language ability, dialect, social insurance, migrants, China

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1. Introduction

In China, rapid economic growth and urbanization have spurred massive internal migration from rural to urban areas. According to the National Bureau of Statistics of China (NBS), more than one-fifths of China's 1.39 billion people migrated internally in 2017 (NBS, 2018). In China's urban areas, there are over 286 million internal rural migrants, constituting 46 percent of the urban labor force (NBS, 2018). In some developed coastal areas, this figure is likely to exceed 50 percent (Gagno, Xenogiani and Xing, 2009). The literature has intensively studied the economic and social integration of international immigrants in developed countries (Chiswick and Miller, 1995; Bleaky and Chin, 2004; Chiswick and Miller, 2007). Immigrants' fluency in the host country's language is an important determinant of their assimilation to the host society. However, the relationship between Chinese migrants' proficiency in local dialects and their social and economic outcomes is under-researched.

In this paper, we examine the economic return on understanding and speaking the local dialect in the municipal district of Foshan city. Foshan is located in Guangdong province and is well known for its fast-growing manufacturing industry, which is recognized as the third largest manufacturing base in southern China. Rapid economic growth attracts a net inflow of migrants from other parts of the country. Taking advantage of the unique feature of our employer-employee survey, we are able to control for the heterogeneity at both the individual and firm levels in the estimation. The results are striking as we find that migrant workers who are fluent in the local dialect receive lower wages compared to those who are not. We also show that ignoring firm characteristics overestimates the economic return of language proficiency. Our finding is robust to different specifications even if we include a fixed effect model and exclude firms with few observations.

A major concern is that the OLS estimates may suffer from endogeneity due to omitted variables and reverse causality. For example, the observed positive relationship between language and earnings may be driven by an unobserved variable, such as ability. Moreover, information on language proficiency in survey data may also be misreported. To address these issues, an instrumental variable (IV) approach is conducted. In particular, we instrument one's language skills by whether he/she arrived Foshan before the age of 10 and the share of workers within firms who are proficient in the local dialect. Consistent with the OLS estimates, the IV results show that workers

with better language skills earn less. However, the IV estimates (in absolute term) are much larger than those of OLS, indicating that the OLS estimates are underestimated, possibly because people with better language skills choose to become self-employed to avoid lower-paying jobs (Wei, Jiao and Growe, 2018). To further access how sensitive our inferences of language return are to varying degrees of violation of the exogeneity or exclusion restriction assumption, we employ the Conley, Hansen and Rossi (2012) method to examine the empirical validity of our IV. Our sensitivity analysis shows that our IV is indeed plausibly exogenous and that the results are not sensitive to the relaxation of the exogeneity assumption. We also employ the imperfect IV method developed by Nevo and Rosen (2012). Relaxing the identifying assumption does not remove the significant association between language proficiency and wage earnings.

We hypothesize that the unexpected finding of the "negative language premium" is a result of workers' "exchanging" their wages for social benefits. In China, social welfare benefits are closely tied to one's hukou, also known as the place of household registration. Under such strict regulations, it is difficult to transfer one's hukou from one place to another. To this end, migrant workers cannot access and enjoy the government-sponsored social benefits in the place where they work, if the place of work is not the same as their hukou registration. Faced with an influx of rural migrants, Guangdong (one of China's most populous provinces) initiated a new policy in 2015 that aimed to help more migrants settle permanently in its cities. Under this new policy, migrants who participate in social insurance programs for five years are encouraged and eligible to apply for local hukou. Because the contributions of social welfare programs is divided between employers and employees, migrant workers may want to "exchange" part of their wages for social security benefits in order to obtain urban hukou.

We pursue three strategies to investigate our hypothesis. Our first strategy is to divide migrants into those arriving in Foshan before and after the policy change of 2015. If the policy truly has an impact on migrants' earnings and social welfare program participation, the wage penalty would be larger for newly arrived migrant workers. We indeed observe that the point estimates of language effects on wages are larger (in magnitude) for migrants who arrived after 2015. Our second strategy tests whether individuals with higher language proficiency are more likely to receive social welfare benefits. The analysis shows that migrant workers who have better language skills are

indeed more prone to have social insurance. Our third strategy is to test whether migrants with better language skills have a stronger desire to stay in their current jobs and settle in the cities where they live. We find that migrant workers who are fluent in the local dialect are more willing to stay in their current position and live in the current city.

We also explore the implications of "exchange motive" hypothesis. Specifically, we examine the heterogeneous language effects on wages by hukou status, labor union, and firm size. First, the two-tier labor market leads to occupational segregation between migrants and local residents, and workers with local hukou are treated differently from those without it (Meng and Zhang, 2001, Colas and Ge, 2018). If migrants strive to obtain local hukou by accepting lower wages, such an "exchange motive" will be limited for those with local hukou. We run separate regressions for migrant workers with and without local hukou and find that the wage penalty occurs only for those who do not have local hukou. If the labor union provides higher wages, job security and better welfare to its members, we would expect a limited "exchange motive" for union members, such as the wage penalty. Consistent with our hypothesis, we find that nonunionized workers receive lower wages compared to their unionized counterparts with the same language proficiency. If the marginal value of language is higher in larger firms, the wage penalty should be limited in these firms. Larger firms are instead willing to pay higher wages for workers with better language skills to enhance information exchange and communication. However, we fail to find a statistically significant wage penalty in larger firms. By contrast, in smaller firms, the phenomenon in which workers who are more fluent in the local dialect receive lower wages is more pronounced.

The present study closely relates to that of Chen, Lu and Xu (2014), which use self-collected survey data for migrants in Shanghai. Like Foshan, Shanghai is a large Chinese city that receives a large number of internal migrants. Our analysis differs from theirs in several aspects. First, our survey observes both individual and firm characteristics, and we are able to control for heterogeneity at both the individual and firm levels. Our estimation results show that ignoring firm heterogeneity seriously biases the true returns to language skills. Second, over three quarters of observations in their sample are employed in the service sector. However, more than 90% of observations in ours work in the manufacturing industry. This distinction stems from

the variation in industrial structure by region and city. Compared to Shanghai, Foshan has attracted more migrants overall, especially rural-to-urban migrants. Considering the different industrial structures and migrant demographics, language may play different roles in one's earnings. In their study, language predominantly serves as a communication skill because service jobs require more social and interpersonal skills. In contrast, communication is less frequent among manufacturing workers. In fact, we do find that language ability is arguably a signal of social identity for migrant workers in the manufacturing sector. Migrant workers with proficient comprehension and speaking skills are more willing to settle down in their current jobs and cities. Third, the findings of the two studies also differ. Chen, Lu and Xu (2014) find that language proficiency increases the earnings of migrant workers in Shanghai. However, their findings are only significant for individuals who work in sales and other service jobs. Focusing on migrant manufacturing workers, we find that workers who are fluent in the local dialect earn lower wages than those who are not.

While this paper focuses on estimating economic returns to language skills in China, we believe that this study contributes to the literature outside of the Chinese context along two dimensions. First, our findings contrast with the results for developed countries. It is well known that language ability is characterized as an important form of human capital (Mesch, 2003). Immigrants who are more proficient in the major language of the host community are better informed about job openings and earnings and can more effectively communicate about their skills with potential employers. Proficiency in the major language of the host community also increases the productivity of immigrants who are already employed (Chiswick and Miller, 1995). The large difference suggests that language plays a very different role for individuals, especially migrants, in developing countries than for individuals in developed countries. Understanding the different roles that language plays in both developed and developing countries is vital to understanding how feasible it is for migrants to socially and economically integrate into local communities. As mentioned above, the distinct features of the Chinese social welfare system and the hukou system may help explain the observed difference between our results and those reported in developed countries.

Second, our results suggest that part of the earnings gap between migrant and local workers can be attributed to migrant workers being willing to accept lower wages in exchange for social insurance. Migrants, especially rural migrants, move from their

hometowns to large cities in search of better job opportunities. Nevertheless, migrants are more likely to be treated differently from local workers and to be discriminated against in the urban labor market. Rural migrants face difficulties such as delayed payment (Démurger et al., 2009), lower job mobility and a lower chance of promotion (Knight and Yueh, 2004). The disadvantaged position of migrant workers in the labor market is partly due to China's longstanding hukou system. Although the Chinese authorities have reformed the hukou system since the late 1990s to improve migrant workers' rights, the system still sets significant limitations and restrictions on migrants' access to social security benefits and services.

The remainder of this paper is structured as follows. Section 2 describes the institutional background of the Chinese household registration (hukou) system as well as the social insurance coverage of migrant workers. Section 3 introduces the data and descriptive statistics, followed by a section presenting the methodology and findings of our empirical analysis. Section 5 discusses possible explanations and the last section concludes the paper.

2. Institutional Background

2.1 The Chinese Household Registration (hukou) System and Reforms

Since it was launched in the 1950s, the Chinese household registration (hukou) system has categorized citizens according to both their place of residence and their eligibility for certain socioeconomic benefits.[1] Hukou was extensively used by the central government to restrict internal migration. Hukou status is usually inherited from a parent (historically the mother) regardless of where one is born and is very difficult to change. [2] For example, neither long periods of residence in a new location nor marriage to a person of different hukou are sufficient to change one's hukou. Migrants who do not have local hukou usually cannot obtain public services such as health care and schooling for their children on an equal basis compared to other local residents. Hukou system forces many rural migrants to live as second-class citizens in

[1] The latter via designation as either "agricultural" or "non-agricultural" residents.

[2] Children initially inherited the hukou status of the head of the household according to the regulations of the "People's Republic of China on Hukou Registration" (1958). However, since 1998, children can choose to inherit either their mother's or father's hukou location and type, according to the "Opinion on Resolving Several Outstanding Problems in the Present Administration of Hukou Work" (1998).

urban areas, aggravating social inequality while fueling tensions between locals and migrants.

Beginning with the economic reform in the late 1970s and accelerating during the late 1990s, the Chinese central government and local authorities gradually relaxed restrictions on obtaining urban residence permits. Two milestone events are worth mentioning. First, in 1997, the State Council initiated an experimental program to allow rural migrants in designated small towns and cities to obtain local hukou. These reforms required migrants seeking to transfer their hukou status to have (1) a "stable job or source of income" and (2) a "stable place of residence" for over two years. Second, since 2001, many provinces and large cities have also begun to allow migrants who satisfy certain criteria to obtain local hukou in urban areas. Many provincial and municipal regulations grant local hukou in urban areas based on educational or financial criteria. For instance, Chongqing municipality grants local hukou to persons with a two-year college degree or higher who purchase a house or apartment of 30 square meters or more.[3] More recently, Zhejiang province directed large and medium-sized towns to grant local hukou to individuals who purchase homes of a certain size or price. [4] However, these reforms often require high income and include restrictions on self-occupied residential property, making them of limited help to rural migrants who seek to settle in urban cities.

Hukou reforms are a pressing matter for Guangdong, a southern Chinese manufacturing hub that hosts the country's largest transient population. Among its approximately 110 million residents, more than 24 million are migrants from other regions, while another 10.6 million have migrated from other cities within the province. Reforming its hukou system has had a profound impact on accelerating the urbanization process in Guangdong province and facilitating the coordinated development of the southern China region. Under such pressure, Guangdong authorities initiated a new policy in 2015 and attempted to ease decades-old curbs on rural-urban migration and help more migrants permanently settle in cities. [5] According

[3] Chongqing City Government Notice of "Opinions Related to the Speeding up of Municipal Urbanization and Steps Regarding the Reform of the Hukou System" (2015).

[4] Notice of Zhejiang Provincial People's Government Office on the "Opinions Regarding the Deepening of Reform of the Residence Permit System" (2016).

[5] The Hukou Reform in Guangdong: http://zwgk.gd.gov.cn/006939748/201507/t20150707_589735.html.

to new guidelines, approximately 13 million migrant workers will be granted local hukou by 2020 and enjoy full access to public services, including housing, health care, social security and education.[6]

2.2 Social Insurance and Migrant Workers' Participation

China's social insurance scheme has undergone significant changes over the past 35 years, especially in urban areas. During the era of the pre-reform planned economy, employees in urban enterprises were automatically entitled to a wide array of social insurance benefits provided by their work units under the umbrella of labor insurance. When the Chinese government deepened its economic reform in the late 1980s, the need to reform the labor insurance scheme arose. State-owned enterprises encouraged senior employees to retire early to leave vacancies for younger and better-educated workers. However, early retirements were quite expensive for individual organizations because each work unit was responsible for its own pension costs. Many state-owned enterprises had trouble keeping up with their payments or defaulted on them altogether. These pension arrears were compounded by large costs from laid-off workers who also remained the financial responsibility of the firms. In the early 1990s, social insurance reform had become essential to extending coverage to the private sector and relieving the struggling state-owned and collective firms.

In the late 1990s, reforms replaced labor insurance with several separate insurances. New sets of regulations created social insurance programs for pensions (in 1997), medical insurance (in 1998), and unemployment insurance (in 1999). These new programs all share some basic features. First, they stand on the three legs of the social pool, personal accounts and supplementary private insurance. Second, payments are divided between the employer, the employee and the state. The reforms of the social insurance system have resulted in broader coverage for urban employees only. Most rural migrants do not enjoy the benefits of social insurance reform partly because of their limited access to social insurance programs, as those programs are closely tied to local hukou status (Cai, 2011). Some local governments have extended their social insurance programs to cover migrants, although policies vary from locality to locality

[6] Implementation Guidelines of the Guangdong Provincial People's Government on Further Promoting the Reform of the Household Registration System can be found in the following link: http://zwgk.gd.gov.cn/006939748/201507/t20150707_589735.html.

(Zhang and Wang, 2008). However, the implementation of this policy varies by the ownership of the firms. Unlike those in state-owned enterprises, workers in private sectors can voluntarily participate in social insurance programs (Giles, Wang and Park, 2013). Rural migrants have lower incentives to participate in these programs, and the participation rate is extremely low (Cheng, Neilson and Smyth, 2014). Two general reasons account for this. First, shared contribution discourages companies from paying for the employee's social insurance. This is particularly true in private firms, which employ a large share of lower educated workers and do not establish labor unions (Rickne, 2013). Second, the poor portability and transferability of these social insurance programs between cities makes it less feasible and attractive for migrant workers.

3. Data and Descriptive Statistics

The data are drawn from a matched employer-employee survey from Nanhai District, Foshan, one of the most populous and economically developed cities in Guangdong. Compared to other major cities in Guangdong, Foshan has attracted more migrants from other parts of China. The backgrounds of migrants in Foshan are quite diverse in terms of culture, social norms and original languages. This project was jointly administered by the South China Normal University and the People's Government of Foshan City; it is a cross-sectional study and has been conducted with two survey waves thus far. The first wave was conducted in 2013. The project team adopted a stratified random sampling strategy to collect information at both the firm and worker levels. Worker information includes basic demographics, wage earnings, employment contracts, job training, participation in social insurance programs, and labor dispute prevention and resolution. Firm information contains the number of employees, ownership structure, industrial sector, annual revenue, and the existence of a labor union. The sampling framework covers businesses from 11 main industrial sectors, including manufacturing, construction, retail, communication and transportation, energy, water production and supply, etc.

We base our analysis on the 2016 survey wave, which covers 3,128 workers from 145 firms. [7] On average, each participating firm has approximately 26 valid observations, with a minimum of one worker and a maximum of forty-three. Most of the questions

[7] Only full-time workers are included in the survey. We further verify their employment status by checking daily hours of work. Surveyed individuals in our sample work about 8.31 hours per day.

remained the same across both the 2013 and 2016 waves. However, the language information exists only in the latter wave, "how well can you understand Cantonese (the local dialect)?" and "how well can you speak Cantonese?" These questions measure the respondent's self-reported comprehension and oral language skills, respectively. The first question used to measure listening proficiency is based on a three-point scale: (1) cannot understand; (2) partly understand; or (3) completely understand. Likewise, the second question measures speaking ability on a four-point Likert scale: (1) cannot speak at all; (2) occasionally speak one or two sentences; (3) speak roughly for daily life and work communication; or (4) can speak as a local. A higher value for each question indicates more proficient and better language skills.

We further restrict our sample to firms operating in the manufacturing industry. There are three reasons for this. First, we would like to focus on a more homogenous group of workers. People with different levels of education and skills are generally clustered into different types of work. Those people also vary in other forms of human capital, such as cognitive and interpersonal skills, which could also influence their earnings. To mitigate such self-selectivity, we focus on migrant workers who are employed in the manufacturing industry and have relatively low skills. In addition, this group represents the majority of migrant workers in Foshan. Over 46% of migrant workers were employed in the manufacturing sector at the national level, and this number reached 72% in Guangdong provenience (Liang, Li and Ma, 2014). Second, workers of manufacturing industry are more representative of the labor force in the city of Foshan. Due to Nanhai's special geographic nature and investment policy, more than 140,000 industrial firms were registered by the end of 2015. The large number of manufacturing firms contributes to the growing demand for blue-collar workers in the local labor market. Almost all blue-collar manufacturing workers are migrants. Third, consistent with the distinctive economic features of Nanhai, 86% of surveyed firms in our study are in the manufacturing sector, and over 90% of sampled workers are in manufacturing. Focusing on manufacturing firms suits the objective of this study, which aims to investigate the economic return of local language proficiency for low-skilled migrants. Because we focus on migrants, workers who were born and raised in Nanhai are excluded. Our final sample consists of 1,876 employer-employee paired observations.

Our dependent variable is the logarithm of monthly wages, including all wage payments, bonuses and allowances. [8] Most manufacturing blue-collar employees work more than 8 hours per day. The overtime pay is at a different rate from regular pay, which varies among firms. Moreover, the data only ask for the number of hours worked per week, and we do not have accurate information on monthly working hours to calculate hourly wages.

Control variables include the following individual characteristics: (1) *Female*. Gender differences in employment status and wages are well established in the literature (Blau and Kahn, 2000; Ichino and Moretti, 2009). Moreover, biological differences between men and women may be due to gender gaps in oral and verbal fluency as well as written composition (Berninger and Fuller, 1992). (2) *Educational attainment*. Additional years of schooling increase labor productivity. Empirical evidence of the educational wage premium is documented in Chinese manufacturing industries (Appleton, Song and Xia, 2005). We thus expect economic return to education to be positive. (3) *Age* and *age squared*. Because there is no information regarding the worker's prior work experience, we add these two variables to estimate the age-earnings profile for migrant workers. Wages increase with age, while productivity does not increase at the same pace; therefore, earnings profiles should be "hump-shaped". (4) *Marital status*. Married men earn more than those who remain single, and the presence of a marriage premium is well known (Korenman and Neumark, 1991; Lundberg and Rose, 2002). Married couples utilize more verbal communication with their partners and may have better language skills compared to single adults. (5) *Union membership*. Studies based on US and UK data have shown that there is a sizable union membership wage premium among private sector union-covered workers (Budd and Na, 2000; Hildreth, 2000). (6) *Tenure*. Job seniority has a large effect on wage growth through the accumulation of firm-specific human capital (Mincer and Jovanovic, 1981).

Firm-level control variables include *employment size*, *firm age* and *firm ownership structures*. We use the number of employees (in 10,000) to measure a firm's *employment size*. The labor demand for a large firm is greater than for a small firm, and on average, larger firms also possess a higher ability to pay. *Firm age* is an important determinant of firm growth. Older firms usually have greater market power and stronger influence on

[8] In China, wages are paid to the workers on a monthly basis. Source: http://www.gov.cn/banshi/2005-08/05/content_20688.htm

hiring. In addition, in China, the systems for setting wages differ greatly among enterprises of different ownership structures (Appleton, Song and Xia, 2005). The reason we control for firm heterogeneity is that language skills are important factor inputs in production. Workers with good language skills perform better, as language ability increases productivity by reducing communicative uncertainty in the production process (Marschak, 1965). To what extent workers utilize their language skills depends on the tasks they perform, which relates to firm size. Larger firms may require workers to perform tasks that are more specialized and thus involve limited communication with others.

Table 1 provides descriptive statistics for the sample we used in the analysis. In total, 47.8% of migrant workers are female and 69.8% are married. Workers are approximately 31 years old on average and received 11.8 years of schooling. [9] They have worked in their current positions for 4.76 years on average and earned 3,633.67 yuan per month. [10] Most firms in our sample were established after the year 2000, with an average firm age of 15.17 years. The average number of employees is 650 per firm (including full-time and part-time workers).

We also compare workers with high and low language skills. Following Dustmann and Van Soest (2003), workers who are able to completely understand or fluently speak the local dialect are classified as high-language-skilled workers, while the others are categorized as low-skilled. The monthly wages are higher for workers with low language abilities, and the wage gap between low- and high-language-skilled workers is approximately 127 yuan. Both groups of workers have similar ages (31.78 for high-skilled workers and 32.07 for low-skilled workers). Education of high-language-skilled workers is slightly higher than that of low-language-skilled workers. Furthermore, low-language-skilled workers tend to have shorter work tenures and are less likely to work in smaller-sized firms.

The bottom panel of Table 1 reports the distribution and monthly wage earnings by the level of language proficiency. The mean level of listening or comprehension skills is 2.42 on a total point scale of three. Less than 10% of migrant workers report that they cannot understand the local dialect at all. Among the rest, 48% can fully understand a

[9] The workers have been living in Nanhai for about 8.02 years.

[10] All wage earnings here are adjusted by the local price index of 2016.

speaker of the local dialect. The mean speaking or communication skill level is 2.64 on a four-point scale. Approximately 20% of migrants cannot speak the local dialect at all. Almost half of migrant workers can communicate in the local dialect at work, but only a quarter can speak it fluently. Compared to those with poor language skills and those with fluent skills, migrant workers who can partially understand local dialect or occasionally speak a few sentences receive the highest earnings.

[Table 1 insert here]

4. Empirical Analysis

As shown in Table 1, relative to lower skilled workers, people with higher language skills earn approximately 3.5 percent less than their counterparts with lower language skills. This unexpected negative relationship between language proficiency and wage earnings contradicts existing literature and studies using alternative Chinese data (Chen, Lu and Xu, 2014), a discrepancy that calls for further investigation. In this section, we first present both OLS and IV estimates of the wage effects of language proficiency. We then conduct sensitivity tests of relaxing both exclusive and correlation assumptions on the instruments for the validity of our IV estimates.

4.1 OLS Regression

We adopt the Mincer (1974) earnings function, modified by the study of migrant earnings (Chiswick, 1978) and augmented with the variable of language proficiency. The wage earnings for individual i at firm j are estimated by following regression,

$$\ln wage_{ij} = \alpha + \beta Language_i + \varphi X_i + \lambda F_j + \varepsilon_{ij} \qquad (1)$$

where *Language* measures whether an individual can *understand* (or *speak*) Cantonese. Individual characteristics X_i and firm-specific variables F_j are described above. All error terms are included in ε_{ij}. The main estimation regresses the logarithm of monthly wage income on *Language* skills and a series of control variables. Most literature focuses on returns to speaking ability that actually refer to communication ability (Bleaky and Chin, 2004; Chiswick, 1991; Chiswick and Miller, 1995). Some articles have explored different dimensions of language fluency. Chiswick and Repetto (2000) find that both Hebrew proficiency and literacy matter for immigrants' earnings in Israel. Carnevale, Fry and Lowell (2001) find that fluency in spoken English alone had a significant effect, but not

when combined with reading ability. Comprehension skills show that language serves as a channel of information exchange and is used as a communicative tool. However, speaking skills reflect one's social and ethnic identity. Including both listening and speaking allows differentiating the different channels through which language may influence a migrant's earnings. In addition, using Chinese data, Chen, Lu and Xu (2014) measure the economic return to both comprehension and speaking abilities for migrants. Following this strategy, we measure one's language skills in both listening and speaking dimensions.

Table 2 presents the estimation results based on OLS regressions. The first two columns control for individual variables. Firm-specific variables are added in columns (3) and (4), and the next two columns further control for firm fixed effects. The impact of understanding the local dialect (Cantonese) on wage earnings is presented in the odd columns, while the effects of speaking Cantonese are reported in the even columns. The results indicate that higher listening and speaking skills substantially and significantly decrease a migrant's wage earnings. Workers who are skilled at listening to (or speaking) Cantonese receive at least 2.7% (or 1.7%) lower wages per month if their language skills are at the next level. This size effect is large and stunning. Considering workers who earn the sample mean wage of 3,795 yuan, the wage gap between a person who can completely understand the local dialect and another who cannot is 204 yuan per month. This wage gap will add up to 2,448 yuan per year. These findings are consistent in all specifications, even when firm attributes and firm fixed effects are controlled. It is worth noting that point estimates are larger when we only control for individual characteristics, indicating that a large portion of wage differences is attributed to firm heterogeneity. In the last two columns of Table 2, we drop firms with fewer than ten observations, the lower 10^{th} percentile of the distribution of observations per firm. Our previous conclusions still hold in this subsample.

The impacts of other variables on wage earnings are consistent with the previous studies. There is a gender wage gap in the manufacturing industry of Nanhai. Female workers earn at least 16% less than their male counterparts. In Appendix Table A1, we divide the sample into male and female and run the regressions separately. The results suggest that only female workers with fluent speaking skills earn less. Language skills do not statistically influence the wage earnings of male workers. One more year of schooling increases wage earnings from 2.0% to 2.2%. The return to education, however,

is significantly lower than the world average (Psacharopoulos, 1994). The difference could be due to workers with less education and low skills being overrepresented in our sample. Alternatively, the difference could be due to migrant workers facing more institutional and labor market discrimination in urban China. The age-earnings profile shows a hump-shaped pattern in the estimation. Wage increases with age but at a slower rate and reaches a maximum at 36.6 years old. The marriage premium does exist among migrant workers, and married men earn 3.8% more than single men. Each year in the current job increases wage earnings by 0.9%. One possible explanation for the low return to tenure is the high turnover rate and low skill requirements for migrant workers in the Chinese manufacturing industry.

Previous research in developed countries has found a positive relationship between the earnings of immigrants and their proficiency in the language of the host country. Language ability is often interpreted as a form of human capital and a determining factor through which immigrants assimilate into the host country's labor market (Dustmann and Soest, 2001; Bleakley and Chin, 2010; Paolo and Raymond, 2012). Possible explanations include that for immigrants, language acts as more than an information transmission channel and human capital indicator. Language may also act as a channel by which migrant workers integrate into their host community. In addition, language ability may enhance the bargaining power of migrant workers when they negotiate wages and social benefits with their employers. However, our findings show a reverse wage premium (or wage penalty) of language proficiency, and higher local language ability reduces the wage earnings for migrant workers.

[Table 2 insert here]

4.2 IV Regression

4.2.1 Instruments and IV Results

Empirical studies on language returns face a potential endogeneity issue that may create bias in the estimation. First, language ability may represent many personal characteristics that generate economic returns. Higher wage earners may invest more time and money to improve their human capital as well as their language skills. It could also be possible that migrant workers, especially those who have limited language abilities, are more likely to cluster in some firms that prefer to hire migrant workers

(Peter & Shen, 2015). Innate ability, working attitudes, and family background are all unobservable and are correlated with language ability, which may be subject to omitted variable bias. This missing variable may cause upward or downward bias (Chiswick and Miller, 1995). Second, reverse causality could also exist if wealthier people can afford to invest in their language skills or if poorer people are willing to invest in language training (Bleaky and Chin, 2004). This simultaneity issue may also bias language return estimates.

Dustmann and Soest (2001) use panel data to address endogeneity and find that these data are more likely to over report than underreport language ability, indicating that the returns to language fluency are more likely to be underestimated with measurements. In their study, the father's education was an instrument for immigrants' language proficiency. Chiswick and Miller (1995) used the variables of whether individuals were married overseas, the number of children they had, the age of the children, and whether individuals live inside or outside a minority-language/birthplace concentration as instruments for language ability. When estimating the impact of language skills on one's earnings and marital outcomes, Bleakley and Chin (2004) use the interaction of the age of child immigrants when they migrate to the United States and whether they originate from Anglophone countries. Gao and Smyth (2011) analyze the returns of speaking standard Mandarin for Chinese migrants in urban China. The instruments used in their study include the number of children living in the host city as well as at least one child studying in the host city. However, their method is also subject to the weak instrument issue because of the correlation between individual ability and family income levels. In their study on the economic return of speaking local Shanghainese for migrants, Chen, Lu and Xu (2014) use several instruments, including whether the migrant's place of origin speaks the Wu dialect (to which Shanghainese belongs), the linear distance between their origin and Shanghai, and an interaction term to alleviate endogeneity. While it is difficult to address all possible sources of endogeneity, we adopt several complementary approaches to address potential bias.

We employ instrumental variable (IV) estimation, which is widely used in the literature, to circumvent the endogeneity problem. However, our dataset did not include information on the respondent's birthplace or the worker's family background. Instead, we use two similar instruments, whether migrant workers moved to Foshan before the age of 10 and the proportion of workers within firms who are proficient in

the local dialect. The reasons for using these two sets of instruments are twofold. First, language ability is highly related to the age at which someone arrived in the host community, that is, whether they arrived during the "critical period" of language acquisition (Lenneberg, 1967). Following this literature, we use whether migrant workers moved to Foshan before age 10 as a second instrument. We realize that this instrument cannot eliminate the possibility that migrant workers who arrived earlier accumulated more human and social capital, which may improve their labor market outcomes. Our IV estimators thus provide an upper bound of the language effect on wages for migrant workers. Second, a migrant who is exposed to a highly intense local dialect environment may improve his/her language ability quickly. It is well documented that low skilled migrant workers disproportionately segregate into low-return jobs. Compared to their urban peers, migrants, especially rural migrants, tend to work for longer hours and receive lower wages (Meng and Zhang, 2001; Yang and Zhou, 1999). We believe that the population share of workers who are proficient in the local dialect serve as a better instrument because language similarity is high among workers from the same province or neighboring provinces (Falck et al. 2012). This ratio is not influenced by the employer's hiring preference and does not suffer from job segregation.

The plausible validity of the proposed IV allows for the estimation of the mean effects of local language proficiency on the wages of migrant workers by two-stage least squares (2SLS) using the following system:

$$\ln wage_{ij} = \alpha + \pi Language_i + \varphi X_i + \lambda E_j + \varepsilon_{ij} \qquad (2)$$

$$Language_{ij} = \omega Z_{ij} + \varphi X_i + \lambda E_j + v_{ij} \qquad (3)$$

where Z_{ij} is the set of instruments mentioned above, including whether one arrives in Foshan before the age of 10 and the share of workers who speak the local dialect fluently in the workplace.

Table 3 presents IV estimates of language skills on earnings. The top panel shows the results from the second stage. The coefficients of *listening* and *speaking* are negative and statistically significant. Compared to our baseline regression, the IV estimates are much larger, suggesting that the effects of language proficiency on wage earnings are underestimated by OLS estimates. As shown in Table 3, Durbin-Wu-Hausman statistics

reject the null hypothesis of the consistency of the OLS estimates at the 5 percent level or lower. The F-test statistic is larger than the rule-of-thumb value of 10 and statistically significant, suggesting that there is no weak IV issue. The bottom panel presents the results from the first stage of the IV estimation. As expected, the instruments of arriving in Foshan before the age of 10 and the share of fluent local workers in the workplace positively relate to one's language proficiency. The difference between the OLS and the IV results implies that language ability correlates with other factors that are omitted from the OLS estimation. These factors include the ability and willingness to stay in the current job or settle down in the city and the linguistic similarity between their original dialect and the dialect used in the host city. The IV estimates also suggest that part of the language effects are absorbed by different rewards on work experience for migrant and urban workers. Our findings further support the hypothesis that dialect is a channel through which people expose their identity and language ability might affect earnings by signaling a social group or identity.

[Table 3 insert here]

4.2.2 Sensitivity Analysis (1): Relaxing the Exclusion Restriction Assumption

As mentioned above, estimating economic returns to language skills is complicated by the potential endogeneity problem. As noted in the literature, choosing a good instrument for language is an important task. Thus, in this section, we perform some sensitivity analyses to assess the validity of our method empirically, and we show that the above section's causal inferences about language's effect on wage earnings are credible. To this end, we adopt two bounds method by Conley, Hansen and Rossi (2012) which allows one to draw inferences when the IV potentially violates the exogeneity restriction.

The method of the union of confidence intervals (UCI) is used. This approach is to examine the robustness of the results to the presence of a direct relationship between the IV (whether migrants move to Foshan before they are 10 years old and the proportion of workers within firms who are proficient in the local dialect) and the outcome (wages), regardless of the mechanisms through which this may occur. To achieve this, Conley, Hansen and Rossi (2012) modify the simultaneous equation system presented in equations (2) and (3) as follows:

$$\ln wage_{ij} = \alpha + \beta Language_i + \gamma Z_{ij} + \varphi X_i + \lambda E_j + \varepsilon_{ij} \qquad (4)$$

$$Language_{ij} = \lambda Z_{ij} + \varphi X_i + \lambda E_j + v_{ij} \qquad (5)$$

The difference between this model and the normal two-stage IV model defined in equations (2) and (3) is the presence of the term, γZ_{ij}, in the structural equation (4). Under the strict exogeneity assumption, the requirement is that language skills have no direct influence on wages, i.e., $\gamma = 0$. The UCI approach amounts to relaxing this strict requirement such that $\gamma \neq 0$ and then checking the significance of our main results. According to this method, even if $\gamma \neq 0$, there is reason to believe that it is small. Assuming that $\gamma = \gamma_0$, equation (4) becomes

$$\left(\ln wage_{ij} - \gamma_0 Z_{ij}\right) = \alpha + \beta Language_{ij} + \varphi X_i + \lambda E_j + \varepsilon_{ij} \qquad (4)$$

This implies that Z_{ij} is now a valid IV for $Language_{ij}$ when the outcome variable is $\left(\ln wage_{ij} - \gamma_0 Z_{ij}\right)$. Hence, we can consistently estimate β by the two-stage least squares method using Z_{ij} as an instrument for $Language_{ij}$. Under the union of confidence intervals approach, γ is assumed to have some specific support interval, $\gamma \in [-\delta, +\delta]$ because we do not know its true value, and then the union of intervals for β is estimated given any γ_0 in that interval. Conley, Hansen and Rossi (2012) note that as long as $\gamma \in [-\delta, +\delta]$, the union will contain the true parameter value of q with an asymptotic probability $\Pr[\beta \in CI_N(1-\alpha)] \geq 1-\alpha$, where $CI_N(1-\alpha)$ is the 95% confidence interval. That is, $CI_N(1-\alpha)$will asymptotically contain the language skills, β at least 95% of the time.

In Panel A of Table 4, bounds are documented under UCI cases as in Conley, Hansen and Rossi (2012). We test different pairs of γ for each instrument and present the estimated lower and upper bound values. In each circumstance, the Conley, Hansen and Rossi (2012) bounds contain the IV estimated parameter, but this is dependent on correctly specifying the prior over γ, as we ensure in Table 4.

4.2.3 Sensitivity Analysis (2): Relaxing the Correlation Assumption

Nevo and Rosen (2012) propose a technique wherein an imperfect IV is used to draw inferences; the technique admits relaxing the orthogonal condition of the instrument (5), resulting in bounds of the parameter of interest. A considerably weaker assumption is that the IV may correlate with the error term in the same direction as the

endogenous variable (Assumption 3 in Nevo and Rosen, 2012) but that the correlation is weaker than that of the endogenous variable (Assumption 4 in Nevo and Rosen, 2012). If abler individuals tend to have better language skills, to the extent that our controls do not entirely rule out such possibilities, we would expect a positive correlation between language proficiency and the error term. The upward estimates of the IV estimation may also be an artifact of a positive correlation between the IV and the error term. Hence, Assumption 3, according to which our IV and the endogenous variable correlate with the error term in the same direction, is plausible. In addition, given that our estimation is at the individual level, arguing that our IV (firm level) is even more endogenous than our endogenous variable (individual level) is implausible. Hence, Assumption 4 is likely to be true. We then apply Proposition 3 in Nevo and Rosen (2012) to bind the estimate from both sides. Define λ as the ratio between the correlation between the IV and the error term (denoted $\rho_{z\varepsilon}$) and the correlation between the endogenous variable and the error term (denoted $\rho_{x\varepsilon}$), i.e., $\lambda \equiv \frac{\rho_{z\varepsilon}}{\rho_{x\varepsilon}}$. Fixing a λ, we can construct a "perfect" IV, denoted v(λ), which is correlated with the endogenous variable but not the error term using the following formula:

$$\mathrm{v}(\lambda) = \sigma_x z - \lambda \sigma_z x$$

Where x and z are the endogenous variable and the IV, respectively, and σ_x and σ_z are their respective standard deviations. The problem, however, is that we do not know the value of λ. Assumption 4, that the endogenous variable is at least as endogenous as the IV, implies that $\lambda \in [0,1]$. In Proposition 3, Nevo and Rosen (2012) show that if performing the same IV estimation using the original IV and the constructed IV with $\lambda = 1$ (the worst case in which the IV is as endogenous as the endogenous variable), the two resulting estimated coefficients bound the value of β.

Panel B of Table 4 compares the estimates of the original IV and constructed IV using the Nevo and Rosen (2012) approach. The original IV estimate for listening (speaking) is -0.120 (-0.063), whereas using the constructed IV taking λ=1, the estimate for listening (speaking) is -0.223 (-0.088) and is statistically significant. In other words, β is bounded between -0.120 and -0.223 (-0.063 and -0.088). This suggests that even if we entertain the doubt that the IV fails the orthogonal condition, our result remains robust.

[Table 4 insert here]

5. *Exchange Wages for Social Insurance Mechanism*

A wage penalty associated with better language skills seems to be a robust finding, even after endogeneity is addressed. In this section, we explore possible explanations for this "negative premium" by investigating whether migrant workers would give up part of their labor income in exchange for social security benefits when negotiating job offers. We then repeat our analysis of the "exchange motive" for different sub-populations (migrants vary by timing of arrival and hukou status), firms with labor union formation and different ownership structures. [11]

As mentioned earlier, due to the strict hukou system in China, the majority of migration is temporary rather than permanent. Migrants have mostly headed to big cities and worked for one or two decades before returning to their hometowns later in life. Much of their motivation for doing so stems from the fact that people's receipt of state-subsidized government benefits and services is linked to their hukou registration. However, transferring hukou from one place to another is extremely difficult. [12] Although the Chinese government has made efforts to broaden the coverage of several social insurance programs in recent years, the participation rate of social insurance coverage is still low partly because of workers' lack of knowledge regarding social insurance programs. According to the Ministry of Human Resources and Social Security of China, in 2015, only half of China's total labor force was entitled to social insurance. [13] The number of social welfare participants is even lower for migrant workers. In a study on rural migrants in Shanghai, Feng, Zuo and Ruan (2002) find that only 14% had health insurance and only 10% had pension plans. As the focus of labor contracts is to negotiate salaries and benefits, workers usually strike a balance between receiving a higher salary with no social security benefits or a lower salary but with social insurance plans. Nielsen et al. (2005) reveal that rural-urban migrants are not willing to participate

[11] The results report in this section are based on the OLS estimation. We also test our model with IV estimation and find changes in magnitude only. IV estimation results are available upon request.

[12] The main pathways for acquiring hukou in a new location are through family relationships, business investment, and targeted labor recruitment, though in all cases the barriers are steep. Waiting periods for family cases can be as long as 15 years. Local governments sometimes make small numbers of local hukou available to businesses in exchange for major investments and sometimes offer expedited access to designated categories of 'highly skilled' individuals, state-owned enterprise (SOE) employees, and local government employees.

[13] Article can be retrieved from the following link:
http://www.mohrss.gov.cn/SYrlzyhshbzb/dongtaixinwen/buneiyaowen/201605/t20160530_240967.html

in urban employee social insurance schemes mainly because of their concerns about collecting their contributions if they return to their hometowns or move elsewhere.

Given the challenges of settling massive numbers of migrants in urban areas, the local government of Guangdong relaxed the hukou restriction in 2015 by granting the right to obtain local hukou to migrant workers who have participated in social welfare programs for five years. As a result, the social insurance participation of migrant workers should be increasing in response to such a policy change, especially for those who hope to obtain permanent residency though a local hukou. In Table 5, we examine whether migrant workers with good language proficiency in the local dialect are more likely to participate in social insurance programs. The likelihood of social welfare participation is regressed over language proficiency and other control variables. The dependent variable equals one if an individual has access to any of the following social insurance programs: pension, medical insurance, unemployment insurance and work-related injury insurance. The independent variables include language abilities (*listen* and *speak*) and all other control variables described in Equation (1). As shown in Table 5, higher listening and speaking abilities increase the possibility of migrant workers participating in social insurance programs. The coefficients are statistically significant, supporting the hypothesis that migrant workers who have better language ability are more likely to participate in social insurance programs and contribute to social security than those who lack local dialect proficiency.

[Table 5 insert here]

We further our analysis by investigating whether workers with better language skills have a stronger desire to settle in the city. It is reasonable that migrants who are eager to obtain permanent residency in urban areas are more likely to be affected by the 2015 Hukou Reform policy and will increase their participation in welfare insurance schemes. By contrast, migrant workers who have a lower desire to stay in the city may invest less in learning the local dialect and thus have lower language skills. They may also prefer to not participate in social insurance. The reason we use language proficiency as a proxy to measure the motivation to settle in one's local community is that language not only serves as a communicative tool and channel of information exchange (which gives it market value) but also acts as a signal of social identity (Gumperz, Dew and Goodwin, 1982). The dialect that someone speaks identifies his/her place of origin and manifests his/her social and cultural identity. The identity signal that

language provides is extremely important in Chinese context, where social connections are an essential part of life and strongly affect people's social well-being. Learning the local language helps immigrants to better assimilate into the host community. Extensive studies of international migration reveal that proficiency in the major language of the destination country has positive effects on immigrants' labor market outcomes (Chiswick and Miller, 2003) and is important for their social integration (Dustmann and Fabbri, 2003).

Table 6 examines how migrants' language skills affect their willingness to stay in their current jobs and maintain current residency. Two survey questions are used: "do you want to stay in your current job?" and "do you want to stay in Foshan city?" The dependent variable is set equal to one if the respondent answers "yes" and zero otherwise. The first two columns of Table 6 indicate that migrants who have better speaking and listening skills do have a stronger desire to stay in their current jobs. Similarly, we find that the willingness to stay in the current city is higher for those who are proficient in the local dialect. Our findings suggest that language plays a role in social identity and that mastering the local dialect is a pathway for migrant workers to integrate into the host city.

[Table 6 insert here]

5.1 Timing of Arrival and Hukou Status

As noted earlier, the local authority of Guangdong reformed its hukou policy in 2015, which could have a greater impact on migrants who arrived after that date, possibly giving them a stronger incentive to settle and hence potentially a larger wage penalty. To test this possibility, we divide the migrants by whether they arrived in Foshan before or after 2015. The results are reported in the first four columns of Table 7. For both groups, migrants with better listening and speaking skills earn less, regardless of the timing of their arrival. However, we do observe that the wage effect on newer migrants is somewhat larger, especially for new migrants who have limited speaking skills. Compared to their migrant counterparts who can speak as fluently as locals, the wages of newer migrants who can barely speak the local dialect are 12.4 percent lower.

One may be concerned that wage differences between migrants with high and low language skills may reflect different types of human capital (as language is a special

form of human capital) across groups. Migrants with longer durations of residency may accumulate more language capital and thus have better language skills. However, our F-statistics fail to reject the null hypothesis that mean values of language proficiency differ among people with different years of residency, perhaps because most migrant workers in our sample are employed by manufacturing firms and perform manual work, which requires limited communication. As a result, they have a limited chance of improving their local dialect abilities. In Appendix Table A2, we restrict the period to a narrower window and investigate the impact of language proficiency on wages for the migrants who arrived between 2014 and 2015. As expected, this group of migrants suffered the greatest wage losses compared to their earlier counterparts. We believe that although the policy change was only announced in 2015, rumors were spread years before. Therefore, the wage effect of the highest magnitude is found for those migrant workers who arrived just before the policy implementation.

It is well known that the segregation of the urban labor market in China is partly due to the hukou system. Workers with local hukou are not only more likely to find a better paying job that matches their qualifications but also more likely to be promoted. We therefore separate migrant workers into two groups, one with local hukou and the other without. The last four columns of Table 7 report the results. As expected, the phenomenon in which migrant workers with better language skills earn less is only statistically significant for those who do not have local hukou.

[Table 7 insert here]

5.2 Labor Unions

Chines labor unions have made major progress in recent years. By the end of 2009, there were approximately 1.845 million labor unions and 226 million union members in China, more than double the numbers of 2003.[14] The functions of unions include organizing welfare programs, providing training services to employees, and mediating and arbitrating disputes (Budd and Na, 2000; Metcalf and Li, 2006; Lu, Tao and Wang, 2010). In a recent study, Yao and Zhong (2013) study the impact of Chinese labor unions on worker welfare based on a survey of 1,268 firms over 12 cities. They find that labor unions significantly increase the hourly wages and pension coverage of

[14] Data retrieved from the National Bureau of Statistics of China. See http://www.stats.gov.cn for full information.

their members. If insurance coverage were broadly provided to union members, people in unions who enjoy those benefits would have fewer incentives to trade off their earnings for social benefits. If that were the case, the wage penalty (or negative wage premium) would be smaller for union members. To test the impact of union membership on workers' "exchange motive", we first investigate the impact of labor union membership on wage earnings for workers with different levels of language proficiency. The first four columns of Table 8 show the results of regression for unionized and nonunionized workers within a firm that forms a union. Workers with better listening and speaking fluency earn less, regardless of their union membership. As expected, the wages of nonunion workers are lower than those of their unionized counterparts with the same language proficiency. This result indicates that workers enjoy a wage premium when they join a union. It is possible that people with better language skills self-select into unions and thus earn higher wages. We further test whether the language skills of unionized workers differ from those of nonunionized workers, and we do not find any statistically significant differences in the language effects.

5.3 Firm Ownership

China's transition to a market-oriented economy has led to dramatic changes in every segment of the economy over the past three decades. The industrial reforms in China have intensely reshaped the urban labor market by introducing a wide range of institutionally and economically distinct types of enterprises. Given the transitional context and the huge variations in ownership structure across enterprises, earnings remain strongly conditioned by institutional arrangements (Chen, Démurger and Fournier, 2005). On the one hand, the protected situation of state-owned enterprises (SOE) in China allows them to offer above-market wages and better job security (Putterman and Dong, 2000). On the other hand, private and foreign enterprises are willing to offer higher remuneration in order to incorporate "efficiency wage" elements or to compensate for the loss of job security and lower nonwage benefits (Adamchik and Bedi 2000). It is interesting to see how the effect of language skills on wage earnings varies among firms with different ownership structures. In the last four columns of Table 8, we divide firms into public enterprises (including state-owned and collectively-owned enterprises) and privately-owned enterprises (including Hong Kong, Macau and Taiwan invested firms, and foreign invested firms). As expected, wage protection is

strong in the companies in public sectors, and we do not see a difference in wages between workers with good language skills and those with limited skills. Consistent with our main findings, workers who are employed in private sectors receive lower wages if they have more advanced listening and speaking skills.

[Table 8 insert here]

5.4 Firm size

In their seminal work, Oi and Idson (1999) note three possible explanations for how firm size influences the wages paid to employees. First, productive workers are matched with able entrepreneurs to minimize monitoring costs. Second, large firms pay efficiency wages to retain productive workers and reduce turnover rates. Third, large firms set higher performance standards that raise labor productivity while compensating for higher wages. As a result, it is likely that firm size has much to do with wage structure. As an important production input, language proficiency positively affects workers' productivity and firm performance.

If that were the case, we would expect the economic return of language abilities to be different by firm size. On the one hand, language skills increase productivity by promoting production efficiency by decreasing uncertainty in production (Marschak, 1965). In his later publication, Mcmanus (1985) argues that people enhance their access to higher-level technologies through effective communication. In both cases, facilitating communication and exchanging of information generate added economic values for firms. Information exchange may generate greater value for larger firms, especially when effective communication between administrative managers and employees is more beneficial but hard to achieve. If the marginal value of language is higher in larger firms, we may not find evidence of a wage penalty in these firms, as they are willing to pay higher wages for workers with better language skills. In contrast, smaller firms have lower monitoring costs and are less likely to hire higher-quality workers; they may have less incentive to pay their current or potential employees "efficiency wages" for better language skills. Consequently, we would expect workers in smaller firms to earn less relative to those with the same language abilities in larger firms.

Following the "definitions of large/medium/small and micro sized industrial enterprises" of the National Bureau of Statistics of China (NBS, 2002), we classify firms

into different sizes based on their number of employees and annual business income. [15] In particular, the classification is defined as follows. Small and micro enterprises have fewer than 300 employees with an annual business income lower than 20 million yuan. Medium-sized enterprises consist of between 300 and 1,000 employees, and their annual business income is between 20 and 400 million yuan. Large enterprises have more than 1,000 employees, and their annual business income exceeds 400 million yuan.

The results of firm size effect on worker wage income are reported in Table 9. There are several points worth noting. First, language proficiency has a positive impact on wages in large-sized firms even though it is not statistically significant. This result is consistent with the literature showing that larger firms are more likely to pay higher skilled workers with "efficiency wages". However, we cannot confidently reject the language premium because a small sample size reduces the statistical power of the analysis. Second, among small and micro firms, listening and speaking abilities have statistically negative effects on workers' wage income. Consistent with our main findings, workers with poorer language skills earn higher wages than those with better language skills. Third, for medium-sized firms, we find similar results to those of smaller-sized firms, although only the wage effect of speaking skills is statistically significant. It is interesting that the coefficients for medium-sized firms are substantially smaller in magnitude relative to the results for small and micro firms, suggesting that the wage penalty effects are more prominent in smaller-sized firms. In sum, we reveal that economic returns to language proficiency are largely related to firm size and find supportive evidence that firm size does matter in determining worker wage earnings.

[Table 9 insert here]

We further test the impact of firm size on workers' social insurance participation, which could also vary by firm size. Compared with workers employed in small-sized firms, workers in larger enterprises with a formal employment contract receive protection from labor contract legislation to participate in the social welfare scheme. Even for migrants, workers with more education are also more likely to be covered by employer-sponsored insurance plans than are less educated workers (Brauw and Giles, 2008). Similar to other developing countries, high mandated contribution rates in China

[15] Detailed information about the classification of firm sizes is available at the National Bureau of Statistics of China (NBS).

provide a strong incentive for employers to evade compliance by using labor dispatch services and by underreporting employment and wages (Gallagher et al., 2013). This phenomenon is particularly pervasive among private firms and sole proprietor businesses. The financial burdens of compliance are a more pressing problem for smaller businesses. As a result, we would expect that the possibility of exchanging wages for social insurance is more likely to occur in smaller firms. Moreover, large firms are more likely to be model employers and to act in a more socially responsible manner, and they tend to provide better benefits for their employees. Empirical findings such as those of Dushi, Iams and Lichtenstein (2011) show that large firms are more likely to participate in social insurance plans and to have high pension coverage.

We would expect a similar phenomenon in the Chinese context, and the phenomena of the wage penalty and exchange of labor income for social insurance coverage are more pronounced in small firms. To test this hypothesis, we run separate regressions of migrant workers with different language skills and their access to different types of social insurance by different sizes of firms. Table 10 presents our regression results. For small and micro firms, as expected, workers with better language proficiency have a higher chance of participating in social insurance programs. For medium-sized firms, language skills have a positive effect on workers' participation in social insurance, although the marginal effect is smaller than that of small-sized firms. Not surprisingly, the language effects on social insurance participation are not statistically significant in larger-sized firms. The results of Table 10 indicate that migrant workers who have language proficiency are indeed more likely to participate in social insurance, particularly when they are hired in smaller- and medium-sized firms. This finding lends some support to our story of "exchange motives". Workers with better language skills are more likely to receive lower wages and participate in social insurance, especially when firms do not fulfill the benefits.

[Table 10 insert here]

6. Conclusion

Using the unique matched employer-employee data from Foshan City, Guangdong province in China, we find that migrant workers who are proficient in Cantonese receive lower wages compared to those who lack such local language proficiency. This result is robust to different specifications and even when the

endogeneity issue is addressed. To explain such unexpected results, we propose the "exchange motive", which states that migrant workers trade part of their salary for social insurance coverage, in line with the "compensating wage differential" theory (Rosen, 1986). Our further analysis shows that migrant workers with higher language skills are more likely to participate in social insurance plans. The phenomenon of an "exchange motive" of migrant workers is more noticeable in small and micro firms. We also discover that migrant workers with higher language ability have a stronger desire to settle in the city where they currently live and work.

This study has profound implications for migration policy. The government should do more to address the challenges of integrating the large influx of migrant workers into cities and should work to improve their employability, working conditions, and social security benefits. Local governments should encourage migrant workers and their employers to participate in social benefit insurance programs, relax the eligibility rules for hukou and set up migrant workers' service centers to ensure that these new residents have easy access to social benefits and services when they need them. Our study also shows the importance of dialect, which acts as a marker of identity to both migrant workers and local workers. Regional governments should also provide language-learning services to new migrants to facilitate their social and economic integration.

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Tables

Table 1: Descriptive Statistics

	Whole Sample			High Language Skills			Low Language Skills		
Variables	Obs.	Mean	St. Dev.	Obs.	Mean	St. Dev.	Obs.	Mean	St. Dev.
Monthly Wages	1876	8.203	0.322	1057	8.180	0.324	819	8.232	0.318
Female	1876	0.467	0.499	1057	0.485	0.500	819	0.444	0.497
Education	1876	11.70	2.941	1057	11.76	2.907	819	11.62	2.985
Age	1876	32.04	8.145	1057	32.01	7.935	819	32.09	8.412
Married	1876	0.700	0.458	1057	0.691	0.462	819	0.713	0.453
Union	1876	0.370	0.483	1057	0.378	0.485	819	0.360	0.480
Tenure	1876	4.747	4.257	1057	4.837	4.439	819	4.630	4.009
Employment Size (in 10,000)	1876	0.065	0.165	1057	0.055	0.136	819	0.079	0.196
Firm age	1876	15.17	7.354	1057	15.41	7.416	819	14.85	7.265
Firm Ownership									
State-Owned Enterprise	1876	0.049	0.215	1057	0.043	0.202	819	0.056	0.230
Collective Enterprise	1876	0.006	0.080	1057	0.009	0.092	819	0.004	0.060
Private Enterprise	1876	0.672	0.470	1057	0.684	0.465	819	0.656	0.475
HMT Enterprise	1876	0.071	0.258	1057	0.061	0.240	819	0.084	0.278
Foreign Enterprise	1876	0.136	0.343	1057	0.132	0.338	819	0.143	0.350

Monthly Wage by Language Skills

Listening	1, Don't Understand			2, Partially Understand			3, Fully Understand		
	Obs.	Mean	St. Dev.	Obs.	Mean	St. Dev.	Obs.	Mean	St. Dev.
Monthly Wages	182	8.166	0.291	798	8.233	0.297	889	8.185	0.305

Speaking	1, cannot speak at all			2, partially speak			3, for daily life and work communication			4, speak as local		
	Obs.	Mean	St. Dev.	Obs.	Mean	St. Dev.	Obs.	Mean	St. Dev.	Obs.	Mean	St. Dev.
Monthly Wages	381	8.188	0.300	529	8.254	0.288	455	8.175	0.302	500	8.187	0.307

Note:

1. The first three columns show the mean and standard deviation of the whole sample. The last six columns separate workers into high and low language skills. Individuals with high language skills are those who can completely understand the local dialect and speak it fluently. The remaining individuals are classified into the low language skills sample.
2. Logarithm of the monthly wage is reported here.
3. There are five ownership structures in China, namely, state-owned enterprises (SOE); collective enterprises; private enterprises; Hong Kong, Macau and Taiwan (HMT) invested enterprises; and foreign invested enterprises.
4. Data source: 2016 wave of matched employer-employee data set from Nanhai district in Foshan, Guangdong.

Table 2: Baseline Results of Effects of Language Skills on Earnings

Dependent Variable: Log (monthly wage)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Workers Characteristics		Workers + Firms Characteristics		Workers Characteristics + Firm Fixed Effects		Sample of observations > 10 per firm	
Listening	-0.036***		-0.027***		-0.021*		-0.025**	
	(0.009)		(0.009)		(0.008)		(0.010)	
Speaking		-0.022***		-0.017***		-0.015***		-0.013**
		(0.006)		(0.006)		(0.005)		(0.006)
Female	-0.178***	-0.178***	-0.170***	-0.169***	-0.163***	-0.161***	-0.173***	-0.171***
	(0.012)	(0.012)	(0.013)	(0.012)	(0.012)	(0.012)	(0.013)	(0.013)
Education	0.021***	0.020***	0.017***	0.017***	0.013***	0.013***	0.018***	0.017***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Age	0.050***	0.049***	0.052***	0.052***	0.043***	0.042***	0.056***	0.055***
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Age-square	-0.070***	-0.069***	-0.072***	-0.070***	-0.057***	-0.056***	-0.076***	-0.075***
	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)	(0.009)
Married	0.046***	0.044**	0.045**	0.043**	0.051***	0.048***	0.046**	0.045**
	(0.018)	(0.018)	(0.018)	(0.018)	(0.016)	(0.016)	(0.018)	(0.018)
Union	0.060***	0.062***	0.034**	0.035**	0.020	0.019	0.035**	0.035**
	(0.013)	(0.013)	(0.014)	(0.014)	(0.014)	(0.015)	(0.014)	(0.014)
Tenure	0.009***	0.010***	0.009***	0.009***	0.010***	0.011***	0.007***	0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Firm Size			0.022***	0.022***			0.022***	0.023***
			(0.006)	(0.006)			(0.006)	(0.006)
Firm Age			-0.003***	-0.003***			-0.003***	-0.004***
			(0.001)	(0.001)			(0.001)	(0.001)
Collective Enterprises			-0.376***	-0.379***			-0.364***	-0.369***
			(0.057)	(0.057)			(0.059)	(0.058)
Private Enterprises			-0.057**	-0.060**			-0.056**	-0.059**
			(0.026)	(0.026)			(0.026)	(0.026)
HMT Enterprises			0.009	0.003			0.011	0.006
			(0.030)	(0.030)			(0.031)	(0.030)
Foreign Enterprises			0.021	0.020			0.027	0.026
			(0.030)	(0.030)			(0.031)	(0.031)
Constant	7.188***	7.179***	7.130***	7.129***	7.282***	7.297***	7.047***	7.037***
	(0.101)	(0.100)	(0.110)	(0.110)	(0.111)	(0.111)	(0.117)	(0.117)
Observations	1,911	1,907	1,869	1,865	1,911	1,907	1749	1747

R^2	0.229	0.231	0.263	0.267	0.473	0.478	0.265	0.269

Note:

1. Dependent variables are the logarithms of total earnings from the previous month. The values of the variable Listen and Speak are the numbers of the choice made in response on the questionnaire. Listen takes integral values ranging from 1 to 3 while Speak ranges from 1 to 4. The higher values of listening and speaking indicate the higher language skills.
2. Robust Standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. A constant term is included in each regression.
3. Data source: 2016 wave of matched employer-employee data set from Nanhai, Guangdong.

Table 3: IV Estimates of the Effect of Language Skills on Earnings

Second Stage: Dependent variable is an individual's monthly income		
	Listening	Speaking
	-0.120***	-0.063***
	(0.045)	(0.021)
Individual Characteristics	Yes	Yes
Firm Characteristics	Yes	Yes
Identification Test		
Durbin-Wu-Hausman	40.010	17.330
p-value	0.0000	0.0000
K-P Ranktest F-statistics	92.709	181.834
p-value	0.0099	0.001
Observations	1,869	1,865
R^2	0.224	0.240
First Stage: Dependent variable is an individual's language skills		
Instruments		
Age of Arriving Foshan before 10	0.433**	1.016***
	(0.240)	(0.505)
Share of Local Workers	0.940***	1.491***
	(0.291)	(0.461)

Note:

1. The first stages of the IV estimations include the same set of control variables as in the corresponding second stage, but the estimated coefficients of these control variables are not reported to save space.
2. Panel A reports the upper and lower bounds of estimates using union of confidence intervals (UCI) as in Conley, Hansen and Rossi (2012) and allows the γ in $\ln wage_{ij} - \gamma Z_i$ taking different values.
3. Panel B reports the constructed IV with Nevo and Rosen's (2012) method.
4. Robust Standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. A constant term is included in each regression.

Table 4: Sensitivity Test of Instrumental Variables (IV)

Panel A: Relaxing exogeneity restriction (Conley, Hansen and Rossi, 2012)

	UCI			
	Listening		Speaking	
	Lower bound	Upper bound	Lower bound	Upper bound
$\gamma_1 \in (-0.1, 0.1)\ ;\ \gamma_2 \in (0.15, 0.2)$	[-0.482	-0.078]	[-0.233	-0.037]
$\gamma_1 \in (-0.15, 0.15)\ ;\ \gamma_2 \in (0.1, 0.25)$	[-0.517	-0.048]	[-0.252	-0.021]
$\gamma_1 \in (-0.2, 0.2)\ ;\ \gamma_2 \in (0.05, 0.3)$	[-0.553	-0.017]	[-0.271	-0.013]

Panel B: Relaxing exclusion restriction (Nevo & Rosen, 2012)

Instruments: Age of Arriving Foshan before 10 and Share of Local Workers	Dependent Variable: Monthly Wage Income			
	Original IV		Constructed IV	
	Listening	Speaking	Listening	Speaking
	-0.120***	-0.063***	-0.223**	-0.088**
	(0.045)	(0.021)	(0.102)	(0.042)
Individual Characteristics	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes
Observations	1,869	1,865	1,869	1,865

Note:

1. The first stages of the IV estimations include the same set of control variables as in the corresponding second stage, but the estimated coefficients of these control variables are not reported to save space.
2. Panel A reports the upper and lower bounds of estimates using union of confidence intervals (UCI) in Conley, Hansen and Rossi (2012) and allows the γ in $\ln wage_{ij} - \gamma Z_i$ taking different values.
3. Panel B reports the constructed IV with Nevo and Rosen (2012) method.
4. Robust Standard errors are in parenthesis. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. A constant term is included in each regression.

Table 5: Influence of Language Skills on Social Insurance Participation

Dependent Variable: Whether one Participates in any Social Insurance	Pension		Medical Insurance		Unemployment Insurance		Work-related Injury Insurance	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Listening	0.074***		0.061***		0.082***		0.063***	
	(0.014)		(0.014)		(0.015)		(0.015)	
Speaking		0.042***		0.034***		0.048***		0.033***
		(0.008)		(0.008)		(0.009)		(0.008)
Individual Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,877	1,873	1,877	1,873	1,877	1,873	1,877	1,873
R^2	0.243	0.243	0.204	0.205	0.233	0.235	0.159	0.157

Note:

1. Dependent variables indicate whether the interviewee is (=1) or is not (=0) participating in four different social insurance plans: pension, medical insurance, unemployment insurance, and work-related injury insurance.
2. The values of the variable Listen and Speak are the numbers of the choice made in response on the questionnaire. Listen takes integral values ranging from 1 to 3 while Speak ranges from 1 to 4. The higher values of listening and speaking indicate higher language skills.
3. Standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. A constant term is included in each regression.
4. Data source: 2016 wave of matched employer-employee data set from Nanhai, Guangdong.

Table 6: Effect of Language Skills on Willingness to Stay (in same Job/City)

Dependent Variable: the Willingness to Stay	Willingness to Stay in Current Job		Willingness to Settle in City	
	(1)	(2)	(3)	(4)
Listening	0.053***		0.010#	
	(0.015)		(0.006)	
Speaking		0.033***		0.011***
		(0.009)		(0.004)
Individual Characteristics	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes
R^2	0.069	0.068	0.012	0.014
Observations	1,877	1,873	1,877	1,873

Note:

1. Dependent variables indicate whether the interviewee is (=1) or is not (=0) wants to stay in current job or in Foshan. The values of the variable Listen and Speak are the numbers of the choice made in response on the questionnaire. Listen takes integral values ranging from 1 to 3 while Speak ranges from 1 to 4. The higher values of listening and speaking indicate the higher language skills.
2. Standard errors are in parenthesis. # $p < 0.12$, ** $p < 0.05$, *** $p < 0.01$. A constant term is included in each regression.
3. Data source: 2016 wave of matched employer-employee data set from Nanhai, Guangdong.

Table 7: Impact of Timing upon Arrival and Hukou Status on Wages

Dependent Variable: Log (monthly wage)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Migrants Arriving after 2015		Migrants Arriving Before 2015		Migrants with Local *hukou*		Migrants without Local *hukou*	
Listening	-0.030*		-0.033***		-0.003		-0.025**	
	(0.015)		(0.010)		(0.031)		(0.010)	
Speaking		-0.031*		-0.018***		-0.023		-0.011*
		(0.017)		(0.006)		(0.017)		(0.006)
Individual Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	176	178	1,693	1,687	256	257	1,599	1,594
R^2	0.323	0.332	0.247	0.250	0.273	0.288	0.270	0.272

Note:

1. Dependent variables are the logarithms of total earnings from the previous month. The values of the variable Listen and Speak are the numbers of the choice made in response on the questionnaire. Listen takes integral values ranging from 1 to 3 while Speak ranges from 1 to 4. The higher values of listening and speaking indicate higher language skills.
2. Columns (1) to (4) run regressions for migrants arriving in Foshan prior to/post 2015, individually. Columns (5) to (8) run regressions for migrant workers with and without local *hukou*.
3. Robust Standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. A constant term is included in each regression.

Table 8: Impact of Labor Union and Firm's Ownership Structure on Wages

Dependent Variable: Log (monthly wage)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Union Members in Firms with Union		Nonunion Workers in Firms with Union		State-own and Collectively-owned Enterprises		Private and Others Enterprises	
Listening	-0.030*		-0.035***		-0.025		-0.027***	
	(0.018)		(0.012)		(0.027)		(0.009)	
Speaking		-0.023**		-0.028**		-0.026		-0.017***
		(0.010)		(0.008)		(0.018)		(0.006)
Individual Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	651	651	834	836	111	110	1,963	1,960
R^2	0.232	0.236	0.285	0.285	0.631	0.623	0.247	0.251

Note:

1. Dependent variables are the logarithms of total earnings from the previous month. The values of the variable Listen and Speak are the numbers of the choice made in response on the questionnaire. Listen takes integral values ranging from 1 to 3 while Speak ranges from 1 to 4. The higher values of listening and speaking indicate higher language skills.
2. The first four columns separate union members from nonunion workers within unionized firms. The last four columns run regressions for firms operating in private versus private sectors. Public firms include state-owned enterprises and collectively-owned enterprises. Private and other firms include privately owned enterprises, Hong Kong, Macau and Taiwan investing firms, and foreign investing firms.
3. Robust Standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. A constant term is included in each regression.

Table 9: Firm Size Effect of Language Skills on Earnings

Dependent Variable: Log (monthly wage)	(1)	(2)	(3)	(4)	(5)	(6)
	Big Sized Firms		Medium Sized Firms		Micro and Small Firms	
Listening	0.010		-0.020		-0.022*	
	(0.027)		(0.017)		(0.013)	
Speaking		0.012		-0.018*		-0.015*
		(0.019)		(0.009)		(0.008)
Individual Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	139	137	521	520	1,033	1,032
R^2	0.616	0.617	0.424	0.438	0.211	0.217

Note:

1. Dependent variables are the logarithms of total earnings from the previous month. The values of the variable Listen and Speak are the numbers of the choice made in response on the questionnaire. Listen takes integral values ranging from 1 to 3 while Speak ranges from 1 to 4. The higher values of listening and speaking indicate higher language skills.
2. Robust Standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. A constant term is included in each regression.

Table 10: Influence of Language Skills on Social Insurance Participation by Firm Size

Dependent Variable: Whether one Participate any Social Insurance	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Pension		Medical Insurance		Medical Insurance		Medical Insurance	
	Panel A：Small-sized Firms							
Listening	0.098***		0.087***		0.118***		0.093***	
	(0.021)		(0.021)		(0.022)		(0.021)	
Speaking		0.055***		0.049***		0.059***		0.046***
		(0.012)		(0.012)		(0.013)		(0.012)
R^2	0.218	0.218	0.170	0.169	0.207	0.201	0.137	0.131
Observations	1,038	1,037	1,038	1,037	1,038	1,037	1,038	1,037
	Panel B：Medium-sized Firms							
Listening	0.072***		0.061***		0.074***		0.063***	
	(0.021)		(0.020)		(0.025)		(0.022)	
Speaking		0.024**		0.018		0.041***		0.022*
		(0.012)		(0.011)		(0.014)		(0.013)
R^2	0.261	0.249	0.177	0.170	0.257	0.263	0.193	0.185
Observations	523	522	523	522	523	522	523	522
	Panel C：Large-sized Firms							
Listening	0.058		0.013		0.051		0.041	
	(0.044)		(0.043)		(0.049)		(0.048)	
Speaking		-0.003		-0.020		-0.017		-0.010
		(0.027)		(0.027)		(0.030)		(0.030)
R^2	0.323	0.313	0.319	0.327	0.279	0.278	0.279	0.278
Observations	139	137	139	137	139	137	139	137

Note:

1. Dependent variables indicate whether the interviewee does (=1) or does not (=0) participate in four different social insurance plans: pension, medical insurance, unemployment insurance, and work-related injury insurance. The values of the variable Listen and Speak are the numbers of the choice made in response on the questionnaire. Listen takes integral values ranging from 1 to 3 while Speak ranges from 1 to 4. The higher values of listening and speaking indicate higher language skills.
2. Standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. A constant term is included in each regression.
3. Data source: 2016 wave of matched employer-employee data set from Nanhai.

Appendix

Table A1: Language Effect on Earnings by Male and Female Sample

Dependent Variable: Log (monthly wage)	(1)	(2)	(3)	(4)
	Male		Female	
Listening	-0.018		-0.041***	
	(0.013)		(0.013)	
Speaking		-0.009		-0.026***
		(0.008)		(0.007)
Individual Attributes	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes
Observations	998	994	871	871
R^2	0.225	0.221	0.187	0.201

Note:

1. Dependent variables are the logarithms of total earnings from previous month. The values of the variable Listen and Speak are the numbers of the choice made in response on the questionnaire. Listen takes integral values ranging from 1 to 3 while Speak ranges from 1 to 4. The higher values of listening and speaking indicate the higher language skills.
2. Robust Standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. A constant term is included in each regression.
3. Data source: 2016 wave of matched employer-employee data set from Nanhai, Guangdong.

Table A2: Language Effect on Earnings for Migrants Arrived between 2014 and 2015

Dependent Variable: Log (monthly wage)	(1)	(2)	(3)	(4)
	Migrants Arriving between 2014 and 2015		Migrants Arriving before 2014	
Listening	-0.034***		-0.023**	
	(0.011)		(0.010)	
Speaking		-0.019***		-0.013***
		(0.006)		(0.004)
Individual Attributes	Yes	Yes	Yes	Yes
Firm Characteristics	Yes	Yes	Yes	Yes
Observations	264	268	1,551	1,543
R^2	0.294	0.293	0.245	0.248

Note:

1. Dependent variables are the logarithms of total earnings from previous month. The values of the variable Listen and Speak are the numbers of the choice made in response on the questionnaire. Listen takes integral values ranging from 1 to 3 while Speak ranges from 1 to 4. The higher values of listening and speaking indicate the higher language skills.
2. Robust Standard errors are in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. A constant term is included in each regression.
3. Data source: 2016 wave of matched employer-employee data set from Nanhai, Guangdong.