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Discrimination against Migrants in Urban Vietnam

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Abstract In 2009, migrant workers in the two major cities of Vietnam, Hanoi and Ho Chi Minh City, earned 42% less per hour than did non-migrant ("resident") workers. We seek to explain this gap using data from a carefully-designed urban poverty survey undertaken in 2009 by the General Statistics Office. We use the method proposed by Brown, Moon, and Zoloth, which first explains how workers sort into different sectors, and then examines wage differentials using a Blinder-Oaxaca style decomposition. About half of the wage gap may be explained by endowments. The system of residential permits (*ho khau*) may contribute to the difficulties faced by migrants. Our results are broadly similar to, although more stable and plausible than, those found for the major cities in China.

Keywords Urban migrants · Wage gap · Blinder-Oaxaca decomposition · Brown et al. decomposition · Vietnam

JEL Classification J31 · J61 · O15

Introduction

In 2009, migrant workers in the two major cities of Vietnam, Hanoi and Ho Chi Minh City, earned 42% less per hour than did non-migrant ("resident") workers. In this paper we ask why this gap is so large, and whether discrimination against migrants plays a

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role. The issue merits attention, because migrants constitute 36% of the population of Ho Chi Minh City and 18% of the population of Hanoi (Anh et al. 2016).

The wide earnings gap raises the possibility that migrants in these two cities face strong headwinds. We define urban migrants as those who do not have an official residence permit (*ho khau)* that allows them legally to live permanently in the city.[1] The *ho khau* gives residents access to subsidized health care, education, and some social benefits (Cameron 2012; Anh et al. 2016). Migrants may also face discrimination as they look for jobs and negotiate pay, due to such factors as differences in language skills, ethnicity, networks of contacts, and information on job opportunities (Nguyen and Minh 2016; Borjas 2015).

On the other hand, the lower wage rate may simply reflect the more modest levels of education and work experience of migrants. Given their small families and propensity to work longer hours, the income poverty headcount rates among migrants in Ho Chi Minh City and Hanoi are both low (1.2% in 2009) and comparable to that of residents (0.5%) (Haughton et al. 2010, p. 96). Earnings gaps between residents and migrants are widely observed in developing countries (Cai 2001; Meng 2001). The approach we take is to separate the earnings differential into a part that can be explained by individual characteristics such as education (the explained or endowment effect), idiosyncratic effects (the unexplained component, which may be due to discrimination), and their interaction (joint effects), first using a Blinder-Oaxaca decomposition, and then disaggregating further using the method proposed by Brown et al. (1980).

A broadly similar approach has been applied to understanding the earnings gap between migrants and residents in China, where residence permits (*hukou)* are also important. In 2016, over a quarter of those living in Chinese cities (i.e. 218 million people, out of 796 million) did not have a *hukou*, and had less access to education, medical care, housing, and formal-sector employment than those residents who did have a permit (den Hartog 2014; population data from the United Nations 2018; *hukou* data from Xinhua, February 9, 2017). Thus, the first contribution of our paper is to examine the case of Vietnam, both because the country is large enough to be important in its own right, but also because it helps us understand whether the findings for Chinese cities are unique to that country, or more broadly applicable. Our estimated earnings equations, which take account of possible selectivity bias, are themselves of interest because they allow one to begin to estimate the impact of education (and other socio-demographic variables) on earnings. A strength of our study is that it uses data from a very carefully designed and executed survey of migrants and residents that was undertaken in 2009.

Urban Migration in Vietnam

By 2009, 30% of the population of Vietnam was living in urban areas, up from 20% in 1991 and just 10% in 1954 (World Bank 2011). Much of this increase was

[1] All household residents in Vietnam must have a *ho khau,* a K1 allowing one to reside permanently in an area, a K2 allowing one to live semi-permanently in another area of a province (or large city), a K3 that allows one to live temporarily in another province, or a K4 issued to migrant workers and students living temporarily outside their province or city of primary residence. We consider residents in Hanoi and Ho Chi Minh City to be migrants if they have a K3 or K4 *ho khau*. To get a permanent K1 *ho khau*, a person must live in the adopted area for at least two years in a dwelling of acceptable quality, and must provide substantial documentation, which Anh et al. (2016) argue can be difficult to meet.

propelled by rural-to-urban migration, so that, according to the 2009 Census, 2.1 million out of the 23.2 million urban dwellers (i.e. 8.9%) had moved to the towns and cities within the previous five years, a figure that does not include temporary or short-stay migrants (Le et al. 2011; Liem and Minh 2011). Boosted by migration, the population in the urban districts of Ho Chi Minh City rose from 2.7 million in 1979 to 5.9 million in 2009, while that of Hanoi increased from 0.9 million to 2.6 million over the same period.

Urbanization actually declined between 1971 and 1981, when the economy was run by central planning. However, the economic growth that followed the *Doi Moi* (renovation) reform policy that was initiated in 1986 to create a socialist-oriented market economy was associated with a resurgence of urban Vietnam, and especially the two major cities. Unlike in China, Vietnam's economic growth has been associated with relatively modest changes in inequality (World Bank 2014), although the rural-urban income gap did rise until about 2010 (Bui and Imai 2018) and the geographic pattern of inequality may have become more complex (Takahashi 2007).

The *Doi Moi* reforms affected rural-urban migration in three main ways (Anh et al. 2003). In rural areas, the introduction of the household contract system released farmers from the land, increasing the supply of labor. In the cities, rationing ended and no longer limited the acquisition of goods and services. For the emerging industrial sector, Vietnam's incorporation into the global economy resulted in an inflow of foreign direct investment into manufacturing, typically in or near urban areas, which attracted workers from the countryside. Foreign direct investment was only permitted from 1987 forward, but by 2009, foreign-owned firms accounted for 18.7% of Vietnam's GDP and 43.2% of its industrial output (General Statistics Office 2010). It has also been argued that households use migration as a strategy for reducing income fluctuations (Duc et al. 2012).

Earnings Differentials

Table 1 depicts the earnings differentials between urban residents and migrants in Hanoi and Ho Chi Minh City. The data come from the 2009 Vietnam Urban Poverty Survey (2009) which was undertaken by the statistic offices of the two cities. A sample of 3349 households covering 8208 persons, with roughly equal numbers from Hanoi and Ho Chi Minh City, and from residents and migrants, was selected using two-stage stratified sampling that deliberately oversampled migrants and took particular care to create a sampling frame that included unregistered migrants. All the summary statistics apply the appropriate sampling weights. Further details of the sampling procedures are provided in the online supplemental appendix. As noted above, we define migrants as those living in Hanoi or Ho Chi Minh City without an official K1 or K2 *ho khau* allowing them to remain there permanently.

The data for any given household were collected in a single interview, using a questionnaire that runs to more than 25 pages. Most of the questions are comparable to those used by the large Vietnam Household Living Standards Surveys (VHLSS), which are undertaken biennially; however, the VHLSS surveys have been criticized for not adequately sampling city migrants, and so they are less suited than the Vietnam Urban Poverty Survey to addressing the key questions raised in this paper.

Table 1 Earnings differentials between urban residents and migrants, Hanoi and Ho Chi Minh City, 2009

	Breakdown (%)			Wage earnings per hour, VND'000			Hours worked per week*			Earnings per person, VNDm/month		
	All	Resid	Migrt	All	Resid	Migrt	All	Resid	Migrt	All	Resid	Migrt
Overall	100	100	100	16.3	18.5	10.8	54.6	51.3	63.0	36.6	40.5	26.6
Sector												
Public	19	23	5	21.7	22.0	17.5	46.3	46.0	49.7	47.8	48.5	37.5
Private/Foreign	33	30	46	16.8	19.6	11.7	55.1	52.8	59.4	39.2	44.4	29.2
Individual	48	48	48	10.1	11.3	8.1	62.2	53.7	70.9	20.9	21.2	20.7
Occupation												
Industry, blue collar	29	24	47	10.2	10.5	9.9	57.1	54.3	61.0	25.2	24.8	25.8
Services, blue collar	42	42	39	12.1	13.9	7.9	60.3	55.5	71.6	27.2	29.9	20.5
Industry, white collar	8	9	4	27.3	29.5	17.0	49.7	48.5	55.3	63.5	68.3	40.3
Services, white collar	22	25	10	26.2	27.1	20.1	45.9	45.5	48.9	55.6	57.4	42.6
Cities												
Hanoi	35	37	23	16.8	18.3	11.1	52.4	49.5	63.5	37.1	39.9	26.6
Ho Chi Minh City	65	63	77	16.1	18.7	10.7	55.8	52.4	62.8	36.3	40.9	26.6

Data source: Vietnam Urban Poverty Survey (2009). Sampling weights are used here. Sample size: 2071 residents and 1815 migrants. *Wage-earners only, in a working week. **The "individual" sector refers to those who are self-employed

The data from the Vietnam Urban Poverty Survey (2009) show that mean earnings in 2009 were 10,800 VND per hour (about 0.60 USD) for migrants, and 18,500 VND per hour for residents. This is the gap, which is essentially as large in Ho Chi Minh City as in Hanoi, that we wish to explain.

Sectoral Concentration

The wage gap is due in part to the greater concentration of city residents in high-paying sectors and occupations. We see from Table 1 that wages are highest in the public sector (21,700 VND per hour), where migrants are poorly represented: just 5% of migrants work in this sector, compared with 23% for residents. In contrast, earnings per hour are only half as high in the individual sector, which includes self-employment and much of the informal sector.

Another way to break down earnings rates is by industry and occupation. White-collar jobs pay twice as well as blue-collar jobs, both in industry and services, and migrants are poorly represented in these positions. It is interesting that migrant workers in blue-collar industrial jobs, where migrants are twice as likely to work as residents, are paid almost as much as residents (9900 VND vs. 10,500 VND per hour). Migrants working in blue-collar service jobs are particularly poorly paid, at an average of 7900 VND per hour.

Migrants compensate for their lower wages by working longer hours, on average 60.0 per week, compared to 51.3 hours weekly for residents.[2] There is no real difference in hours worked by migrants, compared to non-migrants, in public sector jobs or in white-collar positions, but migrants working in services and/or who are self-employed put in a very long working week (as much as 70 hours) compared to non-migrants. The measure of hours worked used here includes all occupations. Secondary jobs are common (10% of urban residents and 2% of migrants worked two jobs simultaneously (Haughton et al. 2010, section 6.5)) so there is no reason to think that the lower working hours of public-sector workers reflect constraints on the availability of work.

Age

The migrants in Vietnam's large cities are young. This is not surprising: Todaro (1969, 1980) showed that expected income differentials between rural and urban areas induce rural people to move. Vu (2007) makes a similar argument in the Vietnamese context. An implication is that migration will be economically rational for individuals if they expect to end up with jobs in urban areas that would compensate them better over their lifetime than in rural areas. Older people are less likely to move since the differential income gain from the migration accrues over a shorter remaining life than for youth (Rhoda 1983; Lucas 1997). On the other hand, migrants may earn less than residents, in part because they are young and inexperienced.

Urban migrants in Vietnam are especially young, because the wave of urban industrialization is particularly recent (Anh et al. 1997). This may be seen clearly in the population pyramids in Fig. 1, which show the distribution of the population of Ho Chi Minh City and Hanoi by age and gender in 2009, for residents (top panel) and migrants (bottom panel), based on data from the Vietnam Urban Poverty Survey (2009). The contrast is striking. Unlike residents, almost two-thirds of migrants are in the 15–24 age brackets. According to the 2009 census, the median age of migrants was 25 years, compared with 30 for residents. For both migrants and residents, women outnumber men by a ratio of 53 to 47.

Registration

We are particularly interested in examining the possibility that the *ho khau* system of household registration helps to institutionalize discrimination against migrants, thereby contributing to their lower earnings (relative to residents).

The experience of China is instructive. There, the similar household registration system (*hukou*) imposes barriers on permanent migration from rural areas to urban areas (Deng and Gustafsson 2006). Rural migrant workers face more difficulties searching for jobs in urban areas in China, and are less likely to switch industries, compared to urban residents. Migrants earn significantly less than residents, and most

[2] These figures for hours worked are for those earning wages or salaries, and include both the principal occupation and secondary occupations (if any). They refer to a typical week, and do not adjust for non-working weeks.

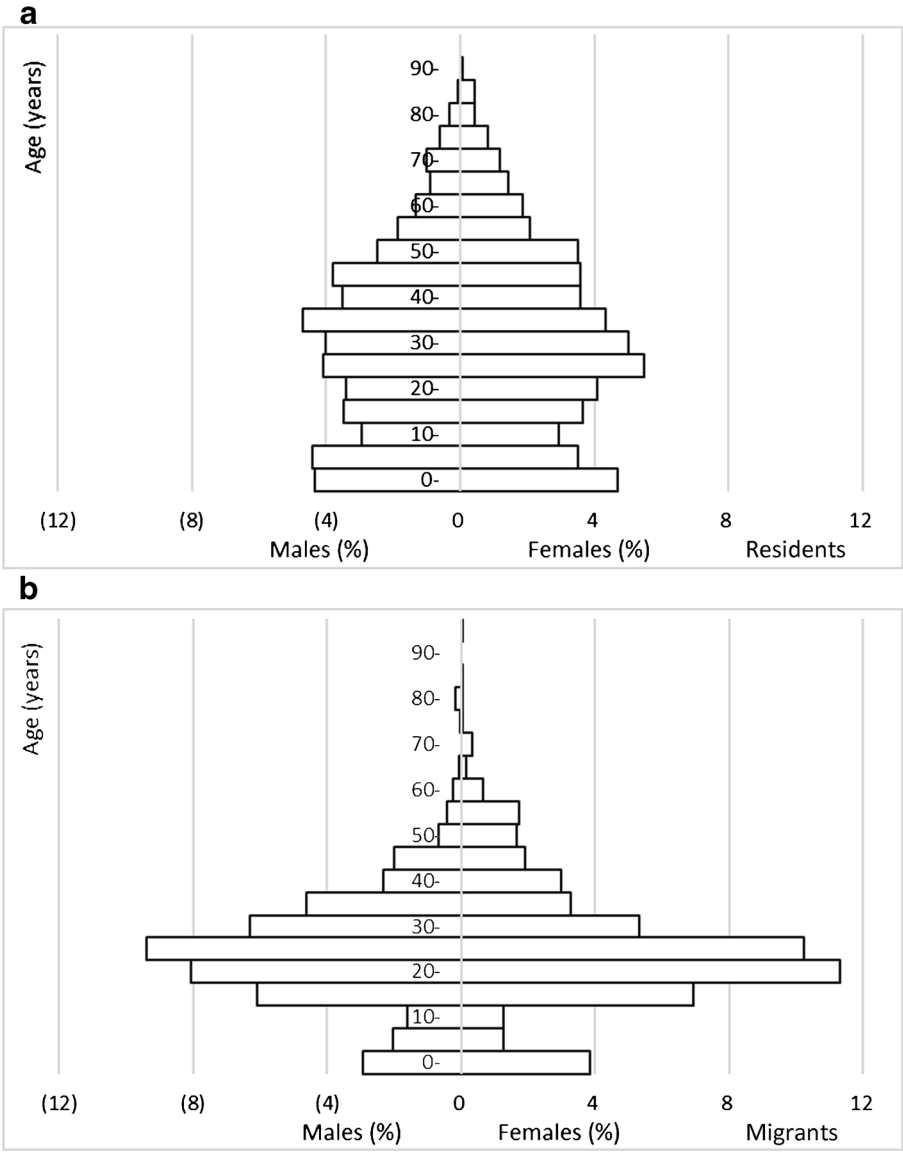

Fig. 1 Population Pyramids for Residents (top) and Migrants (bottom) in Hanoi and Ho Chi Minh City, 2009. Data source: Vietnam Urban Poverty Survey (2009)

of the gap cannot be explained by productivity-related differences between the two groups, implying that rural migrants are discriminated against (Meng and Zhang 2001). Some rural migrants become self-employed to avoid low-paying city jobs, and to enhance their odds of economic assimilation. Some economists in China interpret the relevant effect of discrimination in urban labor markets as a sign of the institutional barriers associated with the *hukou* system (Cui et al. 2013a). On the other hand, migrants may face other barriers to entry into good occupations (Liu et al. 2004), including more limited networks of well-placed contacts. These may create vicious

circles for migrants, while residents enjoy advantaged positions, such as jobs in the public sector or in large firms, conducive to their continued success in the labor market (Fan 2006; Giulietti et al. 2012).

Methodology

In trying to explain why labor earnings differ from person to person, or between groups of people, the usual starting point is to estimate a Mincerian-type wage equation, where the dependent variable is the log of wages per hour, and the independent variables include the individual's education, experience, and experience squared, in addition to other relevant human capital variables. The most basic form of this equation is given by

$$\ln(w_{ij}) = \alpha_{ij} + X_{ijk}\beta_{jk} + \varepsilon_{ij}, \quad j = \text{residents, migrants} \tag{1}$$

where w_{ij} is labor earnings per hour for individual i in group j. We have two groups, migrants and residents. The X_{ijk} matrix includes data on a set of explanatory variables (indexed by k), and the ε_{ij} are random errors.

Estimates based on Equation 1 suffer from selectivity bias, because w_{ij} is only observed for individuals who work for a wage, and this group may not be representative. Presumably those who get a high return on their human capital will be overrepresented here. Heckman's (1979) two-step procedure addresses this problem by first estimating a probit equation that seeks to explain participation (i.e. whether a person is earning wage income) and then including the inverse Mills ratio (i.e. the non-selection hazard) from this first stage, given by λ_{ij}^{k}, as a regressor when estimating Equation 1, as shown here:

$$\ln(w_{ij}) = \alpha_{ij} + X_{ijk}\beta_{jk} + \alpha_{ij}^{k}\lambda_{ij}^{k} + \varepsilon_{ij}, \quad j = \text{residents, migrants.} \tag{2}$$

For this approach to work satisfactorily, it is typically necessary to include some identifying variables in Equation 2 that affect participation, but not the wage rate. We use the size of the household, its unearned income, and the household dependency ratio, as identifying variables.

A full list of the variables used in our earnings equations, broken down by residents and migrants, is given in Table 2. The p-values shown in the final column test whether there are significant differences in the values of the variables for residents and migrants, and show that, with the exceptions of the extent of illness, and the proportion who are kinh (i.e. ethnic Vietnamese), all of the variables differ between residents and migrants. The latter have fewer years of experience (14 vs. 19), marginally less education, are less likely to have married, and have smaller households and less unearned income.

An implication of wage equations of the form shown here is that a lower wage per hour can be due to lower endowments (the X), or lower β_k ("return on endowments"). In order to show this explicitly, we decompose the effect of each component, following

Table 2 Summary statistics for variables used in wage and employment equations

	All	Residents	Migrants	p-value diff
Dependent variable				
Earnings per hour (VND '000)	16.3	18.5	10.8	0.00
Variables for wage equation				
Experience (years)	18.5	19.4	14.3	0.00
Experience squared	672	735	371	
Years of education	8.1	8.1	7.8	0.00
Illiterate (Y = 1) %	13	13	11	0.00
Urban (Y = 1) %	74	73	78	0.00
Kinh (Y = 1) %	95	95	95	0.75
Hanoi (Y = 1) %	35	37	23	0.00
Male (Y = 1) %	61	62	56	0.00
Married (Y = 1%)	48	50	42	0.00
Was married (Y = 1) %	6	7	5	0.00
Ill (Y = 1) %	65	65	64	0.10
Identification variables				
Size of household	4.2	4.5	2.7	0.00
Unearned income (VNDm p.a.)	4.5	5.1	1.6	0.00
Dependency ratio %	28	31	16	0.00

Data source: Vietnam Urban Poverty Survey 2009. The p-values refer to weighted t-tests for continuous variables, and chi-square tests for binary variables. The dependency ratio measures the number of old plus young family members as a percentage of family members of working age

the approach pioneered by Oaxaca (1973) and Blinder (1973). Formally,

$$\overline{\ln w}_r - \overline{\ln w}_m = \left(\overline{X}_r - \overline{X}_m\right)' \hat{\beta}_r + \overline{X}_m\left(\hat{\beta}_r - \hat{\beta}_m\right) + \left(\overline{X}_r - \overline{X}_m\right)'\left(\hat{\beta}_r - \hat{\beta}_m\right) \quad (3)$$

Total difference = Characteristics/endowments + Structure/discrimination + Interaction

where *r* represents urban residents and *m* stands for migrants. The left-hand side of Eqn. (3) represents the total proportionate gap in earnings per hour between residents and migrants, and it may be split into three parts: the first piece measures the earnings differences that are attributable to differences in the "endowments" of the two groups, such as educational attainment, work experience, or other measurable personal characteristics. The second piece represents "unexplained" differences in earnings, inasmuch as differences cannot be attributed to observable differences in earning-generating capacity between the two groups. This part is sometimes referred to as "differences in returns" and is often interpreted as measuring discrimination against one of the groups, although our inability to measure some traits, such as "ability" or attitudes toward work, cautions against jumping to a conclusion of discrimination. The final part term in Eqn. (3) measures the interaction between characteristics and returns on those characteristics.

There is a well-known index number problem with the Blinder-Oaxaca decomposition. As shown in Eqn. (3), there is an implicit assumption that the wage equation for residents,

which generates $\hat{\beta}_r$, is the appropriate reference point and represents a non-discriminatory outcome. Viewed this way, residents are paid appropriately, and migrants may be underpaid. An alternative is to use $\hat{\beta}_m$, which implicitly treats the market for migrant labor as the competitive one, and may view residents as being overpaid. A similar problem arises in the second term in Eqn. (3), where the reference level of endowments shown here is $\overline{X}_m$, but could plausibly enough be $\overline{X}_r$ instead. Some authors compute the decomposition in all possible ways and report the average results (Meng and Zhang 2001). Some use a pooled earnings function as the appropriate reference point (Neumark 1988. Others present the results from the different specifications, as did Baulch et al. (2007) in their exploration of the earnings gap between ethnic groups in Vietnam. This is also the approach we take here (Table 4).

While the Blinder-Oaxaca decomposition is informative, it conflates two potentially distinct causes of inter-group wage differentials. The gap may be caused by earnings differentials within a given sector or occupation or may occur because of uneven access to jobs in a sector or occupation, a form of labor-market segmentation. If migrants earn less, is it because they have difficulty getting jobs in the high-paying sectors, or is it because they earn less than their non-migrant peers in any given sector? A satisfactory solution to this problem is the decomposition proposed by Brown et al. (1980). Let there be J sectors in the economy, indexed by *j*. Then:

$$\overline{\ln w}_r - \overline{\ln w}_m = \sum_{j=1}^{J} p_{rj}\left(\overline{\ln w}_{rj} - \overline{\ln w}_{mj}\right) + \sum_{j=1}^{J} \overline{\ln w}_{mj}\left(p_{rj} - p_{mj}\right). \tag{4}$$

In Eqn. (4), p_{rj} is the probability that residents are working in sector *j*, and this is multiplied by the sector-specific wage gap given by $\left(\overline{\ln w}_{rj} - \overline{\ln w}_{mj}\right)$. This latter may in turn be broken down, for each sector, into the effect of endowments, and the "unexplained" earnings differential, as in the Blinder-Oaxaca decomposition. While the first term on the right-hand side of Eqn. (4) measures intra-sectoral differences in earnings, the second term measures the extent to which the overall wage differential is due to the manner in which residents and migrants find themselves working in different sectors (the "intersectoral" effect).

Appropriate substitution into Eqn. (4) gives us an operationally useful form of the decomposition:

$$\begin{aligned}
\ln w_r - \overline{\ln w}_m = {} & \sum_{j=1}^{J} p_{rj}\left(\overline{\boldsymbol{X}}_r - \overline{\boldsymbol{X}}_m\right)' \hat{\beta}_r && \text{Explained within effects by sector} \\
& + \sum_{j=1}^{J} p_{rj} \overline{\boldsymbol{X}}_m' \left(\hat{\beta}_r - \hat{\beta}_m\right) && \text{Unexplained within effects} \\
& + \sum_{j=1}^{J} \overline{\ln w}_{mj}\left(p_{rj} - \hat{p}_{mj}\right) && \text{Explained between effects} \\
& + \sum_{j=1}^{J} \overline{\ln w}_{mj}\left(\hat{p}_{mj} - p_{mj}\right) && \text{Unexplained between effects.}
\end{aligned} \tag{5}$$

Here $\hat{p}_{mj}$ is the estimated (not actual) proportion of migrants who would be working in each sector, if the job-allocation process that applies to residents were to apply to migrants as well. For instance, if urban residents are well-educated, and well-educated workers are more likely to have jobs in state-owned firms, then this might account to some extent for the higher wages of residents. But if some of the sorting of workers by

sectors is unexplained, then there are grounds for arguing that there may be discrimination that limits entry.

The same index number problem that occurs with the simpler Blinder-Oaxaca decomposition also arises here. Meng and Zhang (2001) estimate all possible permutations and take the average value of the relevant effects. Liu (2002), following Appleton et al. (1999), uses a pooled earnings function as the appropriate reference point. We assume that the labor market facing urban residents, numerically by far the larger group, serves as the appropriate non-discriminatory benchmark, and the position of migrants should be judged relative to this.

There are a number of ways in which to break down the labor market for the purposes of a Brown-style decomposition. Following Liu (2002), we first distinguish between jobs in government and state-owned enterprises, in private (including foreign-invested) firms, and in the individual sector; our concern is that public-sector jobs may be particularly difficult to obtain for migrants, although the wage gap may be small conditional on having a job in that sector. Rand and Torm (2012) find that in Vietnam, formal firms (defined as firms that are officially registered with the authorities) pay higher wages than informal firms, even after controlling for the characteristics of the workforce. Cling et al. (2014) reach a similar conclusion. This seems to make formal-sector jobs relatively more attractive. If migrants have less access to such jobs, this could help explain some of the earnings gap between them and city residents.

Both Meng and Zhang (2001), and Wei and Lu (2007), in their studies of the migrant-resident wage gap in Chinese cities, distinguish four sectors: blue- and white-collar jobs, in industry and services, respectively. We also estimate our decompositions based on this breakdown, in order to be able to compare our results more closely with theirs. Other possible breakdowns are possible. Deng and Gustafsson (2006) compare formal with informal jobs (which our sectoral breakdown implicitly does), while Cheng et al. (2013) distinguish between jobs in competitive and non-competitive sectors. Our data do not allow us break down jobs along these last lines.

The last two terms in Eqn. (5) allow us to disentangle these effects, but in order to measure $\hat{p}_{mj}$ we need to specify and estimate a multinomial logit equation that explains why workers find themselves in one sector rather than another. We use the same variables as in the wage equations, but in this case the adjustment for selection, since some people are not working in any sector, is not as straightforward. Our solution is to include in the estimating equation the adjustment factor proposed by Hay (1980) and given by:

$$\lambda_{ij} = \frac{6}{\pi^2}\,(-1)^{J+1}\left[\frac{J-1}{J}\ln\left(p_{ij}\right) + \sum_{k=1,k\neq j}^{J}\frac{1}{J}\left(\frac{p_{ik}}{1-p_{ik}}\right)\ln_{p_{ik}}\right], \quad j = 1,\ldots,J.$$

As a practical matter, the inclusion of this adjustment did not alter the estimates very much.

Estimates

The first step in computing the Blinder-Oaxaca decomposition is to estimate earnings equations. The relevant results are shown in Table 3, for the pooled sample of migrants and residents in both Hanoi and Ho Chi Minh City, and then separately for residents

Table 3 Estimates of earnings equations, for full sample and for residents and for migrants, with selection adjustment

	Full sample	p-value	Residents	p-value	Migrants	p-value	p-value: difference
Dependent variable							
log(wage per hour)							
Regressors							
Experience (years)	0.028	*0.00*	0.017	*0.01*	0.037	*0.00*	*0.00*
Experience squared	−0.576	*0.00*	−0.554	*0.00*	−0.810	*0.00*	*0.00*
Years of education	0.107	*0.00*	0.151	*0.00*	0.092	*0.00*	*0.00*
Illiterate (Y = 1)	0.473	*0.00*	0.765	*0.00*	0.345	*0.00*	*0.19*
Urban (Y = 1)	0.096	*0.00*	0.186	*0.00*	0.002	*0.94*	*0.00*
Kinh (Y = 1)	−0.107	*0.03*	−0.177	*0.19*	−0.025	*0.70*	*0.02*
Hanoi (Y = 1)	−0.117	*0.00*	−0.168	*0.00*	−0.050	*0.05*	*0.00*
Male (Y = 1)	0.113	*0.00*	−0.027	*0.63*	0.200	*0.00*	*0.00*
Married (Y = 1)	0.055	*0.04*	−0.027	*0.77*	−0.014	*0.68*	*0.00*
Was married (Y = 1)	0.039	*0.49*	−0.001	*1.00*	−0.019	*0.84*	*0.31*
Ill (Y = 1)	−0.019	*0.29*	−0.048	*0.32*	−0.016	*0.48*	*0.73*
Selection lambda	0.299	*0.00*	1.117	*0.00*	0.258	*0.05*	
Intercept	0.985	*0.00*	0.469	*0.08*	1.038	*0.00*	*0.62*

Experience squared is divided by 1000. Probit selection equation (not shown here) also includes household size, unearned income, and dependency ratio. The computations use the "oaxaca" command in Stata (Jann 2008)

Data source: Own calculations using data from the Vietnam Urban Poverty Survey (2009)

and migrants. The reported estimates all use the two-step Heckman procedure to deal with selection bias. The selection term is statistically significant, so this adjustment was appropriate.

Most of the estimates are as expected. Greater experience is associated with higher earnings (per hour), but this effect diminishes with age. An additional year of education is associated with about 10% more earnings, which is a large effect and helps explain the high demand for education that is observed in Vietnam. Earnings are higher in the urban parts of Hanoi and Ho Chi Minh City (as opposed to the outlying districts). The one surprise is that illiteracy appears to be associated with higher wages, however, the effect is modest, in the sense that only those who drop out of school after three or fewer years earn less than those who do not know how to read or write.

After controlling for other factors, workers in Hanoi earn about 12% less than their counterparts in Ho Chi Minh City. Male migrants appear to earn about 20% more than comparably qualified female migrants, but there is no evidence of a gender bias in earnings among urban residents. Liu (2002), using data from the 1993 and 1998 Vietnam Living Standards Surveys found a gender bias nationally, but not for government jobs, and barely within state-owned enterprises. Given that many of those jobs are urban, our results are not entirely surprising. Thuy et al. (2012) also find relatively little unexplained gender bias in wages in Vietnam, at least within segments of the labor market, in sharp contrast to recent findings for China (Wang and Cai 2006).

Blinder-Oaxaca Decomposition

Table 4 gives us the results for the Blinder-Oaxaca decomposition. The upper panel does not use sampling weights in the estimates, while the bottom panel does. When the selection adjustment is included in the earnings equation, and the regression is weighted, we find that between 76 and 85% of the overall earnings (per hour) differential is attributable to differences in endowments. This suggests that the effects of labor-market discrimination against migrants are rather modest.

These findings are relatively robust. An unweighted regression essentially explains all of the earnings differential on the basis of endowment differences between migrants and residents. The explained part is relatively smaller when the selection adjustment is omitted, but as argued above, it is appropriate to make this adjustment. Using the same data set but a different technique, propensity score matching, Nguyen and Minh (2016) find that between 85 and 97% of the wage differential is explained by differences in endowments.

Brown, Moon, and Zoloth Decomposition

It would be helpful to know the extent to which earnings differences between migrants and workers are due to the choice of sector or occupation (the between effect) and to earnings differentials in any given sector or occupation (the within effect). The Brown

Table 4 Blinder-Oaxaca decomposition of hourly earnings between migrants and residents in Hanoi and Ho Chi Minh City, 2009

	d(ln(w))	Change in log of wages attributable to:			% "explained"
		Endowments	Coefficients	Interaction	
Unweighted regression					
No selection adjustment					
Resident earnings equation	0.348	**0.250**	*0.039*	0.058	**72**
Migrant earnings equation	0.348	**0.308**	**0.097**	−0.058	**89**
With selection adjustment					
Resident earnings equation	0.348	**0.359**	*0.023*	*−0.034*	**103**
Migrant earnings equation	0.348	**0.325**	*−0.011*	*0.034*	**94**
Weighted regression					
No selection adjustment					
Resident earnings equation	0.426	**0.256**	**0.114**	0.056	**60**
Migrant earnings equation	0.426	**0.312**	**0.169**	−0.056	**73**
With selection adjustment					
Resident earnings equation	0.426	**0.360**	**0.103**	*−0.037*	**85**
Migrant earnings equation	0.426	**0.323**	*0.066*	*0.037*	**76**

Bold-faced numbers are significant at 1%; numbers in italics are not significant at 10%. Based on earnings equations reported in Table 3

Data source: Own calculations using data from the Vietnam Urban Poverty Survey (2009)

et al. (1980) decomposition achieves this, but first requires that one estimate a multinomial probit equation that models the choice of sector or occupation, and then calls for estimates of earnings equations within each of these sectors (or occupations).

The estimates of two distinct models of sectoral or occupational choice are shown in Table 5. The top panel reports the results of a model where individuals work in a public-sector job or state-owned enterprise, in a private sector firm, or on an individual (self-employed) basis. This latter serves as the reference category for the estimates. There are separate estimates for urban residents and for migrants.

Well-educated urban residents are relatively more likely to work in the public sector, or for a private firm. Those with a *ho khau* for Hanoi work more in public-sector jobs, and less in private firms, than their counterparts in Ho Chi Minh City. The estimates for migrant workers indicate a similar process for public-sector jobs, but show a different pattern for private-sector employment: migrants with more experience are more likely to work in this sector, as are migrants who live on the fringes of the cities rather than close to downtown.

The bottom panel of Table 5 reports a separate set of multinomial probit results, which we need for the decompositions presented in Tables 6 and 7. Here we separate employment into four groups, depending on whether it is blue-collar or white collar (i.e. administrative/managerial/professional), and whether the job is in industry or services. We expect that urban residents and migrants may sort differentially into these occupations and industries; and since a similar breakdown has been used in the context of urban migration in China, this also allows us to make comparisons with those studies. For residents, greater education is associated with white-collar jobs, as is the fact of living near the center of the city. On the other hand, married workers are more likely to be working in blue-collar service jobs, other things being equal, but gender has no significant effect on the choice of occupation/industry. The situation for migrants is slightly different: blue-collar jobs in manufacturing are relatively attractive to men, and to migrants living in the "rural" areas around the cities. Unmarried migrants are found disproportionately in white-collar service jobs. Unsurprisingly, more-educated migrants tend to work in white-collar positions.

These results are entirely plausible, and we combine them with the results of earnings functions that are estimated for each sector or industry/occupation (details not shown here) to obtain the decomposition of the earnings differential between urban residents and migrants that is shown in Table 6. The first key result is that about three-fifths of the earnings differential can be explained by differences in the endowments and other characteristics between residents and migrants. This is at the lower end of the proportion explained in the more basic Blinder-Oaxaca decompositions. The second observation is that about two-thirds of earnings differences are due to variations within sectors or occupations, with relatively less attributable to the differential sorting of residents and migrants by occupation. However, the details differ. Less than 10% of the wage gap is due to differences in job allocations across the three broad sectors, and 44% of the differential remains unaccounted for (due to interactive effects and the imprecise fit of the estimated equations). When jobs are broken down using the industry/services blue/white collar distinction, the explained within variation is far less, but more of the earnings differential is attributable to the choice of industry or occupation. This is mainly driven by the large wage differential between white- and blue-collar jobs, coupled with the small fraction of migrants who have white-collar jobs.

Table 5 Estimates of multinomial logit models of choice of employment sector (top panel) or industry/Job (bottom panel), Hanoi and Ho Chi Minh City, 2009

	Public					Private including foreign					Services blue-collar				
	Residents		Migrants		p diffce	Residents		Migrants		P diffce	Residents		Migrants		p diffce
Experience (years)	0.032	*	0.065		0.48	−0.048	***	0.034		0.00	−0.015		0.020		0.18
Experience squared	−0.697	*	−1.306		0.59	0.028		−1.813	***	0.00	0.796	**	0.279		0.37
Years of education	0.460	***	0.445	***	0.75	0.215	***	0.197	***	0.48	0.095	***	0.031		0.01
Illiterate (Y = 1)	2.163	**	−10.307		0.99	1.740	***	−0.191		0.00	0.707	*	0.606		0.78
Urban (Y = 1)	0.186		0.240		0.85	0.163		−0.552	***	0.00	1.058	***	1.483	***	0.01
Kinh (Y = 1)	0.770	*	13.162		0.98	0.067		0.296		0.56	0.115		−0.199		0.25
Hanoi (Y = 1)	0.300	**	−0.421	*	0.01	−0.520	***	−1.102	***	0.00	−0.040		0.698	***	0.00
Male (Y = 1)	−0.130		−0.061		0.77	−0.190	*	−0.162		0.85	−0.112		−0.638	***	0.00
Married (Y = 1)	−0.274		−0.530	*	0.47	−0.004		−0.264	*	0.21	0.384	**	−0.255		0.00
Was married (Y = 1)	−0.624	*	−0.642		0.99	−0.194		−0.045		0.77	0.287		1.210	***	0.08
Ill (Y = 1)	−0.109		0.098		0.39	−0.125		0.088		0.13	0.007		0.026		0.91
Size of household	−0.024		0.231	**	0.03	−0.041		0.236	***	0.00	0.013		−0.012		0.65
Unearned income (VNDm)	−0.009	*	0.045	**	0.00	−0.003		0.010	**	0.40	0.028	***	0.114	***	0.00
Dependency ratio	0.248		0.675		0.62	−0.056		−0.995		0.06	0.240		0.633		0.41

	Industry white-collar					Services white-collar				
	Residents		Migrants		p diffce	Residents		Migrants		p diffce
Experience (years)	−0.084	***	0.184	***	0.00	−0.099	***	0.093	*	0.02
Experience squared	2.176	***	−4.787	**	0.01	2.627	***	−0.001		0.06
Years of education	0.693	***	0.885	***	0.60	0.731	***	0.934	***	0.65

Table 5 (continued)

	Industry white-collar					Services white-collar				
	Residents		Migrants		p diffce	Residents		Migrants		p diffce
Illiterate (Y = 1)	−9.616		−6.775		1.00	−9.332		−6.221		1.00
Urban (Y = 1)	0.858	***	0.095		0.01	1.050	***	1.255	***	0.96
Kinh (Y = 1)	−1.134	**	0.308		0.18	−0.681		−0.331		0.00
Hanoi (Y = 1)	−0.552	***	−0.515	**	0.99	−0.130		0.302		0.18
Male (Y = 1)	−0.206		−0.562	**	0.12	−0.170		−0.817	***	0.00
Married (Y = 1)	0.340		−0.506		0.12	0.322		−0.926	***	0.01
Was married (Y = 1)	−0.198		−12.328		0.99	0.530		−13.361		0.99
Ill (Y = 1)	0.455	**	−0.046		0.03	−0.167		0.315		0.18
Size of household	−0.129	**	0.261	*	0.06	−0.022		0.337	***	0.06
Unearned income (VNDm)	0.025	**	0.139	***	0.00	0.034	***	0.150	***	0.00
Dependency ratio	0.754		−2.010		0.11	0.525		−1.005		0.18

Experience squared and unearned income are divided by 1000. Regressions are unweighted. Reference category is "Individual" sector in top panel, "industry: blue-collar" in bottom panel. *** significant at 1%; ** significant at 5%; * significant at 10%. "p diffce" is a p-statistic that tests the significance of any difference between the coefficients for residents and migrants

Data source: Own calculations using data from the Vietnam Urban Poverty Survey (2009)

Table 6 Decomposition of earnings differential using Brown et al. (1980) Method

	Sectors		Occupations	
	ln(w)	% of total	ln(w)	% of total
Total earnings/h differential	0.426	100.0	0.426	100.0
Within sectors/occupations	0.285	67.0	0.289	67.8
of which:				
Explained ("endowments")	0.218	51.2	0.153	35.9
Unexplained ("coefficients")	0.067	15.8	0.136	32.0
Among sectors/occupations	0.039	9.1	0.159	37.4
of which:				
Explained	0.020	4.7	0.106	24.9
Unexplained	0.019	4.4	0.053	12.5
Total explained	0.238	56.0	0.259	60.8

Based on multinomial logit models shown in Table 5, with (weighted) wage equations for urban residents, estimated for each sector or occupation. Sectors are government, private and foreign-invested, and individual. Occupations are industry/blue collar, services/blue collar, industry/white collar, and services/white collar

Data source: Own calculations using data from the Vietnam Urban Poverty Survey (2009)

Table 7 sheds some further light on these differences. For instance, the multinomial logit estimates indicate that we expect 33% of migrants to work in blue-collar industrial jobs, while the actual proportion is 47% for migrants (and 24% for urban residents). Within this sector, essentially all of the earnings differential may be explained by differences in the characteristics of residents and migrants. On the other hand, the proportion of migrants working in blue-collar services (39%) is comparable to that of residents (42%), but less than half of the earnings differential in this category is explained by differences in characteristics, leaving a large unexplained earnings gap.

Discussion and Conclusions

We began this paper by noting that migrant workers in Hanoi and Ho Chi Minh City earn substantially less than urban residents who have an official *ho khau* (residence permit). A Blinder-Oaxaca decomposition, based on plausible earnings equations, shows four-fifths of the difference to be due to differences in the characteristics of the two groups, most notably education and experience. A more detailed decomposition, which takes into account the differential sorting of residents and migrants into different sectors or occupations/industries, attributes three-fifths of the earnings gap to differences in observable characteristics.

It is instructive to compare our results with those found by researchers who have looked at large cities in China, where a similar system of resident registration is in place. The comparison is set out in Table 8. The earnings gap between residents and migrants in Hanoi and Ho Chi Minh City is broadly comparable with the gap observed in China, although there is considerable variation across the Chinese studies, with a

Table 7 Breakdown of sources of wage variation by sector and occupation using Brown et al. (1980) decomposition, Hanoi and Ho Chi Minh City, 2009

	Probability for migrants		Proba-bility for residts	Blinder-Oaxaca breakdown			Earning differ-ential (propn)	Within sectors		Among sectors	
	Actual	Estimated		Endowment	Coefficients	Interaction		Endowments	Coefficients	Explained	Residual
Sectors											
Public	0.05	0.14	0.23	0.187	0.064	0.036	0.215	0.010	0.004	0.267	0.236
Private/FIE	0.46	0.39	0.29	0.302	−0.009	0.044	0.337	0.140	−0.004	−0.241	−0.209
Individual	0.48	0.48	0.48	0.140	0.141	−0.014	0.267	0.068	0.068	−0.006	−0.008
Overall							0.426	0.218	0.067	0.020	0.019
Occupations											
Industry/blue col	0.47	0.33	0.24	0.078	−0.006	−0.023	0.049	0.036	−0.003	−0.221	−0.296
Services/blue col	0.39	0.47	0.42	0.212	0.343	−0.026	0.529	0.082	0.133	−0.102	0.194
Industry/white col	0.04	0.07	0.09	0.315	0.047	0.005	0.367	0.014	0.002	0.047	0.081
Services/white col	0.10	0.13	0.25	0.197	0.039	−0.023	0.213	0.020	0.004	0.383	0.075
Overall							0.426	0.153	0.136	0.106	0.053

Based on multinomial logit models shown in Table 5, with (weighted) wage equations for urban residents, estimated for each sector or occupation. Sectors are government, private and foreign-invested, and individual. Occupations are industry/blue collar, services/blue collar, industry/white collar, and services/white collar

Data source: Own calculations using data from the Vietnam Urban Poverty Survey (2009)

Table 8 Comparison of results using Brown et al. (1980) Decomposition of hourly earnings of migrants vs. residents

Survey area	Hanoi & Ho Chi Minh City		Shanghai	Beijing, Wuxi, Zhuhai	Beijing, Tianjin, Shanghai, Guangzhou		China: 2 cities +10 provinces
Comparison	Residents/Migrants		Residents/Migrants	Residents/Migrants	Residents/Urban migrants	Residents/Rural migrants	Residents (early hukou)/Others
Decomposition by:	3 sectors state private+foreign individual	4 occpns/industries Ind.,blue collar svce, blue collar Ind., white collar svce, white collar	4 occupations white collar wholesale+retail services, white collar production+"other"	4 occpns/industries Ind.,blue collar svce, blue collar Ind., white collar svce, white collar	2 sectors monopolistic competitive		2 sectors formal informal
Proportionate gap in earnings/h	0.426	0.426	0.709	0.385	0.202	0.295	0.58
of which due to:							
Within: "endowments"	51	36	−23	27	133	32	25
Within: "coefficients"	16	32	106	26	−16	13	35
Between: "explained"	5	25	13	10	19	22	24
Between: "unexplained"	4	13	5	37	−36	33	16
Memo:							
% of gap that is "explained"	56	61	−11	37	152	54	49
Memo:							
Blinder-Oaxaca: % "explained"	85	85	51	n.a.	n.a.	n.a.	n.a.
Other information:							
Year of survey	2009	2009	1995–96	1998	2008	2008	2002–03
Survey size: residents	2071	2071	2082	2204	397	397	6835 hh
Survey size: migrants	1815	1815	4849	1682	378	1017	2000 hh
Sources	Vietnam Urban Poverty Survey (2009)		Meng and Zhang (2001)	Wei and Lu (2007)	Cheng et al. (2013)		Deng and Gustafsson (2006)

very large gap (71%) observed by Meng and Zhang in Shanghai in 1995–96, and a rather modest gap (20–30%) observed by Cheng et al. (2013) in four megacities in 2008, albeit on the basis of relatively small samples.

Our Blinder-Oaxaca decomposition explains 85% of the earnings gap using the weighted regression for residents, or 76% of the earnings gap using the weighted regression for migrants. This is in line with the main result found by Zhang et al. (2016) using data from 15 Chinese cities for 2007, where they estimated that 17% of the wage gap between migrants and urban workers cannot be explained by observed factors. On the other hand, Meng and Zhang (2001), using the same approach, find that only half of the gap in Shanghai is attributable to observable differences in characteristics between residents and migrants. Our more-detailed decomposition by occupation/industry may be compared with the findings of Wei and Lu for Beijing, Wuxi, and Zhuhai in 1998. The earnings gap is similar overall, and the breakdown of the gap is similar with one important exception. They find that sorting workers by sector matters greatly, and is largely unexplained, while we find that it is essentially predictable based on individual characteristics.

Some of the other Chinese studies show surprising, and not entirely plausible, results. Meng and Zhang find that once one breaks down jobs by occupation, none of the resident-migrant wage gap is explainable by observable characteristics. At the other extreme, Cheng et al. (2013) find that the gap is more than fully explained by differences in the characteristics of residents and migrants! The fragility of these results suggests that we do not yet fully understand the reasons for the resident-migrant earnings gap, and careful attention to data collection and methodology are particularly important in this context. The data we use come from a well-designed and executed survey. In our estimates, we have properly adjusted for possible selection bias.

No matter how we decompose the earnings gap between residents and migrants, part of the difference, somewhere between 15% (last column of Table 4) and nearly 50% (last row of Table 6), remains unexplained. We can only speculate on possible explanations for this difference, because by definition it is associated with unobserved variables. One possibility is that there is discrimination by employers against migrants. Perhaps they are viewed as less adapted to the urban workplace than urban residents. Yet if this is so, how is one to explain the virtual absence of an earnings gap for those working as blue-collar industrial workers?

Another possibility is that the government sector, both government itself, and state-owned enterprises, will not employ workers who do not have the appropriate *ho khau* residence permit. There is evidence to support this: Table 7 shows that just 5% of migrants work for the public sector, compared to the 14% of migrants who would be expected to work in the public sector if the sorting process that applies to residents were also applied to them. If the public sector were to treat migrants in the same way they treat urban residents, then the unexplained earnings gap would shrink by about a fifth. Of course, given that at least half of the earnings gap between migrants and residents is attributable to observable characteristics, especially education, improvements in these areas would help shrink the overall gap.

There are avenues worth exploring further. We define migrants as those who do not have a *ho khau* that permits them officially to live in the city, but we need a better understanding of how people born outside Hanoi or Ho Chi Minh City sometimes manage to obtain a *ho khau*, for instance, by pursuing higher education

in city-based universities. Deng and Gustafsson (2006) have explored this issue for China, but absent data on where our survey respondents were born, we are unable to determine the process by which migrants obtain a *ho khau*. It would also be helpful to explore where in the income distribution the effects of potential discrimination are strongest, for instance, is it poorly-educated or well-educated migrants who face the strongest headwinds? The use of quintile regressions, as done by Salardi (2012) for Brazil, and Cui et al. (2013b) for China, may shed some light on this, but will require sizeable data samples.

References

Anh, D. N., Goldstein, S., & McNally, J. (1997). Internal migration and development in Vietnam. *International Migration Review, 31*(2), 312–337.

Anh, N.A., Tacoli, C. & Thanh, H.X. (2003). Migration in Vietnam: A review of information on current trends and patterns, and their policy implications. Presented paper at the regional conference on migration, development and pro-poor policy choices in Asia, June 22-24, 2003, Dhaka, Bangladesh. http://pubs.iied.org/G00479/ Accessed 27 May 2018.

Anh, D. N., Demombynes, G., & Vu, L. H. (2016). *Reforming Vietnam's household registration system*. Hanoi: World Bank and Vietnam Academy of Social Sciences.

Appleton, S., Hoddinott, J., & Krishnan, P. (1999). The gender wage gap in three African countries. *Economic Development and Cultural Change, 47*(2), 289–312.

Baulch, B., Chuyen, T. T. K., Haughton, D., & Haughton, J. (2007). Ethnic minority development in Vietnam. *Journal of Development Studies, 43*(7), 1151–1176.

Blinder, A. S. (1973). Wage discrimination: Reduced form and structural estimates. *Journal of Human Resources, 8*(4), 436–455.

Borjas, G. J. (2015). *Labor Economics* (7th ed.). New York: McGraw-Hill.

Brown, R. S., Moon, M., & Zoloth, B. S. (1980). Incorporating occupational attainment in studies of male-female earnings differentials. *Journal of Human Resources, 15*(1), 3–28.

Bui, T. & Imai, K. (2018). Determinants of rural-urban inequality in Vietnam: Detailed decomposition analyses based on unconditional quantile regressions. Research Institute for Economics and Business Administration (RIEB) discussion paper, Kobe University. https://www.ifad.org/documents/36783902/40280999/Katsushi+Imai%2C+Senior+Lecturer+%28Associate+Professor%29+Univ+Manchester.pdf/75cae7d6-717e-4625-8b77-1733f39a0d28 Accessed 26 May 2018.

Cai, F. (2001). Institutional barriers in two processes of rural labor migrations in China. *Working Paper Series No.9*. Institute of Population Studies, Beijing. http://iple.cass.cn/webpic/web/iple/upload/2012/03/d20120305150144465.pdf Accessed 31 May 2018.

Cameron, S. (2012). Education, urban poverty and migration–evidence from Bangladesh and Vietnam. *Office of Research Working Paper* 2012–15. UNICEF Office of Research, Florence. https://www.unicef-irc.org/publications/679-education-urban-poverty-and-migration-evidence-from-bangladesh-and-vietnam.html Accessed 27 May 2018.

Cheng, Z., Guo, F., Hugo, G., & Yuan, X. (2013). Employment and wage discrimination in the Chinese cities: A comparative study of migrants and locals. *Habitat International, 39*, 246–255.

Cling, J-P., Razafindrakoto, M. & Roubaud, F. (2014). Segmentation and informality in Vietnam: A survey of the literature. UMR-DIAL document de travail DT/2014-14, Université Paris-Dauphine. https://hal.archives-ouvertes.fr/hal-01653653/document Accessed 27 May 2018.

Cui, Y., Nahm, D. & Tani, M. (2013a). Self-employment in China: Are rural migrant workers and urban residents alike? IZA discussion paper no. 7191, Bonn. https://researchers.mq.edu.au/en/publications/self-employment-in-china-are-rural-migrant-workers-and-urban-resi Accessed 27 May 2018.

Cui, Y., Nahm, D. & Tani, M. (2013b). Earning differentials and returns to education in China, 1995-2008. IZA Discussion paper No. 7349. https://econpapers.repec.org/paper/izaizadps/dp7349.htm Accessed 27 May 2018.

den Hartog, H. (2014). China's Hukou System: Attempts to control Urbanization by Strictly Separating Urban and Rural. *Volume, 39*, 102–109.

Deng, Q. & Gustafsson, B. (2006). China's lesser known migrants. IZA discussion paper no. 2152, Bonn. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=%20908236 Accessed 26 May 2018.

Duc, N.L., Raabe, K. & Grote, U. (2012). Rural-urban migration in Vietnam: Do households and migrants get better off? Institute for Environmental Economics and World Trade. Discussion paper. http://www.tropentag.de/2012/proceedings/node328.html Accessed 27 May 2018.

Fan, C. (2006). "Migration and labor-market returns in urban China: Results from a recent survey in Guangzhou," *Environment and Planning*. A 33.

General Statistics Office (2010). Statistical yearbook of Vietnam 2010. Hanoi.

Giulietti, C., Ning, G., & Zimmermann, F. K. (2012). Self-employment of rural-to-urban migrants in China. *International Journal of Manpower, 33*, 96–117.

Haughton, J., Loan, L.T.T., Linh, Nguyen Bui, et al. (2010). Urban poverty assessment in Hanoi and Ho Chi Minh City, UNDP, Hanoi. http://www.un.org.vn/en/publications/doc_details/264-urban-poverty-assessment-in-ha-noi-and-ho-chi-minh-city.html Accessed 27 May 2018.

Hay, J.W. (1980). Occupational choice and occupational earnings: Selectivity Bias in a simultaneous logit-OLS model. PhD dissertation, Yale University, new haven CT. Published by National Technical Information Service, U.S. Department of Commerce, Rockville MD.

Heckman, J. (1979). Sample selection Bias as a specification error. *Econometrica, 47*, 153–161.

Jann, B. (2008). The blinder-Oaxaca decomposition for linear regression models. *The Stata Journal, 8*(4), 453–479.

Le, B.D., Tran, G.L., & Nguyen, T.P.T. (2011). *Social Protection for Rural-urban Migrants in Vietnam: Current Situation, Challenges and Opportunities*, CSP research report 08, Centre for Social Protection, University of Sussex, Brighton. http://www.ids.ac.uk/files/dmfile/ResearchReport08REVISE.pdf Accessed 27 May 2018.

Liem, N.T. & Minh, N.H. (2011). Migration and urbanization in Vietnam: Patterns, Trends and Differentials, General Statistics Office/Ministry of Planning and Investment, Hanoi.

Liu, A.Y.C. (2002). Gender wage gap in transition in Vietnam. Working paper 01-3, Asia Pacific School of Economics and Government, Australian National University, Canberra. https://openresearch-repository.anu.edu.au/bitstream/10440/1235/1/Liu_Gender2001.pdf Accessed 27 May 2018.

Liu, P., Zhang, J., & Chong, S. (2004). Occupational segregation and wage differentials between natives and immigrants: Evidence from Hong Kong. *Journal of Development Economics, 73*, 395–413.

Lucas, R.E.B. (1997). Internal migration in developing countries. Chapter 13 in M.R. Rosenzweig and O. Stark (eds.), *Handbook of Population and Family Economics*. Elsevier Science B.V., Amsterdam.

Meng, X. (2001). The informal sector and rural-urban migrant – A Chinese case study. *Asian Economic Journal, 15*, 71–89.

Meng, X., & Zhang, J. (2001). The two-tier labor market in urban China. *Journal of Comparative Economics, 29*, 485–504.

Neumark, D. (1988). Employers' discriminatory behavior and the estimation of wage discrimination. *Journal of Human Resources, 23*(3), 279–295.

Nguyen, C. V., & Minh, T. P. (2016). Are migrants in large cities underpaid? Evidence from Vietnam. *IZA Journal of Migration, 5*, 20.

Oaxaca, R. (1973). Male-female wage differentials in urban labor market. *International Economic Review, 9*, 693–709.

Rand, J., & Torm, N. E. (2012). The benefits of formalization: Evidence from Vietnamese manufacturing SMEs. *World Development, 40*(5), 983–998.

Rhoda, R. (1983). Rural development and urban migration: Can we keep them down on the farm. *International Migration Review, 17*(1), 34–64.

Salardi, P. (2012). Wage disparities and occupational intensity by gender and race in Brazil: An empirical analysis using quantile decomposition techniques. Chapter 7 in *An Analysis of Pay and Occupational Differences by Gender and Race in Brazil – 1987 to 2006*, PhD dissertation, University of Sussex, UK. http://sro.sussex.ac.uk/45204/1/Salardi%2C_Paola.pdf Accessed 31 May 2018.

Takahashi, K. (2007). Sources of regional income disparity in rural Vietnam: Oaxaca-blinder decomposition. IDE discussion paper no. 95, Institute of Developing Economies/JETRO, Chiba, Japan. http://www.ide.go.jp/English/Publish/Download/Dp/095.html Accessed 27 May 2018.

Thuy, T.B.T, Toan, P.N., Hien, N.T. & Trang, N.V. (2012). Gender income gap in Vietnam in the 2000s: Evidence from household surveys. Institute of Labour Science and Social Affairs, Vietnam. https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/54700/IDL-54700.pdf?bitstreamId=115287&locale-attribute=fr Accessed 27 May 2018.

Todaro, M. P. (1969). A model of labour migration and urban unemployment in less developed countries. *American Economic Review, 59*(1), 138–148.

Todaro, M. P. (1980). Internal migration in developing countries: A survey. In R. A. Easterlin (Ed.), *Population and economic change in developing countries*. Chicago: University of Chicago Press.

United Nations, Department of Economic and Social Affairs, Population Division. (2018). World urbanization prospects: The 2018 Revision, Online Edition.

Vietnam Urban Poverty Survey. (2009). Data made available to authors by statistics offices of ho chi Minh City and Hanoi.

Vu, T.T. (2007). The Dynamics of Gender and Migration in an Urban Transition: A Case Study from Vietnam. Working Paper, Department of Geography and Geology, University of Copenhagen. https://s3.amazonaws.com/academia.edu.documents/16262360/x400182326.pdf?AWSAccessKeyId=AKIAIWOWYYGZ2Y53UL3A&Expires=1527441633&Signature=lc795hEGzdA84KVOXxHiCHL0x80%3D&response-content-disposition=inline%3B%20filename%3DThe_Dynamics_of_Gender_and_Migration_in.pdf Accessed 27 May 2018.

Wang, M., & Cai, F. (2006). Gender wage differentials in China's urban labour market. Research paper 2006/146, UNU-WIDER, United Nations University. https://www.wider.unu.edu/publication/gender-wage-differentials-chinas-urban-labour-market Accessed 27 May 2018.

Wei, X. & Lu, R. (2007). Labor Market Segregation and the Wage Differential Between Resident and Migrant Workers in China. Working Paper, Department of Economics, Lingnan University, Hong Kong. http://www.aiel.it/Old/bacheca/NAPOLI/C/WEI_LU.pdf Accessed 27 May 2018.

World Bank. 2011. Vietnam urbanization review, Washington DC. https://openknowledge.worldbank.org/bitstream/handle/10986/2826/669160ESW0P1130Review000Full0report.pdf?sequence=1&isAllowed=y Accessed 31 May 2018.

World Bank. 2014. Taking stock: An update on Vietnam's recent economic developments, Hanoi. https://www.openknowledge.worldbank.org/bitstream/handle/10986/21110/928250WP0P13240g0Stock0Dec020140ENG.pdf?sequence=1&isAllowed=y Accessed 31 May 2018.

Zhang, L., Sharpe, R. V., Li, S., & Darity Jr., W. A. (2016). Wage differentials between urban and rural-urban migrant workers in China. *China Economic Review, 41*, 222–233.