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A propensity score matching analysis on the impact of international migration on entrepreneurship in Vietnam

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This paper investigates the impact of international migration on job creation in the informal sector in Vietnam. Using the national representative household data on international migration in 2008, the results find no self-employment differential between migrant and non-migrant households. International migration matters only if business scale is taken into account. Estimations using the propensity score matching method reveal that Vietnam's migrant households are either poor or rich families. This points to the effectiveness of government labour export programmes designed to reduce poverty and the tendency of rich families to send children to study abroad. The results also show that international migration has no impact on entrepreneurship, and thus employment generation in the informal sector, raising concerns about the lasting impact of migration.

Keywords: informal sector; international migration; entrepreneurship; job creation

JEL classifications: J21, O12

1. Introduction

Vietnam has undergone the development process with the expansion of the informal sector. Recent statistics show that the informal sector's contribution to the Vietnamese economy in terms of production and employment generation is by no means negligible. For instance, the ADB (2004) reports that the informal sector, including agriculture, accounted for up to one-third of GDP in 2003, while Cling *et al.* (2010) estimate that this sector absorbed one-quarter of the employed labour force in 2008.

The contribution to the development process is also marked by a growing trend of international migration. Recent Vietnamese emigrants comprise more than 500,000 Vietnamese labourers, 100,000 students, 133,000 Vietnamese brides (Vietnamese Consular Department 2011). These migration outflows have profound impacts on poverty and unemployment reduction. They also provide highly skilled human resources vital to Vietnam's sustainable development.

The important role of the informal sector and international migration is attracting increasing attention from both policymakers and researchers. However, little is known about the link between migration and the informal sector in Vietnam. This paper provides scientific evidence on the impacts of international migration on entrepreneurship in the informal sector. The propensity score matching (PSM) method is applied to analyse household

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data on international migration in 2008, as surveyed by the 'Development on the Move: measuring and optimizing migration's economic and social impacts' (*DotM*) project.

The paper is structured as follows. Section 2 reviews the informal sector in Vietnam since the 1986 economic reform with a particular focus on its concepts and scale. International migration is investigated in Section 3, while Section 4 analyses the impact of international migration on job creation in the informal sector. Concluding remarks are provided in Section 5.

2. The informal sector and employment in Vietnam: concepts and scale

The informal sector is by no means a new phenomenon in Vietnam. This sector existed under the centrally planned economy during the 1955–1985 period. The existence of the sector in this period was considered to be a response to the inefficiency of central planning in providing enough goods and services. Despite this supplementary role, the sector was seen as non-socialist and was thus often neglected by policymakers and the official statistical system (Nguyen 2012).

The *Doi Moi* economic reform, which began in 1986, promoted the development of the non-state sector. As a result, informal economic activities have also expanded. Despite its increasing scale in terms of production and employment in the economy, little attention has been paid to exploring the contribution of the informal sector to the development process. The reason for this has been partially attributed to the scarcity of data.

Pioneering studies on the Vietnamese informal sector started at the end of the 1990s. These studies tried to provide definitions and preliminary figures on the scale of the informal sector in Vietnam. For instance, Le and Nguyen (1997) proposed a long list of specific characteristics that distinguish informal activities from their formal counterparts. However, they did not provide a specific definition of the informal sector or a method to measure its scale. Nevertheless, the research revealed that the informal sector accounted for 30% of Vietnamese GDP in 1993, and 34% two years later. Vu and Tran (1999) reviewed all definitions of informal activities used in studies on the informal sector in Vietnam in the 1990s and found a range of informal sector definitions resulting in different terms used to describe this sector. More recent research (Pham 2004) has extensively discussed identifying the informal sector in Vietnam in the context of economic reform. The author reviewed different perspectives and definitions of informal activities in developing and transition countries. However, the research failed to capture the definitions of the informal sector recommended by the International Labour Organisation (ILO) and the 1993 System of National Accounts (SNA).

A lack of specific surveys to measure the informal sector in Vietnam means that studies endeavouring to estimate the scale of the Vietnamese informal sector have relied mostly on data sets from the Vietnam Household Living Standards Survey (VHLSS). Bernabè and Krstic (2005) used the 1993 and 1998 VHLSS data sets and the informal sector definitions proposed by the 15th International Conference of Labour Statistics (ICLS) to investigate informal employment in Vietnam. In their study, informal workers were defined as waged workers with no social security or self-employed and unpaid family workers in non-farm household businesses. The results found a contraction of formal employment, while the inverse was found for the informal sector during this period. Applying the same definition and using a data set from the 2004 VHLSS, Nguyen (2008) found that the worker participation rate in informal employment was high in both rural and urban areas. For example, this study estimated informal non-farm employment at 33% in the Red River Delta (RRD) of Vietnam.

The ADB (2004) took an alternative approach to measuring the economic weight of the informal sector. It indirectly defined the informal sector as the remainder of the economy after subtracting the state, FDI and formal domestic private enterprises. Based on this definition, the paper found a downward trend in the share of the informal sector including agriculture in GDP from 36% in 1995 to just over 30% in 2003. This applicable estimation method has, however, been criticized by the literature (Roubaud 1994, Thomas 1999).

The General Statistics Office (GSO) of Vietnam, in liaison with the French Development Research Institute DIAL-IRD, has been working on a project since 2007 to improve the data situation by providing comprehensive informal sector and employment statistics. This project, in keeping with international recommendations, defines the informal sector as all unregistered household businesses in the non-agricultural sector. Informal employment is considered to be all those employed in the informal sector and all those employed with no social security in the formal sector. Using the *1-2-3 Survey* scheme (Roubaud 2009), the Vietnamese Labour Force Survey (LFS) is combined with the Household Business and Informal Sector Survey to capture the informal sector and informal employment. This mixed survey strategy was applied in 2007 and 2009. Findings from the 2007 surveys reveal the predominant weight of the informal sector in terms of employment. This sector is the second largest job provider after agriculture. It generates 23.5% of employment, whereas the public sector, foreign enterprises and domestic private enterprises create 10.7%, 2% and 5.7% of jobs, respectively (Cling *et al.* 2010). Results from the 2009 surveys confirm these stylized facts. Informal sector jobs and informal employment remain a huge component of the labour force in Vietnam, which is characterized by poor labour conditions.

In their comprehensive assessment of labour market dynamics in the context of the global crisis, Razafindrakoto *et al.* (2011) show that impressive labour flexibility, particularly in the informal sector, plays a great role in Vietnam in absorbing the shocks at macro-level.

3. International migration and job creation in Vietnam

3.1. *History of international migration in Vietnam*

International migration in Vietnam has been tracked since April 1975 and can be classified into four types as shown in Table 1. The first consists of documented permanent migrants and asylum seekers who were closely associated with the US and the South Vietnamese government during the Vietnam War (1954–1975). Statistics from the United Nations High

Table 1. The stock of Vietnamese international migrants by types and major destinations.

	Refugees	Labour migrants	Study migrants	Marriage migrants
Number	2,768,000	500,000	60,000	128,000
Current major destinations	Australia	Malaysia	Australia	Taiwan
	USA	Taiwan	China	Korea
	Canada	Korea	USA	
Source	Merli (1997)	MOLISA	www.nld.com.vn	Le *et al.* (2007) Vietnam Women Union (2008)

Source: Various; authors' calculations.

Commission for Refugees (UNHCR) reveal that 1,790,000 Vietnamese left the country during the 1975–1995 period (Merli 1997). This figure, however, is too low compared with an estimate of 2,768,000 emigrants calculated by Merli (1997) using the 1979 and 1989 Vietnamese population censuses. The majority of these emigrants are concentrated in the US (around 64%), Australia (12%) and Canada (12%) (UNHCR 1995). The refugee movements could be said to have come to an end in the mid-1990s following the closing of refugee camps in Southeast Asia and the end of the Orderly Departure Program (ODP).

The second type of emigrant concerns labour migrants who work overseas on fixed-term contracts under a bilateral agreement between Vietnam and labour receiving countries. This movement was seen first with the outflow of Vietnamese workers, mainly to Eastern Europe and the former Soviet Union, from 1980 to 1990. During this period, Vietnam sent approximately 300,000 mostly unskilled workers and 7000 health and education experts abroad (BAOW-MOLISA 2005).[1] The labour export movement then shifted to Asian countries due to the collapse of the traditional markets in Eastern Europe. Problems with finding new markets and inexperienced labour export enterprises led to a decrease in labour exports from 1991 to 1999 to 87,108 workers, 40% of whom were unskilled. From 2000 to the present day, there has been a massive increase in labour migration due to high demand for workers in Asia and the country's growing labour force. The Ministry of Labour, Invalids and Social Affairs (MOLISA) reports that there are now more than 500,000 Vietnamese labourers working on fixed-term contracts in 40 nations. The majority, however, are concentrated in Malaysia, Taiwan, Korea and Japan (Dao 2012).

The third emigrant movement involves student migrants. In recent years, demand for overseas studies has risen, especially among the young. The pattern of studying overseas has also changed considerably. Previously, private students went abroad to take bachelor's or master's degrees. Now, however, many children are being sent to overseas high schools at the age of 15. The Ministry of Education and Training (MOET) of Vietnam estimates that there are now 60,000 Vietnamese students studying abroad, the majority of whom are private students (Nguoilaodong 2008).

The last type of Vietnamese emigrants are the marriage migrants. Young Vietnamese women migrate mainly to Taiwan and Korea. Recent statistics show that there are around 100,000 Vietnamese brides in Taiwan (Le *et al.* 2007) and 28,000 in Korea (Vietnam Women Union, 4/5/2008). Vietnamese brides are drawn predominantly from poor areas in the south of the country. For instance, among Vietnamese brides in Taiwan, 30% come from Can Tho, 15% from Dong Thap and 11% from Tay Ninh (Nguyen and Hugo 2007). A survey by the Vietnamese Female Association in Ho Chi Minh City finds that 68% of young women who marry foreigners do so for economic reasons (Wang and Chang 2002).

3.2. *Impact of international migration on job creation*

International migration can help relieve labour surplus and population pressures in developing countries. This impact is especially important for Vietnam, where over one million people enter the work force every year (Table 2). This makes for a significant number of unemployed individuals despite a high rate of job creation. In recent years, the number of unemployed in Vietnam has been virtually identical to the number of new labour force entrants, as shown in Table 2. The current Vietnamese out-movement, whereby labour exports are over-represented in the migration flow, is therefore a good solution for reducing unemployment.

Figure 1 displays the outflow of labour migrants and changes in unemployment figures in Vietnam over the 1997–2008 period. Despite a steady increase in labour exports, changes

Table 2. Labour force, employment and unemployment in Vietnam, 1997–2008.

Year	Labour force	Labour force changes	Thousands of persons	
			Employment	Unemployment
1997	36,654	–	35,603	1051
1998	37,821	1167	36,954	866
1999	39,029	1208	38,120	909
2000	39,253	225	38,368	886
2001	40,108	854	39,000	1107
2002	41,033	926	40,162	871
2003	42,125	1091	41,176	949
2004	43,242	1117	42,316	926
2005	44,382	1140	43,452	930
2006	45,579	1197	44,549	1031
2007	46,708	1128	45,579	1129
2008	48,340	1632	47,250	1090

Source: MOLISA (2009); authors' calculations.

in the number of unemployed have been positive in recent years, implying an increase in unemployment in Vietnam. This might be because of a moderate number of labour migrants, at just 6.5% of the new labour force entrants per year since 2000. The results could suggest that migration helps reduce unemployment by freeing up job vacancies for those who remain in the country and generating new employment via start-ups. The following section investigates the impact of international migration on employment generation based on the household data on international migration in 2008.

4. Impact of international migration on employment in the informal sector

4.1. *Data*

This section uses the data set from the international migration household survey conducted by the 'Development on the Move: measuring and optimizing migration's economic and

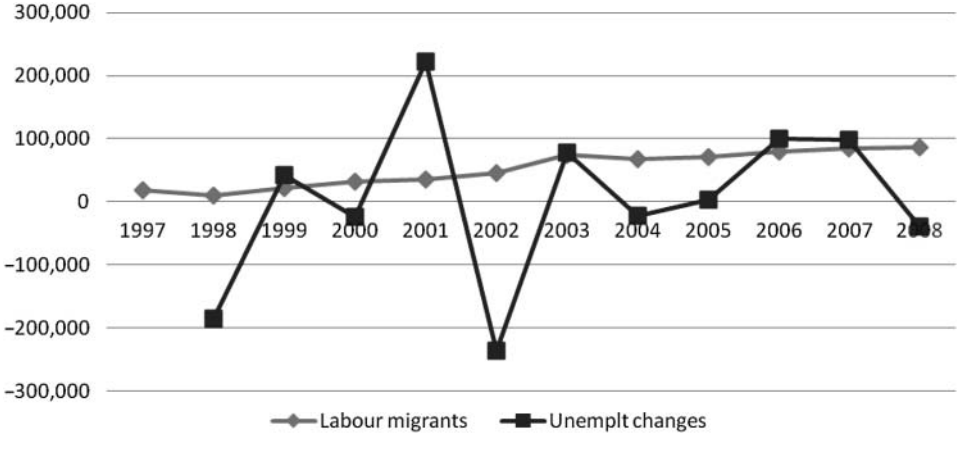

Figure 1. Labour migrants and unemployment changes in Vietnam, 1997–2008. *Source*: MOLISA (2009); authors' calculations.

social impacts' (*DotM*) project. This is a joint survey conducted by the Global Development Network (GDN) and the Institute for Public Policy Research (IPPR), one of the UK's leading think tanks. Based on the project definition of migration which defines an international migrant as a person who spends three months and more living continuously in a country other than that of their birth, a sample of 1,508 households divided equally into three types: absent, returned, and non-migrant households, are surveyed in six provinces of Vietnam: Hanoi and Hung Yen in the North, Nghe An and Da Nang in the Centre and Ho Chi Minh City and Can Tho in the South.[2]

The probability-proportional-to-sample-size (PPS) method is then used to select the above provinces with the probability proportional to their migration density. Once the provinces have been selected, the communes and wards – identified as the primary sampling units (PSUs) – in the surveyed provinces are stratified into rural and urban strata. The PPS method hence gives rise to 15 PSUs selected in each province. Selected PSUs are then divided into small enumeration areas (EAs) of almost equal population size. Five EAs are selected in each PSU using the PPS method. At the final stage, households are randomly selected in each stratum of absent, returned and non-migrant households. The sample is the first data set on international migration in Vietnam. It contains key information on household members and household businesses to be able to examine the impacts of international migration on job creation. Detailed information on the sampling strategy and the data set can be found in Dang *et al.* (2010).

Household businesses in the data set include micro-enterprises and self-employment. As the survey does not specifically set out to investigate the impact of migration on the informal economy, data on registration and social security contributions are not collected. Nevertheless, the tiny scale of businesses in the data set means that it can be assumed that almost all the household businesses in the data set are in the informal sector. Hence, the data provide a proxy when analyzing the informal economy.

The previous section uses macro-level data with the finding that international migration could have a positive impact on employment generation. However, it also acknowledges the difficulty of separating out the impact of migration from other macro-economic factors. The household data are, therefore, the only information that can provide scientific evidence on the impact of international migration on job creation in the informal sector in Vietnam. As set out in the previous section, the number of labour migrants is very small in relation to new labour market entrants. Moreover, examination of the household data reveals that almost all Vietnamese migrants had a job before migrating. Only a tiny proportion of them were unemployed (Table 3). The results may imply that migration helps reduce unemployment in terms of freeing up job vacancies for those remaining in the country and generating new employment via start-ups.

4.2. *International migration and entrepreneurship*

Migration affects business investment in home countries via two channels. Firstly, absent migrants send or potentially send remittances, giving families back home guaranteed funds to address risks and increase their investments (Taylor 2006). Secondly, returned migrants tend to move from agriculture into commercial production with the funds and skills they bring back. Dang *et al.* (2003) suggest that the impact of migration on promoting production in Vietnam is questionable. In this section, we use the household data to investigate the likelihood of migrant households investing in small businesses or taking up self-employment (hereafter family businesses).

Table 3. Employment status of non-migrants and absent and returned migrants, aged 15–60 (%).

Employment status	Non-migrants Current status	Returned migrants		Absent migrants Status before departure
		Status before departure	Current status	
Attending school or other education/ training	15.8	14.6	2.9	26.8
Wage worker	32.6	42.1	39.7	36.4
Self-employed worker	37.4	33.1	38.2	24.3
Unemployed and seeking work	1.7	3.2	6.6	4.1
Doing unpaid work for the family or household	2.0	1.4	0.8	3.4
Inactivity	3.4	0.8	4.1	1.1
Other	7.0	4.8	7.6	3.8
Total	100.0	100.0	100.0	100.0

Source: *DotM* survey; authors' calculations.

Table 4 summarizes the way remittances are spent by the remittance recipient households. In this table, recipients are divided into two types. The first type of household receives remittances from household members currently living overseas and the second type receives money from relatives who are not immediate family members (non-member remitters). As shown in Table 4, most of the households report that they spend remittances differently to their regular income. In particular, 77% of absent migrant households in rural areas state that they use the money remitted by their overseas members differently. Remittances, from both members and non-members, are spent mostly on clothes, shoes and jewellery, household goods, health care and food. They also promote investment in education in a number of families. Furthermore, money remitted by absent migrants prompts an increase in expenditure on housing improvements and helps families to cover debts and save, especially in rural areas. The proportion of remittances from absent migrants invested in businesses is very small, comprising only 2% and 5% of the overall expenditure of rural and urban households, respectively (Table 4).

The relationship between international migration and entrepreneurship is investigated in Table 5. Interestingly, Table 5's statistics reveal that the proportion of non-migrant households with family businesses is higher than that of migrant households. However, businesses with family workers only are more commonly found in this group compared with migrant households. The fact that it is not expensive to be self-employed in Vietnam may explain the high percentage of small family businesses among non-migrant households (Dang *et al.* 2010). Table 5 also displays similar business ownership numbers for migrant and non-migrant households. Nevertheless, migrant household enterprises have a slightly higher average number of workers (family and wage workers combined) and wage workers. These differences are significant at 5% as shown in Table 5.

Table 6 displays the characteristics of the enterprises by household type. A striking feature in this table is that the distribution of family businesses is fairly similar between migrant and non-migrant households. The dominance of small enterprises in urban areas suggests less favourable business conditions in rural places. Most of households have

Table 4. Use of remittances.

	Use of remittances from			
	Absent migrants		Non-member remitters	
	Rural	Urban	Rural	Urban
Total	100.0	100.0	100.0	100.0
Similar to regular sources	22.7	42.4	41.4	48.1
Different to regular sources	77.3	57.6	58.6	51.9
If different, % on				
Education	16.7	19.9	29.4	10.3
Health care	21.1	26.2	35.3	32.4
Wedding	5.9	7.8	11.8	2.9
Funeral	2.0	7.8	5.9	4.4
Religious purposes	0.0	0.7	0.0	4.4
Business	2.0	5.0	5.9	1.5
Food	19.6	39.0	52.9	38.2
Clothes, shoes and jewellery	32.4	39.7	52.9	45.6
Household goods	38.2	29.1	41.2	36.8
Housing improvements	28.9	18.4	0.0	10.3
Land and agriculture	9.3	3.5	5.9	0.0
Child care	7.4	19.9	5.9	8.8
Savings	27.9	12.8	17.6	2.9
Insurance	2.9	0.7	0.0	2.9
Paying off debts	36.3	12.1	0.0	1.5
Lending and contributing to informal credit	5.9	2.1	5.9	0.0
Helping others	4.4	3.5	0.0	13.2
Helping others to migrate	2.9	1.4	0.0	0.0
Other	1.0	5.7	5.9	8.8

Source: *DotM* survey; authors' calculations.

one small business. Furthermore, enterprises employing less than five workers are over-representative, accounting for more than 90% of the total sample (Table 6). The table also shows that more migrant households tend to own larger-scale businesses than non-migrant households, but the difference in business numbers is small. With respect to the sector

Table 5. International migration and family businesses.

	Non-migrant household (1)	Migrant household (2)	Differences (2)–(1)
1. Total number of households	484	1024	
2. Percentage of households with businesses over the last 12 months	40.10	34.80	
3. Percentage of households with businesses with family employees only	30.20	24.90	
4. If business:			
Number of businesses	1.11	1.14	+0.03
Number of workers	2.14	2.64	+0.50**
Number of wage workers (among those using hired workers)	0.67	1.19	+0.52**

Source: *DotM* survey; authors' calculations.
Note: '**' is significant at 5%.

Table 6. Characteristics of family businesses.

	Non-migrant household	Migrant household
1. *Location (%)*		
Rural	35.0	34.8
Urban	65.0	65.2
2. *Number of businesses by household (%)*		
One	88.7	87.2
Two or more	11.3	12.8
3. *Number of employees (%)*		
1	45.2	45.1
2–4	48.6	43.9
5–9	4.0	7.3
10–49	2.3	3.7
4. *Industry (%)*		
Agriculture and fishing	4.0	1.2
Processing industry	16.4	13.4
Construction	1.7	0.9
Vehicle maintenance and sales	2.8	2.7
Shop (wholesale/retail) and family appliance repairs	38.4	50.0
Small restaurant, café, beverage/drink stand	21.5	14.0
Transportation	3.4	2.1
Asset businesses and consulting services	3.4	5.5
Hairdressing and laundry	5.6	6.4
Other services	2.8	3.7

Source: *DotM* survey; authors' calculations.

distribution, the family businesses are often small shops and restaurants. This feature is similar for both migrant and non-migrant households, although migrant households seem to be more concentrated in small shops (50% versus 38.4%). Table 6 shows that the processing industry and services such as hairdressing and laundry are also areas that attract investment from households, both migrant and non-migrant.

4.3. *Methodology*

All in all, the descriptive statistics in Tables 5 and 6 show that there is not much difference between migrant and non-migrant household family businesses. However, migration is correlated with productive investment when taking into account business scale. We use the PSM method to test whether international migration really does affect entrepreneurship. The reason for using this method is that migration is a self-selection process for both observable and unobservable variables. One of the reasons for sending a member overseas could be related to the business start-up decision. In this case, entrepreneurial-minded household heads (HHs) might send a migrant abroad to earn money to set up new economic ventures. Thus, simply comparing the likelihood of migrant and non-migrant households having family businesses may be misleading due to the selection bias. The PSM method aims to create comparable households in terms of observable characteristics, and then to compare the households that experience migration to households that do not. Note that PSM can reduce, but not eliminate, biases generated by unobservable combined factors correlated with both dependent and independent variables. The level of bias reduction depends on the quality of the control variables used in the PSM method and on the matching performance

(Becker and Ichino 2002). Another limitation is that the PSM method is more reliable when it can control for several periods of pre-treatment data. This is not possible in our case, where we only have cross-sectional data collected in 2008.

The PSM method starts by dividing households in our sample into two categories: migrant households, if they have a member currently living abroad or already home and living again with the family, and non-migrant households. Let π_{0i}^{m} denote the outcome of interest for migrant household i. The outcome will be π_{1i}^{m} for a household with migrant member(s) and π_{0i}^{m} for a non-migrant household. The difference in outcome for migrant household i and a non-migrant household

$$\Delta_i = \pi_{1i}^{m} - \pi_{0i}^{m}. \tag{1}$$

Given that the effect of migration might be heterogeneous across households, only the average effect (AE) is identifiable, i.e.

$$AE = E\left(\pi_1^m - \pi_0^m\right). \tag{2}$$

The problem with estimating Equation (2) is that the outcome of a migrant household in the case of no migration cannot be observed. A solution for this is to replace it with a non-migrant household, and thus AE can be identified by

$$AE = E\left(\pi_1^m - \pi_0^{nm}\right), \tag{3}$$

where π_0^{nm} is the outcome of non-migrant households.

If migrants are randomly drawn from the population, then

$$E\left(\pi_1^m\right) = E\left(\pi_0^{nm}\right). \tag{4}$$

However, if migration is a decision process that depends on household characteristics, then

$$E\left(\pi_1^m\right) \neq E\left(\pi_0^{nm}\right). \tag{5}$$

This bias is called the selection bias and can be solved by the PSM method, which requires the conditional independent assumption (CIA). In our case, the CIA can be interpreted as stating that migration selection is random given certain observed household characteristics, and thus that the decision to send a member abroad is unrelated to the decision to run a family business.

The propensity score is defined by Rosenbaum and Rubin (1983) as the conditional probability of sending a member overseas given the household characteristics

$$p\left(X\right) = \Pr(m = 1|X), \tag{6}$$

where $m = 1$ if the household has migrant member(s) and 0 otherwise, and X is a set of household variables.

The propensity score requires a *balancing property*, i.e.

$$m \perp X | p\left(X\right). \tag{7}$$

This, combined with the CIA, gives us

$$\pi_0^m, \pi_1^m \perp m | p(X). \tag{8}$$

Equation (8) implies that if migrant and non-migrant households have the same migration propensity score, the difference between the average outcomes of the two groups is an unbiased estimator of the AE of migration on the outcome of interest.

The propensity score is estimated by either logit or probit models. Becker and Ichino (2002) provide the STATA *pscore* programme to estimate the propensity score and test the balancing property. The programme divides the sample into a number of blocks based on the estimated propensity score such that the mean propensity score is the same across migrant and non-migrant households. Different PSM methods use different ways to match treatment units (migrant households) to control units (non-migrant households) (see Becker and Ichino 2002, for more details). In our case, we use *Nearest-Neighbour Matching* and *Radius Matching* to estimate the AE of migration on entrepreneurship. In *Nearest Neighbour Matching*, a non-migrant household is chosen as a match for a migrant household in terms of the closest propensity score (or the most similar one as regards the observed characteristics). *Radius Matching* is used to avoid the risk of poor matches. This matching method identifies a maximum propensity score distance called 'caliper' and then uses all the matched non-migrant households within the caliper to estimate the average outcome.

4.4. *Model specification*

To evaluate the effect of migration on entrepreneurship, we first identify a set of variables to determine both the decision of migrating and starting up a business. This combination needs to be related to the CIA. Note that the selection of covariates is not problematic if some missing variables influence the decision of migrating, but not so in the case of family business start-ups (Dang 2008).

As mentioned in the previous section, we do not have pre-treatment data, i.e. data about household characteristics before member migration. Instead, we use a number of variables expected to remain the same over time such as HH gender and education. HH education is ranked into three categories: secondary school education, vocational and technical education and higher education. Current HH health status may influence the possibility of a member staying overseas and the family running a business. It is thus added into the model. This dummy variable takes the value 1 if the HHs report good health and 0 otherwise. Our data also collect some information on the household five years previously and, as the majority of absent migrants left the country during this five-year period, we include the age and age-squared of the HH five years previously in the model. Some household characteristics including the household size five years previously, household location (urban/rural) and per capita pre-remittance income (i.e. income before the remittance) for the previous 12 months are also added to the model. We try to simulate the household's economic situation before migration by excluding remittances from total income.[3]

Migrant households in Vietnam can be divided into two categories. One includes poor families on the government's labour export programme designed to contribute to poverty reduction. The other could be said to be rich households able to send their members abroad to study. To control for this fact, both pre-remittance income and pre-remittance income squared per capita are included in the model. Dropping missing and outlier variables from the model brings the sample size down to 1331 observations. A statistical summary of the variables is provided in Table 7.

Table 7. Statistical summary of variables.

	Non-migrant household	Migrant household
1. *Number of observations*	*433*	*898*
2. *Household head characteristics*		
Male (%)	70.9	65.8
Age five years previously (mean)	46.4	48.0
Education (%)		
Up to secondary school level	77.4	79.3
Vocational and technical	12.7	9.2
Higher education	9.9	11.5
Health in good condition (%)	50.3	46.5
3. *Household characteristics*		
Urban (%)	57.0	52.3
Household size five years previously (mean)	3.9	3.7
Per capita pre-remittance income (mean in 1000 of *VND*)	13,117.2	14,956.6

Source: *DotM* survey; authors' calculations.

4.5. *Estimated results*

As shown in our descriptive statistics above, the effect of migration on entrepreneurship is clearer when taking into account the size of the household business in terms of the number of workers. We therefore estimate the impact of migration on entrepreneurship using two specifications. The first specification, called the full model, includes all households with a small family business or self-employment while the second one (restricted model) contains only those households with businesses that employ two or more workers (including family and wage workers). Table 8 presents the estimated propensity scores using the probit model.

The factor of interest is per capita pre-remittance income. As expected, per capita pre-remittance income has negative effects on the probability of sending a household member(s) abroad (Table 8). The results imply the effectiveness of government poverty reduction-based labour export programmes at offering poor households more migration opportunities. Conversely, the positive impact of per capita pre-remittance income squared suggests that richer households are more likely to migrate. The results in Table 8 also show that urban households are less likely to migrate than their rural counterparts. The explanation for this is that labour migrants are over-represented in our sample and the majority of these labour migrant households are located in rural areas.

Unlike the case of Ghana (Tsegai 2007), household size in our study has a negative impact on the propensity of migration. An in-depth look at our household data reveals that larger households are often found in the lower middle and middle of the income distribution (Figure 2). This, coupled with the impact of pre-remittance income, confirms our hypothesis that poor and rich households are more likely to migrate than middle income families. Note that the impact of household characteristics is robust across models, although the significance level is not as strong in the restricted model. Among the HH characteristics, only the head's gender is statistically significant, but this effect is not robust across models (Table 8).

Although the Pseudo R^2 is not very strong in either model, the PSM method is not designed to build a statistical model to explain the likelihood of sending household member(s) abroad. It used to estimate the average impact of migration on entrepreneurship. Furthermore, the propensity score estimation shows that the balancing property is satisfied.

Table 8. Likelihood of sending household member(s) overseas.

	Full model: inc. all households		Contracted model: inc. households with businesses with workers = >2	
	Estimate	*z*-stat	Estimate	*z*-stat
Dependent variable: having or not having migrant member(s)				
Estimation method: probit				
1. *Number of observations*	*1331*		*1107*	
2. *Household head characteristics*				
Male	–0.155*	–1.94	–0.139	–1.57
Age five years previously	–0.013	–0.7	–0.017	–0.88
Age five years previously squared	0.000	1.14	0.000	1.21
Education				
Vocational and technical	–0.172	–1.46	–0.119	–0.92
Higher education	0.065	0.51	0.066	0.48
Health (in good condition)	–0.043	–0.56	–0.072	–0.87
3. *Household characteristics*				
Urban	–0.200**	–2.5	–0.193**	–2.19
Household size five years previously	–0.129***	–3.14	–0.099**	–2.19
Per capita pre-remittance income (in log)	–0.741**	–2.43	–0.550*	–1.67
Per capita pre-remittance income squared (in log)	0.418***	2.74	0.314*	1.91
Pseudo R^2	0.019		0.015	

Source: *DotM* survey; authors' calculations.
Note: '***'; '**', '*' are significant at 1%, 5% and 10%, respectively.

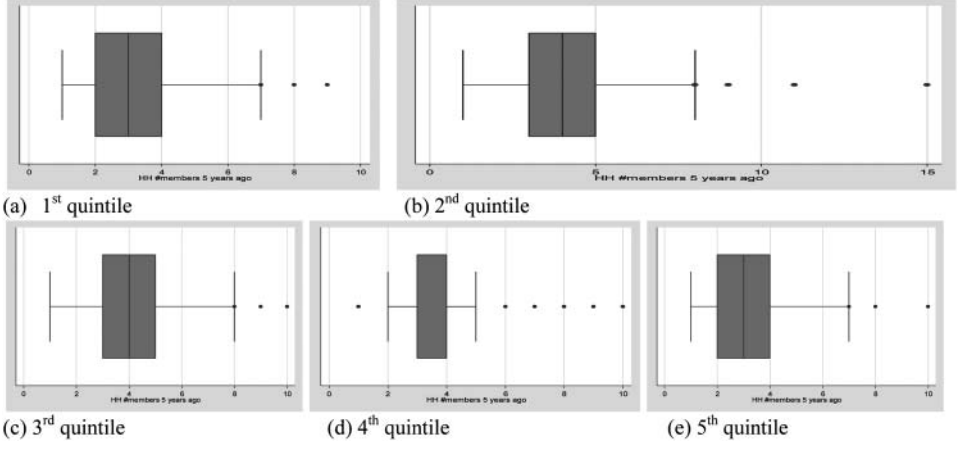

Figure 2. Distribution of household size by pre-remittance income five years previously. *Source*: *DotM* survey; authors' calculations.

Table 9. Average effects of migration on entrepreneurship.

	No. observations in			
	Treatment group (migrant household)	Control group (non-migrant households)	Estimated effect on likelihood of opening family businesses (%)	*t*-stat
Full model				
Nearest-Neighbour Matching	995	367	–0.002	–0.049
Radius Matching ($Radius \leq 0.1$)	898	433	–0.029	–0.998
Contracted model				
Nearest-Neighbour Matching	846	296	–0.012	–0.335
Radius Matching ($Radius \leq 0.1$)	751	356	–0.026	–0.895

Source: *DotM* survey; authors' calculations.

We, therefore, proceed with *Nearest-Neighbour Matching* and *Radius Matching* to estimate the impacts of international migration on setting up family businesses. The estimated AEs for both models are reported in Table 9.

The *t*-statistics in Table 9 show that international migration has no impact on entrepreneurship and the impact is statistically consistent in both full and restricted models. The result confirms household opinions about the positive impacts of migration as shown in Figure 3. As can be seen from this figure, only 23% of households, migrant and non-migrant, think that money sent back home helps to set up a business or invest in production. The results raise concerns about the lasting impact of migration. If the Vietnamese government wants to achieve sustainable poverty reduction, it needs to encourage migrant households to set up enterprises that, in turn, generate jobs for the poor who remain in the country.

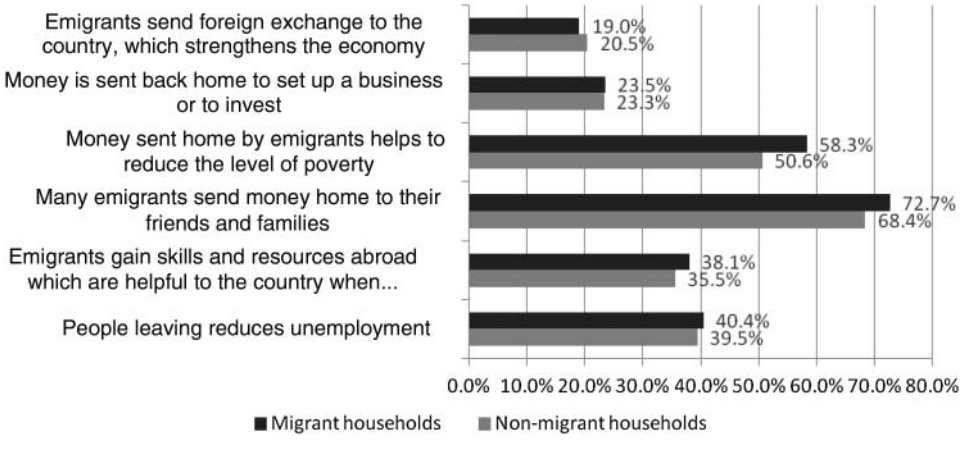

Figure 3. Household opinions about the positive impact of migration. *Source*: *DotM* survey; authors' calculations.

5. Conclusion

The development process in Vietnam goes hand in hand with informal sector expansion and increasing outflows of international migration. However, little is known about the interaction between international migration and the informal sector. This paper sheds light on the impact of international migration on job creation in the informal sector based on 2008 household data on international migration taken from the *DotM* project.

An investigation into the macro- and household-level data suggests that migration has impacts on employment generation by creating jobs for those remaining at home in the form of family business start-ups. The paper's findings show that migration has no impact on self-employment. Migration matters only when taking into account business scale.

In view of the existence of self-selection in the migration decision process, the PSM method is used to estimate the effects of international migration on job creation in the informal sector. Our results show that poor and rich families have a higher propensity to migrate. This reflects the effectiveness of the government's poverty reduction-based labour export programmes and the tendency of rich families to send children to study abroad.

The *Nearest-Neighbour Matching* and *Radius Matching* estimates show that international migration has no impact on entrepreneurship and, hence, on employment generation in the informal sector. Consequently, rather than investing in production, a proportion of remittances is spent on housing improvements or savings. This raises concerns about the lasting impact of migration.

Notes

1. Bureau of Administration on Overseas Workers – The Ministry of Labour, Invalids and Social Affairs, Vietnam.
2. DotM defines migrants and migrant households as follows:
   - An absent migrant is a person who was born in the country of study but who, within the last 10 years, has left to go and live in another country. An absent migrant is still living abroad. An absent migrant household is a household that contains one or more absent migrants.
   - A returned migrant is a person who was born in the country of study and who lives there now but who, at some point, has lived in another country for three months or more. A returned migrant household is a household that contains one or more returned migrants.
   - A non-migrant household is a household that does not contain any migrant member.
3. This is, however, based on the assumption that a migrant's contribution to household income before migration is zero.

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