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# Impact of Foreign Investment on Household Welfare: Evidence from Vietnam<sup>\*</sup>

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## Abstract

We examine the impact of foreign direct investment in Vietnam on household and individual welfare as well as migration using survey data for the period 2002 to 2016. We find that higher revenue from foreign invested firms measured at province level and normalized on population is associated with a variety of positive outcomes. At household level, income and expenditures per capita are higher and poverty incidence is lower. At individual level, non-farm employment and wages are higher. And at commune level, in-migration is higher. However, although these improvements register as statistically significant, the magnitudes in economic terms are modest.

**Keywords:** Economic integration, foreign direct investment, poverty, household welfare, Vietnam.

**JEL codes:** F14, F15, I31, I32.

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## 1. Introduction

Although international economic integration is now widely accepted as a growth engine, the impact of such integration on poverty is still under debate (Lee and Vivarelli, 2006; Meschi and Vivarelli, 2009). Poverty reduction is achieved if trade driven growth is inclusive of poor people (McCulloch, Baulch, and Cherel-Robson, 2001; Ravallion, 2001; Ravallion and Datt, 2002; Dollar and Kraay, 2004). Conversely, if international integration provides limited employment opportunities for the poor and unskilled, poverty may be worsened (see Bhagwati and Srinivasan, 2002; Cimoli and Katz, 2003; Lundberg and Squire, 2003).

Empirical findings are inconclusive on the issue. For example, Dollar and Kraay (2002) reject the hypothesis of a negative impact of trade openness on incomes of the poor for a sample of 92 countries from 1950 to 1999. Friedrich, Schnabel, and Zettelmeyer (2013) used industry-level data and found that European transition regions benefited from financial integration. However, trade integration can sometimes bring negative effects to households. Negative effects were found by Winters, McCulloch, and McKay (2004), Ferreira et al. (2007), Goldberg and Pavcnik (2007), and Castilho, Menéndez, and Sztulman (2012). The disparate effects of trade openness on household welfare, as documented across different countries, suggest that there is no one-size-fits-all result. Thus, there is a need for studies that consider various aspects of international integration and household welfare to shed more light on this complicated issue.

This paper analyzes the impact of foreign direct investment (FDI), as reflected by the revenue of foreign invested firms, on the welfare of Vietnamese households. Household welfare is captured by an array of indicators including income, expenditure, poverty, employment, and migration. Closest to our work is Hoang, Wiboonchutikula, and Tubtimtong (2010) who found a positive effect of FDI on economic growth in Vietnam. Recently, McLaren and Yoo (2017) concluded that rising FDI was associated with a marginal decline in living standards for

households that did not have a member employed by a foreign firm with only modest gains for households that did have a member employed by a foreign firm.

Our paper differs from previous studies on the effect of FDI inflows into Vietnam in three ways. First, we estimate the effect on household income and expenditures using the Vietnam Household Living Standard Surveys (VHLSS) from 2002 to 2016, i.e., we make use of direct measures of income and expenditures whereas McLaren and Yoo (2017) used indirect proxies such as access to electricity and piped water and possession of a radio or television. Second, we combine data on household living standards from the VHLSS with data on the revenue of foreign firms from the Vietnam Enterprise Census (VEC). Third, we provide a more comprehensive picture of the impact of economic integration on household living standards by considering a variety of welfare outcomes including income, expenditure, poverty, income sources, and migration. Using different outcomes allows us to examine channels through which FDI can affect household welfare.

Vietnam is a populous country (nearly 93 million residents in 2017) that has achieved rapid economic growth and marked poverty reduction in recent decades.<sup>5</sup> Global poverty reduction relies on improving economic prospects in countries like Vietnam that focus on economic integration to achieve growth (Chandy and Gertz, 2011). This study examines the impact of FDI using household and community level data for 2002-2016. We show that at the provincial level, greater revenue per capita from foreign invested firms is associated with higher household income and expenditures and with lower poverty, although the magnitude of the relationship is rather small. The small impact is partly explained by our empirical evidence that foreign firm revenues are associated mainly with wages and non-farm household income, which are not the main sources of income among the rural poor in Vietnam. We find no link between

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<sup>5</sup> Source: [https://www.gso.gov.vn/default\\_en.aspx?tabid=774](https://www.gso.gov.vn/default_en.aspx?tabid=774)

foreign firm revenue and employment or the number of hours worked. Our results indicate a heterogeneous effect between rural and urban areas in support of the argument that FDI creates more benefits for rural than urban inhabitants. However, no difference is found between ethnic groups in the effects of FDI on poverty and expenditures. Finally, we find higher foreign firm revenue at province level results in a larger flow of in-migration at commune level.

Our findings have important implications for policymakers. Though FDI may be effective in boosting growth at an aggregate level, policies should be designed so that the poor benefit from the integration, e.g., more FDI could be directed to the agricultural sector.

The remainder of this article proceeds as follows. The second section summarizes the data sources. The third section describes the situation in Vietnam with respect to FDI and household welfare in Vietnam. The methodology employed in this study is presented in the fourth section. The fifth section reports our empirical results, and the sixth section concludes.

## **2. Data**

This article relies on a rich dataset from the Vietnam Household Living Standard Surveys (VHLSS) to measure the welfare and characteristics of Vietnamese households from 2002 to 2016. The VHLSS has been conducted by the General Statistics Office (GSO) of Vietnam every two years since 2002 and follows the World Bank's Living Standards Measurement Study. The 2002 survey covered nearly 30,000 households while later surveys covered around 9,000 households. The 2002 survey is representative at the provincial level, and the later surveys at the regional level.<sup>6</sup> Information is collected through face-to-face interviews with household members and commune officials. The surveys include questions about demography, employment, labor force participation, education, health, income, expenditures, housing, fixed assets, durable goods,

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<sup>6</sup> There are six geographic regions in Vietnam.

involvement in poverty alleviation programs, general economic conditions, agricultural production, local infrastructure and transportation, and social problems.

Migration data are from the commune module of VHLSS, which pertains only to rural areas. The commune module contains data on the population of rural communes and the number of in- and out-migrants during the preceding 12 months. Using this information, we compute the in- and out-migration rates of communes.

We employ the Vietnam Enterprise Census (VEC) data to obtain revenue figures for both foreign and domestic firms. The VEC, conducted annually since 2000 by the Vietnam General Statistics Office (GSO), provides information on firm ownership, business activities, employment, compensation, assets, capital, business performance, revenue, profit, and industrial sector. The VEC encompasses all registered enterprises in Vietnam.

Sample sizes by year (2001-2016) for households, communes, and firms are reported in Appendix Table A.1.

### **3. Household welfare and foreign investment**

#### *3.1. Household welfare*

Figure 1 shows that Vietnam achieved high growth in per capita income and expenditure with both increasing dramatically from 2002 to 2016.<sup>7</sup> In 2016, per capita income and expenditure were 35,917 and 32,538 thousand VND, respectively. It should be noted that the large increases in income and expenditure from 2008 to 2010 may be attributable to a change in the VHLSS questionnaire. Until 2008, questions about expenditure and wages were asked pertaining to the past 12 months. Since the 2010 VHLSS, however, the questions were asked pertaining to the past month, then annualized by multiplying by 12. As a result, the values show a discontinuity.

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<sup>7</sup> Means and standard deviations for per capita income and expenditure and the poverty rate are presented in Appendix Table A.2.

**[Figure 1]**

We estimate the proportion of households living in poverty using the poverty line constructed by the World Bank and the GSO of Vietnam. A household is defined as poor if its per capita expenditure is below the poverty line. Under the VHLSS, the poverty line up to 2008 was set equivalent to an expenditure level that allowed nutritional needs to be met given food consumption of 2,100 calories per person per day and essential non-food items such as clothing and housing to be purchased. From 2010 onward, the calorie requirement was raised to 2,230 per person per day and the consumption basket was also updated. As a result, the poverty line from the 2010 VHLSS was raised and the poverty rate increased relative to 2008.<sup>8</sup> Figure 1 shows that the poverty rate decreased significantly from 2002 to 2008. In 2010, with the lifting of the poverty line, the poverty rate was higher than in 2008. However, the poverty rate resumed its decline from 2010 to 2016. It should be noted that if we construct a poverty line for 2010 using the approach applied under the 2008 VHLSS, the poverty rate in 2010 is reduced to 12.3% from 20.7%. This is significantly lower than the 2008 poverty rate of 14.5%. In this study, we use the official poverty line from the WB and GSO for interpretation. The change in measurement is controlled for with year fixed effects.

Poverty has been reduced for both urban and rural areas, as shown in Table 1. However, poor households are considerably more prevalent in rural areas than in urban areas. In 2016, the rural poverty rate was 13.6%, which was approximately seven times higher than the urban poverty rate of 1.6%. There is also a huge gap in poverty rates between the Kinh ethnic majority and ethnic minorities (Bui, Nguyen, and Pham, 2017). The poverty rate has decreased over time for both

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<sup>8</sup> The VHLSS poverty line in thousand VND per person per year was set by year as: 2002, VND1,917; 2004, VND2,077; 2006, VND2,560; 2008, VND3,358; 2010, VND7,836; 2012, VND10,456; 2014, VND11,563; 2016, VND11,630.

Kinh and ethnic minorities. However, the poverty rate for ethnic minorities at 44.6% in 2016 remained very high at a rate of 15 times that of the Kinh majority.

**[Table 1]**

Figure 2 compares the change in per capita expenditure over time of urban and rural residents and of Kinh and ethnic minorities.<sup>9</sup> All groups have achieved per capita growth in expenditure. However, the gaps between urban and rural residents, and between Kinh and ethnic minorities has widened.

**[Figure 2]**

Table 2 shows the transition in household income sources from 2002-2016. The share of wage income in the total increased from 28.8% in 2002 to 45.7% in 2016. The share of crop income decreased from 26.0% to 14.1%. The shares of income from livestock and other agricultural activities also decreased. The non-farm income share was almost unchanged at about 17-18%. In 2016, income from other sources, such as private and public transfers, accounted for 13.3%.

**[Table 2]**

Table 3 presents employment statistics over time. The employment rate among people of working age (15-65) and the average number of hours worked per month are both stable over time. In 2016, the employment rate was 90.1% and work hours per month stood at 156.4. Although the employment rate was high, a large number of workers were self-employed. In 2002, only 30.8% of working age people held a wage-paying job. However, this proportion increased to 42.8% in 2016. Non-farm employment also accounted for a larger share of the labor force over time. Monthly wages increased from VND 1952 thousand in 2002 to VND 4919 thousand in 2016.

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<sup>9</sup> Quantitative estimates (with standard deviations) of poverty rate and per capita income and expenditure by urban/rural areas and ethnic groups are presented in Appendix Table A.3.



Employment statistics by urban and rural residence are presented in Appendix Table A.4 and by ethnicity in Appendix Table A.5. These tables show a large gap in labor market participation and wages between urban and rural residents, and between Kinh and ethnic minorities. Urban residents and Kinh people also have higher rates of employment in formal jobs than their rural and minority counterparts.

**[Table 3]**

Figure 3 presents in-migration and out-migration rates at the level of rural communes. The migration rate has increased over time. In 2016, the in-migration rate was 1.18% and the out-migration rate was 1.28% for a net outflow of 0.1%

**[Figure 3]**

### *3.2. International integration of the Vietnamese economy*

Since the 1980s, Vietnam has increasingly engaged in international economic integration, marked by the approval of laws allowing foreign investment in 1987 that resulted in large inflows of FDI. Figure 4 illustrates the upward trend in the number of foreign invested firms over time. In 2002, there were only 600 foreign invested firms in Vietnam, and this number increased to 11,968 in 2016.

**[Figure 4]**

As shown in Figure 5, the number of domestic firms increased apace over time such that the proportion of foreign firms relative to the total remained steady. Over the period 2002-2016, foreign firms accounted for between 2.0% and 2.7% of the total. Although foreign firms constituted a small share by number, they accounted for a large and increasing share by employment and revenue. In 2002, the foreign firm share by number was 2.5% while it was 10.4% of employment and 8.6% of revenue. In 2016, the foreign firm share by number was slightly lower

at 2.3%, but had reached 27.6% of employment and 24.4% of revenue. These figures indicate the important role of FDI in creating jobs and stimulating economic growth in Vietnam.

**[Figure 5]**

Table 4 compares foreign and domestic firms with respect to employment and revenue. Foreign firms are much larger with respect to both measures. In 2016, foreign firms employed on average 319 workers, approximately 21 times as many as domestic firms. Similarly, for revenue, foreign firms were larger with an average revenue of 341 billion VND, roughly 14 times the 25 billion VND of domestic firms.

**[Table 4]**

Both Figure 5 and Table 4 show that foreign firms were hit harder than domestic firms by the global financial crisis of 2008-2009. Revenues of foreign firms dropped sharply in 2008 both in absolute terms and as a share of the revenue of all firms. Employment was hit with a lag in 2010. However, the foreign invested sector quickly recovered.

Figure 6 compares the spatial distribution of poverty and foreign firms in Vietnam. We obtain data on the number of poor people at district level from Lanjouw, Marra, and Nguyen (2017) with availability for 2010 and compare with firm data for the same year. Panel A shows that poverty rates in mountainous areas (Northern Mountain) and highland areas (Central Highlands) are much higher than those in the delta regions. However, the poor areas have a lower population density. As a result, the number of poor are not concentrated in the areas of high poverty incidence. In sheer numbers, the highest concentrations of poor are in the Red River and the Mekong River Deltas. The number of foreign firms is highest in the Red River Delta, the North Central Coast, and South-East regions. The figure indicates that the density of foreign firms is negatively correlated with the poverty rate, but not correlated with the density of poor people. In

other words, there is evidence of higher FDI being associated with lower poverty rates but no clear link between FDI and concentration of the poor.

**[Figure 6]**

In Figure 7, we examine the correlation between household welfare and foreign firm revenue across provinces and over time for the 63 provinces of Vietnam during the period 2002 to 2016. At province level, we compute the poverty rate and household expenditure per capita using household data from the VHLSS dataset and foreign firm revenue using firm data from the VEC dataset. Elaborating on the pattern suggested by Figure 6, Figure 7 shows household expenditure increases with foreign firm revenue (Panel A) and the poverty rate decreases with foreign firm revenue (Panel B).

**[Figure 7]**

**4. Estimation method**

We employ a standard model of household income and expenditure (Glewwe, 1991) and include, as an explanatory variable, the revenue of foreign invested firms at province level normalized on population as a proxy for international economic integration. The model is:

$$Y_{i,t} = \beta_0 + X_{i,t}\beta_1 + FDI_{j,t}\beta_2 + FDI_{j,t-1}\beta_3 + DOF_{j,t}\beta_4 + DOF_{j,t-1}\beta_5 + T_t\beta_6 + P_j\beta_7 + \varepsilon_{i,j,t} \quad (1)$$

where,  $Y_{i,t}$  is the outcome indicator by household or individual or commune  $i$  in year  $t$ ;  $FDI_{j,t}$  is the provincial FDI measure given by revenue of foreign firms per capita in province  $j$  at time  $t$ , with its lag also included;  $DOF_{j,t}$  is the provincial revenue of domestic firms per capita, its lag also included;  $X_{i,t}$  is a vector of control variables;  $T_t$  is a set of year dummies;  $P_j$  is a set of province dummies which captures time-invariant unobserved provincial characteristics; and  $\varepsilon_{i,j,t}$  is a normally distributed i.i.d. error term.

Welfare indicators are considered at household, individual, and commune levels. At the household level, indicators include income; expenditures; poverty status; and income shares from each of wages, nonfarm production, and other sources. At the individual level, indicators include a variety of work related outcomes: employment status; work hours; non-farm employment status; and wages. At commune level, the indicators are in-migration and out-migration rates.

Among the outcome measures used as dependent variables are a number of binary indicators. We use a linear probability model, rather than probit or logit regression, for simplicity of interpretation. Linear models yield consistent estimates and are widely used for binary and count models (Angrist, 2001; Angrist and Krueger, 2001).

Economic integration is measured by the revenue of foreign firms at province level divided by population. This is similar to the measure of firm agglomeration, often taken as the relative density of firms by industrial sectors (Ellison and Glaeser, 1999). We use firm revenue rather than the number of firms because revenue is a proxy of firm performance and is related to local employment and output.<sup>10</sup> We take the province, rather than the district, as our unit of FDI measurement since districts are relatively small and it is likely that people work across district boundaries. Measurement at the province level reduces such spillover effects.

The control variables for regressions involving individual outcomes include gender, age, education, ethnicity, and marital status. For regressions involving household outcomes, the same characteristics are taken for the household head, with household size and urban residency included as additional controls. For regressions at commune level, control variables include paved road availability and distance to the nearest town. Variables such as geographic characteristics that are time-invariant are controlled for by province fixed effects.

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<sup>10</sup> McLaren and Yoo (2017) use employment of foreign invested enterprises as a proxy of economic integration of each province. We tried this variable and the results are similar to those based on revenue.

A potential issue with estimation of the effect of foreign invested firms is endogeneity bias. Provinces with more foreign firm revenue might have different characteristics from those with less foreign firm revenue with these characteristics potentially bearing on welfare outcomes as well. To mitigate this bias, we use province fixed-effects to control for unobserved provincial-level time-invariant variables. The province fixed-effects estimator might still be biased if firm revenue variables are correlated with time-variant unobserved variables that are also correlated with welfare outcomes. Thus, although we are seeking evidence of a causal effect of foreign invested firms, we are fully aware of the difficulties of estimating causal effects.

## **5. Estimation results**

The effects of FDI on household outcomes, estimated using province fixed-effects regression, are reported in Table 5. Both current and lagged foreign firm revenues show a positive association with income and expenditures. The effect is statistically significant at the 5% level but small in magnitude. For an increase in foreign firm revenue per capita of 10%, household income per capita increases by 0.07% in the current year and 0.03% in the following year for a combined effect of 0.1%. Similarly, a 10% increase in foreign firm revenue per capita is associated with an increase in expenditure per capita of 0.09% in the current year and 0.04% in the following year for a combined increase of 0.13%. The coefficient estimate of the two-year effect of foreign firm revenue on poverty is negative, a 10% increase in revenue being associated with a reduction in the poverty rate of 0.05 percentage points. The effect is very small since foreign firms have a small effect on income and expenditure. Finally, foreign firm revenue shows a positive relationship with shares of income from wages and nonfarm production but no relationship with other income. Wage and nonfarm income accrue mainly to the non-poor rather than the poor. This explains the minor impact of foreign firms in reducing poverty.

[*Table 5*]

Domestic firm revenue does not, for the most part, show a statistical association with either income or expenditure of households, with the exception of a lagged positive effect on income. An effect of lagged domestic firm revenue is also seen with respect to reducing the poverty rate and increasing the wage share of income. The effect on poverty is more appreciable than for foreign firm revenue, a 10% increase in domestic firm revenue being associated with a 0.19 percentage point reduction in the poverty rate. This may be because domestic firms tend to predominate in areas of greater poverty incidence, and as a result, more low-income people benefit from the growth of domestic firms.

Estimation results for welfare outcomes at individual level are reported in Table 6. No significant effect is found for foreign firm revenue on work status or work time broadly speaking. For nonfarm employment specifically, however, a significantly positive effect is found both contemporaneously and with a lag. A 10% increase in foreign firm revenue per capita is associated with a 0.02 percentage point increase in the probability of having nonfarm employment in the current year and similarly a 0.02 percentage point increase with a lag. Domestic firm revenue shows significant and substantially larger positive effects. Wages also show a statistically positive association with foreign firm revenue, although only in the current period. A 10 percent increase in foreign firm revenue results in a wage increase of 90 VND per month. Again, the magnitude is small, but this measure applies broadly to all workers, whether employed by a foreign invested firm or otherwise. The effect of domestic firm revenue on wages is found, inexplicably, to be negative in the current year and positive with a lag.

**[Table 6]**

People have strong incentive to move from areas of low opportunity to areas of higher opportunity (Stark, 1991; Stark and Bloom, 1985). Table 7 reports the effect of foreign and domestic firm revenue on in-migration and out-migration rates for rural communes. The effect of the FDI firms on out-migration is not statistically significant at conventional levels. However, we

find a significant effect of firms on in-migration. Consistent with theory, higher FDI firms, which increase the local income, attract more people to come and reduce the people migrating. Table 7 shows that an increase in foreign firm revenue per capita of 10% at province level is associated with an increase in the commune level in-migration rate of 0.0035 percentage points. That is equivalent to 0.03% of the total in-migrants.<sup>11</sup> Higher domestic firm revenue also attracts in-migrants.

[*Table 7*]

## 6. Conclusions

Our study of foreign investment in Vietnam indicates positive effects with regard to a number of welfare indicators. At household level, income and expenditure per capita are shown to rise and poverty to fall. At individual level, non-farm employment and wages are shown to rise. And at commune level, in-migration is shown to be higher. For all indicators, although the results are statistically significant, the magnitudes are small in economic terms. Nevertheless, the effects captured are derived from firm revenue per capita at province level and apply broadly to households and firms generally, whether employed by foreign firms or not.

The impact of foreign invested firms on poverty is muted because foreign investment tends to flow not to the rural areas where poor households are concentrated but to more urban and better-off areas. The undesirable consequence of foreign investment may thus be a widening of income disparity between the rural poor and the urban non-farm population.

Vietnam has implemented incentive programs to encourage investors, both foreign and domestic, to take their business to remote and low income areas. These incentives include lower tax rates and support for labor training. Our results show, however, that the impact of these programs on household welfare and poverty has not been great. This can be explained by the fact

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<sup>11</sup>  $0.03\% = 0.00035\% / 1.18\%$ . The denominator is the in-migration rate in 2016 (see Figure 3).

that investors usually require skilled labor but most labor in poor rural areas is in agriculture and lacks the education and skills for modern manufacturing. Thus, education must be the focus for progress to be achieved.



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**Table 1. Poverty rate by rural/urban residence and ethnic group (%)**

	Rural	Urban	Kinh	Minority
2002	35.6 (47.6)	6.6 (23.6)	23.0 (41.5)	69.3 (47.8)
2004	25.0 (42.8)	3.6 (19.6)	13.5 (33.4)	60.7 (49.5)
2006	20.4 (39.7)	3.9 (18.3)	10.3 (29.4)	52.3 (50.0)
2008	18.7 (38.3)	3.3 (18.2)	9.0 (27.9)	50.3 (49.9)
2010	26.9 (44.0)	6.0 (24.1)	12.9 (32.9)	66.3 (48.8)
2012	22.2 (41.5)	5.4 (22.3)	9.9 (29.3)	59.2 (49.7)
2014	18.6 (38.9)	3.8 (19.6)	6.3 (24.7)	57.8 (49.9)
2016	13.6 (33.1)	1.6 (13.4)	3.1 (17.0)	44.6 (48.9)

Note: Poverty rates are computed using VHLSS household data. This table shows the percentage of households whose per capita expenditure is below the poverty line. Standard deviations are in parentheses.

Source: Author estimation.

**Table 2. Share of household income by source (%)**

	Wages	Non-farm	Crops	Livestock	Other agriculture	Other
2002	28.8 (94.2)	17.2 (82.8)	26.0 (78.0)	7.6 (32.8)	6.9 (45.8)	13.5 (59.1)
2004	29.6 (91.2)	17.3 (80.0)	23.3 (74.0)	6.9 (31.3)	6.3 (43.3)	16.6 (63.5)
2006	31.5 (92.1)	17.6 (81.1)	21.6 (71.8)	6.7 (32.0)	5.8 (42.3)	16.7 (64.7)
2008	32.8 (92.4)	17.3 (80.7)	22.2 (73.5)	6.4 (32.6)	5.6 (40.5)	15.8 (62.9)
2010	40.1 (100.0)	18.2 (85.3)	19.0 (70.7)	5.0 (30.0)	4.9 (39.6)	12.7 (56.7)
2012	42.7 (99.0)	17.1 (82.2)	18.0 (69.7)	4.9 (30.3)	4.3 (36.4)	12.9 (54.4)
2014	45.0 (98.5)	17.5 (81.7)	15.9 (65.1)	4.9 (30.6)	4.2 (35.2)	12.4 (54.6)
2016	45.7 (98.4)	17.5 (80.7)	14.1 (60.3)	5.3 (31.8)	4.1 (34.5)	13.3 (56.3)

Note: Income shares are computed using VHLSS household data. Standard deviations are in parentheses.  
Source: Author estimation.

**Table 3. Employment Statistics**

	Employed (%)	Work time (hours per month)	Wage job (%)	Wages (thousand VND/month)	Non-farm employment (%)	Formal job (%)
2002	91.4 (27.4)	161.8 (61.5)	30.8 (48.2)	1952.9 (1736.8)	42.1 (49.0)	n.a.
2004	89.9 (29.2)	158.2 (65.8)	31.7 (45.6)	2590.8 (2202.8)	48.7 (49.8)	n.a.
2006	89.6 (29.6)	161.6 (65.7)	33.3 (46.4)	2848.3 (2479.9)	48.6 (49.8)	n.a.
2008	88.9 (30.6)	161.1 (67.3)	34.5 (46.7)	3188.9 (3334.6)	49.8 (49.9)	n.a.
2010	89.4 (29.4)	154.5 (73.9)	37.6 (47.7)	3738.1 (2807.3)	53.1 (50.0)	15.3 (34.3)
2012	90.4 (28.6)	152.6 (71.1)	39.6 (48.2)	3991.5 (2698.4)	53.3 (50.0)	16.3 (35.4)
2014	89.1 (29.3)	156.8 (71.5)	41.6 (48.5)	4445.1 (2902.7)	56.1 (50.0)	18.8 (36.7)
2016	90.1 (28.9)	156.4 (71.6)	42.8 (49.1)	4919.4 (3474.6)	57.6 (49.8)	19.2 (37.7)

Note: Employment statistics are computed using VHLSS individual data for persons aged 15-65. Wages are in January 2016 prices. Standard deviations are in parentheses.

Source: Author estimation.

**Table 4. Firm employment and revenue by ownership type**

	Employment			Revenue (billion VND)		
	Foreign	Domestic	All	Foreign	Domestic	All
2001	233.4 (404.7)	64.0 (318.2)	66.1 (320.0)	144.7 (342.7)	51.3 (718.8)	52.5 (715.4)
2002	270.9 (1017.8)	59.8 (257.1)	65.0 (302.2)	207.3 (679.9)	55.9 (1122.0)	59.7 (1113.4)
2003	308.7 (955.3)	57.3 (249.5)	63.6 (291.6)	220.8 (688.9)	55.9 (1063.6)	60.0 (1056.2)
2004	335.5 (1392.4)	52.3 (243.1)	59.8 (333.2)	233.8 (819.5)	48.5 (710.1)	53.5 (713.9)
2005	333.1 (1434.6)	43.3 (219.1)	50.6 (316.8)	226.2 (836.3)	42.5 (762.2)	47.1 (764.7)
2006	325.5 (1359.9)	39.6 (343.2)	46.7 (403.3)	243.0 (1203.2)	43.3 (892.8)	48.3 (902.3)
2007	335.8 (1365.1)	34.9 (184.5)	42.5 (287.2)	244.4 (986.7)	41.4 (737.1)	46.5 (745.1)
2008	338.5 (1350.7)	32.0 (239.5)	38.8 (313.9)	233.5 (979.7)	46.0 (968.0)	50.1 (968.7)
2009	319.7 (1385.5)	29.9 (274.6)	36.5 (345.9)	224.4 (1063.0)	38.1 (839.8)	42.4 (846.1)
2010	299.5 (1241.1)	27.6 (315.0)	33.0 (359.4)	257.4 (1259.2)	35.9 (831.6)	40.2 (842.7)
2011	344.2 (1352.6)	25.8 (175.5)	31.8 (279.4)	284.9 (2007.4)	32.3 (748.8)	37.1 (806.2)
2012	344.5 (1478.4)	24.9 (217.8)	31.4 (304.7)	302.7 (3859.7)	30.3 (759.4)	35.8 (932.0)
2013	328.5 (1504.2)	23.5 (196.3)	30.2 (299.7)	310.8 (6109.7)	28.6 (702.8)	34.9 (1145.3)
2014	341.2 (1592.6)	22.3 (185.1)	29.5 (304.9)	318.5 (4856.5)	26.5 (524.5)	33.0 (896.0)
2015	338.8 (1643.7)	21.3 (175.0)	28.4 (304.6)	353.9 (5471.7)	25.7 (438.2)	33.1 (928.4)
2016	318.8 (1527.2)	19.8 (144.1)	26.7 (276.1)	341.1 (5703.9)	25.0 (409.7)	32.3 (958.3)

Note: Employment and revenue means are computed using VEC firm data. Standard deviations are in parentheses.

Sources: Author estimation.

**Table 5. Household welfare outcomes**

	Log income per capita	Log expenditure per capita	Poor household (yes=1)	Income share from wages	Income share from nonfarm production	Income share from other sources
Log foreign firm revenue per capita	0.007*** (0.002)	0.009*** (0.001)	-0.007*** (0.001)	0.002* (0.001)	0.003*** (0.001)	0.001 (0.001)
Lag log foreign firm revenue per capita	0.003** (0.002)	0.004*** (0.001)	0.002** (0.001)	0.001* (0.001)	-0.001* (0.001)	-0.000 (0.001)
Log domestic firm revenue per capita	-0.013 (0.013)	-0.007 (0.010)	-0.001 (0.006)	0.006 (0.007)	0.009 (0.007)	0.002 (0.005)
Lag log domestic firm revenue per capita	0.025** (0.011)	0.014 (0.009)	-0.019*** (0.005)	0.018*** (0.006)	-0.002 (0.006)	0.008* (0.004)
Head male (yes=1)	-0.044*** (0.007)	-0.039*** (0.006)	0.005* (0.003)	-0.034*** (0.004)	0.003 (0.004)	-0.047*** (0.003)
Head age	0.031*** (0.001)	0.031*** (0.001)	-0.014*** (0.001)	-0.003*** (0.001)	0.001** (0.000)	-0.006*** (0.000)
Head age squared	-0.000*** (0.000)	-0.000*** (0.000)	0.000*** (0.000)	0.000 (0.000)	-0.000*** (0.000)	0.000*** (0.000)
Head primary education (yes=1)	0.169*** (0.007)	0.166*** (0.005)	-0.092*** (0.004)	-0.022*** (0.004)	0.029*** (0.003)	-0.004 (0.003)
Head lower-secondary education (yes=1)	0.306*** (0.007)	0.290*** (0.006)	-0.145*** (0.004)	-0.013*** (0.004)	0.041*** (0.004)	-0.005 (0.003)
Head upper-secondary education (yes=1)	0.431*** (0.010)	0.430*** (0.008)	-0.168*** (0.004)	-0.006 (0.006)	0.069*** (0.005)	0.001 (0.004)
Head vocational training (yes=1)	0.596*** (0.009)	0.531*** (0.008)	-0.189*** (0.004)	0.122*** (0.006)	0.024*** (0.005)	-0.002 (0.004)
Head tertiary education (yes=1)	0.871*** (0.011)	0.790*** (0.010)	-0.177*** (0.004)	0.285*** (0.006)	-0.116*** (0.005)	-0.020*** (0.004)
Head ethnic minority (minority=1)	-0.376*** (0.009)	-0.355*** (0.007)	0.305*** (0.006)	-0.043*** (0.005)	-0.113*** (0.003)	0.016*** (0.003)
Head married (yes=1)	0.107*** (0.017)	0.063*** (0.014)	-0.063*** (0.007)	-0.016 (0.010)	0.036*** (0.009)	-0.002 (0.008)
Head widowed (yes=1)	0.015 (0.018)	0.013 (0.015)	-0.046*** (0.008)	0.018* (0.011)	0.040*** (0.009)	-0.038*** (0.008)
Head divorced (yes=1)	-0.036 (0.022)	-0.024 (0.018)	-0.007 (0.009)	0.026* (0.014)	0.034*** (0.011)	0.000 (0.011)
Household size	-0.063*** (0.001)	-0.087*** (0.001)	0.029*** (0.001)	0.027*** (0.001)	0.009*** (0.001)	-0.042*** (0.001)
Urban (yes=1)	0.228*** (0.006)	0.256*** (0.005)	-0.047*** (0.002)	0.076*** (0.004)	0.118*** (0.003)	0.004* (0.002)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	8.306*** (0.095)	8.237*** (0.082)	0.831*** (0.047)	0.100* (0.058)	-0.003 (0.051)	0.297*** (0.038)
Observations	94,666	94,692	94,692	94,687	94,687	94,687
R-squared	0.500	0.652	0.262	0.186	0.094	0.264

Note: Estimations make use of VHLSS household data and VEC firm data aggregated at province level. Robust standard errors are in parentheses. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Author estimations.

**Table 6. Individual welfare outcomes**

Explanatory variables	Currently working (yes=1)	Work time (hours/month)	Non-farm employment (yes=1)	Wages (thousand VND/month)
Log foreign firm revenue per capita	-0.001 (0.001)	-0.004 (0.003)	0.002*** (0.001)	0.009*** (0.002)
Lag log foreign firm revenue per capita	-0.000 (0.000)	0.003 (0.003)	0.002*** (0.001)	-0.003 (0.002)
Log domestic firm revenue per capita	0.014*** (0.004)	0.038 (0.023)	0.013** (0.006)	-0.064*** (0.014)
Lag log domestic firm revenue per capita	-0.004 (0.004)	-0.028 (0.020)	0.012*** (0.005)	0.172*** (0.012)
Gender (male=1)	0.055*** (0.002)	0.339*** (0.008)	0.032*** (0.002)	0.221*** (0.005)
Age	0.029*** (0.001)	0.185*** (0.002)	0.012*** (0.000)	0.056*** (0.002)
Age squared	-0.000*** (0.000)	-0.002*** (0.000)	-0.000*** (0.000)	-0.001*** (0.000)
Ethnic minority (minority=1)	0.041*** (0.002)	0.201*** (0.013)	-0.240*** (0.004)	-0.168*** (0.011)
Primary education	0.030*** (0.002)	0.188*** (0.012)	0.061*** (0.003)	0.142*** (0.008)
Lower-secondary education	0.034*** (0.003)	-0.117*** (0.013)	0.107*** (0.004)	0.220*** (0.009)
Upper-secondary education	-0.031*** (0.004)	-0.746*** (0.018)	0.239*** (0.004)	0.354*** (0.011)
Vocational training	0.011*** (0.003)	0.212*** (0.018)	0.412*** (0.004)	0.521*** (0.010)
Tertiary education	0.017*** (0.004)	0.289*** (0.020)	0.454*** (0.004)	0.851*** (0.010)
Married	0.041*** (0.003)	0.972*** (0.015)	-0.026*** (0.003)	0.053*** (0.007)
Widowed	0.011* (0.006)	0.758*** (0.025)	0.035*** (0.007)	0.005 (0.022)
Divorced	0.014** (0.007)	0.840*** (0.039)	0.067*** (0.009)	0.044** (0.020)
Year fixed effects	Yes	Yes	Yes	Yes
Province fixed effects	Yes	Yes	Yes	Yes
Constant	0.283*** (0.034)	0.165 (0.177)	-0.058 (0.043)	4.756*** (0.115)
Observations	228,882	282,028	222,529	79,096
R-squared	0.112	0.339	0.301	0.456



**Table 7. Migration outcomes**

	In-migration rate (%)	Out-migration rate (%)
Log foreign firm revenue per capita	0.035*** (0.009)	0.013 (0.008)
Lag log foreign firm revenue per capita	-0.024 (0.017)	-0.011 (0.016)
Log domestic firm revenue per capita	0.458*** (0.104)	0.023 (0.095)
Lag log domestic firm revenue per capita	-0.243*** (0.087)	-0.046 (0.085)
Paved road to commune center (yes=1)	0.480*** (0.048)	0.023 (0.081)
Distance to nearest town (km)	0.003 (0.003)	-0.007*** (0.002)
Year fixed effects	Yes	Yes
Province fixed effects	Yes	Yes
Constant	-1.863*** (0.325)	0.282 (0.284)
Observations	17,536	17,536
R-squared	0.026	0.033

Note: Estimations make use of VHLSS commune data and VEC firm data aggregated at province level. Robust standard errors are in parentheses.

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Author estimation.

## APPENDIX

**Table A.1. Sample size of VHLSS and VEC datasets**

	Vietnam Household Living Standard Survey			Vietnam Enterprise Census
	Households	Individuals	Communes	Firms
2001				55,063
2002	29,530	132,376	2,042	61,146
2003				68,109
2004	9,188	40,437	2,181	91,556
2005				113,188
2006	9,189	39,071	2,280	131,975
2007				155,607
2008	9,189	38,253	2,219	202,295
2009				233,234
2010	9,399	36,999	2,199	287,896
2011				339,168
2012	9,399	36,655	2,219	352,091
2013				391,541
2014	9,399	36,077	2,205	415,656
2015				455,296
2016	9,399	35,788	2,191	517,695

**Table A.2. Income and expenditure and poverty rate**

	Income per capita (thousand VND)	Expenditure per capita (thousand VND)	Poverty rate (%)
2002	13,606 (38,206)	10,374 (8,655)	28.8 (44.9)
2004	15,924 (15,306)	11,966 (9,649)	19.5 (39.4)
2006	18,433 (19,048)	14,051 (11,580)	16.0 (36.2)
2008	19,136 (24,210)	14,258 (11,177)	14.5 (34.9)
2010	25,897 (49,256)	25,427 (24,089)	20.7 (40.5)
2012	28,890 (31,551)	26,568 (22,674)	17.2 (37.8)
2014	31,641 (29,978)	28,609 (23,755)	13.5 (35.0)
2016	35,917 (33,364)	32,538 (27,793)	9.8 (29.0)

Note: Statistics are computed based on VHLSS household data. Per capita income and expenditure are in January 2016 prices. Standard deviations are in parentheses.

Source: Author calculation.

**Table A.3. Income and expenditure by urban/rural residence and ethnic group**

	Income per capita (thousand VND)		Expenditure per capita (thousand VND)		Income per capita (thousand VND)		Expenditure per capita (thousand VND)	
	Rural	Urban	Rural	Urban	Kinh	Minority	Kinh	Minority
2002	10733 (11,316)	23,102 (75,616)	7,889 (4,980)	18,586 (12,957)	14,550 (40,960)	7,029 (7,462)	11,091 (8,954)	5,370 (4,188)
2004	12,630 (11,432)	25,399 (21,386)	9,065 (6,032)	20,313 (13,725)	17,053 (15,996)	8,117 (6,731)	12,834 (9,963)	5,963 (4,422)
2006	15,483 (14,887)	26,522 (26,316)	10,773 (6,835)	23,040 (17,044)	19,781 (20,023)	9,818 (8,401)	15,129 (12,023)	7,155 (5,080)
2008	15,862 (21,600)	27,708 (29,214)	11,095 (7,100)	22,540 (16,214)	20,625 (25,691)	9,413 (8,724)	15,326 (11,556)	7,287 (5,289)
2010	21,037 (53,714)	37,412 (33,396)	19,584 (15,867)	39,273 (34,508)	28,351 (53,432)	11,560 (11,880)	27,821 (25,394)	11,442 (8,817)
2012	23,323 (21,141)	42,127 (46,135)	21,653 (15,731)	38,254 (31,245)	31,620 (33,242)	13,145 (14,451)	28,865 (23,500)	13,319 (11,956)
2014	25,128 (25,457)	44,288 (35,497)	22,968 (15,852)	39,561 (33,401)	34,418 (31,231)	14,566 (15,397)	31,105 (24,666)	13,264 (10,311)
2016	28,742 (29,703)	51,256 (36,771)	26,238 (19,433)	46,007 (37,793)	39,505 (34,577)	17,048 (19,568)	35,685 (28,618)	15,987 (15,895)

Note: Statistics are computed based on VHLSS household data. Values are in January 2016 prices. Standard deviations are in parentheses.

Source: Author calculation.

**Table A.4. Employment statistics by urban/rural residence**

	Work time (hours/month)		Wage job (%)		Wages (thousand VND/ month)		Formal job (%)	
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban
2002	154.4 (59.2)	188.2 (63.9)	33.7 (47.1)	52.6 (50.0)	1,426 (1153.8)	3,138 (2347.8)	n.a.	n.a.
2004	147.3 (61.8)	192.2 (69.1)	25.2 (42.6)	52.0 (50.0)	2,078 (1755.6)	3,353 (2660.1)	n.a.	n.a.
2006	150.9 (63.0)	193.3 (65.5)	26.6 (43.4)	52.8 (50.0)	2,318 (2194.0)	3,629 (2748.4)	n.a.	n.a.
2008	149.6 (64.3)	194.8 (66.7)	27.9 (43.9)	53.9 (49.9)	2,558 (2309.6)	4,136 (4413.2)	n.a.	n.a.
2010	141.2 (70.5)	189.6 (73.5)	30.4 (45.2)	56.4 (49.9)	2,938 (1781.8)	4,875 (3708.6)	8.7 (27.1)	32.8 (45.9)
2012	139.8 (68.1)	186.4 (69.2)	32.5 (46.0)	58.3 (49.8)	3,349 (1994.1)	4,942 (3356.7)	9.7 (28.4)	33.7 (46.2)
2014	141.4 (68.9)	190.2 (67.4)	33.7 (46.4)	58.6 (49.8)	3,669 (2305.5)	5,413 (3436.3)	11.2 (30.1)	35.3 (46.6)
2016	142.2 (68.6)	189.9 (68.8)	35.7 (47.3)	59.6 (49.5)	4,162 (2881.1)	5,990 (4064.9)	12.5 (31.8)	35.1 (46.6)

Note: Statistics are calculated based on VHLSS individual data. Wages are in January 2016 prices. Standard deviations are in parentheses.

Source: Author estimations.

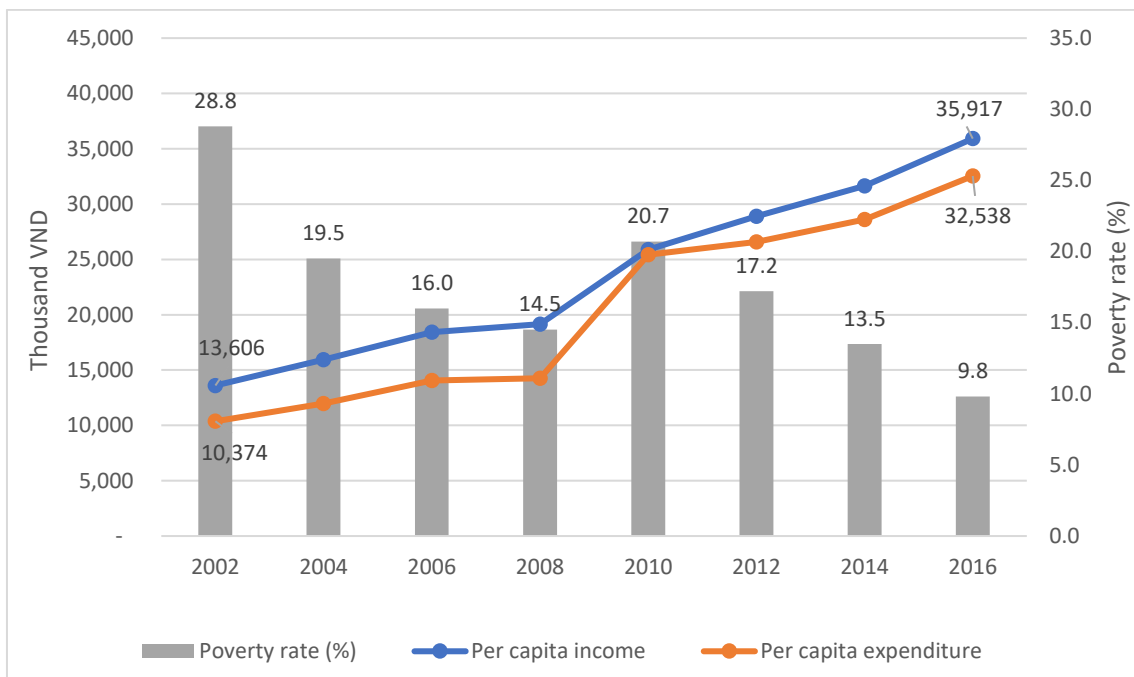
**Table A.5. Employment statistics by ethnicity**

	Work time		Wage job		Wages		Formal job	
	(hours / month)		(%)		(thousand VND/ month)		(%)	
	Kinh	Minority	Kinh	Minority	Kinh	Minority	Kinh	Minority
2002	162.9 (62.8)	153.8 (53.6)	39.4 (48.8)	26.4 (43.9)	2,045 (1778.0)	970 (1078.4)	n.a.	n.a.
2004	160.1 (68.1)	145.0 (52.0)	34.2 (47.0)	13.8 (33.2)	2,622 (2239.3)	2,043 (1637.4)	n.a.	n.a.
2006	164.0 (67.7)	146.1 (53.7)	36.0 (47.7)	15.2 (34.7)	2,900 (2532.3)	2,060 (1667.0)	n.a.	n.a.
2008	163.5 (69.7)	146.2 (53.5)	37.8 (48.2)	13.8 (33.0)	3,232 (3418.4)	2,452 (1867.2)	n.a.	n.a.
2010	159.1 (75.8)	129.2 (60.7)	41.4 (49.0)	16.6 (36.0)	3,818 (2873.5)	2,632 (1834.9)	17.2 (36.5)	4.9 (21.9)
2012	156.7 (73.2)	129.9 (58.2)	43.7 (49.4)	17.5 (36.9)	4,068 (2735.4)	2,954 (2132.1)	18.5 (37.7)	4.4 (21.1)
2014	161.7 (73.4)	131.2 (58.5)	45.5 (49.5)	21.3 (38.7)	4,517 (2948.6)	3,639 (2380.2)	21.0 (38.9)	7.2 (24.1)
2016	161.7 (73.2)	129.6 (59.5)	46.6 (49.8)	23.7 (41.3)	5,038 (3524.0)	3,746 (2908.6)	21.8 (40.1)	6.4 (23.7)

Note: Statistics are computed based on VHLSS individual data. Wages are in January 2016 prices. Standard deviations are in parentheses.

Source: Author estimations.

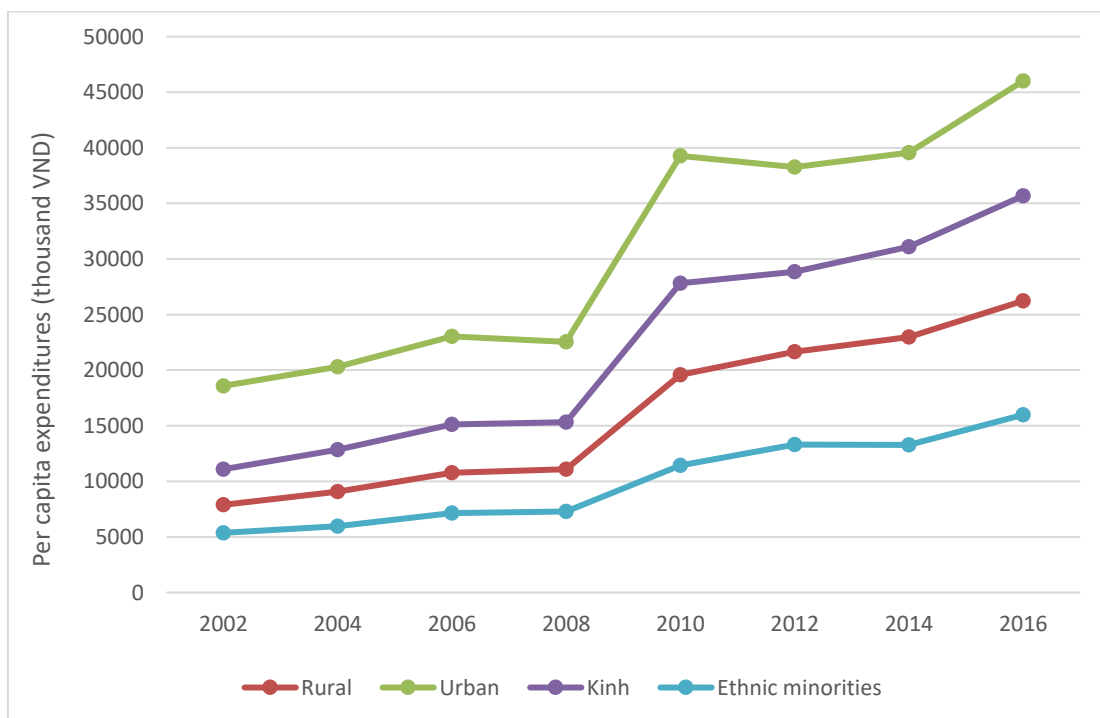
**Figure 1. Income, expenditures, and poverty over time**



Note: Magnitudes are calculated from VHLSS household data. Per capita income and expenditures are in January 2016 prices.

Source: Author calculation.

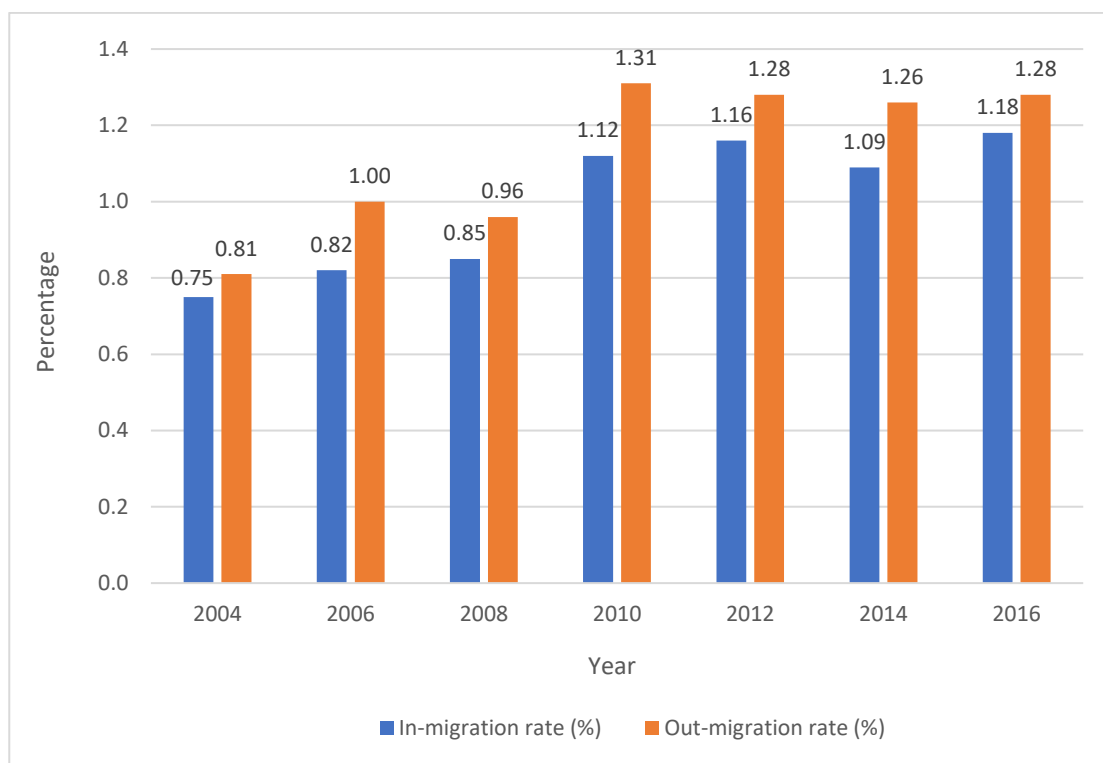
**Figure 2. Per capita expenditures by urban/rural residence and ethnicity**



Note: Magnitudes are calculated from VHLSS household data. Per capita income and expenditures are in January 2016 prices.

Source: Author calculation.

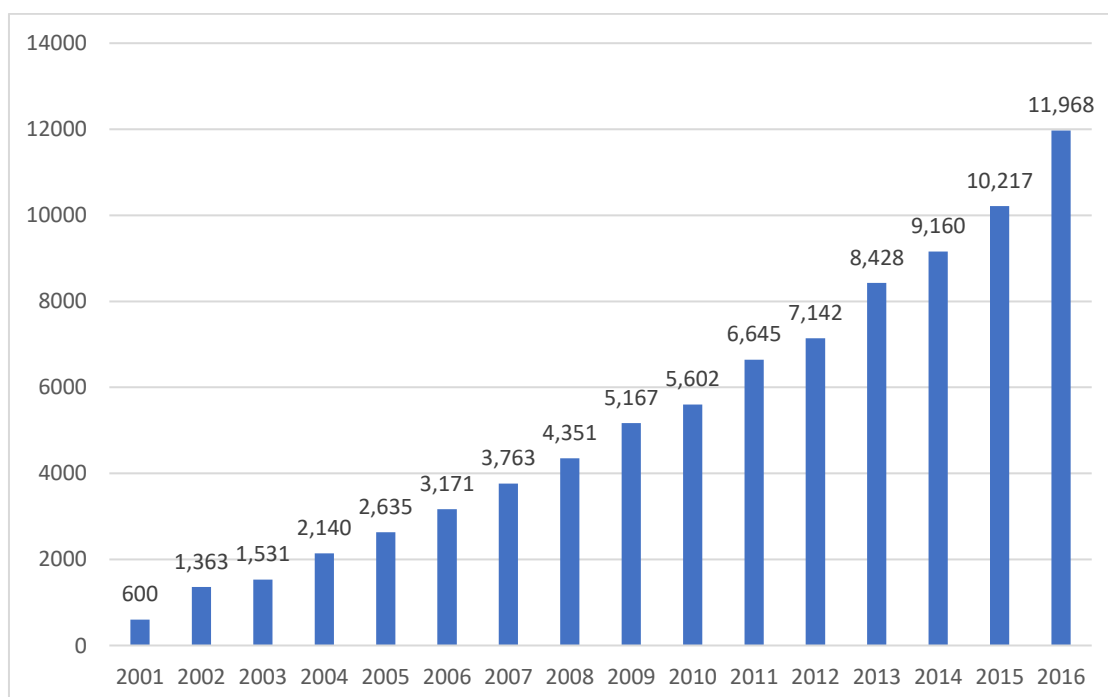
**Figure 3. Rates of in-migration and out-migration at commune level**



Note: Magnitudes are calculated from VHLSS commune data.

Source: Author calculation.

**Figure 4. Number of foreign invested firms**

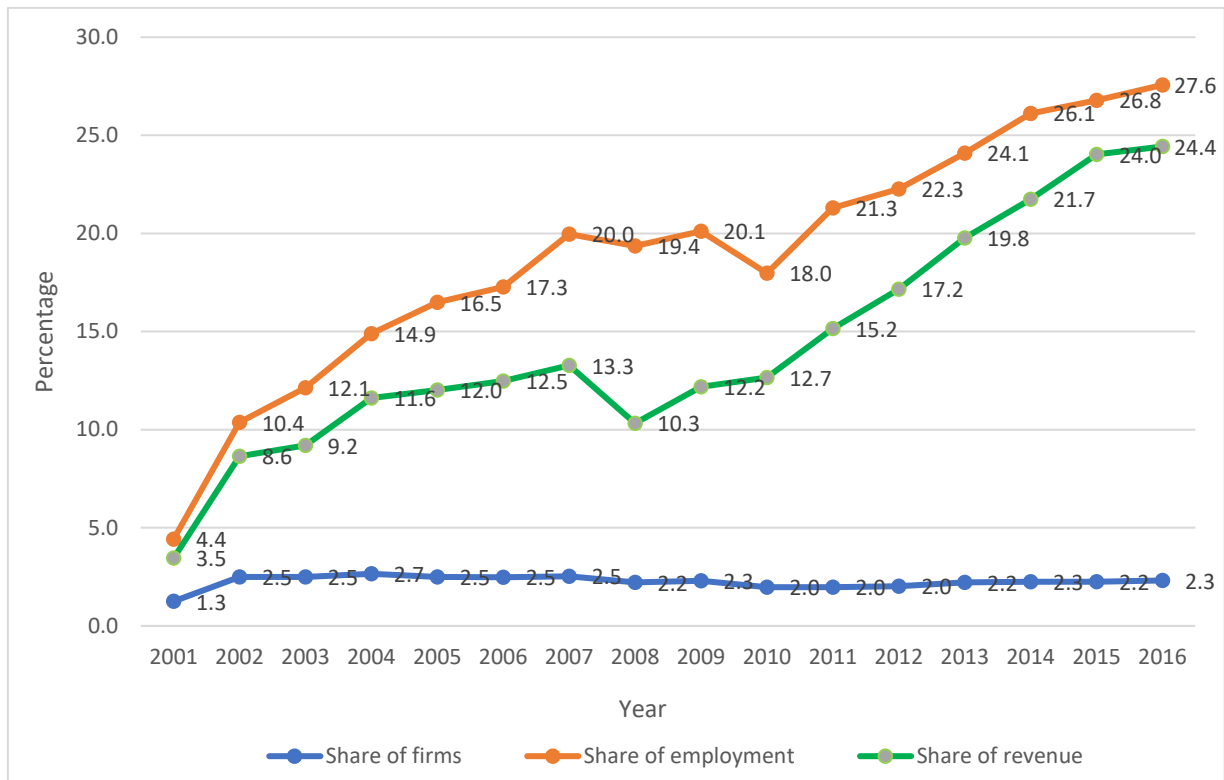


Note: Magnitudes are calculated from VEC firm data.

Source: Author calculation.



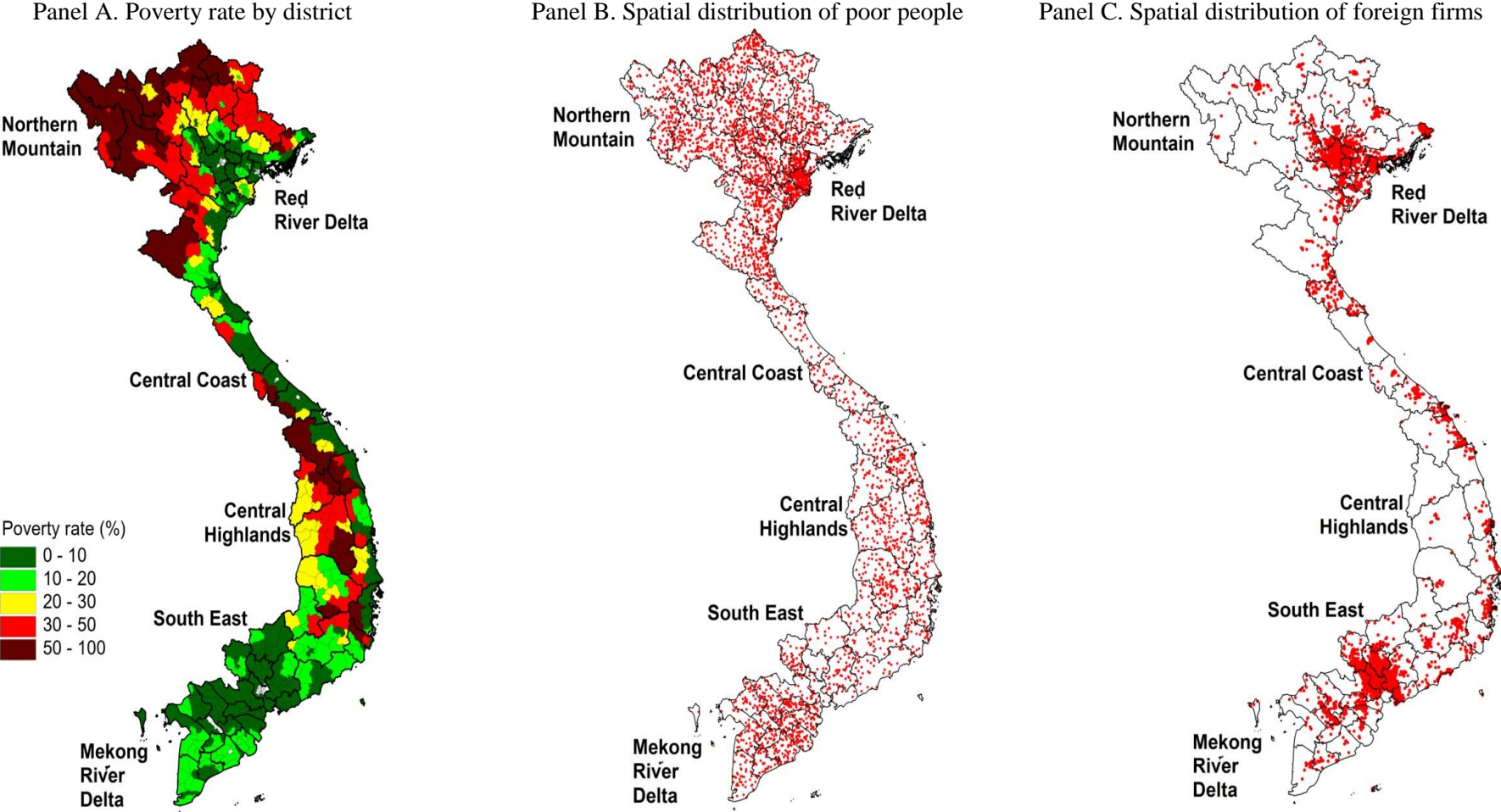
**Figure 5. Shares of foreign invested firms in firm numbers, employment, and revenue**



Note: Magnitudes are calculated from VEC firm data.

Sources: Author calculation.

**Figure 6. Spatial distribution of poverty and foreign firms, 2010**



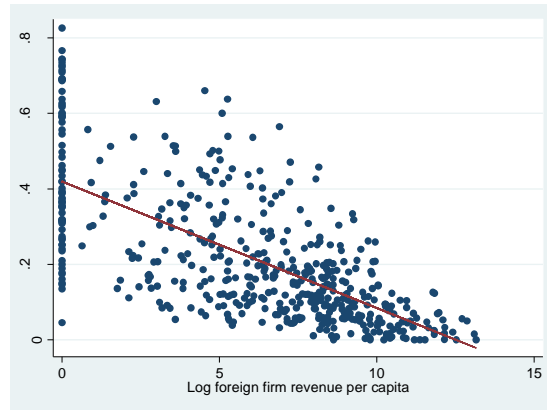
Source: Author construction using firm data from the Vietnam Economic Census and poverty data from Lanjouw et al. (2017).  
 Note: Each dot represents 500 poor households in Panel B and one foreign invested firm in Panel C.

**Figure 7. Foreign firm revenue, household expenditures, and poverty rate by province, 2002-2016**

Panel A. Household expenditures vs foreign firm revenue



Panel B. Poverty rate vs foreign firm revenue



Note: Magnitudes are at province level from VHLSS and VEC data.

Source: Author calculation.