Impacts of Economic Integration on Living Standards and Poverty Reduction of Rural Households

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Abstract

Economic integration has been accelerated in Vietnam as in other East Asia countries with the aim to reduce poverty and inequality. However, challenges including widening income gap between urban and rural and between households have emerged. This article examines the effect of economic integration on poverty and inequality of rural households in Vietnam. Corrected for fixed effects and other potential bias we find that the effect of economic integration on household welfare is minimal and statistically insignificant. Our study suggests policy agendas will require a redistributive household and community level component in addition to macroeconomic growth to effectively reduce poverty.

Keywords: Economic integration, poverty, inequality, Vietnam

JEL codes: F14, F15, I31

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I. Introduction

While trade liberalization is now widely accepted as an engine of growth, the impact of such growth on poverty and equality is still under debate (Lee and Vivarelli (2006); Meschi and Vivarelli (2009)). Poverty reduction is achieved if economic growth does not have strong systematic effects on income distribution (see evidence in McCulloch, Baulch and Cherel-Robson (2001); Ravallion (2001); Ravallion and Datt (2002); Dollar and Kraay (2004)). Indeed, if international economic integration and trade liberalization provide limited employment opportunities for poor and/or unskilled labor, poverty may increase (see Lundberg and Squire (2003); Cimoli and Katz (2003); Bhagwati and Srinivasan (2002)).

This paper analyses the impact of international economic integration on poverty and inequality for rural households in Vietnam at household, district and provincial levels. We investigate the effect of integration on household income and consumption, and measures of poverty and inequality. Although there is a literature on the impact of economic integration on household income and expenditure (Dollar and Kraay (2002)), the effect on poverty and income inequality is less well understood – this article contributes to that gap.

Vietnam is a populous country (89 million residents in 2012) with a high poverty rate, and a predominantly rural population (more than 70 percent). Global poverty reduction relies on improving economic prospects in countries like Vietnam, and focus on economic integration and growth (Chandy and Gertz (2011)). Existing research examines the effect of economic integration on growth and poverty using aggregate numbers. Defining the poor as having the mean income of the poorest quintile, Dollar and Kraay (2002) reject the hypothesis of a negative impact of trade openness on the income of the poor in 92 countries over the period from 1950 to 1999. Using industry-level data, Friedrich, Schnabel and

Zettelmeyer (2013) conclude that the European transition regions benefited from financial integration in terms of economic growth.

The work in this paper examines the impact of trade liberalization and economic growth using household and community level data. Using unique data from the Vietnamese household surveys from 2006-2010, we show that at the micro level the correlation between levels of economic integration and household income, expenditure and poverty are small and statistically insignificant. This result has important implications for policy makers. Whilst economic growth and integration may be effective at an aggregate level, to assure improvements for individual households and communities policy needs also to consider the distributive effects

The remainder of this article proceeds as follows. Section II summarizes the data. Section III describes the economic integration and poverty situation in Vietnam. The methodological approach employed in this study is presented in Section IV. Section V reports our empirical results and Section VI concludes.

II. Data

This article uses three Vietnam Household Living Standard Surveys (VHLSS) in 2006, 2008, and 2010 to measure the welfare and characteristics of Vietnamese households. 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 VHLSS 2006 and 2008 includes 9,189 households in as representative of the Vietnamese population based on the 1999 population census. In 2010 the VHLSS covers 9,402 households sampled from the population frame of the 2009 population census. Since there is no direct link between the VHLSS 2010 and previous generations of survey, we generate panel data using only the VHLSS in 2006 and 2008 (see World Bank (2013) for further discussion of the

surveys). Information is collected through face-to-face interview with the household heads, household members and key commune officials and includes information on demography, employment, labor force participation, education, health, income, expenditure, housing, fixed assets and durable goods, and involvement in poverty alleviation programs, general economic conditions, agricultural production, local infrastructure and transportation and social problems.

We also employ the Vietnam Enterprise Census (VEC) in the same period to evaluate the level of economic integration. The VCE, conducted annually since 2000 by the Vietnam Statistical Office (GSO), provides information on demographic data of firms, firm ownership, business activities, employment, income of employment, assets, capital, business performance, revenue, profit, detailed information for each production sector. The VEC contains all registered enterprises in Vietnam[5].

Finally we use the data from the Rural, Agricultural and Fishery Census (RAFC) in 2006 and 2011 to calculate poverty and inequality indices for each district in the sample. The scope, content, and method of the census follow the recommendation of the Food and Agriculture Organization (FAO). The RAFC is conducted every 5 years, beginning in 1994. These surveys were conducted all over the country with a sample of 75000 households in rural area selected from the population census[6].

We measure the degree of poverty using three indices developed by Foster *et al.* (1984). These indices can be written in their general form as follows:

$$P_{\alpha} = \frac{1}{n} \sum_{i=1}^{q} \left[\frac{z - Y_i}{z} \right]^{\alpha}, \tag{2}$$

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[5] The number of enterprises in 2006, 2008, and 2010 surveys are 2131 975, 205 689, and 287 896 firms, respectively.
[6] The sample accounts for 0.5 percent of the total rural households in Vietnam.

where Y_i denotes a welfare indicator for person i, z is the poverty line, n is the number of people in the sample, q is the total number of poor people, and α is a measure of inequality aversion. Different values of α provide different indices. When $\alpha = 0$, the index measures the proportion of people who live under the poverty line (headcount index); when $\alpha = 1$, the index represents the depth of poverty (poverty gap index); and when $\alpha = 2$, the index characterizes square poverty gap (poverty severity index). Following the literature, we employ per capita expenditure as a proxy for welfare (Razavi (1998); Van den Berg and Cuong (2011); Bui, Dungey, Nguyen and Pham (2014))

Income inequality is measured by the three most common indices: Gini, Theil L, and Theil T. The Gini coefficient, which is based on the Lorenz curve, is the most widely used to measure inequality due to its straight forward calculation, flexibility across different population groups and independence from sample size and scale of the economy. The Gini coefficient is estimated by the difference between the distribution of income and the uniform distribution that represents equality.

$$G = \frac{n+1}{n-1} - \frac{2}{n(n-1)\bar{\bar{Y}}} \sum_{i=1}^{n} \rho_i Y_i \ , \tag{3}$$

where ρ_i is the rank of individual i by their income. ρ_i is equal to 1 for the richest and increase for individuals with lower income. The Gini coefficient lies in the range of 0 to 1, with a higher Gini coefficient representing greater income inequality

III. International integration and poverty in Vietnam

Poverty in Vietnam

For each of the urban and rural areas in the sample, we estimate the proportion of households who are living under the poverty line from 2002 to 2010[7]. The results are presented in Fig. 1, which shows that Vietnam achieved great success in reducing poverty over the period. The percentage of poor households in both rural and urban areas falls dramatically over the sample – with a slight increase in 2010 due to the global financial crisis which began in 2009. Poor households are considerably more prevalent in rural areas than in urban areas, as indicated in the figure.
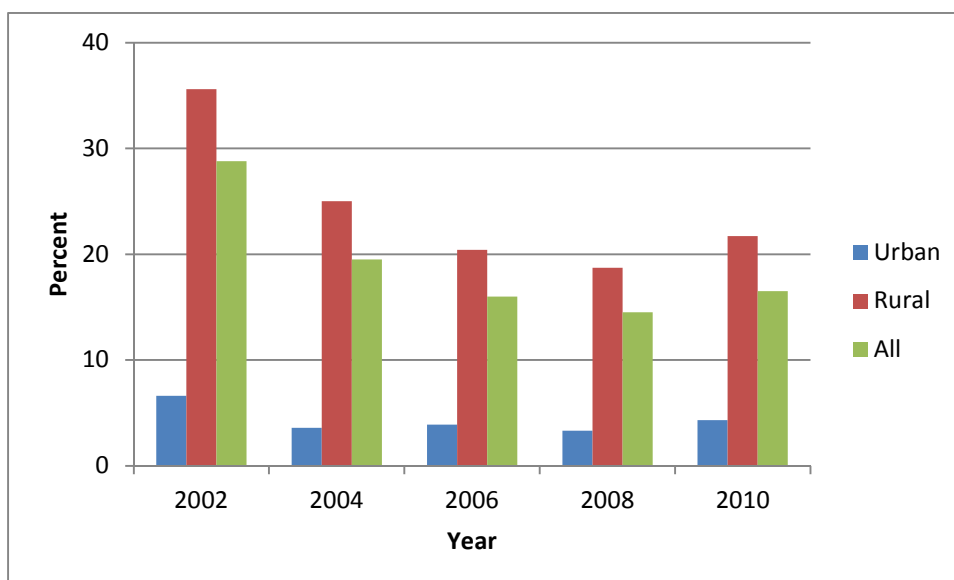
Fig. 1. Percentage of poor household

Table 1 provides household poverty measures using poverty gap and poverty severity indices. The poverty gap index measures how far households are from the poverty line, and shows a decline from 8.7 in 2002 to 4.6 in 2008 in rural areas and then a slight increase to 5.7 in 2010. Poverty gaps in the rural areas are some 6 to 9 times higher than those of urban areas. The poverty severity index, the weighted sum of poverty gaps, provides a similar picture.

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[7]Following the classification of the GSO and the World Bank, we define poor households as those that have per capita expenditure below the expenditure poverty line of VND 3335 thousand (USD 200) per year

Table 1.Poverty indicators of household in 2002-2010

	2002	2004	2006	2008	2010	Changes 2010/2002
Poverty gap index						
Urban area	1.3	0.7	0.8	0.5	1.0	-0.3
Rural area	8.7	6.1	4.9	4.6	5.7	-2.9
Overall	6.9	4.7	3.8	3.5	4.3	-2.6
Poverty severity index						
Urban area	0.4	0.2	0.2	0.1	0.3	-0.1
Rural area	3.0	2.2	1.8	1.7	2.2	-0.8
Overall	2.4	1.7	1.4	1.2	1.7	-0.8

Source: Author's estimation from the 2002-2010 VHLSS.

The distribution of poor households by regions is presented in Table 2 highlighting the variation in poverty rates across the eight regions. Poverty rates in mountainous areas are much higher than those in the deltas with the greatest concentration of poverty in the North West of the country. Table 2 also shows that the drop in the poverty rate recorded in aggregate is reflected in all regions over the sample period.

Table 2: Percentage of poor household by regions

Regions	2002	2004	2006	2008	2010	Changes 2002-2010
Red River Delta	22.4	12.1	8.8	8.1	7.6	-14.8
Northeast	38.4	29.4	25.0	24.3	29.6	-8.9
Northwest	68.0	58.6	49.0	45.7	50.2	-17.8
North Central Coast	43.9	31.9	29.1	22.6	22.9	-21.1
South Central Coast	25.2	19.0	12.6	13.7	14.6	-10.5
Central Highlands	51.8	33.1	28.6	24.1	24.5	-27.3
Southeast	10.5	5.4	5.8	3.5	8.0	-2.5
Mekong River Delta	23.4	15.9	10.3	12.3	15.7	-7.7
All regions	28.8	19.5	16.0	14.5	16.5	-12.3

Source: Authors' estimation from the 2002-2010 VHLSS.

Table 3 presents the correspondence between type/sector of employment of the household head and poverty rate. More than 40 percent of households employed in the agricultural sector are poor, considerably higher than in other sectors. Households with

additional members working in the agricultural sector have a higher probability of being in poverty.

Table 3: Poverty rate by occupation

	2002	2004	2006	2008	2010	Changes 2002-2010
Emp sector of the HH head						
Self employed	33.2	23.0	18.9	17.1	20.1	-13.1
State sectors	6.6	4.7	2.7	3.4	7.5	1.0
Private enterprises	7.2	6.1	3.2	3.2	4.9	-2.4
Unemployed	21.6	14.9	12.3	11.3	10.4	-11.2
Emp type of the HH head						
Management	10.4	6.6	3.6	4.3	9.9	-0.4
Professional staff	3.0	1.1	0.7	2.1	4.1	1.1
Secretary	7.0	3.8	3.5	3.4	7.0	0.0
Agriculture	40.9	29.5	25.1	23.1	27.6	-13.3
Skilled labor	13.2	9.6	8.2	6.0	8.5	-4.8
Unskilled labor	19.1	11.5	7.5	7.9	12.7	-6.4
Unemployed	21.6	14.9	12.3	11.3	10.4	-11.2
No of farmers in the HH						
0	8.1	4.8	4.0	4.5	8.7	0.6
1	24.2	14.8	11.5	11.1	15.0	-9.2
2	41.3	24.2	20.0	21.2	24.7	-16.6
3	44.0	24.2	20.3	28.8	32.4	-11.5
4	53.0	37.1	36.1	40.5	52.7	-0.3
Total	28.8	19.5	16.0	14.5	16.5	-12.3

Source: Author's estimation from the 2002-2010 VHLSS.

Table 4 compares the composition of income between poor and non-poor households. The income of poor households is mainly sourced from agricultural activities, especially livestock production. While income from agricultural activities contributes 51.2 percent of household income for poor households it only accounts for 29.3 percent of total income for non-poor households in 2010. Between 2006 and 2008 the dependence of the poor on agricultural income increased.

Table 4: Composition of household income

Sources of income	2006		2010	
	Non poor	Poor	Non poor	Poor
Livestock production	15.3	30.0	18.6	32.9
Cultivation	4.3	6.9	6.3	8.4
Fishery and other agricultural activities	3.4	8.9	4.4	9.9
Non-farm production	19.8	6.8	19.1	5.0
Salary	41.4	33.0	30.5	28.6
Money granted from other people	9.1	8.0	11.3	9.1
Others	6.7	6.4	9.7	6.1

Source: Authors' estimation from the 2006 and 2010 VHLSS.

Inequality in expenditure among household is presented in table 5. Inequality among households, measured by the Gini coefficient, inter-quartile and inter-decile ratios, is stable during the period. Differences in expenditure in urban areas are much higher than those in rural areas.

Table 5: Deviation of consumption of households

Year	Inter-quartile (P75/P25)			Inter-decile (P90/P10)			Gini coefficient		
	Urban	Rural	All	Urban	Rural	All	Urban	Rural	All
2002	2.44	1.89	2.23	5.38	3.48	4.88	35.26	28.14	37.03
2004	2.26	1.99	2.33	4.85	3.75	5.12	33.17	29.46	36.98
2006	2.15	2.02	2.33	4.56	3.95	4.91	32.92	30.17	35.80
2008	2.25	1.94	2.23	4.68	3.99	4.80	34.66	30.53	35.57
2010	2.19	2.06	2.26	4.47	4.09	4.88	35.77	30.71	36.27

Source: Authors' estimation from the 2006 and 2010 VHLSS.

Note: the inter-quartile (P75/P25) and inter-decile (P90/P10) ratios refer to consumption – inter-quartile and consumption-inter-decile, respectively.

International integration of the Vietnam economy

Since the 1980s, Vietnam has increasingly engaged in international economic integration, marked by the approval of laws allowing foreign investment in 1987, and since allowing a large international flow of foreign investment. Figure 2 illustrates the upward trend both in term of the number of Foreign Direct Investment (FDI) projects and implemented capital. FDI increased sharply during 2005-2008 period, peaking at USD 11.5

billion in 2008. However, since the global financial crisis, FDI growth has not continued at earlier rates.
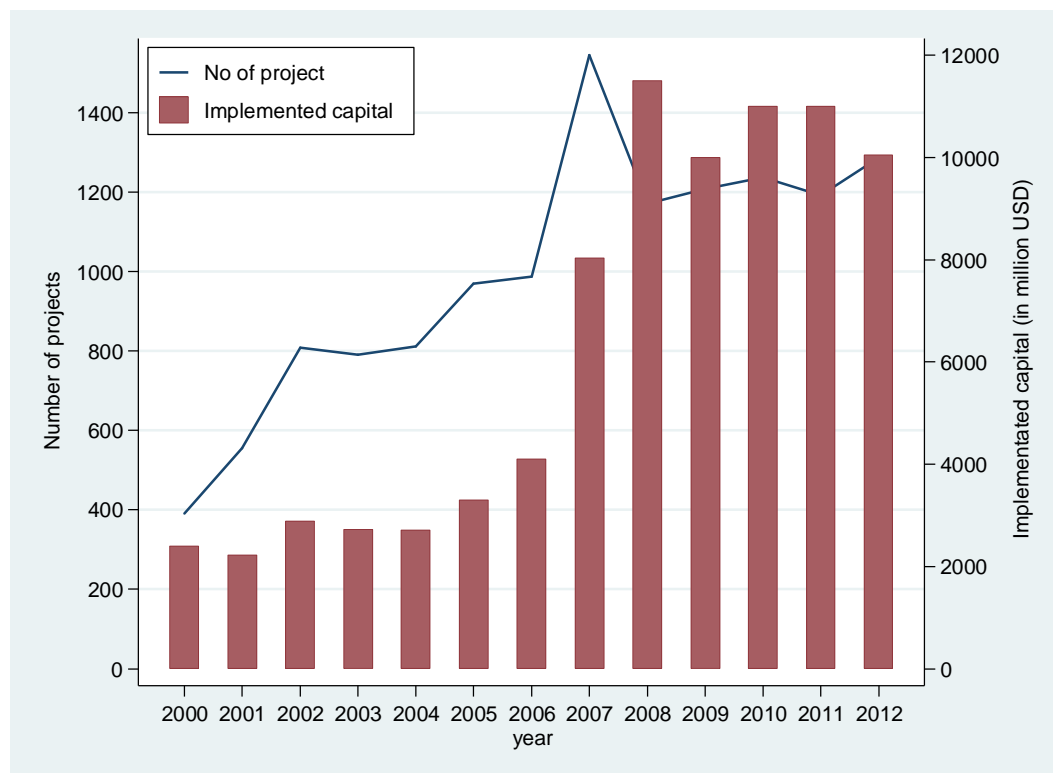
Fig. 2.Number of Projects and implemented capital of FDI in Vietnam

The number of FDI enterprises in Vietnam increase during the period of 2000-2011 as shown in Figure 3; in 2011 there were 9,384 such enterprises – 6 times higher than in 2000.. However, with increasing growth of domestic economies the, the percentage of FDI enterprises in the economy has decreased slightly during the period.
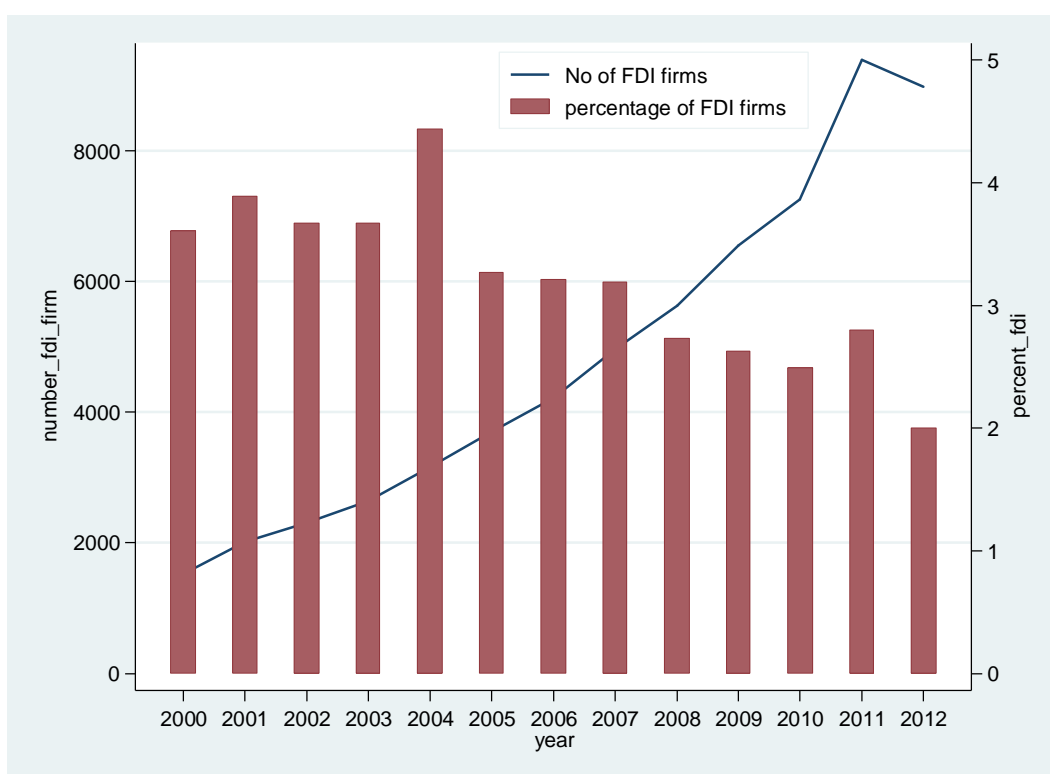
Fig. 3. Number and percentage of FDI firms in Vietnam

An alternative measure of economic integration relies on the share of enterprises whose business are related to the globalization process. We first measure the level of economic integration by the share of foreign related firms which include FDI firms and/or firms that have export/import activities. We then extend the definition of firms to those that operate in the tradable sectors[8]. Table 6 reports the number and percentage of integrated enterprises over total enterprises during the period. The number of foreign related enterprises and firms in tradable sectors increases sharply during the sample period, however, the percentage of these enterprises in comparison to total enterprises in Vietnam declines due to a mass increase in small and medium enterprises during the sample period. The same trend can be observed using a broader definition of integrated enterprises. Finally, the number of firms in the

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[8]Tradable sector includes firms, which are either export oriented or import substitution. Most of them are in agriculture, mining, and manufacturing industries (see Oostendorp and Doan (2013))

tradable sectors is highly correlated to the contribution of revenue of these firms within districts (see Figure A1 in the appendix).

Table 6: Share of foreign related enterprises

Type of enterprise	2006		2008		2010	
	Number	Percent	Number	Percent	Number	Percent
Foreign Direct Investment	4,220	3.26	5,626	2.74	7,254	2.52
Export/import related	7,665	5.92	6,842	3.33	7,635	2.65
Foreign related	10,207	7.89	10,492	5.10	11,982	4.16
Tradable sector	32,252	24.93	52,154	25.36	57,838	20.09

Source: Authors' estimation from the Enterprise Census in 2006, 2008 and 2010.

Notes: Foreign related enterprises are FDI and/or Export/import related enterprises.

Poverty and international economics integration in Vietnam

Figure 5 compares levels of household poverty (measured by the density of poor households, left panel) and the level of economic integration (measured by the density of foreign related enterprises, right panel) in Vietnam. With the exception of the high density of poor households in the Red River Delta region, poor households are scattered evenly across the regions, while the numbers of foreign related enterprises are higher in the Red River Delta, the North Central Coast and the South East regions.
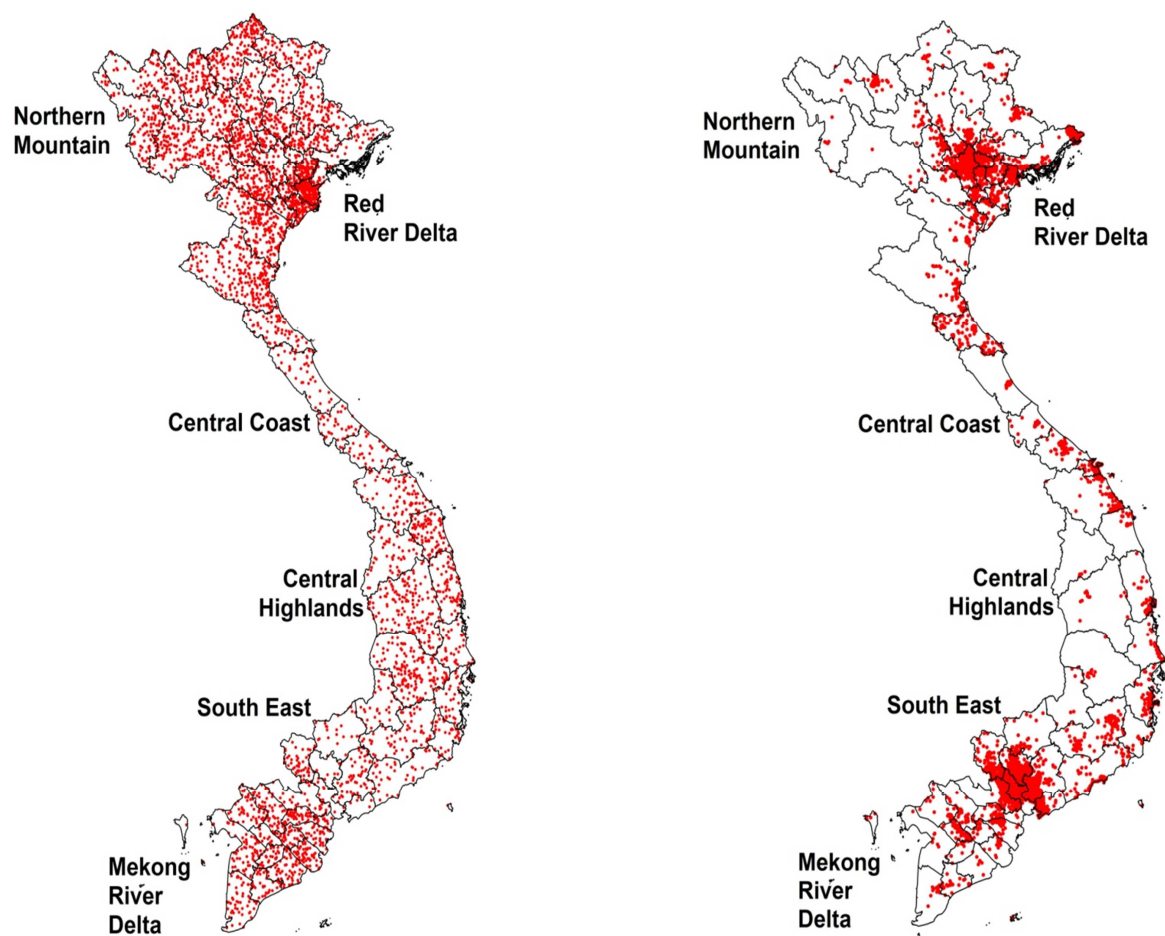
Source: Author's estimate from VHLSS 2010 and VES 2011

Note: each dot equals to 500 poor households (left panel) and one foreign related firm (right panel), respectively.

Fig. 4. Distribution of poor household and foreign related enterprises

Figure 5 presents the poverty rate (left panel) and the share of revenue from foreign related enterprises (right panel) at district level. The figure suggests a low correlation between poverty rate and the level of economic integration within districts.

Fig. 5. Poverty rate and share of revenue of foreign related enterprises at district level

To formalize these observations we turn to regression analysis in the next section.

IV. Methodology

We employ a standard model of household income and consumption with control variables for the level of economic integration in the district where the household resides (for standard income/consumption models see (Glewwe (1991)).The (logarithm) of household income/consumption can be written as follows.

$$Y_{ijt} = \beta_0 + X_{ijt}\beta_1 + H_{jt}\beta_2 + G_t\beta_3 + u_j + v_{ij} + \varepsilon_{ijt}, \qquad (1)$$

where, Y_{ij} is the welfare variable of household i in district j in year t; X_{ijt} is a vector of household and community control variables, which include household characteristics and geographical location (The summary statistics of the control variables are presented in the appendix -Table A.1). H_{jt} is vector of variables representing the level of economic integration in district j in year t; G_t is year t dummy variable, u_j is a time invariant unobservable of characteristics of district j; v_{jt} is a time varying unobservable representing the characteristics of district j, π_{ij} is a time invariant unobservable representing the characteristics of households i in district j; and ε_{ijt} is a normally distributed i.i.d. error term.

We propose two potential measures of the economic integration at district level. Households in areas with more foreign related enterprises have more opportunities to export and to consume import substitution goods. These foreign related enterprises also generate non-farm jobs for households in the region. To obtain data at a district level we first measure the percentage of revenue from foreign related enterprises compared with overall enterprise in the district. This simple ratio reflects the openness of the district to attracting international capital inflow. We also implement a broader definition of foreign related enterprises by including those which operate in export oriented and import substitution sectors (tradable sectors) in our revenue share measure, based on the 2 digit Vietnamese industrial codes, also used by Oostendorp and Doan (2013).

To evaluate the impact of economic integration on various household welfare measures, we use different Y_{ijt} variables including dummy variable for poor household, (log of) income, expenditure, and changes in compositions of household income.

In Equation 3, unobservable variables (including both household and district characteristics) may be correlated with economic integration (H_{jt}) resulting in biased coefficient estimates. We employ fixed-effects regressions to minimize the impact of time invariant unobservable variables (u_j and π_{ij}) that may correlate to the level of economic integration.

We utilize a linear model to measure the impact of economic integration on poverty. Specifically, we regress various poverty and inequality measures on a proxy variable for economic integration after controlling for year dummy variable.

$$I_{jt} = \beta_0 + H_{jt}\beta_1 + G_t\beta_2 + \varepsilon_{jt} \qquad\qquad (4)$$

Where I_{jt} is the poverty/inequality indices of district j in year t; H_{jt} is a proxy for the level of economic integration in the district; G_t is year t dummy variable; and ε_{jt} is the error term.

V. Estimation results

Impacts of economic integration on household income and expenditure

The effects of economic integration on household income and expenditure during the 2006- 2010 period are reported in Table 7. Because the VHLSS 2010 are not connected to the VHLSS 2006 and 2008 we are unable to use household fixed-effects estimation. Thus, we use district fixed-effects to remove time invariant unobservable factors at the district level. Table 7 incorporates both measures of economic integration (the percentage of revenue of foreign related and tradable enterprises compare to total revenues of enterprises in the district). The effects of economic integration on household income and expenditure of the rural household, after controlling for the district fixed effects, are small and statistically insignificant. Economic integration has an insignificant impact on the changes in the composition of rural household income.

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Since the share of revenue of foreign related enterprises may be correlated to that of tradable enterprises, we estimate two different models each of which includes only one measure of the integration. The results of these regressions are reported in the Appendix-Tables A.2 and A.3. Consistent with the findings reported in Table 7, economic integration has no significant impact on rural household welfare or their composition of income.

Table 7: Household welfare and the economics integration

Explanatory variable	Poor household	Log (expenditure)	Log (income)	Deposits/ total income	Salary / total income	Non-farm income/ total income
% revenue of foreign related enterprises	0.0537	0.0392	-0.0684	-0.0145	0.0268	0.0235
	(0.0519)	(0.0606)	(0.0649)	(0.0224)	(0.0300)	(0.0255)
% revenue of tradable enterprises	-0.0148	-0.0392	0.0113	0.0084	-0.0157	0.0053
	(0.0411)	(0.0490)	(0.0580)	(0.0194)	(0.0252)	(0.0208)
Household size	0.0237***	-0.0522***	-0.0422***	-0.0254***	0.0148***	0.0017
	(0.0020)	(0.0024)	(0.0033)	(0.0011)	(0.0020)	(0.0015)
% of children below 15	0.3095***	-0.5992***	-0.6426***	0.0121	-0.0147	0.0851***
	(0.0171)	(0.0180)	(0.0238)	(0.0078)	(0.0141)	(0.0115)
% of old member more than 60	0.1154***	-0.2170***	-0.2781***	0.2536***	-0.2145***	-0.0658***
	(0.0134)	(0.0179)	(0.0223)	(0.0102)	(0.0106)	(0.0082)
Head primary school degree	-0.1013***	0.1525***	0.1688***	-0.0117***	-0.0374***	0.0316***
	(0.0089)	(0.0096)	(0.0126)	(0.0041)	(0.0068)	(0.0054)
Head lower-secondary degree	-0.1788***	0.2785***	0.3121***	-0.0064	-0.0458***	0.0519***
	(0.0100)	(0.0105)	(0.0137)	(0.0043)	(0.0084)	(0.0066)
Head upper-secondary degree	-0.2107***	0.3824***	0.4233***	-0.0134**	-0.0347***	0.0928***
	(0.0127)	(0.0162)	(0.0217)	(0.0062)	(0.0121)	(0.0109)
Head with technical degree	-0.2300***	0.5075***	0.6116***	-0.0007	0.0396***	0.0764***
	(0.0114)	(0.0155)	(0.0198)	(0.0066)	(0.0120)	(0.0090)
Head with tertiary degree	-0.2622***	0.7344***	0.8872***	-0.0352***	0.2873***	-0.0359***
	(0.0138)	(0.0247)	(0.0360)	(0.0128)	(0.0210)	(0.0122)
Head is ethnic minority (yes=1)	0.2442***	-0.3313***	-0.3000***	-0.0096**	-0.0107	-0.0756***
	(0.0185)	(0.0225)	(0.0237)	(0.0047)	(0.0143)	(0.0079)
Year dummy (2008=1)	-0.0020	0.2721***	0.2432***	0.0628***	0.0139***	-0.0068
	(0.0075)	(0.0100)	(0.0112)	(0.0040)	(0.0051)	(0.0045)
Year dummy (2010=1)	0.1021***	0.7926***	0.6532***	-0.0236***	0.0829***	0.0057
	(0.0095)	(0.0143)	(0.0147)	(0.0038)	(0.0068)	(0.0058)
Constant	0.0644***	8.5882***	8.8345***	0.1871***	0.2500***	0.0885***
	(0.0190)	(0.0231)	(0.0270)	(0.0101)	(0.0140)	(0.0112)
Observations	19866	19866	19864	19866	19866	19866
R-squared	0.31	0.61	0.48	0.28	0.19	0.13

Source: Authors' estimation from VHLSS and VEC in 2006, 2008, and 2010.

Notes: District fixed-effect estimation

Figures in brackets are robust SEs.

* significant at 10%; ** significant at 5%; *** significant at 1%.

As robustness check we implement Equation (1) with a smaller set of control variables for household welfare (appendix- Tables A.4 and A.6); provincial fixed effects (appendix- Tables A.7 and A.8); and household fixed effects (appendix- Table A.9). The results of these regressions are in line with our findings in Table 7, confirming that economic integration has no statistical impact on rural household income/ expenditure or the composition of income.

Finally to see if the impact of economic integration varies with household characteristics, we add the interaction variables of the integration and some of household characteristics. The regression results (presented in the appendix-Table A.10) indicate that there are no significantly different impacts of the integration amongst the demographic location and level of education of household. However, the interaction variable between integration and agricultural land is negative and statistically significant. This implies that households with more agricultural land tend to benefit less from economic integration, reflecting that the income of households with lesser or no agricultural land depend mainly on non-agricultural activities.

Impacts of economic integration on poverty and inequality

Table 8 reports the regression results using Equation (4). Our results show that, after controlling for district fixed effects, the impact of economic integration on poverty and inequality are small and insignificant. The results indicate that economic growth from economic integration does not have a strong effect on the distribution of income amongst households.

Table 8: Effect of economic integration on poverty and inequality

Explanatory variable	log (Mean expenditure)	Poverty rate (%)	Poverty gap	Poverty gap square	Gini
% revenue of foreign related enterprises	-0.0495	0.2635	0.4048	0.2654	-0.0569
	(0.0472)	(1.2443)	(0.4579)	(0.2452)	(0.4164)
Year dummy variable (2011=1)	1.1069***	-6.6269***	-1.6055***	-0.5030***	1.6431***
	(0.0064)	(0.3341)	(0.1300)	(0.0680)	(0.1163)
Constant	8.3220***	26.3388***	6.8244***	2.5505***	25.4080***
	(0.0045)	(0.2426)	(0.0887)	(0.0477)	(0.0775)
Number of observation	1240	1240	1240	1240	1240
Number of district	646	646	646	646	646
R square	0.98	0.40	0.21	0.09	0.26

Source: Authors' estimation from VHLSS and RAFC in 2006 and 2011.

Notes:　* significant at 10%; ** significant at 5%; *** significant at 1%.

　　　　Figures in brackets are robust SEs. District fixed-effect estimation

VI. Conclusion

Our results show that the effect economic integration on poverty alleviation during the 2006-2010 in Vietnam is small and insignificant. These results are partly explained by the concentration of poor households in rural areas which are not directly involved in or benefiting from international economic integration. Thus, policy agendas to reduce poverty will require a redistributive household and community level component in addition to macroeconomic growth in order to effectively reduce the poverty rate. The consequence of not addressing the distributive effects of poverty reduction programs based on economic integration and growth will be growing inequality between the rural (agricultural) poor and better urban outcomes.

Like in many developing countries, in Vietnam investors especially foreign investors who invest in remote and low income areas receive lots of support from the government including lower tax rates, better access fund for labor training, etc. The purpose of these support aim at improving household living standard in the region. However, our results show a minimal impact of the integration on household income. This can be explained as the integrated

companies usually require skill labor meanwhile most of the labor force in rural areas are uneducated. To increase household income and reduce rural-urban immigration, the government should focus on education and training of the labor force so as they can take the advantage of the integration.

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APPEDNIX

Table A.1. Summary statistics of explanatory variables

Variable	2006		2008		2010	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Household size	4.293	1.715	4.172	1.672	3.983	1.602
% of children below 15	0.231	0.212	0.212	0.210	0.223	0.215
% of elderly above 60	0.131	0.265	0.139	0.268	0.120	0.259
Ethnic minorities (yes=1)	0.188	0.391	0.182	0.386	0.213	0.410
Head without school degree (yes=1)	0.315	0.465	0.295	0.456	0.296	0.457
Head primary school degree (yes=1)	0.269	0.444	0.271	0.444	0.275	0.447
Head lower-secondary degree (yes=1)	0.270	0.444	0.270	0.444	0.256	0.436
Head upper-secondary degree (yes=1)	0.057	0.231	0.062	0.242	0.064	0.245
Head with technical degree (yes=1)	0.072	0.259	0.086	0.281	0.083	0.275
Head with tertiary degree (yes=1)	0.017	0.128	0.016	0.124	0.026	0.159
% of revenue of foreign related enterprises	0.155	0.251	0.140	0.232	0.171	0.253
% of revenue of tradable enterprises	0.382	0.271	0.419	0.253	0.423	0.271
Per capita expenditure (thousand VND/year)	4741	3026	6419	4247	10878	7607
Per capita income (thousand VND/year)	6854	6208	9403	12647	14540	36199
% of remittances in total income	0.107	0.182	0.173	0.248	0.086	0.172
% of wage in total income	0.252	0.296	0.262	0.304	0.331	0.339
% of non-farm income (excluding wage) in total income	0.127	0.243	0.125	0.243	0.133	0.265

Table A.2. Household welfare and foreign related enterprises

Explanatory variable	Poor household	Log (expenditure)	Log (income)	Deposits/ total income	Salary/ total income	Non-farm income/ total income
% revenue of foreign related enterprises	0.0472	0.0220	-0.0634	-0.0108	0.0199	0.0259
	(0.0457)	(0.0564)	(0.0599)	(0.0216)	(0.0272)	(0.0245)
Household size	0.0237***	-0.0522***	-0.0422***	-0.0254***	0.0148***	0.0017
	(0.0020)	(0.0024)	(0.0033)	(0.0011)	(0.0020)	(0.0015)
% of children below 15	0.3094***	-0.5994***	-0.6425***	0.0121	-0.0148	0.0852***
	(0.0171)	(0.0180)	(0.0238)	(0.0078)	(0.0141)	(0.0115)
% of old member more than 60	0.1154***	-0.2171***	-0.2780***	0.2536***	-0.2146***	-0.0658***
	(0.0134)	(0.0179)	(0.0223)	(0.0102)	(0.0106)	(0.0082)
Head primary school degree	-0.1014***	0.1523***	0.1689***	-0.0117***	-0.0374***	0.0316***
	(0.0089)	(0.0096)	(0.0126)	(0.0041)	(0.0068)	(0.0054)
Head lower-secondary degree	-0.1788***	0.2783***	0.3121***	-0.0064	-0.0459***	0.0519***
	(0.0100)	(0.0105)	(0.0137)	(0.0043)	(0.0084)	(0.0065)
Head upper-secondary degree	-0.2108***	0.3822***	0.4233***	-0.0133**	-0.0348***	0.0928***
	(0.0127)	(0.0162)	(0.0217)	(0.0062)	(0.0121)	(0.0109)
Head with technical degree	-0.2300***	0.5074***	0.6117***	-0.0006	0.0395***	0.0764***
	(0.0114)	(0.0155)	(0.0198)	(0.0066)	(0.0120)	(0.0090)
Head with tertiary degree	-0.2622***	0.7345***	0.8872***	-0.0352***	0.2873***	-0.0359***
	(0.0138)	(0.0247)	(0.0360)	(0.0128)	(0.0210)	(0.0122)
Head is ethnic minority (yes=1)	0.2441***	-0.3314***	-0.3000***	-0.0096**	-0.0107	-0.0756***
	(0.0186)	(0.0225)	(0.0237)	(0.0047)	(0.0143)	(0.0079)
Year dummy (2008=1)	-0.0025	0.2707***	0.2436***	0.0631***	0.0134***	-0.0066
	(0.0071)	(0.0098)	(0.0110)	(0.0040)	(0.0050)	(0.0044)
Year dummy (2010=1)	0.1017***	0.7915***	0.6535***	-0.0233***	0.0825***	0.0059
	(0.0093)	(0.0143)	(0.0144)	(0.0039)	(0.0067)	(0.0057)
Constant	0.0596***	8.5755***	8.8382***	0.1899***	0.2449***	0.0902***
	(0.0153)	(0.0177)	(0.0204)	(0.0073)	(0.0117)	(0.0092)
Observations	19866	19866	19864	19866	19866	19866
R-squared	0.31	0.61	0.48	0.28	0.19	0.13

*Source: Auth*ors' estimation from VHLSS and VEC in 2006, 2008, and 2010.

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%.

Figures in brackets are robust SEs. District fixed-effect estimation

Table A.3.Household welfare and contribution of enterprises in tradable sectors

Explanatory variable	Poor household	Log (expenditure)	Log (income)	Deposits/ total income	Salary/ total income	Non-farm income/ total income
% revenue of enterprises in the tradable sectors	0.0044	-0.0251	-0.0132	0.0032	-0.0061	0.0137
	(0.0362)	(0.0449)	(0.0540)	(0.0188)	(0.0229)	(0.0201)
Household size	0.0237***	-0.0522***	-0.0422***	-0.0254***	0.0148***	0.0017
	(0.0020)	(0.0024)	(0.0033)	(0.0011)	(0.0020)	(0.0015)
% of children below 15	0.3091***	-0.5995***	-0.6421***	0.0122	-0.0149	0.0850***
	(0.0170)	(0.0180)	(0.0238)	(0.0078)	(0.0141)	(0.0115)
% of old member more than 60	0.1154***	-0.2170***	-0.2780***	0.2536***	-0.2145***	-0.0659***
	(0.0134)	(0.0179)	(0.0223)	(0.0102)	(0.0106)	(0.0082)
Head primary school degree	-0.1014***	0.1525***	0.1689***	-0.0117***	-0.0374***	0.0315***
	(0.0089)	(0.0096)	(0.0126)	(0.0041)	(0.0068)	(0.0054)
Head lower-secondary degree	-0.1788***	0.2784***	0.3121***	-0.0064	-0.0458***	0.0519***
	(0.0100)	(0.0105)	(0.0137)	(0.0043)	(0.0084)	(0.0066)
Head upper-secondary degree	-0.2105***	0.3826***	0.4230***	-0.0134**	-0.0346***	0.0929***
	(0.0127)	(0.0162)	(0.0217)	(0.0062)	(0.0121)	(0.0110)
Head with technical degree	-0.2301***	0.5075***	0.6117***	-0.0007	0.0395***	0.0764***
	(0.0114)	(0.0155)	(0.0198)	(0.0066)	(0.0120)	(0.0090)
Head with tertiary degree	-0.2622***	0.7344***	0.8872***	-0.0352***	0.2873***	-0.0359***
	(0.0138)	(0.0247)	(0.0360)	(0.0128)	(0.0210)	(0.0122)
Head is ethnic minority (yes=1)	0.2441***	-0.3313***	-0.3000***	-0.0096**	-0.0107	-0.0756***
	(0.0186)	(0.0225)	(0.0237)	(0.0047)	(0.0143)	(0.0079)
Year dummy (2008=1)	-0.0031	0.2712***	0.2447***	0.0632***	0.0133***	-0.0073
	(0.0073)	(0.0099)	(0.0112)	(0.0040)	(0.0051)	(0.0045)
Year dummy (2010=1)	0.1029***	0.7931***	0.6522***	-0.0238***	0.0833***	0.0061
	(0.0096)	(0.0142)	(0.0146)	(0.0038)	(0.0067)	(0.0058)
Constant	0.0653***	8.5889***	8.8334***	0.1869***	0.2504***	0.0889***
	(0.0191)	(0.0229)	(0.0271)	(0.0101)	(0.0140)	(0.0112)
Observations	19866	19866	19864	19866	19866	19866
R-squared	0.31	0.61	0.48	0.28	0.19	0.13

*Source: Auth*ors' estimation from VHLSS and VEC in 2006, 2008, and 2010.

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%.

Figures in brackets are robust SEs. District fixed-effect estimation

Table A.4. Household welfare and the two measures of economics integration

Explanatory variable	Poor household	Log (expenditure)	Log (income)	Deposits/ total income	Salary/ total income	Non-farm income/ total income
% foreign related enterprises	0.0407	0.0645	-0.0421	-0.0139	0.0263	0.0213
	(0.0544)	(0.0655)	(0.0707)	(0.0229)	(0.0307)	(0.0263)
% revenue of enterprises in the tradable sectors	-0.0161	-0.0417	0.0087	0.0093	-0.0221	0.0101
	(0.0439)	(0.0543)	(0.0647)	(0.0196)	(0.0256)	(0.0213)
Head is ethnic minority (yes=1)	0.3158***	-0.4711***	-0.4499***	-0.0238***	0.0000	-0.0841***
	(0.0205)	(0.0276)	(0.0290)	(0.0049)	(0.0144)	(0.0078)
Year dummy (2008=1)	-0.0121	0.2934***	0.2651***	0.0673***	0.0112**	-0.0077*
	(0.0080)	(0.0111)	(0.0121)	(0.0043)	(0.0053)	(0.0046)
Year dummy (2010=1)	0.0823***	0.8366***	0.6978***	-0.0162***	0.0822***	0.0053
	(0.0099)	(0.0153)	(0.0160)	(0.0041)	(0.0070)	(0.0060)
Constant	0.1305***	8.4131***	8.7121***	0.1110***	0.2651***	0.1394***
	(0.0153)	(0.0208)	(0.0241)	(0.0086)	(0.0097)	(0.0086)
Observations	19,866	19,866	19,866	19,866	19,866	19,866
R-squared	0.24	0.49	0.37	0.11	0.13	0.10

*Source: Auth*ors' estimation from VHLSS and VEC in 2006 and 2011.

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%.

            Figures in brackets are robust SEs. District fixed-effect estimation

Table A.5. Household welfare and contribution of foreign related enterprises

Explanatory variable	Poor household	Log (expenditure)	Log (income)	Deposits/ total income	Salary/ total income	Non-farm income/ total income
% revenue of foreign related enterprises	0.0336	0.0461	-0.0382	-0.0098	0.0166	0.0258
	(0.0467)	(0.0595)	(0.0639)	(0.0229)	(0.0276)	(0.0250)
Head is ethnic minority (yes=1)	0.3157***	-0.4712***	-0.4499***	-0.0238***	-0.0000	-0.0840***
	(0.0205)	(0.0275)	(0.0290)	(0.0049)	(0.0144)	(0.0078)
Year dummy (2008=1)	-0.0127*	0.2919***	0.2654***	0.0677***	0.0104**	-0.0074*
	(0.0075)	(0.0108)	(0.0119)	(0.0044)	(0.0052)	(0.0045)
Year dummy (2010=1)	0.0818***	0.8354***	0.6980***	-0.0159***	0.0816***	0.0056
	(0.0097)	(0.0151)	(0.0157)	(0.0041)	(0.0069)	(0.0059)
Constant	0.1252***	8.3994***	8.7150***	0.1141***	0.2579***	0.1427***
	(0.0102)	(0.0128)	(0.0130)	(0.0044)	(0.0056)	(0.0051)
Observations	19866	19866	19864	19866	19866	19866
R-squared	0.24	0.49	0.37	0.11	0.13	0.10

*Source: Auth*ors' estimation from VHLSS and VEC in 2006 and 2011.

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%.

            Figures in brackets are robust SEs. District fixed-effect estimation

Table A.6.Household welfare and contribution of enterprises in tradable sectors

Explanatory variables	Poor household	Log (expenditure)	Log (income)	Deposits/ total income	Salary/ total income	Non-farm income/ total income
% revenue of enterprises in the	-0.0016	-0.0186	-0.0063	0.0043	-0.0127	0.0178
tradable sectors	(0.0373)	(0.0485)	(0.0588)	(0.0197)	(0.0231)	(0.0205)
Head is ethnic minority (yes=1)	0.3157***	-0.4712***	-0.4499***	-0.0238***	0.0000	-0.0841***
	(0.0205)	(0.0275)	(0.0290)	(0.0049)	(0.0144)	(0.0078)
Year dummy (2008=1)	-0.0130*	0.2920***	0.2660***	0.0676***	0.0107**	-0.0082*
	(0.0077)	(0.0109)	(0.0121)	(0.0044)	(0.0053)	(0.0046)
Year dummy (2010=1)	0.0829***	0.8375***	0.6972***	-0.0164***	0.0826***	0.0056
	(0.0100)	(0.0153)	(0.0160)	(0.0041)	(0.0069)	(0.0060)
Constant	0.1311***	8.4141***	8.7115***	0.1108***	0.2655***	0.1397***
	(0.0155)	(0.0206)	(0.0242)	(0.0085)	(0.0097)	(0.0085)
Observations	19866	19866	19864	19866	19866	19866
R-squared	0.24	0.49	0.37	0.11	0.13	0.10

*Source: Auth*ors' estimation from VHLSS and VEC in 2006 and 2011.

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%.

Figures in brackets are robust SEs. District fixed-effect estimation

Table A.7.Household welfare and contribution of foreign related enterprises

Explanatory variables	Poor household	Log (expenditure)	Log (income)	Deposits/ total income	Salary/ total income	Non-farm income/ total income
% revenue of foreign related enterprises (at provincial level)	-0.0044	0.0216	0.0257	-0.0012	-0.0087	0.0275
	(0.0543)	(0.0636)	(0.0856)	(0.0186)	(0.0367)	(0.0380)
Household size	0.0239***	-0.0522***	-0.0433***	-0.0253***	0.0140***	0.0018
	(0.0019)	(0.0022)	(0.0025)	(0.0009)	(0.0016)	(0.0017)
% of children below 15	0.3151***	-0.6075***	-0.6382***	0.0137	-0.0162	0.0848***
	(0.0172)	(0.0155)	(0.0277)	(0.0088)	(0.0150)	(0.0099)
% of old member more than 60	0.1074***	-0.2108***	-0.2748***	0.2562***	-0.2146***	-0.0612***
	(0.0129)	(0.0175)	(0.0227)	(0.0123)	(0.0103)	(0.0077)
Head primary school degree	-0.1071***	0.1606***	0.1737***	-0.0127***	-0.0316***	0.0340***
	(0.0083)	(0.0085)	(0.0114)	(0.0042)	(0.0074)	(0.0050)
Head lower-secondary degree	-0.1828***	0.2812***	0.3133***	-0.0076*	-0.0402***	0.0524***
	(0.0084)	(0.0108)	(0.0125)	(0.0044)	(0.0086)	(0.0056)
Head upper-secondary degree	-0.2166***	0.3891***	0.4293***	-0.0136**	-0.0282**	0.0897***
	(0.0103)	(0.0158)	(0.0205)	(0.0064)	(0.0113)	(0.0115)
Head with technical degree	-0.2424***	0.5321***	0.6320***	-0.0002	0.0505***	0.0776***
	(0.0109)	(0.0163)	(0.0177)	(0.0068)	(0.0122)	(0.0094)
Head with tertiary degree	-0.2787***	0.7668***	0.9155***	-0.0326***	0.2994***	-0.0313***
	(0.0153)	(0.0269)	(0.0309)	(0.0110)	(0.0246)	(0.0105)
Head is ethnic minority (yes=1)	0.2994***	-0.3653***	-0.3560***	-0.0152***	-0.0387***	-0.0881***
	(0.0161)	(0.0176)	(0.0219)	(0.0037)	(0.0103)	(0.0066)
Year dummy (2008=1)	-0.0037	0.2728***	0.2489***	0.0639***	0.0110***	-0.0057
	(0.0056)	(0.0104)	(0.0115)	(0.0040)	(0.0038)	(0.0035)
Year dummy (2010=1)	0.1061***	0.7883***	0.6489***	-0.0241***	0.0789***	0.0056
	(0.0091)	(0.0145)	(0.0164)	(0.0039)	(0.0078)	(0.0058)
Constant	0.0630***	8.5721***	8.8267***	0.1888***	0.2562***	0.0867***
	(0.0200)	(0.0246)	(0.0374)	(0.0083)	(0.0149)	(0.0131)
Observations	20181	20181	20179	20181	20181	20181
R-squared	0.25	0.56	0.43	0.25	0.13	0.07

*Source: Auth*ors' estimation from VHLSS and VEC in 2006, 2008, and 2010.

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%.

Figures in brackets are robust SEs. Provincial fixed-effect estimation

Table A.8.Household welfare and the per capita revenue of foreign related enterprises

Explanatory variable	Poor household	Log (expenditure)	Log (income)	Deposits/ total income	Salary/ total income	Non-farm income/ total income
Log of revenue of foreign related enterprises/total number of people in the province	-0.0012	0.0088	0.0008	0.0044**	0.0026	-0.0026
	(0.0075)	(0.0081)	(0.0101)	(0.0022)	(0.0041)	(0.0035)
Household size	0.0239***	-0.0522***	-0.0433***	-0.0254***	0.0140***	0.0018
	(0.0019)	(0.0022)	(0.0026)	(0.0009)	(0.0016)	(0.0017)
% of children below 15	0.3151***	-0.6076***	-0.6382***	0.0137	-0.0162	0.0849***
	(0.0173)	(0.0155)	(0.0277)	(0.0088)	(0.0150)	(0.0099)
% of old member more than 60	0.1074***	-0.2109***	-0.2747***	0.2561***	-0.2146***	-0.0610***
	(0.0129)	(0.0175)	(0.0228)	(0.0123)	(0.0103)	(0.0077)
Head primary school degree	-0.1071***	0.1606***	0.1738***	-0.0128***	-0.0317***	0.0341***
	(0.0083)	(0.0085)	(0.0114)	(0.0042)	(0.0074)	(0.0050)
Head lower-secondary degree	-0.1828***	0.2812***	0.3133***	-0.0076*	-0.0403***	0.0524***
	(0.0084)	(0.0108)	(0.0125)	(0.0044)	(0.0086)	(0.0056)
Head upper-secondary degree	-0.2166***	0.3890***	0.4294***	-0.0137**	-0.0283**	0.0899***
	(0.0103)	(0.0158)	(0.0206)	(0.0064)	(0.0112)	(0.0115)
Head with technical degree	-0.2424***	0.5320***	0.6319***	-0.0002	0.0505***	0.0776***
	(0.0109)	(0.0163)	(0.0177)	(0.0068)	(0.0122)	(0.0095)
Head with tertiary degree	-0.2787***	0.7669***	0.9153***	-0.0324***	0.2995***	-0.0316***
	(0.0153)	(0.0270)	(0.0310)	(0.0110)	(0.0246)	(0.0105)
Head is ethnic minority (yes=1)	0.2994***	-0.3651***	-0.3561***	-0.0151***	-0.0386***	-0.0883***
	(0.0161)	(0.0176)	(0.0218)	(0.0037)	(0.0103)	(0.0067)
Year dummy (2008=1)	-0.0029	0.2675***	0.2478***	0.0616***	0.0099**	-0.0051
	(0.0058)	(0.0095)	(0.0111)	(0.0042)	(0.0049)	(0.0043)
Year dummy (2010=1)	0.1075***	0.7783***	0.6478***	-0.0290***	0.0761***	0.0082
	(0.0114)	(0.0163)	(0.0183)	(0.0045)	(0.0093)	(0.0074)
Constant	0.0712	8.5090***	8.8285***	0.1534***	0.2333***	0.1156***
	(0.0609)	(0.0677)	(0.0867)	(0.0194)	(0.0330)	(0.0277)
Observations	20181	20181	20179	20181	20181	20181
R-squared	0.25	0.56	0.43	0.25	0.13	0.07

*Source: Auth*ors' estimation from VHLSS and VEC in 2006, 2008, and 2010.

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%.

Figures in brackets are robust SEs. Provincial fixed-effect estimation

Table A.9.Household welfare and the two measures of economics integration

Explanatory variable	Poor household	Log (expenditure)	Log (income)	Poor household	Log (expenditure)	Log (income)	Poor household	Log (expenditure)	Log (income)
% revenue of foreign related enterprises	0.0887	0.0056	0.1018	0.0680	0.0249	0.1007			
	(0.0633)	(0.1023)	(0.0896)	(0.0597)	(0.0983)	(0.0834)			
% revenue of tradable enterprises	-0.0618	0.0579	-0.0033				-0.0456	0.0589	0.0153
	(0.0489)	(0.0533)	(0.0701)				(0.0458)	(0.0516)	(0.0641)
Household size	0.0327***	-0.0996***	-0.0921***	0.0331***	-0.0999***	-0.0920***	0.0329***	-0.0996***	-0.0919***
	(0.0081)	(0.0088)	(0.0107)	(0.0081)	(0.0089)	(0.0108)	(0.0081)	(0.0088)	(0.0107)
% of children below 15	0.0280	-0.1641**	-0.2829***	0.0283	-0.1644**	-0.2829***	0.0288	-0.1640**	-0.2819***
	(0.0673)	(0.0673)	(0.0876)	(0.0667)	(0.0672)	(0.0874)	(0.0672)	(0.0672)	(0.0878)
% of old member more than 60	-0.0832	-0.1354	-0.3417***	-0.0850	-0.1336	-0.3418***	-0.0811	-0.1353	-0.3393***
	(0.0605)	(0.0981)	(0.0962)	(0.0608)	(0.0980)	(0.0960)	(0.0603)	(0.0976)	(0.0959)
Year dummy (2008=1)	-0.0115	0.2876***	0.2781***	-0.0137	0.2896***	0.2779***	-0.0130	0.2875***	0.2763***
	(0.0100)	(0.0131)	(0.0162)	(0.0097)	(0.0130)	(0.0157)	(0.0099)	(0.0133)	(0.0162)
Constant	0.0547	8.7798***	9.1188***	0.0321	8.8009***	9.1176***	0.0613	8.7802***	9.1263***
	(0.0408)	(0.0433)	(0.0560)	(0.0364)	(0.0401)	(0.0554)	(0.0407)	(0.0434)	(0.0557)
Observations	5855	5855	5853	5855	5855	5853	5855	5855	5853
Number of households	2974	2974	2974	2974	2974	2974	2974	2974	2974
R-squared	0.02	0.39	0.26	0.02	0.39	0.26	0.02	0.39	0.26

*Source: Auth*ors' estimation from VHLSS and VEC in 2006, 2008, and 2010.

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%.

       Figures in brackets are robust SEs. Provincial fixed-effect estimation

Table A.10.Household welfare and contribution of foreign related enterprise (with interaction)

Explanatory variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
% revenue of foreign related enterprises (denoted by R)	-0.1924**	-0.0536	-0.0608	-0.0208	0.0229	-0.0263	0.0056
	(0.0772)	(0.0619)	(0.0725)	(0.0602)	(0.1018)	(0.0675)	(0.1104)
R * Household size	0.0322***						
	(0.0116)						
R * Head is ethnic minority (yes=1)		-0.0539					
		(0.0910)					
R * Head primary school degree			-0.0140				
			(0.0487)				
R * Head lower-secondary degree			0.0213				
			(0.0547)				
R * Head upper-secondary degree			-0.0487				
			(0.0820)				
R * Head with technical degree			-0.0020				
			(0.0817)				
R * Head with tertiary degree			0.0151				
			(0.1792)				
R * Crop land (hecta)				-0.0817**			
				(0.0389)			
Crop land (hecta)				0.1416***			
				(0.0151)			
R * Drive way in the district (Yes=1)					-0.0913		
					(0.0810)		
Drive way in the district (Yes=1)					0.0406**		
					(0.0161)		
R* Market place in the district (Yes =1)						-0.0397	
						(0.0452)	
Market place in the district (Yes =1)						0.0050	
						(0.0136)	
R * North East (Yes = 1)							-0.0923
							(0.1383)
R * North West (Yes = 1)							0.1082
							(0.2342)
R * North Central Coast (Yes =1)							0.1606
							(0.1722)
R * South Central Coast (Yes = 1)							-0.0076
							(0.1900)
R * Central Highlands (Yes = 1)							-0.1941
							(0.3422)
R * South East (Yes = 1)							-0.2573
							(0.2724)
R * Mekong River Delta (Yes = 1)							-0.2132
							(0.1806)
Household size	-0.0472***	-0.0421***	-0.0421***	-0.0549***	-0.0421***	-0.0422***	-0.0422***
	(0.0038)	(0.0032)	(0.0032)	(0.0035)	(0.0033)	(0.0033)	(0.0032)
% of children below 15	-0.6435***	-0.6425***	-0.6423***	-0.5960***	-0.6393***	-0.6403***	-0.6418***
	(0.0238)	(0.0237)	(0.0238)	(0.0231)	(0.0240)	(0.0240)	(0.0239)
% of old member more than 60	-0.2775***	-0.2779***	-0.2779***	-0.2785***	-0.2772***	-0.2769***	-0.2771***
	(0.0223)	(0.0223)	(0.0223)	(0.0220)	(0.0226)	(0.0227)	(0.0223)
Head primary school degree	0.1689***	0.1689***	0.1712***	0.1524***	0.1680***	0.1685***	0.1691***
	(0.0127)	(0.0127)	(0.0145)	(0.0122)	(0.0128)	(0.0128)	(0.0127)
Head lower-secondary degree	0.3127***	0.3124***	0.3086***	0.2924***	0.3134***	0.3144***	0.3126***
	(0.0137)	(0.0137)	(0.0161)	(0.0133)	(0.0139)	(0.0139)	(0.0137)
Head upper-secondary degree	0.4242***	0.4234***	0.4328***	0.4076***	0.4227***	0.4235***	0.4239***
	(0.0218)	(0.0218)	(0.0261)	(0.0216)	(0.0220)	(0.0220)	(0.0218)
Head with technical degree	0.6126***	0.6118***	0.6121***	0.5981***	0.6113***	0.6132***	0.6127***
	(0.0199)	(0.0198)	(0.0226)	(0.0195)	(0.0197)	(0.0197)	(0.0198)
Head with tertiary degree	0.8895***	0.8878***	0.8849***	0.8757***	0.8905***	0.8914***	0.8885***
	(0.0358)	(0.0358)	(0.0434)	(0.0345)	(0.0366)	(0.0367)	(0.0358)
Head is ethnic minority (yes=1)	-0.2979***	-0.2939***	-0.2994***	-0.3151***	-0.2994***	-0.3012***	-0.2986***
	(0.0237)	(0.0254)	(0.0237)	(0.0234)	(0.0234)	(0.0235)	(0.0237)
Year dummy (2008=1)	0.2435***	0.2438***	0.2439***	0.2421***	0.2447***	0.2453***	0.2435***
	(0.0110)	(0.0110)	(0.0111)	(0.0108)	(0.0113)	(0.0112)	(0.0111)
Year dummy (2010=1)	0.6555***	0.6549***	0.6550***	0.6610***	0.6521***	0.6526***	0.6529***
	(0.0144)	(0.0144)	(0.0144)	(0.0142)	(0.0146)	(0.0146)	(0.0144)
Constant	8.8576***	8.8355***	8.8369***	8.8229***	8.8035***	8.8317***	8.8387***
	(0.0217)	(0.0207)	(0.0211)	(0.0206)	(0.0237)	(0.0225)	(0.0222)
Observations	19864	19864	19864	19864	19399	19399	19864
R-squared	0.48	0.48	0.48	0.50	0.48	0.48	0.48

*Source: Auth*ors' estimation from VHLSS and VEC in 2006, 2008, and 2010.

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%.

Figures in brackets are robust SEs. Household fixed-effect estimation
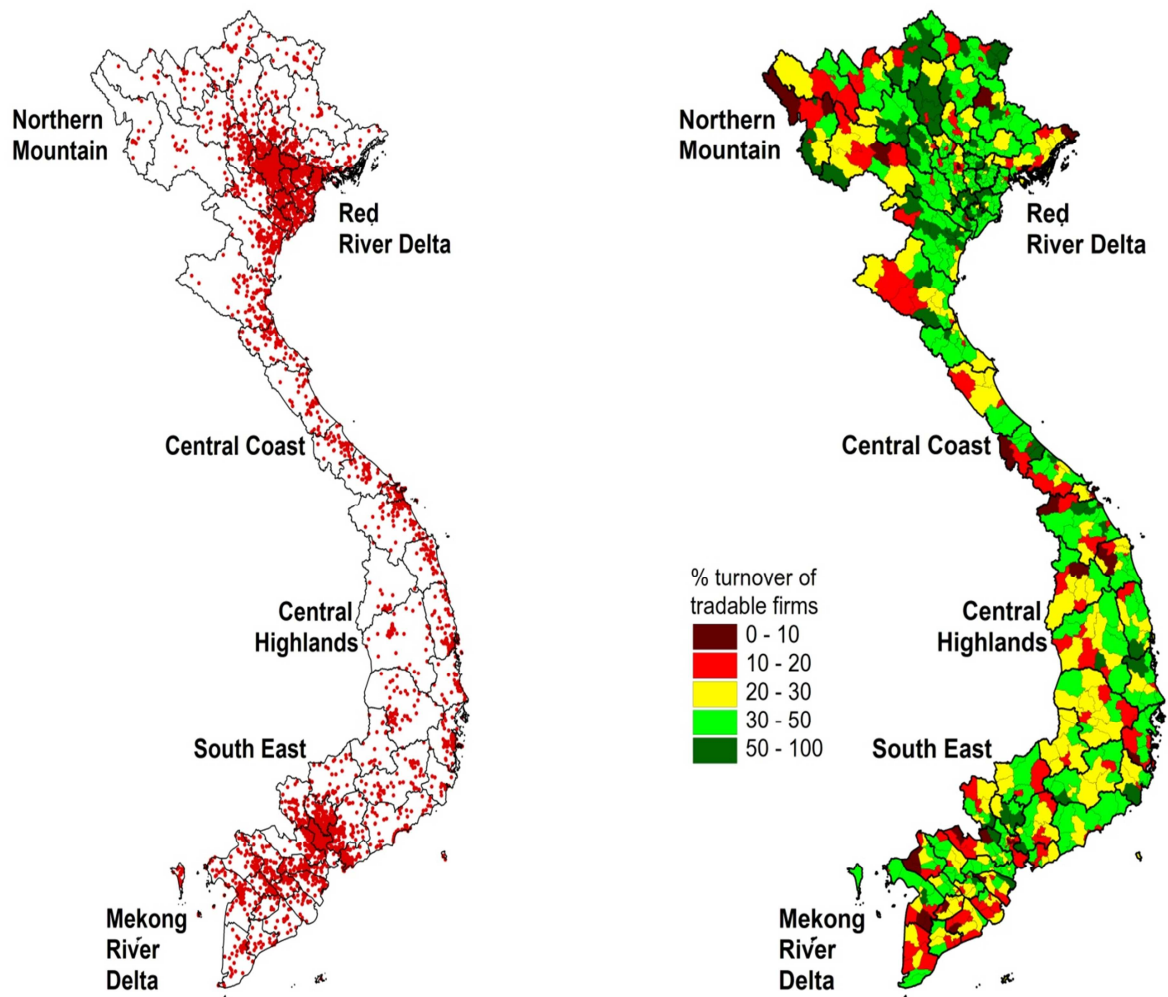
Source: Epprecht and Nguyễn (2013) and Enterprise Census 2011

Fig. A1: Distribution of enterprises and sale contribution of tradable sectors by district

Figure A1 presents the number of enterprises (a red point equal to 10 enterprises, left panel) and contribution of sales of tradable enterprises in the district (left panel).