

# The impact of household head labor status and worker characteristics on household poverty: Evidence in Vietnam

**Nguyen Ngoc Duc**

University of Antwerp, Department of applied economics, Antwerpen, Belgium  
Can Tho University, School of economics, Can Tho city, Vietnam

**Le Tin**

Can Tho University, School of economics, Can Tho city, Vietnam

## ABSTRACT

This study follows a worker-based approach and distinguishes between wage workers and self-employed workers. Our hypotheses stress the role of household head worker characteristics in explaining the probability of a household being poor. Using data from the Vietnam Household Living Standard Survey 2014 (VHLSS 2014), we estimate a probit regression model. The result shows that households whose head are informal wage earners have the highest risk of living in poverty, while households with the head are formal wage earners are at the lowest risk of being poor. The effects of self-employed households fall between those two extremes. The weaknesses of informal employment are reflected in four main aspects: low labor quality, low education level, low working time (hours/year), and lack of social insurance. Education plays a major role in reducing poverty and diminishing the difference in the effect of formal and informal statuses. The findings can serve as evidence for formulating effective policies related to poverty reduction.

**Keywords:** Worker characteristics, household poverty status, formal and informal employment, wage workers, self-employed workers, relative income poverty threshold

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## INTRODUCTION

Vietnam's development over the past 30 years has been remarkable. The advent of the introduction of *doi moi* (economic reform) policies in 1986 triggered the transformation of Vietnam's economy and accelerated its industrialization and rapid urbanization. Economic growth helped create jobs and reduce poverty considerably. Vietnam, however, is facing challenges related to the rise of informal economic sectors. The International Labor

Organization (2011) revealed that an impressive half of all industrial jobs in Vietnam are held in the informal economic sector, contributing to 20% of its GDP. Recently, the share of informal workers in the non-agricultural employment workforce has reached 57.2%; if agricultural employment is included, the share would even rise to 78.6% (Vietnam General Statistics Office, 2016). Although informal workers in Vietnam dominate the workforce, there have been limited studies about them.

In many countries, the informal economy is mainly considered as an underground, shadow, or grey economy. The prevalence of informal economic sectors is associated with the increased risk of reduced tax collection, limited investments of size-constrained firms and socially unprotected labor. Workers in the informal economic sector are described as those who are not productive enough to be employed in formal jobs. They are unregistered, not formally recognized, not protected under labor legislation and social protection, and often remain trapped in poverty (Tokman, 1989). Regarding individual choice, however, De Soto (1986) found that the choice of informality is voluntary due to the costs of legislation for formal status and registration. The informal sector is formed by micro-entrepreneurs who prefer to evade economic regulations. Moreover, Maloney (2003) found that workers in informal employment may gain better earnings compared to what they would have earned in the formal employment settings. They may also value the independence of self-employment more than social protection. In the more recent literature, the informal economic sector has been described as a dynamic area wherein individuals and firms practice entrepreneurial culture to generate wealth in ways that would be difficult or even impossible to achieve in the heavily regulated formal economic sector (Ghecham, 2017; Herrera & Hidalgo, 2014).

Indeed, there is significant heterogeneity among workers in the informal economic sector (Cunningham & Maloney, 2001). From the view of human capital theory and labor status, we are particularly interested in the following questions: Who are the poor in the labor market? Do workers in the informal sector have a higher probability of being in a household at risk of poverty than formal workers? How do head worker characteristics affect the probability of household poverty by head wage and self-employed workers, broken down by formal and informal employment? The findings of the study can simultaneously contribute to evaluating the effectiveness of poverty reduction policies and directing those policies toward income redistribution instead of increasing productivity. In addition to policymaking, the relationship between poverty and the labor market status is also considered from the perspective of the factors that determine household income.

Utilizing the available data from the Vietnam Household Living Standard Survey 2014 (VHLSS 2014), our study uses the relative income poverty line, which defines the poor as those with an equivalent income below 60% of the median household equivalent income. We use a probit regression model to identify the relationship between poverty and worker characteristics. We focus mainly on the relative income poverty line, which is assumed to be the most appropriate threshold for our specific target group.

## LITERATURE REVIEW

### Informal employment – the study’s concept and hypotheses on household poverty

Following a worker-based approach and the concept of informal employment recommended by the International Labour Organization (1993, 2003), we define two categories of workers split by employment status: wage workers and self-employed workers. Informality can then be measured by the workers’ legal status, such as labor contracts (Duval-Hernandez, 2006). An alternative indicator of informality that can be considered is social security status (Merrik, 1976). However, these measures cannot be applied to self-employed workers, as they cannot have a contract with themselves. In the case of self-employed workers, informality can be measured by their firm’s legal status, such as business registration. From that perspective, the current study defines informal workers as follows.

- *Informal wage workers* refer to employees or wage workers hired without labor contracts and/or social insurance by formal firms, informal enterprises, or households.
- *Informal self-employed workers* refer to employers/owners engaged in their own business production units without business registration; own-account workers involved in their own business production units without business registration; contributing (unpaid) family workers working in household business production without business registration; and members of unregistered producers’ cooperatives who are not paid.

It is important to observe that, as in other studies, we exclude agricultural and related activities from the scope of our analysis

(International Labour Organization, 1993; Nguyen, Nordman, & Roubaud, 2013; Vietnam General Statistics Office, 2016). Thus, an informal worker only refers to a household head who works in non-agricultural informal employment. However, a household head worker can hold many jobs simultaneously. So, an informally employed is classified according to his/her main job (or main employment).

There is significant heterogeneity among workers in the formal and informal sectors. Two main dominant approaches were applied in related economic literature to explain this phenomenon. The first, also called the *dualist approach*, is an extension of Lewis (1954) and Harris and Todaro (1970). This approach considers the informal sector as a residual component of the market and is unrelated to the formal sector. Wages are set below market-clearing prices. Workers lack labor protections, and working conditions are not satisfactory. Working characteristics can be identified as small or undefined workplaces, unsafe and unhealthy conditions, low levels of productivity and skills, low or unstable incomes, long working hours and lack of access to information, training, and technology (International Labour Organization, 2002; Tokman, 1989). Entry barriers are minor or nonexistent in the informal sector, in which workers can earn cash rather than earn nothing (Fields, 2005). The *structuralist approach* considered the informal sector as a part of the capitalist system, helping to increase economic flexibility and competitiveness by providing cheap labor and products for formal firms (Moser, 1978). The informal sector could serve as a place to develop business potential and accumulate working skills and experiences.

*Hypothesis 1: Households whose heads are informal workers tend to have a higher probability of being poor than households whose heads are formal workers.*

*Hypothesis 2: Among the formal-informal workers, households whose heads are informal wage workers suffer the highest risk of living in poverty.*

### **Effect of worker characteristics on household poverty**

To identify the effect of head worker characteristics on household poverty status in

Vietnam, we pay attention to the human capital theory, originally described (Becker (1964). The theory stresses the role of competencies, skills and knowledge, as well as personal traits or attributes, behaviors and habits possessed by an individual to perform labor and produce economic value. We assume the household head represents a chief worker whose income accounts for a large proportion of household income. Therefore, differences in human capital explain the individual's earnings gap and may directly affect household poverty status. Market failures, such as incomplete information, adverse selection, and externalities are also viewed as aggravators of poverty (Davis, 2007). Uncertainty (e.g., recessions, sickness, family breakdown) may play a major role in causing poverty.

Education is one of the main determinants of human capital and is often used to explain the differences in individuals' incomes and earnings (Lydall, 1968). More specifically, education increases the stock of human capital, which, in turn, increases labor productivity and wages. There might however be a vicious cycle in that low education leads to poverty and poverty leads to low education (Bastos, Casaca, Nunes, & Pereira, 2009); thus, the poor face difficulties in affording their education, even if education is provided publicly, due to high opportunity costs. In most cases, they have to work to survive. Machin (2011) noted that poor households tend to 'under-invest' in education. Moreover, Duncan (1961) claimed that occupation is determined largely by education, concluding that educational attainment affects the difference in income due to the fact that poorly-educated and well-educated persons typically engage in low- and high-income occupations. However, Mayhew (1971) emphasized that education does not by itself, lead to high-income occupations. The author recommended the necessity of considering occupation and other related variables as independent of education in explaining variation in earnings.

Regarding workers in different institutional sectors, recent studies worldwide have reported that worker characteristics, such as levels of education, age, gender, and health status, do matter in determining the difference between formal and informal status. Marcelli, Jr., and Joassart (1999) and Gallaway and Bernasek (2002) found that people with a higher level of

education have a higher probability of working in the formal sector. Bairagya (2012) emphasized that, without any general or technical education, individuals have a greater likelihood of entering the informal sector. As the level of education increases, this probability decreases in all states regardless of their development level. Marcelli et al. (1999) pointed out the positive correlation between education and occupation, in which more education is associated with a higher percentage of formal jobs and vice versa. Maloney (2004) argued that, due to the scarcity of formal jobs, most young workers with low education levels enter informal jobs to avoid unemployment. This steppingstone is necessary for them to enter the labor market. As age increases, the probability of being engaged in the informal sector decreases. This probability increases past a certain age, however (Bairagya, 2012). Moreover, location and gender also drive participation in informal jobs. Jensen, Cornwell, and Findeis (1995) observed that informal jobs are dominant in rural residents. From a gender perspective, Hoyman (1987) and Nelsen (1999) argued that females have a significantly dominant position in the informal sector. Similarly, Chen (2001) explained that women comprise the majority of the informal sector in developing countries because they generally have less education and skills compared with men. Cultural and social factors also restrict women to housework, and this limits investments in human capital. Regarding health status, the recent work of Liang, Appleton, and Song (2016) on informal employment in China reported that informal wage workers tend to have less favored characteristics (such as less educated, less healthy and able bodies, compared with formal employees). Moreover, they are considered as the most vulnerable group in the labor market; thus, the growth of this group should also be concerned.

*Hypothesis 3: Education plays a major role in determining poverty. And a household whose head worker has a lower level of education tends to have a higher probability of being poor.*

*Hypothesis 4: Informal workers have less favored characteristics than formal ones. And, the effects of worker characteristics on the probability of household poverty are much stronger in the case of households whose heads are informal workers*

## METHODOLOGY

The data used in this paper are drawn from the Vietnam Household Living Standards Surveys (VHLSS) of 2014, which is conducted by the General Statistics Office of Vietnam (GSO) every two years. The VHLSS is a good source for poverty measurement; however, VHLSS 2014 does not cover all the informal employment aspects, as defined by the International Labour Organization (2003). Nevertheless, we are able to create an informality proxy that combines both job and firm approaches. On the job side, we can separate formal and informal wage workers based on a labor contract. On the firm side, informal workers are those whose businesses are not registered (Nguyen et al., 2013). The households' weight use reflects the expansion factors specified by VHLSS.

VHLSS 2014 covers a total of 36,081 individuals and 9,399 households. Retaining only households whose heads are working in non-agricultural employment, we arrived at a total of 3,956 households. To reduce possible bias, we trimmed the data and dropped the missing values and influential outliers. This procedure resulted in the removal of 19 observations, providing a baseline analytic sample of 3,937 households.

We identified poverty based on a monetary approach, which used an income threshold considered as the minimum amount of monetary value that a household needs to survive - the poverty line (Davis & Sanchez-Martinez, 2014; Laderchi, Saith, & Stewart, 2003). Moreover, to maximize comparability among households and with existing analyzes, we used the modified scale of the Organization for Economic Cooperation and Development (OECD). This equivalence scale takes a childless, single-adult household as a reference point, with an equivalence value of one, and differentiates between additional adults and children (see Table 1). Household equivalized income is then calculated by dividing total household income by the household equivalence value. Finally, we identified poor and non-poor households, whose heads are formal and informal workers, by using the concept of relative income poverty, which defines a household as poor if its equivalent income falls below 60% of the median household equivalized income.

**Table 1.** Equivalence scale

	OECD-modified Scale
First adult	1
Another second adult	0.5
Third adult	0.5
Subsequent adults	0.5
Each dependent aged 0 to 14	0.3
15 and above	0.5

Sources: Chanfreau and Burchardt (2008) and OECD (2009)

The study’s objectives are to investigate the difference in household poverty status and determine whether the effects of worker characteristics on poverty status differ among wage and self-employed workers broken down by formal and informal employment. Given that, our dependent variable is dichotomous: 1 if the household equivalent income is below 60% of the median household equivalent *income threshold*, and 0 otherwise. We rely on the standard probit model, which assumes that the probability of a household being poor ( $Y=1$ ) is determined by the standard normal cumulative distribution function  $\Phi(z_i)$ . To compare the probability of a household falling into poverty between wage and self-employed workers, we created a dummy of

*employment status (Empl)*, which takes the value of one if the household head is a wage earner and zero if the head is a self-employed worker. Moreover, to account for informal-formal differences in the probability of being poor, we created a dummy of the *institutional sector (Inst)*, which takes the value of one if a household head is a formal worker and zero if the head is an informal worker. An interaction term  $Empl \times Inst$  was added to estimate the difference in the probability of a household being poor between wage and self-employed workers broken down by formal and informal sectors. The model is estimated as follows:

$$Pr(Y_i = 1|X_i, Empl_i, Inst_i) = \Phi(\beta_0 + X_i\beta_1 + \gamma Empl_i + \rho Inst_i + \delta Empl_i * Inst_i) \tag{1}$$

where  $X_i$  denotes the vectors of variables referring to head worker characteristics and location and geographical variables of household  $i$ .  $\delta$  is interpreted as a measure of interaction effect among four categories of workers: the formal wage workers (FW), the informal wage workers (IW), the formal self-employed workers (FS) and the informal self-employed workers (IS). Note that  $\Phi(z_i) \in [0,1]$  and  $z_i$  is the *z-value* or *z-*

*index* of the probit model.

Finally, to report our results and compare the effects of explanatory variables on the probability of being poor, we rely on the average marginal effects (AMEs) in order to reflect the change in probability of being at-risk of poverty given a unit change in an independent variable  $X$  (Williams, 2012). Particularly, the marginal effect is calculated as follows:

$$\frac{\partial P(Y = 1|X_j)}{\partial X_j} = \frac{\partial E(Y|X_j)}{\partial X_j} = \phi(X\beta)\beta_j \tag{2}$$

$\beta_j$  multiplied by  $\phi(X\beta)$  gives the marginal effect.

However, the computation of AMEs depends on the type of variables, as we have both continuous and dummy variables in our model.

For each type, the AME is calculated as follows:  
AME for continuous variables:

$$AME = \frac{1}{n} \sum_{i=1}^n \phi(X\beta)\beta_j \quad (3)$$

$\frac{1}{n} \sum_{i=1}^n \phi(X\beta)\beta_j$  denotes for an average across the resulting effect estimates.

AME for dummy variables:

$$AME = \frac{1}{n} \sum_{i=1}^n [\Phi(X\beta|X_j = 1) - \Phi(X\beta|X_j = 0)] \quad (4)$$

The above equation computes the difference in the two probabilities ( $X_j = 1$  and  $X_j = 0$ ) and then computes the average across the result estimates.

To ensure model validity, we checked for heteroscedasticity in our estimation as well as model misspecification. The results point out that heteroscedasticity is not the problem in our model. The sign and significant level from the average marginal effects of explanatory variables are not different between the heteroscedastic probit and standard probit models. Besides, the standard probit model shows no evidence of misspecification.

### Descriptive statistics

Table 2 shows that informal worker households primarily reside in rural areas. At the aggregate level, the head gender ratio does not vary between formal and informal workers, of which the male gender is predominant. Kinh/Chinese is the main ethnicity in our sample. The mean age of household heads ranges from 42 to 49 years. As expected, workers who have higher schooling years are less likely to be engaged in informal employment and vice versa. Formal wage workers have the highest education years, while informal wage workers have the lowest. Moreover, self-employed workers have more working hours (per year) than wage workers in both formal and informal employment. As far as wage workers are concerned, on average, the formal ones tend to have higher working hours than the informal ones, and very few informal wage workers have social insurance, regardless of whether it is compulsory or voluntary.

Regarding occupation skill levels, formal wage workers are mainly high-skilled and

intermediate-skill laborers, while informal wage workers are intermediate and low-skilled laborers. Both formal-informal self-employed workers are found prominently as intermediate-skilled laborers. Moreover, about 19% of total informal self-employed workers are low-skilled laborers. The sample population lives mainly in the Red River Delta, Northern and Coastal Central, the Mekong Delta, and the Southeastern Area.

Households whose heads are formal wage workers have the lowest poverty rate, while those whose heads are informal wage workers have the highest poverty rate. The poverty rates of self-employed households fall in between those two extremes. Regarding the poverty gap ratio, the result indicates that informal wage worker households have in-depth poverty among the poor, while formal wage worker households have the lowest poverty gap ratio. Among the self-employed, the poverty gap ratio of informal self-employed households is higher than their formal counterparts.

**Table 2.** Statistical characteristics of the household head by formal-informal employment status

Variables	Formal wage worker (N=1,101)	Informal wage worker (N=1,305)	Formal self-employed (N=606)	Informal self-employed (N=925)
Head sex = Male	0.74 (0.44)	0.85 (0.35)	0.74 (0.44)	0.66 (0.47)
Head age	42.95 (9.95)	44.57 (9.82)	47.48 (9.56)	49.39 (11.36)
Head education year	12.38 (3.57)	7.78 (3.56)	9.39 (3.21)	7.76 (3.53)
Head working time per year	2158.44 (584.84)	1845.29 (650.11)	2371.12 (883.35)	1969.47 (858.83)
Head sick = yes	0.06 (0.24)	0.06 (0.24)	0.04 (0.21)	0.08 (0.27)
Head Kinh/Chinese	0.93 (0.25)	0.91 (0.29)	0.98 (0.16)	0.95 (0.21)
Urban	0.58 (0.49)	0.28 (0.45)	0.52 (0.50)	0.43 (0.49)
Head social insurance	0.80 (0.40)	0.04 (0.20)	-	-
<b>Head occupation (%)</b>				
High-skilled labor	45.23	6.05	4.95	1.95
Intermediate-Skilled labor	47.68	62.68	83.17	78.92
Low-skilled labor	7.08	31.26	11.88	19.14
<b>Regions (%)</b>				
Red River Delta	26.61	27.82	23.6	28.76
Midlands and North Mountainous	14.44	13.18	15.35	8.43
Northern and Coastal Central	19.07	24.60	23.1	21.41
Central Highlands	5.00	3.52	7.10	3.35
South-Eastern Area	21.98	11.49	13.37	13.51
Mekong Delta	12.9	19.39	17.49	24.54
<b>Household poverty rate and poverty gap (%)</b>				
Household Relative poverty rate	3.45	26.59	9.24	19.57
Household Poverty gap ratio	0.85	6.52	1.98	5.49

Source: Authors' finding

## DISCUSSION

### The difference in the probability of households being poor by head employment status broken down by formal and informal institutions

Table 3 shows the two key indicators are jointly and statistically significant. Regarding head employment status, on average, the likelihood of living in poverty is higher in wage worker households, estimated at 3.48% more than the self-employed worker households. As far as the institutional working sector is concerned, a

formal worker household has less probability of being poor than the informal counterpart, estimated at 8.58%.

With respect to the interaction term of employment status and formal-informal institution sector, the result shows all positive predictive margin effects on the probability of a household being poor. Among the sub-samples, informal wage households have the highest probability of falling into poverty. In comparison, a formal wage household enjoys the lowest

likelihood of being poor. The probabilities of being poor among self-employed households fall in between these two extremes, in which informal households suffer greater risks of living in poverty than the formal ones. In other words, the difference in predicted probability among four categories of worker households can be clearly seen by taking formal wage households as

a reference. The result indicates that, on average, informal wage earners and informal self-employed workers are 11.86% and 6.03% higher than a formal wage-earner, respectively. The effect on the probability of a household being poor appears a bit stronger for formal self-employed than for formal wage-earners, but the difference is not significant.

**Table 3.** Contrast predictive margins of employment status and institutional sector on the response variable in probit estimation

Probability of household being poor	Delta Method		
	Contrast	Std. Err.	P>chi2
<b>Head employment</b>			
(Wage vs Self-employed)	0.034826	0.012929	0.007
<b>Institutional sector</b>			
(Formal vs Informal)	-0.085750	0.012274	0.000
<b>Head employment#institutional sector</b> ( <i>Formal wage omitted</i> )			
Informal wage	0.1185902	0.0170176	0.000
Formal self-employed	0.0203348	0.0173575	0.241
Informal self-employed	0.0603296	0.0169335	0.000

Source: Authors' finding

### Determinants of households being poor by worker characteristics among formal and informal workers

This section examines the effect of worker characteristics on the predicted probability of households being poor for both formal and informal employment. We assumed that household poverty status differs among wage and self-employed workers, broken down by institutional sector. We report the average marginal effect to check how each explanatory variable impacts the response variable differs among the sub-samples. Moreover, to test the robustness of the results, we added control variables of household characteristics (e.g., own house, number of working members, number of young) and estimated the average marginal effect among sub-population. The results indicate that the effects of our explanatory variables do not differ between the two models. In particular, Table 4 shows that most potential worker characteristics have significant effects on the probability of a household living in poverty. Furthermore, the signs of the effects are the same among the sub-sample workers; however, the

magnitudes of effects are much stronger in informal than formal workers.

The gender of the head does matter in determining household poverty. As indicated, a household whose head is a female worker is more likely to fall into poverty. This suggests that fear of change, fear of striving and being content with life are agglomeration mentalities that hinder women from progression. The magnitude of the effect appears much stronger for informal workers, especially in the case of informal wage-earner households. This finding might be consistent with the report on informal employment from the Vietnam General Statistics Office (2016) and Chen (2001) for women and informality. The reason might be that female workers in the informal workforce generally have less education and skills than men. Many of them have made precarious livings as home-based workers, construction laborers and street vendors. The result also indicates that the effect of gender on the probability of ending up in poverty decreases as the education level increases, irrespective of labor status (Figure 2). Thus, increasing education attainment levels may play a major role in the formulation of poverty



reduction policies.

Regarding the age of the household head, our estimation indicates that the probability of a household being poor does not significantly differ with age groups across the sub-samples of formal and informal workers. However, the results show that the predictive margin of each age category decreases as age increases. Furthermore, the relationship between the household head's age and household poverty may not be linear, as it would be linked to workers' marginal productivity. Compared to young household heads, older ones tend to have lower marginal productivity, arguably due to the higher depreciation rate of human capital and their weakened dexterity and physical strength (Becker, 1964; Davis & Sanchez-Martinez, 2014; Kyzyma, 2014).

Our results indicate that the number of schooling years has a significant negative effect on the likelihood of a household living in poverty across the sub-samples. The result is consistent with human capital theory in which education does matter in determining poverty (Lydall, 1968; Ulimwengu, 2008). There might appear to be a vicious cycle of poverty in that low education leads to poverty, and poverty leads to low education (Bastos et al., 2009). Because the poor many times have to work to survive, they face difficulties in affording their education, even if education is provided publicly. Thus, the importance of education in reducing poverty is highlighted in the current study. Figure 1 shows the change in probability of household poverty by schooling years by each employment status. With low education, informal workers are more likely to fall into poverty than formal ones. The effects decrease in all states and get closer to zero as education increases. Regarding head employment status, the difference in the predicted probability of a household being poor between the formal and informal sectors appears stronger for wage earners than for the self-employed. As the level of education increases, this difference diminishes regardless of employment status (Figure 1b).

Head working time also is an important indicator of household poverty. As expected, the effect appears to be smaller for formal wage households than others. The reason might be that formal wage earners mostly have fixed working hours, typically 8 hours per day, and few of them may even have extra working hours under their

contracts. For other sub-samples, the higher the head's working time, the lower the incidence of household poverty. The predicted probability magnitude is strongest for households whose heads are informal wage workers, estimated at 8.7%. This could be attributed to the fact that most informal wage earners are casual day laborers and sub-contract workers who do not have adequate jobs. Thus, they have lower working time per year than their formal counterparts.

Occupation skill also has significant effects on poverty. The results indicate that households whose heads are low-skilled laborers have the highest risk of being poor among other occupation categories. In comparison, being high-skilled laborers lessens the incidence of poverty across the sub-samples. Regarding each sub-group, these predicted probabilities' magnitudes are stronger for informal worker households than their formal counterparts. Moreover, the results show a positive correlation between education and occupation skills levels, that more education years are associated with higher working skill levels and vice versa (Figure 3).

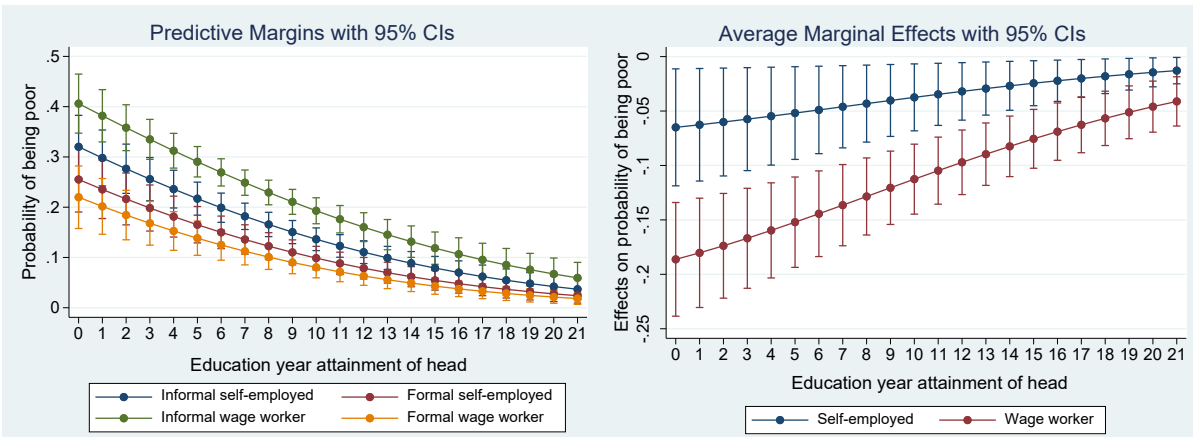
Uncertainty, such as a severe sickness or injury, plays a major role in causing poverty. Similar to poor levels of skills, a poor level of health implies a lower likelihood of getting a job or being able to work at all; hence, individuals have a higher probability of ending up poor. The finding might be consistent with the findings of Buddelmeyer and Cai (2009) and Reinstadler and Ray (2010) regarding health and poverty in Australia and individual income poverty in Europe, respectively. Among the sub-samples, the effect appears to be a bit stronger for informal worker households.

The difference in the ethnicities of household heads also matters in determining household poverty, especially among informal workers. The results show that a household with Kinh ethnicity is less likely to be poor than other ethnic minorities who comprise a smaller proportion of the population. The latter mostly have low educational levels, are geographically, culturally and linguistically isolated, and have limited access to the market.

Furthermore, our results show that regional location does matter in explaining household poverty. Given that, households (both for formal and informal employment) in the Southeastern Area and Red River Delta are less likely to be poor

than households living in other regions. This partially reflects that the more the area is urbanized, the more occupation opportunities for laborers to generate earnings. Hence, the households here have less probability of ending up in poverty. Among the four sub-groups of worker households, these regional categories' impacts are higher for informal worker

households than their formal counterparts. Similarly, households residing in urban areas are less likely to fall into poverty than those residing in rural areas, and the effect is strong in the case of informal worker households. The reason might be that informal jobs are more dominant among rural residents. This finding is corroborated by the work of Jensen et al. (1995) in Pennsylvania.



(a) Predictive margins at representative values of education year

(b) AMEs of formal status depend on education years (with reference to informal status)

Figure 1. The effect of head education year among formal and informal labor statuses

Source: Authors' finding

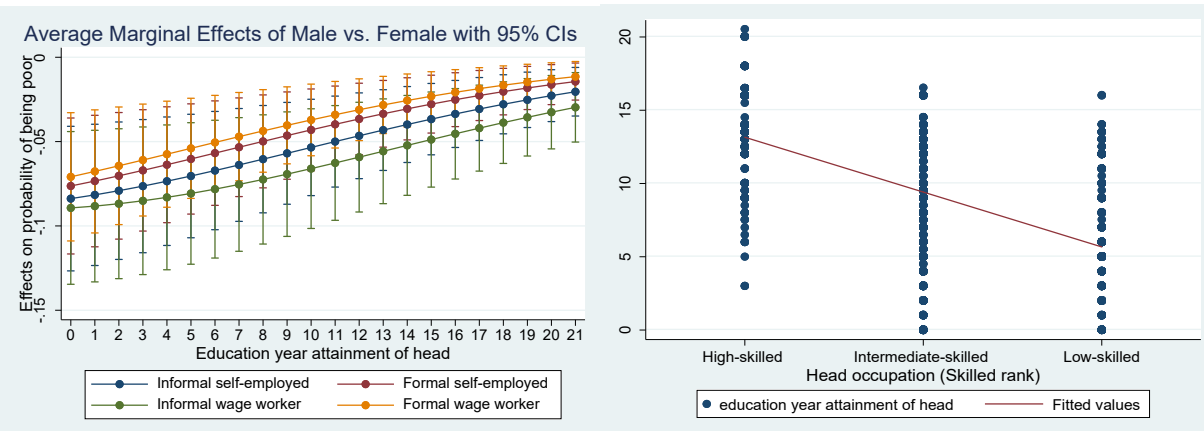


Figure 2. AMEs of head gender depend on education years among formal-informal labor statuses

Source: Authors' finding

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- ktau head_edu_year head_occ_new, stats(taua taub)

Number of obs = 3937
Kendall's tau-a = -0.3050
Kendall's tau-b = -0.4491
Kendall's score = -2363426
SE of score = 69780.030 (corrected for ties)

Test of Ho: head_edu_year and head_occ_new are independent
Prob > |z| = 0.0000 (continuity corrected)
    
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Figure 3. Correlation between education years and occupation skills

Source: Authors' finding

**Table 3.** The effects of worker characteristics among sub-samples of wage and self-employed workers, broken down by formal and informal employment, on the probability of a household being poor. Estimation with average marginal effects.

Average marginal effects	Formal wage workers		Informal wage workers		Formal self-employed		Informal self-employed	
	dy/dx	SE.	dy/dx	SE.	dy/dx	SE.	dy/dx	SE.
Head sex = Male	-0.04101***	0.01163	-0.06615***	0.01791	-0.04641***	0.01300	-0.05560***	0.01494
Head age (15-30 years omitted)								
- 31-45 years	-0.02336	0.02000	-0.03766	0.03165	-0.02644	0.02282	-0.03167	0.02698
- 46-60 years	-0.03459*	0.02002	-0.05666*	0.03204	-0.03928*	0.02319	-0.04731*	0.02741
- Above 60 years	0.00705	0.02965	0.01093	0.04594	0.00791	0.03316	0.00934	0.03916
Head working skills ( <i>High-skilled level omitted</i> )								
– Intermediate-skill level	0.05973***	0.01319	0.11901***	0.02481	0.07077***	0.01345	0.09145***	0.01739
– Low-skilled level	0.12262***	0.01977	0.22076***	0.02911	0.14211***	0.02017	0.17708***	0.02374
Head education year	-0.01048***	0.00176	-0.01743***	0.00225	-0.01193***	0.00188	-0.01445***	0.00204
Log head working time	-0.05252***	0.00888	-0.08738***	0.01255	-0.05982***	0.00960	-0.07244***	0.01035
Head sick = Yes	0.03881**	0.01864	0.06180**	0.02805	0.04379**	0.02090	0.05222**	0.02418
Head ethnic = Kinh/chinese	-0.09576***	0.02421	-0.14430***	0.03272	-0.10686***	0.02697	-0.12495***	0.02964
Urban	-0.04813***	0.00948	-0.08342***	0.01491	-0.05532***	0.01041	-0.06800***	0.01226
Regions ( <i>Red River Delta omitted</i> )								
– Midlands and Nor Mountainous	0.04599***	0.01732	0.07710***	0.02743	0.05257***	0.01920	0.06390***	0.02359
– Northern and Coastal Central	0.05677***	0.01408	0.09383***	0.02131	0.06470***	0.01542	0.07824***	0.01858
– Central Highlands	0.00102	0.02161	0.00183	0.03870	0.00118	0.02505	0.00147	0.03117
– South-eastern Area	-0.05305***	0.01187	-0.10653***	0.02098	-0.06295***	0.01351	-0.08158***	0.01549
– Mekong Delta	0.04148***	0.01365	0.06996***	0.02213	0.04748***	0.01549	0.05784***	0.01865

Asterisks indicated significance level: \*\*\*1%; \*\*5%; \*10%

Source: Authors' finding

## CONCLUSION AND RECOMMENDATION

This study examines the effects of head working characteristics and labor status on the probability of a household being poor among formal and informal workers in the Vietnam economy. It is assumed that the head worker is the household's chief worker, whose income contributes the most to total household income. Taking advantage of the VHLSS 2014, we address labor heterogeneity at the job and firm base, the wage-earner and the self-employed broken down by formal-informal status. Our results suggest that household poverty status highly depends on head worker characteristics and labor status.

Our major findings show that households whose heads are informal workers have a higher probability of being poor than households whose heads are formal workers. Among the formal-informal status, households whose heads are informal and formal wage workers have the highest and lowest risks of living in poverty, respectively. The probabilities of living in poverty of self-employed households fall between those two extremes, in which an informal one suffers a more likely at-risk probability of poverty. The study emphasizes that gender, education levels, occupation skill levels, working time, health status, location, and regions influence the probability of household poverty. Moreover, the magnitudes of effects appear much stronger in the case of informal workers than formal ones. The study also indicates that education may play a major role in reducing poverty and diminishing the difference in the effects on the probability of households living in poverty between formal and informal employment statuses.

In general, compared to the formal ones, the weaknesses of informal workers are reflected in four main aspects: low labor quality, low educational level, low working time (hours/year) and lack of social insurance or labor protection.

The implications of the above findings for policy development can be stated as follows. First of all, it is necessary to increase vocational training associated with job requirements in enterprises in order to increase job opportunities and labor quality for informal workers. Because women working in the informal economy are more vulnerable and are at a higher probability of being poor than men, it is necessary to enhance women's participation in the wage

economy through income support, increasing women's autonomy, and maintaining gender equality in jobs. Second, there is an urgent need to reorient parents' and their children's thinking through mass education campaigns regarding the importance of education (e.g. especially for households in ethnic minorities and rural areas). Parents must also insist on their children going to school before seeking employment or going into business. Third, most informal employment jobs are unstable, have long working hours per day and are paid less than the legal minimum wage, which suggests that there should be a priority policy to ensure minimum wage payment (e.g., per hour of work) in the informal sector. Fourth, it is necessary to strengthen social security for informal workers by ensuring production and business owners' compliance in signing labor contracts and providing compulsory social insurance for their laborers. Employees must also be encouraged and supported so that they can participate in voluntary social insurance. Last but not least, the government must accelerate the formalization of employment in the informal economic sector. This requires a system of supportive policies that affect each target group in the process of formalizing jobs. When transforming into formal work, there will be opportunities to increase investment, expand and have easier access to credit. These, in turn, lead to increased profits, wages and labor productivity.

Despite the fact that the study has been conducted in the context of the Vietnam economy, our results are in line with the literature, indicating that worker characteristics do matter in determining household poverty and emphasizing the importance of education in reducing poverty. Moreover, our study also provides evidence on the impact of the head's labor status on household poverty. These findings further expand the empirical understanding of the disadvantages of informal workers in the labor market, which has been limited in the literature and is mainly restricted to Latin America. Moreover, in the unique nature of Vietnam, the study's findings can simultaneously contribute to evaluating the effectiveness of poverty reduction policies and directing those policies towards accelerating the formalization process and income redistribution instead of increasing productivity. In addition to policymaking, the relationship between poverty and labor market status is also considered from

the perspective of the factors that determine household income. Finally, this study can serve as a good reference for enriching the forum of informal employment in Vietnam, which is a part of the *Decree on measuring the non-observed economy* approved by the Prime Minister of Vietnam on 1 February 2019.

Our study has some limitations and could be extended in various directions. First, as we assumed that the household head represents a chief worker whose income accounts for a large proportion of household income, it would be better to take into account all other working members of a household. Second, microfinance policies are important indicators for explaining poverty levels, but they are absent from the analysis due to data limitations. Third, the difference in individual earnings among formal and informal workers is an interesting alternative topic that can be explored in future studies. Finally, the probability of transition between institutional working sectors might also be an interesting consideration.

#### REFERENCES

- Bairagya, I. (2012). Employment in India's informal sector: size, patterns, growth and determinants. *Journal of the Asia Pacific Economy*, 17(4), 593–615.
- Bastos, A., Casaca, S. F., Nunes, F., & Pereirinh, J. (2009). Women and poverty: A gender-sensitive approach. *The Journal of Socio-Economics*, 38(No.5), 764-778.
- Becker, G. S. (1964). *Human Capital: A Theoretical and Empirical Analysis*. University of Chicago Press: University of Chicago Press.
- Buddelmeyer, H., & Cai, L. (2009). Interrelated Dynamics of Health and Poverty in Australia. *IZA Discussion Paper, No. 4602*.
- Chanfreau, J., & Burchardt, T. (2008). Equivalence scales: rationales, uses and assumptions. Retrieved from <https://www2.gov.scot/resource/doc/933/0079961.pdf>
- Chen, M. A. (2001). Women and informality: a global picture, the global movement. *SAIS Review*, 21(1), 71-82.
- Cunningham, W., & Maloney, W. (2001). Heterogeneity among Mexico's Micro-Enterprises: An Application of Factor and Cluster Analysis. *Economic Development and Cultural Change*, 50, 131-156. doi:10.1086/340012
- Davis, E. P. (2007). A confrontation of economic and theological approaches to “ending poverty” in Africa. *Economics and Finance Working papers*, pp. 07-14. Retrieved from <http://bura.brunel.ac.uk/handle/2438/1036>
- Davis, E. P., & Sanchez-Martinez, M. (2014). *A review of the economic theories of poverty*. National Institute of Economic and Social Research (NIESR). Discussion Papers 435.
- De Soto, H. (1986). *El Otro Sendero: la revolución informal*. Lima: El Barraanco.
- Duncan, O. D. (1961). Occupational Components of Educational Differences in Income. *Journal of the American Statistical Association*, 56(296), 783-792. doi:10.2307/2281994
- Duval-Hernandez, R. (2006). *Informality, Segmentation and Earnings in Urban Mexico*. University of California. Center for US-Mexican Studies.
- Fields, G. S. (2005). A Guide to Multisector Labor Market Models. *Social Protection Discussion Paper Series, no. 505*.
- Gallaway, J. H., & Bernasek, A. (2002). Gender and Informal Sector Employment in Indonesia. *Journal of Economic Issues*, 36(2), 313–321. doi:10.1080/00213624.2002.11506473
- Ghecham, M. A. (2017). The Impact of Informal Sector on Income Distribution: Could Concentration of Income be Explained by the Size of Informal Sector? *International Journal of Economics and Financial Issue*, 7(1), 594-600.
- Harris, J. R., & Todaro, M. P. (1970). Migration, unemployment, and development: a two-sector analysis. *American Economic Review*, 60(1), 126-142.
- Herrera, J., & Hidalgo, N. (2014). Dynamics of informal microenterprises and poverty in Peru: A panel approach. In L. S. Cling J.-P., Razafindrakoto M. and Roubaud F. (Ed.), *The Informal Economy in Developing Countries* (pp. 292-308). Oxford and New York: Routledge.
- Hoyman, M. (1987). Female Participation in the Informal Economy: A Neglected Issue. *The Annals of the American Academy of Political and Social Science*, 493, 64-82.
- International Labour Organization. (1993). *Resolution concerning statistics of employment in the informal sector*. Paper

- presented at the 15th International Conference of Labour Statisticians, January 1993.  
[https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/normativeinstrument/wcms\\_087484.pdf](https://www.ilo.org/wcmsp5/groups/public/---dgreports/---stat/documents/normativeinstrument/wcms_087484.pdf)
- International Labour Organization. (2003). *Guidelines Concerning the Statistical Definition of Informal Employment*. Paper presented at the 17th International Conference of Labour Statistics, December 2003, Geneva: ILO.
- International Labour Organization. (2011). The informal economy in Vietnam. Retrieved from [http://www.ilo.org/wcmsp5/groups/public/@asia/@ro-bangkok/@ilo-hanoi/documents/publication/wcms\\_171370.pdf](http://www.ilo.org/wcmsp5/groups/public/@asia/@ro-bangkok/@ilo-hanoi/documents/publication/wcms_171370.pdf)
- Jensen, L., Cornwell, G. T., & Findeis, J. L. (1995). Informal work in nonmetropolitan Pennsylvania. *Rural sociology*, 60(1), 91–107.
- Kzyzma, I. (2014). Changes in the patterns of poverty in Germany, 1992-2009. *The review of income and wealth*, 60 (Supplement Issue).  
 doi:<https://doi.org/10.1111/roiw.12147>
- Laderchi, C. R., Saith, R., & Stewart, F. (2003). Does it Matter that we do not Agree on the Definition of Poverty? A Comparison of Four Approaches. *Oxford Development Studies*, 31(3).
- Lewis, W. A. (1954). Economic development with unlimited supplies of labour. *Manchester School*, 28(2), 139-191.
- Liang, Z., Appleton, S., & Song, L. (2016). *Informal Employment in China: Trends, Patterns and Determinants of Entry*. Retrieved from IZA Discussion Paper No. 10139: <http://ftp.iza.org/dp10139.pdf>
- Lydall, H. (1968). *The structure of earnings*. Oxford, Clarendon 1968.
- Machin, S. (2011). Education and Inequality. In B. Nolan, W. Salverda, & T. M. Smeeding (Eds.), *The Oxford Handbook of Economic Inequality*. Oxford University Press.
- Maloney, W. F. (2003). Informal self-employment: Poverty trap or decent alternative. In Pathways Out of Poverty[eds] G. S. Fields and G. Pfeffermann, Kluwer, Boston.
- Maloney, W. F. (2004). Informality Revisited. *World Development*, 32(7), 1159-1178.  
 doi:10.1016/j.worlddev.2004.01.008
- Marcelli, E. A., Jr., M. P., & Joassart, P. M. (1999). Estimating the Effects of Informal Economic Activity: Evidence from Los Angeles County. *Journal of Economic Issues*, 33(3), 579–607.
- Mayhew, A. (1971). EDUCATION, OCCUPATION, AND EARNINGS. *ILR Review*, 24(2), 216-225.  
 doi:10.1177/001979397102400206
- Moser, C. O. N. (1978). Informal sector or petty commodity production: dualism or independence in urban development. *World Development*, 6((9/10)), 1041–1064.
- Nelsen, M. K. (1999). Economic restructuring, gender and informal work: a case study of a rural county. *Rural sociology*, 64(1), 18-43.  
 doi:10.1111/j.1549-0831.1999.tb00003.x
- Nguyen, H. C., Nordman, C. J., & Roubaud, F. (2013). Who Suffers the Penalty?: A Panel Data Analysis of Earnings Gaps in Vietnam. *Journal of Development Studies*, 49(12), 1694-1710.  
 doi:10.1080/00220388.2013.822069
- OECD. (2009). What are equivalence scales? Retrieved from <http://www.oecd.org/els/soc/OECD-Note-EquivalenceScales.pdf>
- Reinstadler, A., & Ray, J.-C. (2010). Macro Determinants of Individual Income Poverty in 93 Regions of Europe. *LISER Working Paper Series, No 2010-13*.
- Tokman, V. E. (1989). Policies for a heterogeneous informal sector in Latin America. *17(7)*, 1067-1076.  
 doi:10.1016/0305-750X(89)90169-1
- Ulimwengu, J. M. (2008). Can US welfare programs cure persistent poverty? *IFPRI Discussion Paper*. Retrieved from <http://www.ifpri.org/pubs/dp/ifpridp00818.asp>
- Vietnam General Statistics Office. (2016). *Report on informal employment in Vietnam*. Ha Noi: Hong Duc Publishing House.
- Williams, R. (2012). Using the margins command to estimate and interpret adjusted predictions and marginal effects. *The Stata Journal*, 12(2), 308-331.

## ABOUT THE AUTHORS

Nguyen Ngoc Duc, email:

[ngoc.nguyen@student.uantwerpen.be](mailto:ngoc.nguyen@student.uantwerpen.be)

**Nguyen Ngoc Duc** is a PhD student in Applied Economics, Faculty of Business and Economics at the University of Antwerp, Belgium. He is working on his PhD thesis about Labour economics in Vietnam. He obtained MSc. degree in Development Economics from Czech University of Life Sciences (CULS), Czech Republic, in 2011. And Bachelor's degree major in Economics from Collegio De Los Baños (CDLB), Philippines, in 2008. He is currently working as a lecturer in the Department of Economics, School of Economics, Can Tho University, Vietnam. He teaches Microeconomics, Labour economics and related. His main research interests are labor policy, public economics, transition economics and economic development.

**Le Tin** obtained a degree from the University of the Philippines Los Baños (UPLB) (Philippines) with quantitative economics as his special field. He is a lecturer of the School of Economics of CanTho University in Vietnam. He teaches Accounting and Finance-related subjects. His research interests are Labor Economics, Economic Growth, Stock Exchange and Environmental Accounting.