

A quantitative analysis of housing and its correlates in rural Vietnam

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ABSTRACT

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Using data from the 2018 Vietnam Household Living Standard Survey, the current study examines factors associated with housing conditions in rural Vietnam. We used both descriptive statistics and regression analyses. Controlling for other factors in the regression models, the study finds that households with better education and occupation were more likely to have larger sizes of housing area per person, higher value of the house and permanent houses. Also, the housing conditions are much better for the Kinh population (the ethnic majority) than that for ethnic minorities. In addition, we find that the opportunities for obtaining better housing outcomes vary largely across regions. Our research findings suggest that improving the access of ethnic minorities to education and better job are expected to improve the housing conditions.

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1. Introduction

Housing is widely viewed as a key health resource and plays a key role in the overall quality of life (Dunn, 2002; Evans, Wells, & Moch, 2003; Mak, Choy, & Ho, 2007). Thus, the quality of housing has been a main concern for both researchers and policy makers (Araujo et al., 2005; Baiden, Arku, Luginaah, & Asiedu, 2011). Planners and policy makers try to ensure housing conditions to be served by the needs of their residents and thereby contributing to their quality of life in many countries (Addo, 2016; Hussain & Rashid, 2015; Ibem & Amole, 2013; Lee & Park, 2010; Mohit, Ibrahim, & Rashid, 2010). Vietnam has attained remarkable progress in improving the living standards of its population over the past three decades. The country had moved from one of the poorest countries in 1980s to a lower middle-income economy by the end of 2010 (Kozel, 2014). A recent report shows that about two thirds of Vietnam's population is currently defined as economically secure, consisting of the 13 % who are now part the global middle-class. This group increases rapidly, rising by over 20 %age points over the period 2010 to 2017 (Pimhidzai, 2018). However, Vietnam's improvement in housing conditions seems to lag behind its economic attainments. It is estimated that about 25 % (approximately 4.8 million households) of the country's 24.2 million households were living in poor accommodation (Samad et al., 2015). It is reported in 2016 that there have been about 10.4 % of rural population still living in temporary houses while the corresponding figure is about 2.4 % in urban areas (GSO, 2016). Using the updated data from the 2018 Vietnam Household Living Standard Survey (2018 VHLSS), our study estimated that 62 % and 7 % of the Vietnamese rural households have lived in semi-permanent houses and temporary houses, respectively (see Table 1). While there are huge number of studies examining factors affecting household income and poverty among Vietnamese rural households (Bui, Dungey, Nguyen, & Pham, 2014; Kang & Imai, 2012; Nguyen, Raabe, & Grote, 2015; Tran, 2015; Van Hoang, Tran, Nguyen, & Nguyen, 2019), no study investigates housing and its correlates in rural Vietnam. A throughout understanding of what determining housing conditions is needed for both academic researchers and policy

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makers in Vietnam. The importance of the topic and the literature gap has inspired us to conduct the current research. The main objective of our study is to identify factors affecting housing conditions in rural Vietnam.

In the current study, housing conditions are mentioned in two key indicators: (i) the average housing area per person and (ii) the house types, which are the main indicators of the housing domain in Vietnam. Our econometrics analysis reveals that the level of education and occupation are major factors affecting housing conditions. Households with better education and occupation tend to have larger housing areas per person and live in permanent houses. A large gap in housing conditions is observed between ethnic minorities and the Kinh group (majority). We also discuss some policy implications that might help improve housing conditions for the poor and ethnic minorities in rural Vietnam.

2. Data and analytical methods

2.1. Data

Our study utilized a secondary dataset from the 2018 Vietnam Household Living Standard Survey, which was conducted by the General Statistical Office [GSO] of Vietnam. The survey is designed to be representative both regionally and nationally. The total household sample includes about 46,000 households, and our study uses about 30,000 rural households. The survey contains various useful information concerning socio-economic characteristics of households such as demographics, education, employment, occupation, assets, income and expenditures, and others. Especially, the survey collected information about housing conditions, including the housing area, the value of the house and various types of houses, which allows us to examine what determines the housing conditions?

2.2. Analytical methods

Our study employs both descriptive statistics and micro-econometric analysis. Our econometric model specification is based on the distribution of dependent variables (Wooldridge, 2016). Econometric analysis using both OLS (Eqs. (1-2)) and Multinomial logit regression (Eq. (3)) were used to examine the impact of various factors on the average housing area per person, the value of the house and the house type, respectively.

$$HA_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \varepsilon_i, \quad (1)$$

$$HV_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \varepsilon_i, \quad (2)$$

$$HT_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_3 X_{3i} + \varepsilon_i, \quad (3)$$

where HA_i is the natural logarithm (log) of the average housing area per person, HV_i is the log of the value of the house and HT_i shows various types of houses (villa, permanent and semi-permanent houses), with the temporary house being treated as the reference group). Various independent variables were selected following previous literature (Addo, 2016; Alexiu, Ungureanu, & Dorobantu, 2010; Hussain & Rashid, 2015) and the sustainable livelihood framework (Scoones, 1998). Three equations use the same covariates as follows: X_{1i} is the vector of individual characteristics of household heads such as age, gender, ethnicity, education and occupation, while X_{2i} is a set of variables reflecting household characteristics, namely household size, dependency ratio and various types of lands. X_{3i} includes dummy variables for seven regions and ε_i is an error term. Finally, $\beta_0, \beta_1, \beta_2$ and β_3 denote unknown parameters that need to be estimated. However, we did not include the income variable because this variable is often determined by education and occupation in the empirical literature (Möllers & Buchenrieder, 2011; Tran, 2015). Thus, excluding this variable from regression models enables us to minimize the potential endogeneity problem.

3. Results and discussions

3.1. Descriptive statistics

The name, definition and measurements of both dependent and independent variables are given in Table 1. 81 % of the heads of household sample are Kinh people (ethnic majority). The average age of the household heads is about 52 years, 82 % among them are married and 79 % of the household heads are male. Regarding the highest education qualification of the heads, Table 1 shows that 20 % of household heads had no education, 29% with primary education, 31 % with lower secondary education while only 8 % having upper secondary education, 1% with college degree and 3% with university and higher degrees. The data also reveal that those with unskilled job accounts for 59% of the household heads, followed by those with skilled manual jobs (27 %), low skilled non-manual jobs (10 %) while only 4 % with high skilled non-manual jobs. On average, each household have 3.7 members and the dependency ratio is 0.39. The average size of annual cropland per household is 3206 m². The corresponding figures for perennial cropland, forestland, aquaculture land and garden are 1716 m², 1863 m², 498 m², and 208 m². Interestingly, Table 1 shows that only 1 % of household sample live in villas, 31 % with permanent households while 62 % and 7 % living in semi-permanent and temporary houses, respectively. Also, the average housing area per capita is about 27 m², with the corresponding highest and smallest size being 1 m² and 670 m². On average, the total value of the house (as self-reported by the household head) is about 558 million Vietnam Dong (VND)¹.

¹ 1 USD equated to about 23 thousand VND in 2018.

Table 1
Key characteristics of rural household sample, 2018

Variable	Observation	Mean	Std. Dev.	Min	Max
Ethnicity of household head (1=major; 0=minor)	29,596	0.81	0.39	0	1
Age of household head (years)	29,596	51.86	13.60	12	113
Marital status of household head (1=married, 0=otherwise)	29,596	0.82	0.38	0	1
Gender of household head (1=male; 0=female)	29,596	0.79	0.41	0	1
Highest education level of household head					
No education (1=yes; 0=not)	29,596	0.20	0.40	0	1
Primary education (1=yes; 0=not)	29,596	0.29	0.46	0	1
Lower secondary education (1=yes; 0=not)	29,596	0.31	0.46	0	1
Upper secondary education (1=yes; 0=not)	29,596	0.08	0.28	0	1
College (1=yes; 0=not)	29,596	0.01	0.10	0	1
University and higher (1=yes; 0=not)	29,596	0.03	0.17	0	1
Main occupation of household head					
Unskilled job (1=yes; 0=not)	29,564	0.59	0.49	0.00	1.00
Skilled manual job (1=yes; 0=not)	29,564	0.27	0.45	0.00	1.00
Low skilled non-manual job (1=yes; 0=not)	29,564	0.10	0.30	0.00	1.00
High skilled non-manual job (1=yes; 0=not)	29,564	0.04	0.19	0.00	1.00
Household characteristics					
Household size	29,596	3.71	1.58	1.00	13.00
Dependency ratio*	29,596	0.39	0.31	0	1
Annual cropland (m2)	29,596	3206	17918	0	2700000
Perennial cropland (m2)	29,596	1716	8946	0	700000
Forestland (m2)	29,596	1863	11197	0	690000
Aquaculture land (m2)	29,596	498	4394	0	380000
Garden land(m2)	29,596	208	909	0.0	60000
Housing condition					
The total value of the house (million Vietnam dong)	29,596	558	782	0.0	34000
Average housing area per person	29,596	27	21	1	670
Villa (1=yes; 0=not)	29,596	0.01	0.07	0.0	1
Permanent house (1=yes; 0=not)	29,596	0.31	0.46	0.0	1
Semi-permanent house (1=yes; 0=not)	29,596	0.62	0.49	0.0	1
Temporary house (1=yes; 0=not)	29,596	0.07	0.26	0.0	1

Source: authors' own calculation from the 2018 VHLSS. This ratio is calculated by the number of members aged under 15 and over 59, divided by the number of members aged 15-59.

3.2. Econometric analysis

Table 2 reports the regression results from the housing area and value of the house models.

Table 2
Factors associated with the value and size of the house (OLS regression)

Explanatory variables	The average housing area per person		The total value of the house	
	Coef	se	Coef	se
Ethnicity	0.19***	(0.016)	0.76***	(0.037)
Age	0.01***	(0.000)	0.01***	(0.001)
Marital status	-0.02*	(0.012)	0.22***	(0.022)
Gender	0.05***	(0.011)	-0.01	(0.020)
Primary education	0.02**	(0.008)	0.04***	(0.016)
Lower secondary education	0.06***	(0.009)	0.16***	(0.018)
Upper secondary education	0.11***	(0.013)	0.27***	(0.023)
College	0.19***	(0.034)	0.41***	(0.052)
University and higher	0.19***	(0.022)	0.44***	(0.049)
Skilled manual job	0.06***	(0.009)	0.21***	(0.018)
Low skilled non-manual job	0.15***	(0.012)	0.38***	(0.024)
High skilled non-manual job	0.18***	(0.019)	0.45***	(0.039)
Dependency ratio	-0.13***	(0.011)	-0.34***	(0.020)
Household size	-0.20***	(0.002)	0.10***	(0.004)
Annual cropland (log)	0.00*	(0.001)	-0.01***	(0.003)
Perennial cropland (log)	0.01***	(0.001)	0.01***	(0.003)
Forestland (log)	-0.00	(0.002)	-0.02***	(0.004)
Aquaculture land (log)	0.01***	(0.002)	-0.01*	(0.004)
Southeast	0.07***	(0.017)	-0.66***	(0.038)
Mekong Delta	0.03	(0.023)	-0.08*	(0.045)
Central Highlands	-0.06**	(0.026)	-0.34***	(0.062)
South Central Coast	0.02	(0.019)	-0.55***	(0.046)
North Central Coast	-0.04**	(0.019)	-0.41***	(0.042)
West Northern Mountains	0.04	(0.028)	-0.37***	(0.074)
East Northern Mountains	0.10***	(0.020)	-0.22***	(0.044)
Constant	3.19***	(0.032)	11.30***	(0.060)
Observations	29,564		29,564	
R-squared	0.360		0.248	

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Source: authors' own calculation from the 2018 VHLSS.

It is evident that controlling for other factors in the model, households with the head being the Kinh group, on average, have a housing area per person that is 19 % higher than that among those with the head being ethnic minorities. Also the value of the house is much higher (76 %) for the former than that for the latter. The impact of the household heads' age on housing area and house value is highly statistically significant but its magnitude is quite small. While the marital status of household heads has a negative and very small effect on housing area (-2%), it does have a quite large and positive effect on the value of the house (22%). We also find a small effect of gender effect on housing area, with the housing area per capita being 5% higher for male-headed households. In both models, we find positive effects of education on the size and value of the house. Also, the effect increases with higher levels of education in both models. For instance, the average housing area per capita is 2% higher for households with the head completing primary education than those without education. Similar but larger effects are 6%, 11%, 19% and 19% for lower secondary education, upper secondary education, college and university degrees, respectively. The corresponding effect of education levels on the house value is 4%, 16%, 27%, 41% and 41% respectively. The finding is consistent with previous studies (Alexiu et al., 2010; Hussain & Rashid, 2015; Kain & Quigley, 1970) which confirmed the importance of education in housing conditions.

Table 3
Factors associated with house types (Multinomial regression model)

Explanatory variables	Villa vs temporary house		Permanent house vs temporary house		Semi-permanent house vs temporary house	
	RRR	SE	RRR	SE	RRR	SE
Ethnicity	8.02***	(3.300)	3.92***	(0.553)	1.63***	(0.186)
Age	1.03***	(0.008)	1.04***	(0.003)	1.03***	(0.002)
Marital status	1.83*	(0.649)	1.80***	(0.181)	1.22**	(0.101)
Gender	1.03	(0.314)	0.83**	(0.078)	0.85**	(0.068)
Primary education	0.91	(0.234)	1.13*	(0.081)	1.23***	(0.075)
Lower secondary education	1.24	(0.306)	1.70***	(0.139)	1.48***	(0.109)
Upper secondary education	2.38***	(0.701)	2.14***	(0.261)	1.66***	(0.190)
College	5.42*	(5.023)	5.80***	(3.560)	4.59**	(2.773)
University and higher	10.54***	(5.087)	5.23***	(1.596)	3.06***	(0.901)
Skilled manual job	1.60**	(0.352)	2.04***	(0.173)	1.55***	(0.118)
Low skilled non-manual job	1.82**	(0.548)	2.17***	(0.244)	1.56***	(0.157)
High skilled non-manual job	3.35***	(1.493)	4.07***	(1.033)	2.80***	(0.679)
Dependency ratio	0.43***	(0.133)	0.34***	(0.034)	0.63***	(0.056)
Household size	1.35***	(0.080)	1.26***	(0.028)	1.10***	(0.023)
Annual cropland (log)	0.96	(0.027)	0.98	(0.010)	1.03***	(0.009)
Perennial cropland (log)	1.05	(0.032)	1.01	(0.013)	1.04***	(0.010)
Forestland (log)	0.98	(0.042)	0.97*	(0.015)	1.00	(0.014)
Aquaculture land (log)	1.05	(0.041)	1.00	(0.016)	0.96***	(0.012)
Southeast	0.02***	(0.005)	0.01***	(0.001)	0.09***	(0.018)
Mekong Delta	0.06***	(0.027)	0.02***	(0.007)	0.33***	(0.076)
Central Highlands	0.02***	(0.013)	0.02***	(0.005)	0.19***	(0.048)
South Central Coast	0.13***	(0.066)	0.09***	(0.029)	1.27	(0.373)
North Central Coast	0.06***	(0.026)	0.08***	(0.019)	0.30***	(0.073)
West Northern Mountains	0.06***	(0.046)	0.10***	(0.029)	0.22***	(0.061)
East Northern Mountains	0.12***	(0.045)	0.09***	(0.020)	0.17***	(0.037)
Constant	0.01***	(0.008)	1.42	(0.439)	3.81***	(1.070)
Pseudo R2			0.18			
Prob > chi2			0.000			
Observations			29,564			

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1 RRR: relative risk ratios.
Source: authors' own calculation from the 2018 VHLSS.

As given in Table 3, the Multinomial logit estimates are reported in the form of the relative risk ratios (RRR). The results confirm the key role of education in living better houses. For instance, the RRR of living in a permanent house is 1.13 times higher for households with the head having primary education. The corresponding figures are 1.70, 2.14, 5.8 and 5.23 times higher for lower secondary education, upper secondary education, college and university. In all three models, we find that occupation of household heads plays a decisive role in securing better housing conditions. The average housing area per person and the value of the house is 18% and 45% higher for households with the heads having skilled non-manual jobs than for those with the heads being unskilled workers. The RRR of living in villas, permanent and semi-permanent houses (relative to temporary houses) is 3.35, 4.07 and 2.80 times higher than those with the heads being high skilled non-manual workers than those with their heads being unskilled workers. Notably, Table 3 indicates that households in the ethnic majority (Kinh population) have RRR that is 8.02, 3.92 and 1.63 times higher to live in villas, permanent and semi-permanent houses than for those in ethnic minorities. Finally, we also find evidence that housing conditions vary across regions. Specifically, with the same individual and household characteristics, households living in the Southeast and East Northern Mountains regions, on average, tend to larger housing areas per person while those in the Central highland and North Central Coast tend to have smaller housing areas per person than those living in the Red River Delta (the reference group). Interestingly, we find that the value of the house is much lower in all regions than that in the Red River Delta. Also, households living in other region are more likely to live in temporary houses than those living in the Red River Delta.

4. Conclusion and policy implications

The main aim of the current study was to examine housing and its correlates in rural Vietnam. It has been estimated that 32% of the rural household sample lived in permanent houses, while 62% living in semi-permanent houses and 7% with temporary houses. The average housing area per capita is about 27 m² and the average value of the house is about 558 million VND. Our econometric analysis has found a number of key factors affecting housing conditions in rural Vietnam. First, households with better education attain higher quality of housing conditions, including the housing area per person, permanent houses and higher values of the house. Second, these housing conditions are also better for households with better occupations. These findings, combined together, show the importance of human capital in securing better housing outcomes. We find a large gap in housing quality between ethnic minority households and Kinh households in rural Vietnam. The former always have lower level of education and occupation than do the latter in Vietnam (Tran, 2015). The findings imply that improving the access of the ethnic minorities to education can help them not only move out of poverty but also improve their housing conditions. Notably, we find housing quality varies largely across regions. Households living in the Red River Delta tend to living in permanent households than those in other regions. This suggests that the opportunities for attaining better housing outcomes might be affected by some socio-economic-regional factors. This implies that housing policies should be designed accounting for differences in the regional context. Investigating the reason for this difference also offers an interesting topic for future research.

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