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Health insurance and self-employment transitions in Vietnam

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ABSTRACT

Health insurance can have important effects on self-employment and self-employment transitions. However, there is a literature gap on the relationship between health insurance and self-employment in low- and middle-income countries, especially in the context of the rapid expansion of health insurance in these countries. This article examines this relationship in Vietnam with a focus on a comparison between the voluntary scheme for the informal sector (mostly self-employed workers) and compulsory insurance for the formal sector (mostly wage workers). We employ a Probit model with selection on a panel from the Vietnamese Household Living Standards Surveys 2010–2014 to investigate the association between health insurance and self-employment entry and exit. We show that those with compulsory health insurance in Vietnam, the formal workers, are 10 percentage points less likely to enter self-employment than those having voluntary insurance. Regarding self-employment exit, people with compulsory insurance are more likely to exit self-employment compared with those covered by voluntary insurance. However, the effect size is relatively small.

KEYWORDS

Health insurance; self-employment entry; self-employment exit

There is a difference in the coverage rate of health insurance between self-employed workers and wage earners in Vietnam. This disparity is largely a result of a gap in the coverage rate between formal workers and informal workers (Somanathan et al., 2014) whereby the self-employed in Vietnam are overly represented by informal workers (Cling et al., 2011) and those in the formal sector are often wage employees and public workers. In 2011, informal workers and their families represented around 50 percent of those without insurance coverage in Vietnam while the corresponding share among formal workers was around 19 percent (Somanathan et al., 2014). The enrollment rate into health insurance among informal workers in 2011 was only 26 percent compared with 56 percent for formal ones (ibid.). Even though Vietnam's health insurance system has been pooled into a single

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program called Social Health Insurance (SHI), the current program has inherited the targeting approach from its predecessors, which depends on employment status for working-age individuals. Therefore, different employment groups are enrolled into the SHI program via different membership categories with different enforcement mechanisms. Formal workers are enrolled via a compulsory scheme whereas informal workers have an option to join via a voluntary scheme. A formal worker would get the insurance coverage via his or her employer, whereby two thirds of health insurance premiums are paid by employers and the worker pays the remaining amount. On the contrary, informal workers have to pay an out-of-pocket premium to a local insurance agency. Even though the two schemes share the same SHI benefit package, this design has led to the aforementioned discrepancy in enforcement between the formal and informal sector, possibly due to adverse selection among informal workers (Somanathan et al., 2014). Additionally, the lack of health-insurance literacy in Vietnam (ibid.) may be another reason for the low uptake rate of voluntary insurance compared with the compulsory scheme. This enforcement issue creates a link between health-insurance coverage and the institutional sector (formal/informal), which is then translated into a link between health insurance and employment category (that is, self and wage employment) due to the structure of the Vietnamese labor market.

The relationship between health insurance and the nexus of self- and wage employment (especially self-employment mobility) is an important policy issue because of its potential impact on the labor market (for example, see Gumus & Regan, 2015; Heim & Lurie, 2010; Velamuri, 2012). However, despite a rich literature on the effects of health-insurance systems on self-employment mobility, much of the literature has focused on the American health-care system with very few studies examining this relationship in the context of low- and middle-income countries (LMICs) (Le et al., 2019). Therefore, the literature is not necessarily useful for LMICs as the high level of formal self-employment of the American economy is rather distinctive from the situation in low- and middle-income economies in which large portions of the population are engaged in informal self-employment. Besides, the rapid expansion of health-insurance coverage in LMICs (Lagomarsino et al., 2012; Rodin & de Ferranti, 2012) and the vital role of self-employment in these economies (Gindling & Newhouse, 2014) highlight an urgent need for more research on this topic. Therefore, it is timely and relevant to conduct research for LMICs given that many of these countries are rapidly expanding their health-insurance systems in parallel with pushing for the formalization of the economy and encouraging formal entrepreneurship. For Vietnam, given the role of the self-employment sector in the country, which accounted for more than 58 percent of total employment in 2017 (World Bank, 2018), and the gap in health-insurance

coverage between self-employed workers and wage earners (Somanathan et al., 2014), it is highly relevant to investigate this relationship.

This article examines the relationship between health insurance and self-employment mobility in Vietnam with a focus on the comparison between the voluntary scheme for the informal sector (mostly self-employed workers) and the compulsory scheme for the formal sector (mostly wage workers). We employ a Probit model with selection on a panel from the Vietnamese Household Living Standards Surveys (VHLSS) 2010–2014 to investigate the association between health-insurance coverage and self-employment entry and exit over time. However, due to the absence of exogenous policy variations, this analysis aims only to highlight the correlation between health insurance and self-employment mobility rather than drawing a causal link between the two. This presents the biggest limitation of the study.

Literature review

The relationship between health insurance and self-employment mobility is a relevant policy question because of the potential impacts on the labor market. One of the growing concerns involves "entrepreneurship lock" (Fairlie et al., 2011), which is believed to keep people in wage employment and, hence, potentially reduce job search and job matching while triggering labor-market inefficiencies if health insurance is linked to wage employment (Gumus & Regan, 2015). The term *entrepreneurship lock* was coined by Fairlie et al. (2011) to distinguish it from *job lock* (that is, the effect of health insurance on job mobility in general). This perspective is influenced by the job-lock literature pioneered by Madrian (1994) and Gruber and Madrian (1994) regarding the American labor market, which, in turn, is based on the idea of the job-matching component of productivity by Jovanovic (1979). It is argued that the productivity of the whole economy is reduced if a better job match is impeded because someone who wants to move chooses to stay in his or her current job just because of the health benefit attached (Madrian, 1994). In that logic, Holtz-Eakin et al. (1996) examines the effect of health insurance on entrepreneurial activity and hypothesizes that employer-sponsored health insurance impedes people from leaving their wage job for self-employment. However, the study finds no significant evidence to support the hypothesis (Holtz-Eakin et al., 1996). Since then, the body of literature on entrepreneurship lock has been developed further, with several studies on the United States. In examining labor-force transition during middle age, Zissimopoulos and Karoly (2007) study working individuals over age 51 and suggest that having a retirement health coverage in the current job reduces the likelihood of moving into self-employment in the next period. However, Zissimopoulos and Karoly (2007) investigate the effects of many factors on the transition to self-employment rather than mainly focusing on health insurance. Fairlie et al. (2011) use a regression discontinuity approach

to examine the effect of employer-provided health insurance on entrepreneurship in the elderly group at the retirement age cutoff of 65 and find an increase in the business-ownership rate from just under to just above 65 years old. In Germany, according to Fossen and König (2017) the public health insurance scheme, which is only mandatory for public-sector workers, tends to decrease the probability of self-employment entry. The study finds that a cost difference in health insurance premium of 10 Euros per month can reduce the annual entry rate by 1.7 percent (Fossen & König, 2017).

Contrary to the entrepreneurship-lock argument, health insurance can also have an entrepreneurship promotion effect, depending on the portability of the health insurance package (that is, whether health insurance is tied to employment or not) (Le et al., 2019). Health insurance access via either the employer or a spousal package has been shown to be a significant determinant of being self-employed (Gai & Minniti, 2015; Wellington, 2001). Health insurance reforms that improve access to health insurance for the self-employed through fiscal instruments (tax deductibility or tax subsidies) have been shown to increase the probability of self-employment (Gumus & Regan, 2015; Heim & Lurie, 2010; Velamuri, 2012). Similarly, state-level coverage expansion has been found to promote self-employment (DeCicca, 2007; Niu, 2014). In another study on 28 countries in eastern Europe and central Asia, Wagstaff and Moreno-Serra (2009) use aggregate data for the period 1990 to 2004 to show that social health insurance expansion seems to increase the self-employment share of total employment.

In summary, depending on the design of health insurance systems, health insurance can have either entrepreneurship-lock or entrepreneurship-promotion effects. The current study seeks to find evidence concerning this matter for Vietnam.

The Vietnamese health insurance system

In Vietnam, the first social health insurance was introduced as a compulsory-contribution-based scheme in 1992 for the formal sector to include public servants, people working in state-owned enterprises, and private companies (Palmer, 2014). Since then, different schemes have been introduced to different groups of the population. Finally, in 2008, all schemes were consolidated into one national SHI program under the first Health Insurance Law (Socialist Republic of Vietnam, 2008). The latest policy change was the Health Insurance Law Amendment in 2014 (Socialist Republic of Vietnam, 2014), which revised some of the articles in the previous bill and explicitly endorsed universal health coverage by stating that "health insurance is compulsory for all individuals under this law" (Article 1, Socialist Republic of Vietnam, 2014). Until 2014, the majority of SHI members were enrolled under different membership categories that used to form its predecessors.

These included compulsory insurance for the formal sector, free health insurance for the poor, subsidized insurance for the near-poor, free insurance for social-assistance recipients (persons with disabilities,[1] veterans and mothers of war martyrs), free insurance for children under age 6 and voluntary insurance for students, the informal self-employed (that is, farmers and nonfarm self-employed workers), and dependents of those in the compulsory scheme. In addition to the SHI, there were also other types of health insurance in the financial market. However, these were often more expensive and exclusively for those who could afford it.

Despite all schemes having been pooled into one single payment program, management remains fragmented (Somanathan et al., 2014), with differences in enforcement mechanisms, premiums, and co-payment rates. Due to the enforcement issue (ibid.), the government has been trying to increase the coverage rate via many policy reforms. The current system uses a diminishing premium rate, with the premium being increasingly lower for the next family member who is enrolled into the SHI. For the compulsory and voluntary insurance schemes, different salary bases and contribution rates are used. Formal employees are required to contribute 2 percent of their salary (the remaining 4 percent is paid by their employers) (Socialist Republic of Vietnam, 2014). By contrast, those covered by the voluntary scheme, contribute 6 percent of the minimum wage of the public sector (ibid.). The diminishing premium rate then applies to the next enrollee in the family. Due to this dynamic premium formula, it is not straightforward to quantify whether formal workers or informal workers are paying more in insurance premiums. We, however, have evidence of an enforcement gap between the two schemes (Somanathan et al., 2014).

Data and methodology

We use a panel from the Vietnamese Household Living Standards Surveys (VHLSS) 2010–2014. VHLSS is a representative household survey conducted every two years to collect individual-level data on many topics including health, labor, and demographics. However, because of the broad purpose, the surveys do not have detailed information on job characteristics, spousal characteristics (Zissimopoulos & Karoly, 2007), or risk attitude (Van Praag & Cramer, 2001), which have been shown to significantly affect self-employment.

Each survey round collects information for around 9,000 households in 3,000 communes in Vietnam. To ensure the representativeness of each survey cross-section, a rotating approach is used wherein only half of the sample

[1]The poor and the near-poor are those listed in the Poor List or the Near-Poor List by MOLISA (The Ministry of Labour - Invalids and Social Affairs). In Vietnam, poverty targeting are done bottom-up via community meetings. Those enlisted as "poor" can benefit from free health insurance (the premiums are fully tax-funded). Those enlisted as "near-poor" will benefit from premium subsidy if enrolled into SHI (premiums are partly subsidized, they still have to pay the remaining amount).

each wave is repeated in the next wave. This significantly reduces the sample size when the panel structure is used. After data cleaning and verification, the original panel includes approximately 1,850 households each wave. Notably, it is not possible to separate students above age 16 in the working-age sample because the surveys in 2010 and 2012 did not ask why someone was not working over the last 12 months. After attrition checks, we use the legal working-age cutoff in Vietnam (16 years old) and the universally accepted working age (16–65) in the literature to draw a subsample of working-age people. The panel of working-age individuals has 4,047 observations in 2010, 4,226 observations in 2012, and 4,047 observations in 2014.

In this article, we define a person as self-employed (SE) if they reported having worked as a self-employed worker "over the last 12 months." Unlike the self-employment sector in advanced countries, which is mainly represented by formal workers and entrepreneurs, this employment category in LMICs denotes a complex taxonomy. This includes farmers, own account workers,[2] unregistered workers working in household businesses (informal workers), and formal entrepreneurs (formal workers). Wage employment (WE) and dual employment (DE, that is, engaged in both self-employment and wage employment simultaneously) are specified based on the self-reported work status "over the last 12 months."

We define SE entry and exit based on work transitions from year t to year $t + 1$ (that is, transitions between the years 2010 to 2012 and the years 2012 to 2014). In particular, entry into SE is defined as a dummy variable, taking the value of 1 if a person moves from WE or DE in year t to SE in year $t + 1$. SE entry takes the value of 0 if the individual stayed in WE or DE for both periods t and $t + 1$. Similarly, SE exit is defined as a dummy variable to indicate the transition from SE in year t to WE or DE in year $t + 1$. SE exit equals 0 if the person stayed in SE in both years t and $t + 1$. After tracking the SE transitions, we keep the observations only in the baseline years (two cross-sections in 2010 and 2012).

As work transition depends on the original status (that is, working or not working), we use a Probit model with sample selection by Van de Ven and Van Praag (1981) to account for selection into the labor market. In a nutshell, this model mimics the Heckman correction (Heckman, 1979), which is designed for explaining a nondichotomous variable, to apply into a Probit model with a dichotomous variable. However, Van de Ven and Van Praag (1981) use both maximum likelihood and two-stage estimators for comparison to avoid the disadvantages of the Heckman's two-stage estimator. This model has two equations, a selection equation for selectivity into the labor market and an outcome equation for SE transitions. For identification, the model requires that the selection equation have at least one exogenous variable that is not in the outcome equation (that is, identification variable). We use the dummy variable of employment status in 2010

[2]Own-account workers are those workers who, working on their own account or with one or more partners, hold the type of jobs defined as "self-employment jobs", and have not engaged on a continuous basis any employees to work for them.

Table 1. Entrepreneurship lock mechanisms.

Movement	Mechanisms	Variable
Stay in WE/DE	-Informal WE to formal WE	Entry = 0
	-Informal WE to DE (at least one job is formal)	
	-Informal DE (both jobs are informal) to formal WE	
	-DE (both are informal) to DE (at least one job is formal)	
SE exit	-Informal SE to DE (at least one job is formal)	Exit = 1
	-Informal SE to formal WE	

Notes. SE = self-employment only; WE = wage employment only; DE = dual employment.

(that is, the lag value of employment status in 2012) as an identification variable in this research. There are reasons to assume that the labor-force participation in 2010 affects that of 2012. Once a person is in the labor market, his or her employment transition in 2012 does not depend on labor-force participation in the previous time period in 2010. The use of a lag variable reduces the final sample to include only regressors from the year 2012. The final sample for our analysis consists of 4,226 working individuals in 2012.

Because SE in Vietnam comprises both formal and informal sectors whereas voluntary insurance is designed for the informal self-employed, the underlying mechanism of employment mobility (or immobility) in the case of entrepreneurship lock (if any) can be varied and aligns with the process of formalization. We expect that those with compulsory health insurance in the formal sector (that is, those working in the public sector or in the formal private sector) will have the tendency to stay in WE or DE, whereas those with a voluntary health insurance (farmers and persons who are informally self-employed in the non-farm sector) are expected to be more likely to move out of SE to WE or DE with a more secured health scheme. The mechanisms are summarized in Table 1.

Using lag of labor-force participation as the identification variable, in the main equation, we regress SE entry and exit on health insurance coverage; individual and household characteristics in the baseline, such as gender, marital status, educational attainment, the annual health-care utilization (proxied for health status), income per capita per month, household size, dependency ratio,[3] and work industry (agriculture/non-agriculture). To account for the seasonal effect, we also control for the interview month. Notably, we do not have information on health status, therefore it is proxied by health-care utilization. We use only the first type of health insurance reported for this analysis because the majority of the surveyed people have only one health insurance scheme.

Methodological limitations

One concern is the potential endogeneity of health insurance as there is adverse selection in enrolling into the SHI program, especially for those who sign up for

[3]*Dependency ratio* is defined as the total number of children under 16 and elderly family members above 65 divided by the household size.

voluntary insurance (Somanathan et al., 2014). One can argue that there are idiosyncratic shocks that may affect health insurance enrollment and income, which in turn, affects employment choices. Additionally, risk-taking behavior, which was not controlled for in our models due to data limitation, might affect health insurance enrollment while potentially affecting self-employment choices. As it is difficult to find a viable instrument variable to address this endogeneity issue, the results of this analysis should not be interpreted as drawing any causal inference.

To avoid using health insurance, which is likely endogenous, a potential solution is to construct a synthetic health insurance premium. However, constructing synthetic health insurance premiums potentially results in severe bias. In reality, the implementation of the SHI in Vietnam has many complications, especially with the household-based enrollment of informal workers. Calculating the discounting premiums for the next family members is not always straightforward. There is a huge discrepancy between what is regulated in the health insurance law and how much people pay for premiums in reality. The low awareness of the Social Health Insurance program is another issue, which potentially results in a very imprecise health-premium estimation. Therefore, in this research, we choose to use health insurance rather than insurance premiums as the main independent variable despite the potential risk of endogeneity

Results

Descriptive statistics

Health insurance coverage

Table 2 provides information on health insurance coverage in Vietnam during the years 2010 to 2014. As suggested, health insurance was expanding rapidly during the period, from nearly 60 percent to 76 percent of the total population. Coverage also increased sharply for working-age people, from around 47 percent in 2010 to 58 percent in 2014. However, despite the rapid coverage expansion, the results seem to be consistent with Somanathan et al. (2014) regarding the low enforcement of SHI, especially the contribution-based categories (that is, voluntary and compulsory insurance). Importantly, other types of private insurance outside the SHI program were more popular than these contribution-based schemes, suggesting that the SHI program might not be well received by the general public. This is explained, according to our observations, by the fact that people do not have trust in the effectiveness of the system (Somanathan et al., 2014).

Self-employed in Vietnam

Table 3 shows the employment categories in Vietnam during the years 2010 to 2014 using the final panel of the working-age population. Similar to other

Table 2. Health insurance coverage from 2010 to 2014 (%).

	2010	2012	2014
Total population			
No insurance	41.37	36.99	33.07
Free health insurance for children under 6	8.23	5.81	3.22
Subsidized health insurance for the poor and the near poor*	14.07	16.87	16.07
Free health insurance for assistance recipients	5.61	6.46	9.64
Compulsory health insurance for the formal sector	9.63	10.63	11.12
Voluntary insurance	6.78	7.83	10.75
Others (mostly private insurance)	14.31	15.41	16.13
Number of observations	6,061	6,090	5,636
Working-age population			
No insurance	52.55	46.90	41.57
Subsidized health insurance for the poor and the near poor*	14.13	16.06	14.99
Free health insurance for assistance recipients	5.07	5.78	8.80
Compulsory health insurance for the formal sector	12.81	13.57	14.17
Voluntary insurance	8.37	9.49	12.85
Others (private insurance)	7.07	8.21	7.63
Number of observations	4,047	4,226	4,047

Notes. The statistics are weighted using the survey sampling weights.
*Until 2014, the poor were entitled to free health insurance, while the near poor could benefit from a half-price premium reduction.

Table 3. Employment categories from 2010 to 2014 (%).

Year	2010	2012	2014
Total sample (working-age population)	4,047	4,226	4,047
Working population rate	84.53	83.64	82.83
Total sample of the working population	3,454	3,550	3,397
WE only	24.07	24.38	24.71
DE	22.44	21.22	22.05
SE only	53.49	54.41	53.24

Notes. DE (dual employment) denotes the combination of both WE and SE. The statistics are weighted using the survey sampling weights.

LMICs, Vietnam is characterized by a large share of self-employment, at approximately 54 percent to 55 percent of the total working population from 2010 to 2014. Another important feature is the role of dual employment, which makes up around 22 percent of the total working population.

Table 4 provides information on the self-employed in Vietnam. As discussed in Data and Methodology, the SE sector in a developing country such as Vietnam not only includes formal entrepreneurs but also farmers, own-account workers, and employees working for household businesses. Therefore, among those engaging in SE in Vietnam (both DE and SE only) during the years 2010 to 2014, only about 30 percent to 32 percent worked in the nonfarm sector while around 68 percent to 70 percent were in agriculture. This suggests a dominance of farmers, own-account workers, and employees in agricultural-household businesses in the self-employed population. Additionally, because the majority of agricultural-household businesses in Vietnam are informal (Cling et al., 2011), whereas farmers

Table 4. The profile of self-employed workers (%) in Vietnam from 2010 to 2014.

Year	2010	2012	2014
By sector			
SE in agriculture	68.27	69.99	68.64
SE in the nonfarm sector	31.73	30.01	31.36
Total	100	100	100
By sector and employment category			
- SE only in agriculture	41.50	44.06	42.37
- DE (with SE in agriculture)	26.76	25.93	26.27
- SE only in the nonfarm sector	28.95	27.89	28.34
- DE (with SE in the nonfarm sector)	2.79	2.12	3.02
Total	100	100	100
Total sample of those engaged in SE*	2,697	2,738	2,632

Notes. The statistics are weighted using the survey sampling weights. DE denotes the combination of both WE and SE.
*Includes both DE and SE.

and own-account workers are informal by definition, the self-employed population in our data mostly represents informal workers. This is consistent with Cling et al. (2011), who suggest that a majority of self-employed persons in Vietnam are in the informal sector. This is an important finding given that data limitations do not allow us to distinguish formal workers from informal ones within the self-employed category. Therefore, the voluntary-health-insurance scheme, which is designed for informal workers, is actually targeted to the informal self-employed.

Employment mobility in Vietnam

Table 5 shows patterns of mobility in employment status in Vietnam during the years 2012 to 2014. As illustrated, the rigidity of the economy was relatively strong. After the two years between 2012 and 2014, more than 85 percent of the working population stayed in the same sector, whereas as only 14 percent entered or exited SE. The rigidity is most pronounced among formal workers: nearly 97 percent did not enter SE. This is reasonable as SE jobs in Vietnam

Table 5. Self-employment entry and exit from 2012 to 2014 (%).

	SE entry		SE exit		
	Stay in DE/WE	SE entry	Stay in SE	SE exit	Total
No insurance	80.48	19.52	86.64	13.36	100
Health insurance for the poor and the near poor	82.67	17.33	82.78	17.22	100
Health insurance for assistance recipients	72.98	27.02	86.36	13.64	100
Compulsory insurance in the formal sector	96.93	3.07	72.73	27.27	100
Voluntary health insurance	87.15	12.85	86.79	13.21	100
Others (private insurance)	88.35	11.65	79.76	20.24	100
Total	85.87	14.13	85.51	14.49	100
Observations	1199	197	1519	257	1,396

Notes. The statistics are weighted using the survey sampling weights. The number of observations is rounded up. This uses the final sample of 2012 after tracking SE transitions and only includes those participating in the labor force. SE entry (or exit) is defined as moving into (or out of) SE from (to) WE or DE.

are mostly in the informal sector (farmers, informal household businesses). It is sensible that those with a formal job—who are better off with more social protection—do not want to quit for SE opportunities.

Estimation results

Tables 6 and 7 show the results of SE transitions during the years 2012 to 2014 (coefficients reported). Table 8 reports the average marginal effects

Table 6. Probit selection model—SE entry.

Equation	**Selection**	**Main**
Dependent variable	LFP	SE entry
Age squared	−0.004***	0.000
	(0.00)	(0.00)
Age	0.264***	0.003
Male	(0.04)	(0.04)
	0.739***	-0.169*
	(0.12)	(0.10)
Household size	−0.095**	−0.008
	(0.04)	(0.04)
Dependency ratio	0.136	0.155
	(0.36)	(0.29)
Marital status (base: married individuals)		
-Single	−0.179	−0.094
	(0.20)	(0.18)
-Widowed/divorced/separated	0.145	−0.395
	(0.28)	(0.26)
Number of health-care utilizations per year	−0.135	0.030
	(0.09)	(0.08)
Urban (dummy)	−0.119	−0.130
	(0.13)	(0.13)
Monthly income per capita (in millions VND)	−0.045	0.013
	(0.05)	(0.05)
Health insurance (base: voluntary insurance)		
-No insurance	0.332	0.287
	(0.21)	(0.21)
-Health insurance for the poor and the near poor	0.322	0.279
	(0.24)	(0.23)
-Health insurance for assistance recipients	0.059	0.364
-Compulsory insurance in the formal sector	(0.31)	(0.28)
	1.361***	-0.550**
	(0.24)	(0.27)
-Others (private insurance)	−1.094***	−0.380
Work in agri-/aquaculture sector	(0.35)	(0.59)
	7.385***	0.461***
Labor-force participation in 2010 (identification variable)	(0.42)	(0.12)
	1.821***	
Number of observations	1,832	1,832
Wald test of independent equations		
ρ	0.327	
P (Probability > χ^2)	0.082	

Notes. LFP = labor-force participation. Standard errors are shown in parentheses. Educational attainment and month of interview are included and statistically significant. Coefficients are reported. Standard errors are clustered on the household. Maximum likelihood estimation is used.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table 7. Probit selection model—SE exit.

Equation	**Selection**	**Main**
Dependent variable	LFP	SE exit
Age squared	−0.003***	−0.001**
	(0.00)	(0.00)
Age	0.243***	0.038
	(0.04)	(0.03)
Male	0.178	0.312***
Household size	(0.12)	(0.08)
	-0.082*	-0.068**
	(0.05)	(0.03)
Dependency ratio	0.175	−0.239
	(0.32)	(0.24)
Marital status (base: married individuals)	−0.761***	0.346*
-Single		
	(0.23)	(0.19)
-Widowed/divorced/separated	−0.365*	0.212
	(0.22)	(0.19)
Number of health-care utilizations per year	−0.086	−0.007
	(0.09)	(0.06)
Urban (dummy)	0.006	−0.165
Monthly income per capita (in millions VND)	(0.13)	(0.12)
	0.073*	-0.057*
	(0.04)	(0.03)
Health insurance (base: voluntary insurance)		
-No insurance	0.212	−0.111
	(0.18)	(0.13)
-Health insurance for the poor and the near poor	−0.240	−0.082
	(0.24)	(0.17)
-Health insurance for assistance recipients	−0.343	−0.008
-Compulsory insurance in the formal sector	(0.27)	(0.19)
	−0.891**	0.712**
	(0.36)	(0.33)
-Others (private insurance)	−0.601*	−0.121
	(0.31)	(0.28)
Work in agri-/aquaculture sector	9.397***	0.171
Labor-force participation in 2010 (identification variable)	(0.25)	(0.11)
	2.130***	
Number of observations	2,156	2,156
Wald test of independent equations		
ρ	0.397	
P (Probability > χ^2)	0.024	

Notes. LFP = labor force participation. Standard errors are shown in parentheses. Educational attainment and month of interview are included and statistically significant. Coefficients are reported. Standard errors are clustered on household. Maximum likelihood estimation is used.
*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

conditional on selection into the labor market. We use maximum-likelihood estimation for asymptotic efficiency and estimate clustered standard errors at the household level.

As suggested in Tables 6 and 7, we reject the null hypothesis of independent equations (P of entry and exit regressions are 0.082 and 0.024). In other words, the selectivity is confirmed for both SE entry and exit. Table 6 suggests that conditional on participation in the labor market, those having compulsory health insurance (formal workers) in 2012 are significantly less likely to move into SE

Table 8. Average marginal effect.

	SE entry	SE exit
Age	0.004***	−0.005
	(0.00)	(0.05)
Male	−0.056**	0.069
	(0.02)	(0.70)
Household size	0.001	−0.014
	(0.01)	(0.16)
Dependency ratio	0.030	−0.062
	(0.06)	(0.48)
Marital status (base: married individuals)		
-Single	−0.016	0.000
	(0.04)	(0.000)
-Widowed/divorced/separated	−0.077*	0.000
	(0.04)	(0.000)
Number of health-care utilizations per year	0.010	0.001
	(0.02)	(0.05)
Urban (dummy)	−0.025	−0.039
	(0.03)	(0.36)
Monthly income per capita (in millions VND)	0.004	−0.016
	(0.01)	(0.12)
Health insurance (base: voluntary insurance)		
-No insurance	0.057	0.000
	(0.05)	(0.000)
-Health insurance for the poor and the near poor	0.055	0.000
	(0.05)	(0.000)
-Health insurance for assistance recipients	0.086	0.000
	(0.07)	(0.000)
-Compulsory insurance in the formal sector	−0.102**	0.000
	(0.05)	(0.000)
-Others (private insurance)	−0.037	0.000
	(0.10)	(0.000)
Work in agri-/aquaculture sector	−0.090	−0.240
	(0.11)	(4.73)
Labor-force participation in 2010 (identification variable)	−0.047	−0.064
	(0.03)	(1.04)
Number of observations	1,832	2,156

Notes. Standard are shown errors in parentheses. Educational attainment and month of interview are included and statistically significant. Standard errors are clustered on household. Maximum likelihood estimation is used. The average marginal effect is conditional on selection into the labor market.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

in 2014 than those with voluntary insurance (informal workers). In particular, on average, people with compulsory insurance are 10 percentage points less likely to move into SE in the subsequent time period (see Table 8). This effect is significant at 5 percent significance level. Regarding SE exit, those having compulsory insurance are more likely to exit SE compared to those covered by voluntary insurance (see Table 7). This effect is statistically significant at 5 percent significance level. However, the effect size (average marginal effect conditional on labor force participation) is relatively negligible (see Table 8).

We also ran Probit regressions without selection to compare the results with the selection models. Results of Probit regressions are reported in the Appendix (Tables A1 and A2). As suggested, when selection is not accounted

for, Probit regressions tend to yield larger coefficients while suggesting the same effect directions.

Robustness checks

As DE and WE are necessarily different in essence, we also repeated the analysis that separate these two forms of employment (See Appendix, Tables A3 and A4). As suggested, there is no big difference between DE and WE regarding SE entry and exit. In general, all effect signs are consistent across different definitions of SE entry and exit. However, the effects are not statistically significant this time compared to the results from the first analysis. The loss of statistical significance is probably due to the reduction in sample size when we separated WE from DE.

Discussion

In this study, we show that health insurance has a strong association with SE entry. In particular, those insured under the compulsory membership category are less likely to enter SE than those insured under the voluntary membership category. On average, those with compulsory insurance are approximately 10 percentage points less likely to move into SE compared to those with voluntary insurance. The effect is statistically significant at a 5 percent significance level and consistent with the hypothesis of entrepreneurship lock.

Regarding SE exit, those having compulsory insurance are more likely to exit SE than those covered by voluntary insurance. However, the average marginal effect is relatively negligible. This might be due to the very small number of observations of these two insurance categories as our SE exit definition by default includes only self-employed workers in 2012 who were less likely to be covered in either of the schemes. Notwithstanding the small effect size (see Table 8), the significantly positive effect of compulsory insurance on SE exit suggests that self-employed workers with compulsory insurance in the formal sector are more likely to exit SE than the self-employed in the informal sector with voluntary insurance (farmers, own-account workers, unregistered household employees). This further suggests that it is easier for someone who is formally self-employed to move out of the high-risk sector and find other job opportunities in WE or DE whereas informally self-employed workers are somehow stuck where they are. This is consistent with Gindling and Newhouse (2014), who suggest that the self-employed in developing countries are pushed into lower-paid self-employment out of necessity rather than opportunity. This might be the case for Vietnam, since in our regressions we controlled only for educational attainment and excluded many other important individual characteristics that determine SE exit like experience, social network and so on due to data limitations.

Because of the over-representation of studies for the United States in the literature, it is difficult to compare our results with other studies. Additionally, health regimes vary significantly even within LMICs, so any attempt to compare the results should be made with caution. Wagstaff and Moreno-Serra's (2009) study of central Asian and Eastern European countries with very similar SHI systems examines the issue from a macro-level perspective and hence is not necessarily comparable to our micro-analysis.

The most similar study is by Zissimopoulos and Karoly (2007), who use a multinomial logit model and track the transition into SE from one data wave to the next. They suggest a 0.7 percentage point decrease and a 0.1 percentage point decrease in transition to SE for salary men and women, respectively. The very small effect size in the study by Zissimopoulos and Karoly (2007) is probably due to their focus on older workers; whereas, we examine the whole working-age population. It is intuitive that the effect size for the elderly would be smaller than the general working-age population as the former are less likely to participate in the labor market in general and as a self-employed worker in particular.

Entrepreneurship lock is more relevant for the United States (Fairlie et al., 2011; Zissimopoulos & Karoly, 2007) due to the institutional link between health insurance and employment. In Vietnam, the effect caused by health insurance policy might not be that strong by design, owing to the availability of voluntary health insurance for informal workers. Therefore, our analysis might overestimate the effect size as it could not distinguish health insurance from other fringe benefits that are normally attached to formal jobs and the public sector. This is caused by data limitations, which allow us to capture only the correlation, rather than causality, between health insurance and SE mobility. Therefore, the interpretation of our results should emphasize that people with compulsory insurance are locked in WE and DE due to the benefits attached to their job (job security, other fringe benefits, income prospects) and that insurance coverage is just one among them.

Despite the methodological limitations, we can show a correlation between health insurance and SE mobility. In Vietnam, because SE is highly overlapping with the informal sector, this suggests a relationship between health insurance and the formality of employment. In other words, the design of the SHI that separates the formal sector from the informal sector, which then has been translated into the enforcement issue and coverage gap, seems to contribute to the rigidity of the labor market. Our evidence suggests that the differential between various health insurance schemes may be associated with self-employment mobility. The entrepreneurship lock effect is not necessarily a unique feature of the American system where health insurance is largely tied to employment.

The labor-market rigidity found in this study leads to important discussions of its potential economic inefficiency and the role of entrepreneurship in the Vietnamese economy. Based on the efficiency argument, it is important to tackle

the link between health insurance and employment. Even though voluntary insurance for informal workers is designed to remove this link, the weak enforcement of this scheme compared to the compulsory package seems to fortify this undesirable link in the labor market. Therefore, a financial incentive to encourage insurance enrollment might not be sufficient. Awareness raising, which has been shown to increase willingness to pay for SHI (Nguyen & Hoang, 2017), is needed to improve the issue of low uptake. Additionally, efficiency improvement of the SHI system and improved quality of care is vital when people do not trust the effectiveness of SHI (Somanathan et al., 2014).

Moreover, one should be cautious in using the efficiency argument to promote self-employment in Vietnam because better job matching and more flexibility in an economy with a high concentration of jobs in the informal sector might imply moving out of the formal sector. SE in Vietnam is normally associated with the informal sector, with smaller firms/economic formations and fewer labor protections. With increasing concern regarding the erosion of labor protection due to weak compliance and disguised employment in LMICs (ILO, 2015), the policy choice may be pushing for the formalization of the informal economy, combined with entrepreneurship-promotion policies for the formal self-employment sector.

In the context of Vietnam, where a large proportion of workers are working in the shadow economy (Cling et al., 2011), the transition toward the formal economy might be challenging in the short term. Therefore, in the short term, the focus should be on improving the depth and breath of SHI coverage to discourage adverse selection, tackling the enforcement issue of the voluntary scheme via a compulsory mandate to reduce the rigidity and inflexibility of the economy induced by health insurance benefits.

Conclusion

Even though the relationship between health insurance and self-employment mobility can have important labor-market implications, we know very little about this in the context of LMICs. In this article, we used a Probit model with sample selection to estimate the association between health insurance in Vietnam and the mobility in and out of SE. Even though we were not able to identify causal effects, we showed that those with compulsory health insurance in Vietnam, the formal workers, were less likely to enter self-employment compared to those having voluntary insurance. The effect was partly explained by the higher uptake of compulsory health insurance in Vietnam, which made staying out of SE (often informal SE) a preferred choice. Regarding the effect of health insurance on SE exit, we found that those with compulsory insurance were more likely to exit SE (even though the average marginal effect was relatively small in size). The rigidity of the economy was highlighted, suggesting the need to tackle the enforcement issue of the SHI program in Vietnam in addition to other labor policies.

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Appendix

Table A1. Probit model—SE entry and exit.

	(1)	(2)
	SE entry	SE exit
Age squared	0.001*	−0.001**
	(0.00)	(0.00)
Age	−0.042	0.039
Male	(0.03)	(0.03)
	-0.197**	0.295***
	(0.10)	(0.08)
Household size	−0.015	−0.069**
	(0.04)	(0.03)
Dependency ratio	0.151	−0.303
	(0.29)	(0.24)
Marital status (base: married individuals)		
-Single	−0.072	0.365*
	(0.17)	(0.19)
-Married	0.000	0.000
	(.)	(.)
-Widowed/divorced/separated	−0.426	0.205
	(0.26)	(0.19)
Number of health-care utilizations per year	0.035	0.000
	(0.08)	(0.06)
Urban (dummy)	−0.108	−0.184
	(0.13)	(0.12)
Monthly income per capita (in millions VND)	0.020	−0.060*
	(0.05)	(0.03)
Health insurance (base: voluntary insurance)		
-No insurance	0.258	−0.101
	(0.21)	(0.14)
-Health insurance for the poor and the near poor	0.279	−0.072
	(0.23)	(0.17)
-Health insurance for assistance recipients	0.338	0.005
-Compulsory insurance in the formal sector	(0.29)	(0.19)
	−0.619**	0.785**
	(0.26)	(0.33)
-Others	−0.340	−0.132
	(0.56)	(0.29)
Work in agri-/aquaculture sector	0.388***	0.064
	(0.11)	(0.10)
N	1,172	1,664

Notes. Standard errors are shown in parentheses. Educational attainment and month of interview are included and statistically significant. Standard errors are clustered on household.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

Table A2. Probit model—average marginal effects.

	(1)	(2)
	SE entry	SE exit
Age	0.004***	−0.004***
	(0.00)	(0.00)
Male	−0.045**	0.064***
	(0.02)	(0.02)
Household size	−0.003	−0.015**
	(0.01)	(0.01)
Dependency ratio	0.034	−0.065
	(0.07)	(0.05)
Marital status (base: married)		
Single	−0.016	0.090*
	(0.04)	(0.05)
Widowed/divorced/separated	−0.082**	0.047
	(0.04)	(0.05)
Number of health-care utilizations per year	0.008	0.000
	(0.02)	(0.01)
Urban (dummy)	−0.025	−0.040
	(0.03)	(0.03)
Monthly income per capita (in millions VND)	0.005	−0.013*
	(0.01)	(0.01)
Health insurance (base: voluntary insurance)		
-No insurance	0.063	−0.022
	(0.05)	(0.03)
-Health insurance for the poor and the near poor	0.069	−0.016
	(0.05)	(0.04)
-Health insurance for assistance recipients	0.085	0.001
-Compulsory insurance in the formal sector	(0.07)	(0.04)
	−0.095**	0.238**
	(0.05)	(0.11)
-Others	−0.061	−0.028
	(0.09)	(0.06)
Work in agri-/aquaculture sector	0.089***	0.014
	(0.02)	(0.02)
N	1,172	1,664

Notes. Standard errors are shown in parentheses. Educational attainment and interview month are included. Educational attainment is statistically significant. Interview month is statistically insignificant. Standard errors are clustered on the household.

*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Table A3. Probit selection model—selection equation separating WE from DE.

	Wage Employment		Dual Employment	
	SE entry	SE exit	SE entry	SE exit
Currently employed (dummy) Age squared	−0.003***	−0.003***	−0.005***	−0.003***
Age	(0.00)	(0.00)	(0.00)	(0.00)
	0.233***	0.225***	0.394***	0.252***
	(0.04)	(0.04)	(0.07)	(0.04)
Male	0.645***	0.144	0.734***	0.062
	(0.13)	(0.12)	(0.20)	(0.12)
Household size	−0.062	−0.094*	−0.306***	−0.096**
	(0.05)	(0.05)	(0.07)	(0.05)
Dependency ratio	0.103	0.212	0.221	0.141
	(0.40)	(0.33)	(0.50)	(0.34)
Marital status (base: married individuals)				
-Single	−0.316	−0.845***	−0.672**	−0.873***
	(0.23)	(0.25)	(0.32)	(0.25)
-Widowed/divorced/separated	−0.017	−0.464*	−0.339	−0.485**
	(0.37)	(0.24)	(0.37)	(0.24)
Number of health-care utilizations per year	−0.139	−0.093	−0.154	−0.111
	(0.11)	(0.08)	(0.12)	(0.08)
Urban (dummy)	0.058	0.127	−0.596***	0.064
	(0.13)	(0.13)	(0.20)	(0.13)
Monthly income per capita (in millions VND)	0.024	0.079**	−0.172**	0.086**
	(0.05)	(0.04)	(0.08)	(0.04)
Health insurance (base: voluntary insurance) -No insurance	0.492*	0.180	0.225	0.179
	(0.25)	(0.20)	(0.37)	(0.20)
-Health insurance for the poor and the near poor	0.181	−0.141	0.489	−0.102
	(0.33)	(0.27)	(0.44)	(0.27)
-Health insurance for assistance recipients	0.587	0.090	−0.077	0.273
	(0.48)	(0.32)	(0.53)	(0.37)
-Compulsory insurance in the formal sector	0.587**	−1.293***	−0.125	−1.480***
	(0.27)	(0.36)	(0.39)	(0.36)
-Others	−0.239	−0.477	−0.540	−0.457
Work in agri-/aquaculture sector	(0.29)	(0.37)	(0.60)	(0.39)
	8.037***	8.803***	9.492***	8.679***
Employment status in 2010 (identification variable)	(0.48)	(0.27)	(0.69)	(0.28)
	1.563***	2.226***	2.884***	2.242***
	(0.14)	(0.18)	(0.30)	(0.18)
N	1,080	1,965	1,098	2,107

Notes. Standard errors shown in parentheses. Educational attainment and interview month are included. Coefficients are reported. Standard errors are clustered on the household. Maximum likelihood estimation is used.

*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$.

Table A4. Probit selection model—main equation separating WE from DE.

	Wage Employment		Dual Employment	
	SE entry	SE exit	SE entry	SE exit
Age squared	−0.002	0.000	0.001	−0.001**
	(0.00)	(0.00)	(0.00)	(0.00)
Age	0.158	−0.023	−0.043	0.067*
	(0.11)	(0.04)	(0.05)	(0.03)
Male	0.221	0.481***	−0.315**	0.242***
	(0.20)	(0.14)	(0.13)	(0.09)
Household size	−0.094	−0.103**	0.019	−0.064*
	(0.07)	(0.05)	(0.05)	(0.04)
Dependency ratio	−0.519	0.016	0.382	−0.295
	(0.58)	(0.38)	(0.38)	(0.26)
Marital status (base: married individuals)				
-Single	−0.065	0.627***	0.042	0.207
	(0.24)	(0.21)	(0.29)	(0.25)
-Widowed/divorced/separated	−0.072	−0.004	−0.572*	0.222
	(0.55)	(0.37)	(0.32)	(0.21)
Number of health-care utilizations per year	−0.017	0.058	0.001	0.000
	(0.15)	(0.10)	(0.09)	(0.07)
Urban (dummy)	−0.125	0.210	0.011	−0.377**
	(0.19)	(0.17)	(0.23)	(0.16)
Monthly income per capita (in millions VND)	−0.096	0.027	0.086	−0.076*
	(0.08)	(0.03)	(0.08)	(0.04)
Health insurance (base: voluntary insurance)				
-No insurance	0.363	0.327	0.055	−0.015
	(0.40)	(0.26)	(0.30)	(0.16)
-Health insurance for the poor and the near poor	−0.129	0.234	0.138	0.221
	(0.53)	(0.33)	(0.33)	(0.19)
-Health insurance for assistance recipients	0.927	−0.383	−0.108	−0.089
	(0.75)	(0.44)	(0.40)	(0.30)
-Compulsory insurance in the formal sector	−0.360	1.330***	−0.405	0.325
	(0.45)	(0.37)	(0.41)	(0.38)
-Others	−0.005	0.631*	−5.811***	0.385
	(0.64)	(0.37)	(0.41)	(0.30)
Work in agri-/aquaculture sector	0.460	−0.140	0.329**	0.202
	(0.29)	(0.17)	(0.16)	(0.14)
N	1,080	1,965	1,098	2,107
Wald tests of independence				
ρ	0.634	0.519	0.340	0.190
P value (Probability > χ^2)	0.271	0.148	0.283	0.481

Notes. Standard errors shown in parentheses. Educational attainment and interview month are included. Coefficients are reported. Standard errors are clustered on household. Maximum likelihood estimation is used.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.