EXISTENCE AND ECONOMIC PERFORMANCE OF INFORMAL ECONOMY IN THAILAND

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EXISTENCE OF INFORMAL ECONOMY IN THAILAND

WHY INFORMAL ECONOMY EXISTS AND GROWS IN BOTH ADVANCED AND DEVELOPING COUNTRIES AROUND THE WORLD?

Possible answers

1) It is the product of *exclusion* from state benefits or as part and parcel of the process of modernization.

2) It is driven by the *voluntary* exit of workers out of formal institutions in order to find better job options.

3) It is a result of the decision to *voluntarily* exit from the formal economy because of a social and redistributive choice, such as social networks and connections with relatives, friends, and neighbors.

THE CASE OF THAILAND IS WORTH INVESTIGATING BECAUSE

1) Thailand has a very large informal sector by international standards. It accounts for 50.6 percent of Thailand's GDP (an average during 1999–2007), which ranks 10th out of 162 countries and is the largest in Asia (Schneider et al. 2010).

2) Higher GDP per capita of Thailand does not lead to a smaller size of its informal sector.

3) Empirical studies on Thailand's informal sector are still highly inadequate.

DEFINITION

❖ The study at <u>national level</u> follows Thailand's National Statistical Office (NSO) as we use its 2010 Labor Force Survey.

   ❖ The informal workers are those who are not protected or covered by any work-related social protection schemes.

❖ The <u>case study</u> of Chiang Mai

   ❖ No business registration under the Ministry of Commerce

   ❖ Not paying to the central administration the formal income, business, or value added taxes that contribute to the officially calculated GDP (paying only local sign tax can still be regarded as informal)

   ❖ Contributing to Social Security under Article 40 (self-insured) can still be regarded as informal (NSO counts them as formal).

OBJECTIVES

1) To investigate <u>at the national level</u> the **voluntariness to exist** of informal workers in order to understand the recent situation in Thailand.

2) To examine **reasons to exist** of informal businesses, using <u>a case study</u> of Chiang Mai city since data at the national level are not available.

3) To investigate how the informal businesses perform in terms of their **profit making and business expansion**, using again <u>the case study</u> of Chiang Mai city

DATA AND METHODOLOGY

1) National level analysis on the voluntariness of informal workers (the Finite Mixture model: The incomplete information model)

2) Case study analysis on reasons to exist of informal businesses (Multivariate Probit models)

3) Case study analysis on economic performances of informal businesses

       3.1 Factors affecting the profit of informal businesses (OLS)

       3.2 Factors affecting the decision to expand informal businesses (Logistic model: Maximum Likelihood)

1. NATIONAL LEVEL: VOLUNTARINESS (THE FINITE MIXTURE MODEL) (1)

2010 Labor Force Survey from the National Statistical Office

50,682 samples of employed workers from all regions in Thailand

43,855 formal workers and 6,827 are informal workers

➤ NSO data only allow us to observe whether a worker works in the formal or informal sectors, but cannot observe whether a worker <u>voluntarily or involuntarily</u> works in the informal labor market.

➤ We also would like to estimate different patterns of <u>wage determinants</u> for workers in each category.

1. NATIONAL LEVEL: VOLUNTARINESS (THE FINITE MIXTURE MODEL) (2)

The complete information model

Let $A = (w, x, z)$ be the complete data

where w is the log of workers' wage,

x is workers' characteristics,

z defines groups of workers.

$$z_i = \begin{cases} 1 & \text{if formal worker} \\ 2 & \text{if voluntary informal worker} \\ 3 & \text{if involuntary informal worker} \end{cases} \quad (1)$$

z has the generalized Bernoulli distribution with π_j being the probability of

$$z_i = j$$

for all $j = 1, \ldots, 3$ and $\sum_{j=1}^{3} \pi_j = 1$

1. NATIONAL LEVEL: VOLUNTARINESS (THE FINITE MIXTURE MODEL) (3)

Each type of workers is expected to have different wage distributions. Assuming normality, wage distribution for each type of workers

$$w|z = j \sim F_j(x\beta_j, \Psi_j), \text{ (2)}$$

where $w|z = j$ is the log wage of group j workers,

$F_j(\cdot)$ is the distribution function of wage when the workers belong to group j,

$x\beta_j$ is the mean of F_j and Ψ_j is a set of other parameters in F_j

Let $\theta = \{\pi, \beta, \Psi\}$. The likelihood of the complete information case is

$$L(\theta|w, x, z) = \prod_{i=1}^{N} g(w_i, x_i, z_i; \theta) = \prod_{i=1}^{N} \prod_{j=1}^{J} [\pi_j \cdot F_j(w_i|x_i)]^{1\{z_i=j\}} \text{ (3)}$$

1. NATIONAL LEVEL: VOLUNTARINESS (THE FINITE MIXTURE MODEL) (4)

The incomplete information model

Separating voluntary from involuntary informal workers using the Finite Mixture Model with EM algorithm.

The E (Expectation) step is to estimate the expected value of the group variable z_i, given the initial value of $\theta^{(t)}$

$$z_i^{(t)} = \begin{cases} 1 & if \ z_i = 1 \\ \dfrac{g\left(w_i, x_i \middle| z_i = 2, \theta^{(t)}\right)\tilde{\pi}_2^{(t)}}{g\left(w_i, x_i \middle| z_i = 2, \theta^{(t)}\right)\tilde{\pi}_2^{(t)} + g\left(w_i, x_i \middle| z_i = 3, \theta^{(t)}\right)\tilde{\pi}_3^{(t)}} & if \ z_i \neq 1 \end{cases} \quad (4)$$

where $\tilde{\pi}_j^{(t)} = \pi_j / (\pi_2 + \pi_3)$ is the probability of an individual belong to group j given that he/she is an informal worker

1. NATIONAL LEVEL: VOLUNTARINESS (THE FINITE MIXTURE MODEL) (5)

The M (Maximization) step estimates $\theta^{(t+1)}$ that maximizes the expected likelihood,

$$Q\left(\theta, \theta^{(t)}\right) = E_{\theta^{(t)}}[\log L(\theta) \,|w, x, z]. \quad (5)$$

2. CASE STUDY: REASONS TO EXIST (MULTIVARIATE PROBIT MODELS) (1)

393 samples who answered NO for all of these questions:

➢ *Is your business currently formally registered?*

➢ *Are you currently paying an income tax?*

➢ *Is your business currently paying the value-added tax?*

Then, they are asked (proxies for the voluntariness):

➢ *Are you satisfied with your current business?*

➢ *Do you want to stay in the current business?*

Dummy: Yes = 1 No = 0

2. CASE STUDY: REASONS TO EXIST (MULTIVARIATE PROBIT MODELS) (2)

$$\Pr(y_{1i} = 1 | x_{1i}) = \Pr(\beta'_{11} x_{1i} + \epsilon_i > 0) = \Phi(\beta'_{11} x_{1i}), (6)$$

$$\Pr(y_{2i} = 1 | x_{1i}) = \Pr(\beta'_{12} x_{1i} + \eta_i > 0) = \Phi(\beta'_{12} x_{1i}), (7)$$

Where subscript *i* indicates individual,

y_{1i} and y_{2i} are dummy variables for the first question and second question

x_{1i} is a vector of explanatory variables (including the intercept term) which consists of a set of owner characteristics, business characteristics, and dummies for relevant questions from the questionnaire.

ϵ_i and η_i are assumed to be normally distributed disturbance terms with zero mean and their variances equal to σ_ϵ and σ_η

2. CASE STUDY: REASONS TO EXIST (MULTIVARIATE PROBIT MODELS) (3)

Individual characteristics dummies

gender

marital status

education attainment (each for primary, secondary, and tertiary)

disability (which accounts for both underlying/chronic diseases and disability)

Business characteristics dummies

business types (food seller, non-food seller, other services; with services as a reference group)

profitability (measured as profit per working hour)

2. CASE STUDY: REASONS TO EXIST (MULTIVARIATE PROBIT MODELS) (4)

Questions used in the model:

A1. Do you want to change your working hours if possible?

A2. Do yars you think you are able to stay in this business for the next 3 years?

A3. Do you think that this job poses a health risk for you?

A4. Do you think that government officials are too strict on your business?

A5. Do you choose to stay in the current business because of family or friends?

A6. Do you choose to stay in the current business because it pays better than other jobs?
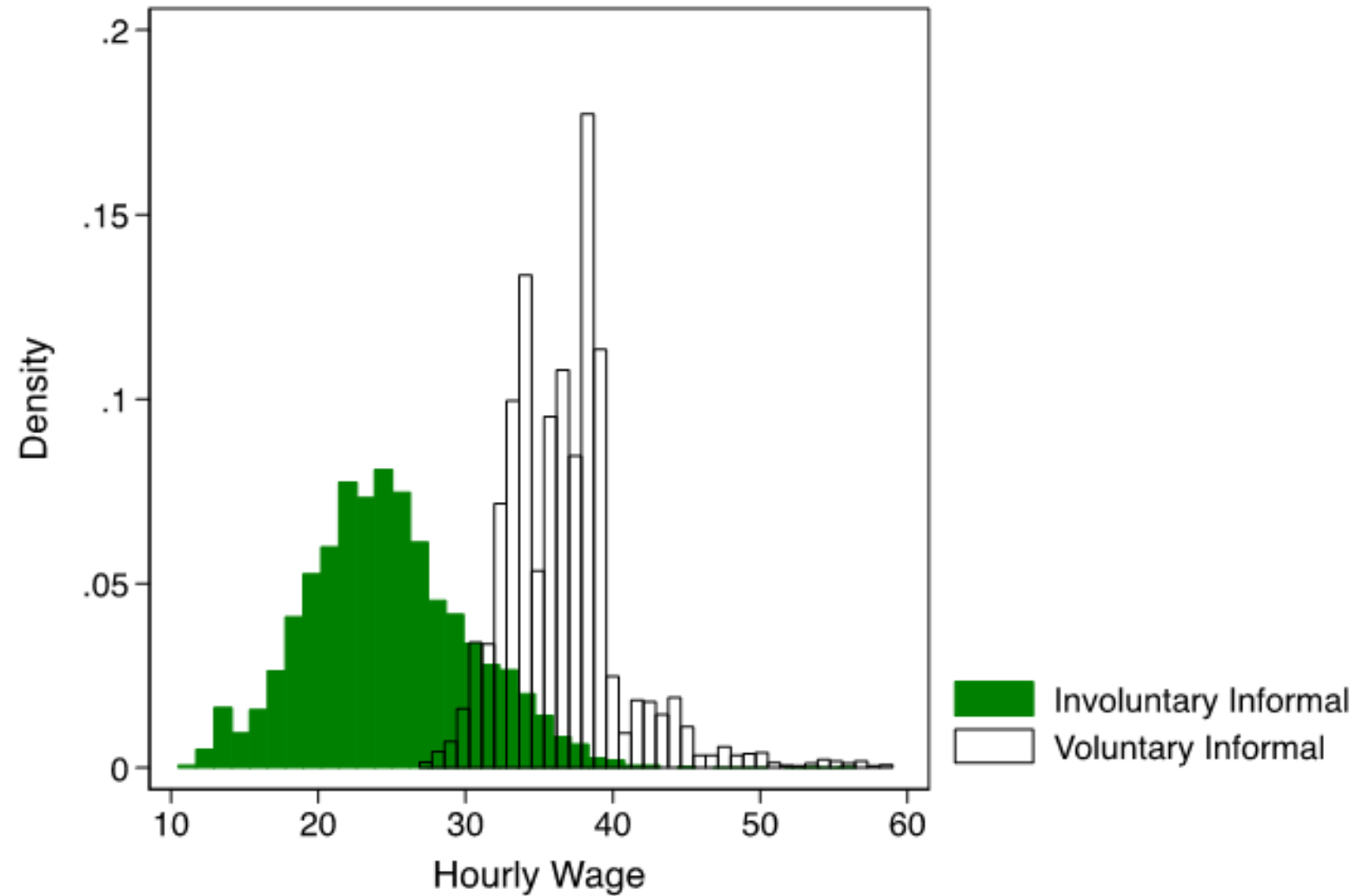
RESULTS AND DISCUSSION: NATIONAL LEVEL (1)

❖ We examine the Finite Mixture models with normal, log-normal, student-t and gamma distributions.

❖ The model selection criteria used in this study is the Bayes information criteria (BIC) because the Finite Mixture model can be over-fitted and there is a trade-off between the data fitting and the parsimony of the model.

❖ The results show that the student's t distribution provides the lower BIC for the informal sector estimation.

❖ For the formal sector, the Gaussian assumption is used for the estimation.

RESULTS AND DISCUSSION: NATIONAL LEVEL (2)

❖ Main findings: the majority of <u>informal workers in Thailand are in the sector voluntarily</u>. Specifically, among all informal workers, 72.3 percent are voluntary and only 27.7 percent are involuntary.

❖ The wage is higher in the voluntary informal sector. Voluntary informal workers gain 36.66 Baht per hour, while involuntary informal workers only gain 26.92 Baht per hour on average.

❖ The results also show that the involuntary group faces a higher standard error of wage compared to the voluntary group. This indicates a higher uncertainty or risk of income in the involuntary informal sector.

	Informal	
	Involuntary	Voluntary
Wage	26.924	36.664
	(14.344)	(4.082)
Fraction	0.277	0.723
	(0.241)	(0.241)

Figure 1: The wage densities of involuntary and voluntary informal workers

RESULTS AND DISCUSSION: NATIONAL LEVEL (3)

	Formal	Informal	
	(Gaussian)	Involuntary (Student's t)	Voluntary (Student's t)
Age	0.015***	-0.009***	0.001*
	(0.000)	(0.002)	(0.001)
Female	-0.150***	-0.187***	-0.127***
	(0.005)	(0.041)	(0.011)
Married	0.065***	-0.000	0.038**
	(0.005)	(0.045)	(0.012)
Primary	0.089***	0.077	0.109***
	(0.011)	(0.076)	(0.024)
Secondary	0.441***	0.136	0.253***
	(0.011)	(0.102)	(0.029)
Tertiary	1.201***	1.462***	0.507***
	(0.011)	(0.142)	(0.043)
Senior	-0.538***	-0.157	-0.064**
	(0.017)	(0.091)	(0.024)

	Formal	Informal	
	(Gaussian)	Involuntary (Student's t)	Voluntary (Student's t)
HH_infant	-0.038***	0.047	-0.022
	(0.009)	(0.070)	(0.018)
HH_child	-0.019***	-0.095**	-0.000
	(0.004)	(0.031)	(0.008)
HH_senior	-0.008*	-0.056	-0.019*
	(0.004)	(0.037)	(0.009)
HH_members	-0.002	0.049**	0.010*
	(0.002)	(0.016)	(0.004)
Constant	3.133***	3.456***	3.423***
	(0.014)	(0.126)	(0.036)
LL	-26348.707		
BIC	53152.41267		
N	50682		

RESULTS AND DISCUSSION: NATIONAL LEVEL (4)

❖ Effects of workers' characteristics on wage are different among each type of workers.

❖ Tertiary education is the key determinant of wage in all three sectors.

❖ For the formal sector, age is positively correlated with wage. This indicates a positive return to work experience. However, once the workers retire, the wage drop significantly.

❖ For voluntary informal workers, age shows only a slight positive effect and the senior dummy shows a slight negative effect.

❖ For the involuntary informal sector, age has a slight negative effect and the senior dummy has no significant effect.

❖ This indicates that age and the retirement age play a less important role in the informal sector.

RESULTS AND DISCUSSION: NATIONAL LEVEL (5)

❖ Married workers tend to have a higher wage in the formal and voluntary informal sectors. However, it has no significant effect in the involuntary informal sector.

❖ For the family size, formal workers with bigger family with children or senior family members tend to have lower wage. For the informal sector, family size has a positive effect. This can be because of nature of the jobs that other family members can sometimes help with the work.

❖ Female has a lower wage on average in all three markets and the wage gap is largest in the involuntary sector. This does not necessarily imply gender discrimination, as it might be a result of different job conditions.

RESULTS AND DISCUSSION: CASE STUDY (DESCRIPTIVE STATISTICS) (1)

Respondents have to choose one of the 3 answers:

(1) You currently want to change your job for a new one which could give you higher income = involuntary = 19%

(2) You are currently working in this job because you are already satisfied with this level of income = voluntary with monetary or economic choice = 35%

(3) You are currently working in this job because you want to be close to your family or relatives and/or because you are accustomed to this lifestyle and are satisfied with it = voluntary with social choice = 46%

Thus, voluntary informal respondents = 81%, consistent with the national level.

RESULTS AND DISCUSSION: CASE STUDY (DESCRIPTIVE STATISTICS) (2)

❖ 88 percent of the samples are satisfied with their current businesses and 77 percent do not want to change their jobs.

❖ 72 percent of them choose to stay in the business in order to be close to their family and friends, while 38 percent choose the current job because of financial help received from relatives or acquaintances.

❖ 60 percent think that the current job is the most profitable job they can do, given their circumstances.

❖ 48 percent of them have a plan to expand their businesses.

❖ 24 percent of the respondents want to change their working hours if possible.

❖ 20 percent think government officials are too strict on their businesses.

RESULTS AND DISCUSSION: CASE STUDY (DESCRIPTIVE STATISTICS) (3)

❖ 53 percent of the respondents used to be an employee who enrolled in the social security system.

❖ 32 percent have an occupational license but it is not currently in use.

❖ 62 percent do not want to register their businesses because they think the process is troublesome.

❖ 46 percent think that registering their businesses would obstruct their work.

❖ 50 percent do not want to register their businesses because they are afraid this could lead to future tax collection.

RESULTS AND DISCUSSION: CASE STUDY (REASONS TO EXIST) (1)

❖ <u>The voluntariness might not be related to gender, age, marital status, and education attainment of informal business owners</u>.

❖ Owners who are disabled or who have underlying/chronic diseases tend to be much less satisfied with their jobs.

❖ Poor working hours negatively affect voluntariness.

❖ Involuntary informal businesses are very likely to be those with less stability.

❖ <u>Extremely strict regulations make informal business owners less satisfied with their businesses; however, it does not make them consider changing jobs</u>.

RESULTS AND DISCUSSION: CASE STUDY (REASONS TO EXIST) (2)

❖ While occupational risk may not affect the owners' satisfaction with their current businesses, it makes them concerned enough to change jobs.

❖ Voluntariness tends not to be financially driven.

❖ A sufficient level of income is needed for them not to think about changing jobs.

❖ Business owners who remain in their current businesses because of family or friends are more likely to be satisfied and want to stay in their current businesses.

❖ Involuntary informal businesses (19%) are characterized by poor working hours, business instability, occupational risk, and strict regulations.

Dependent variables	(1) Satisfied with current business		(2) Want to stay in current business	
Independent variables	Coefficient	Std. Error	Coefficient	Std. Error
Female	−0.111	(0.221)	0.089	(0.167)
Age	−0.002	(0.010)	0.008	(0.008)
Married	0.325	(0.224)	−0.090	(0.177)
Disabled	−0.737	(0.288)**	−0.031	(0.270)
Education:				
Primary	−0.443	(0.360)	−0.491	(0.325)
Secondary	0.410	(0.258)	0.026	(0.211)
Tertiary	0.110	(0.290)	0.125	(0.215)
Log(Profit)	0.069	(0.130)	0.180	(0.107)*
Type of business:				
Service (reference)				
Food	0.167	(0.876)	−0.628	(0.714)
Non-food	0.014	(0.878)	−0.613	(0.719)

Dependent variables / Independent variables	(1) Satisfied with current business		(2) Want to stay in current business	
	Coefficient	Std. Error	Coefficient	Std. Error
A1. Want to change working hours if possible (Y/N)	−0.617	(0.212)***	−0.701	(0.171)***
A2. Able to work in this business for the next 3 years (Able/Unable or not sure)	0.939	(0.214)***	0.963	(0.168)***
A3. Think that this job has health risk (Y/N)	−0.206	(0.224)	−0.380	(0.179)**
A4. Think that government officials are too strict on your business (Y/N)	−0.833	(0.224)***	0.020	(0.206)
A5. Choose to remain in current business because of family or friends (Y/N)	0.533	(0.211)**	0.556	(0.168)***
A6. Choose current business because it pays better than other jobs (Y/N)	−0.137	(0.211)	−0.028	(0.160)
Constant	0.695	(1.178)	−0.022	(0.954)
Corr(ϵ, η)	0.777	(0.124)***		
No. of observations	393			

CONCLUSION (1)

Results from our survey make us think further why most informal business owners choose to exist voluntarily.

❖ Tax avoidance? (about half of the respondents feel that they do not want to register their businesses because they are afraid it could lead to future tax collection on them).

❖ Too troublesome to become formal? (62 percent of the respondents feel that the process of registering their businesses is troublesome, and 55 percent think that they do not see any benefit in doing so).

❖ Ignorance? (only 27 percent understand the benefits and rights that come with business registration, only 18 percent think that they are required to register their businesses, and only 37 percent understand the benefits of participating in the social security system, even though as high as 75 percent state that they want to enroll in the social security system).

❖ Weak government? (only 20 percent of the respondents think that government officials are too strict on their businesses).

CONCLUSION (2)

Why does it matter?

❖ If most of them exist voluntarily, then reducing tax burden for them will only make them stay on and increase budget deficit.

❖ Do they really represent the poor? Being more strict on them will exacerbate inequality?

❖ Is this already the best the Thai government can handle this issue? How can we solve the weak government problem?

PERFORMANCE OF INFORMAL ECONOMY IN THAILAND

OBJECTIVE

1) To investigate how the informal businesses perform in terms of their **profit,** using again <u>the case study</u> of Chiang Mai city

PROFIT PER MONTH

	N	Mean	Median
Involuntary	96	9,559.47	6,166.50
Voluntary - Financial reasons	242	14,806.31	10,000.00
Voluntary - Social reasons	262	10,117.42	7,666.67
Total	600	11,919.34	9,000.00

PROFIT PER MONTH

Tax Rate	Involuntary	Voluntary - Financial reasons	Voluntary - Social reasons	Total
0	90	197	243	530
5	3	27	12	42
10	2	9	6	17
15	0	8	0	8
20	0	1	0	1
25	1	0	1	2
Total	96	242	262	600

3. CASE STUDY: PERFORMANCES (OLS) (1)

3.1 Factors affecting the profit of informal businesses

$$Log(Profit_i) = \beta_1' x_{1i} + u_i,$$

where $Profit_i$ denotes average profit per working hour,

x_{1i} is a vector containing the owner and the business characteristics.

PRIMARY RESULTS

VARIABLES	locc_profit
xage	-0.00560*
	(0.00314)
xfemale	-0.0712
	(0.0631)
xedu_hs	0.281***
	(0.0735)
xedu_c	0.267***
	(0.0784)
occ_year	0.00341
	(0.00527)
occ_whpw	0.00638***
	(0.00162)
occ_workers	0.122**
	(0.0504)
occ_workers_fam	0.00319
	(0.0596)
occ_char_timeflex	0.119
	(0.0948)
occ_char_jobsecure	-0.102
	(0.0750)
occ_char_healthhazard	-0.0506
	(0.0698)
occ_char_famproximity	-0.0110
	(0.0700)
Constant	9.012***
	(0.278)

THANK YOU