



Are Thai Non-Agricultural Workers Financially Fragile?

Niwaan Ponpunthin*

*Institute for Continuing Education and Human Resources, Thammasat University,
Thailand.*

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Abstract

Financial fragility is a worker's inability to afford an immediate, inevitable, and unexpected cost of 3,000 THB using only cash or bank accounts. Such fragility could happen to anyone regardless of socioeconomic class. Workers with such fragility tend to have more financial stress and lower productivity. And yet, there is no study about this topic in Thailand. Thus, I conduct this research to explore the financial fragility of Thai non-agricultural workers using the Panel Socioeconomic Survey dataset from the National Statistical Office. Results from the Panel Logistic Regression show that almost half of these workers are financially fragile. Results also show that educational attainment substantially helps reduce such fragility among the workers. Whereas having a history of falling into poverty aggravates the fragility. My recommendations are 1) to attain quality education together with practical financial knowledge and 2) to maintain a steady income level with various proposed savings tools.

Keywords: Financial Fragility, Thai Worker, Emergency Savings, Personal Finance

JEL Classifications: D14, G51

*Corresponding author: 2 Prachan Road, Phra Borom Maha Rachawang, Phra Nakhon, Bangkok 10200, Thailand. Email: niwaan@tu.ac.th; niwaan.p@gmail.com

1. Introduction

Consider this hypothetical situation. Mr. John Doe works for a company that utilizes messaging apps, such as LINE or WhatsApp, as the primary communication tool. Every day he must connect with his boss and colleagues through that app. One day his phone is broken, and he must repair or replace the phone before tomorrow. The closest local shop sells him a smartphone at the lowest price of 2,999 THB (for ease of calculation, I shall round up to 3,000 THB). Unfortunately, the shop's EDC machine is out of order, so he cannot use a credit card or installment loan card. He tries to borrow the shop owner's phone to call his friends and relatives, but no one answers his calls. The question is, 'Does he have 3,000 THB in his wallet or his ATM account at that moment to pay this immediate and inevitable cost?' If the answer is no, then Mr. Doe is financially fragile. If the answer is yes, then he is not financially fragile. This hypothetical situation might not be precisely defined. Mr. Doe might find another solution, such as put the phone cost on tab. Or he might use some personal loan card to get cash from the nearest ATM. However, my main point is that a financially fragile person lacks liquidity even in a small amount when he/she needs it most.

I define 'Financial Fragility' as a worker's inability to afford an immediate, inevitable, and unexpected cost of 3,000 THB with only cash or savings in his/her bank account. I shall discuss the background behind this definition in the next section. The interesting point of this fragility is that everyone could become financially fragile if he/she mismanages his/her own money regardless of socioeconomic status. For example, a person might have various investments, whether in real estate, mutual funds, or the stock market. However, he/she has set aside minimal liquidity, especially cash and savings. When an unforeseen financial shock, even not so much like 3,000 THB, could knock his/her life off balance. In other words, it is a simple poke that broke your finances.

In Human Resources literature, it is well known that financial problems induce financial stress, which in turn lowers workers' productivity and causes absenteeism among workers (Kim & Garman, 2003; PricewaterhouseCoopers, 2017, 2019; Williams et al., 1996). Financial fragility is one of the financial issues that workers could encounter every single day. And yet, there is no research regarding such fragility. Academics and policymakers in Thailand tend to focus on poverty and its vulnerability (Thailand Development Research Institute, 2006; U-nuch, 2010). Most of them might not be aware of the possibility that high-income earners could have financial fragility, not just only low-income earners, which I shall show the supporting data later. This overlook creates the elephant in the room in terms of financial fragility research.

Therefore, I conduct this research to answer two research questions: 1) whether Thai non-agricultural workers statistically have financial fragility, and 2) which factor significantly affects Thai non-agricultural workers' financial fragility. This research article consists of six sections – introduction, literature review, research methodology, data and results, conclusion & discussion, and research recommendations.

2. Literature Review

2.1 Definition of Financial Fragility and Its Background

'Financial Fragility' in this research is defined as 'A situation in which a worker could not afford an immediate, inevitable and unexpected cost of 3,000 THB with only cash or bank account'. I avoid using the word 'emergency cost' since the meaning of emergency varies by person. Some people might only limit emergency costs to a medical

cost or any life-threatening cost. At the same time, the others might include car repair cost, smartphone replacement cost, etc.

The background behind this definition is from the Survey of Household Economics and Decision-making conducted by the Board of Governor, Federal Reserve System (2019). One of the survey's questions was, "Suppose that you have an emergency expense that costs \$400. Based on your current financial situation, how would you pay for that expense?" The survey did not provide the background behind the 400 USD figure. It only stated that the 400 US emergency cost is "relatively small, unexpected expenses, such as a car repair or replacing a broken appliance." According to the survey results, around 4 in 10 adults would have difficulty covering such expense with only cash or its equivalent. This finding reflects that approximately 40 percent of American adults are financially fragile. They did not have 400 USD in their wallets or bank accounts to pay for this hypothetical emergency cost.

To apply to Thailand context, I derive the financial fragility threshold by comparing the median US household income from the United States Census Bureau conducted by Fontenot et al. (2018) with the average Thai household income provided by the National Statistical Office (NSO) (2018). In 2017, the median US household income was around 61,372 USD annually (about 1.9 million THB), while the average Thai household income was around 323,352 THB per year. Upon comparison, the US household income was approximately six times higher than the Thai household income. Therefore, Thailand's financial fragility threshold should be around six times lower than the US threshold – about 66.67 USD or 2,067 THB. However, for ease of research communication, I shall round up the threshold to 3,000 THB.

Upon considering the threshold, I find this threshold suitable for the Thailand context in a real-life manner. The cost of a smartphone, which is essential in today's world of work, starts from 2,000 THB (without network carrier contract) as far as I know. If someone needs to call an ambulance in Thailand, he/she could reach the 1669 hotline for free or spend at least 2,000 THB for getting a private ambulance (Srimode, 2017).

2.2 Other Financial Fragility Definition

Besides the definition in this research, other definitions vary by the emergency conditions and the monetary thresholds.

The first definition defines the same as the above definition with some differences in the threshold level. For example, Anderloni et al. (2012) defined Italy's threshold at 700 EUR or around 24,000 THB.

The second definition defines differently from the first. Lusardi et al. (2011) defined financial fragility as the ability "to come up with \$2,000 if an unexpected need arose within the next month". If the survey respondents answered, 'probably not able' or 'certainly not able,' then they are financially fragile. The threshold and timeframe could be varied to the country context, such as 1,500 EUR (inflation-adjusted) (around 52,000 THB) in the case of Italy, or 2,000 AUD within two weeks in the case of Australia (Worthington, 2004).

I prefer the first definition to the second one because I find the second definition too flexible. Trump and Schwartz (1987, p. 277) once said, "...you're only as strong as your weakest link." The second definition does not reflect the weakest link, in my opinion. A worker would have plenty of time to come up with a large sum of money within 30 days. He/she could pawn some assets, sell stocks, borrow from his/her friends and relatives, or resort to payday loans. Plenty of time, plenty of options. Meanwhile, the word 'fragility' should reflect the worker's inability to absorb a sudden financial shock even when that shock is relatively tiny. The core tenet of financial fragility should be the lack of liquidity even in small amounts when the worker needs it the most. Therefore, I shall stick to the first definition with the 3,000 THB threshold.

2.3 Impact of Financial Fragility

Hasler et al. (2017) stated that the impact of the sudden cost toward financially fragile workers could be like a butterfly effect. If their cars broke, they could not go to work. Such work absenteeism could lead to unemployment. When the households' breadwinners lose their jobs, they cannot afford three meals, resulting in malnutrition and accumulated stress. Moreover, they could face evictions if they cannot pay their rent on time. These evictions tamper with FICO score and credit history, resulting in more loan application rejects. Those who cannot get loans might have to resort to payday loans with exorbitant interest rates. And they would risk their lives of being murdered if they could not pay back. With several murders, the community eventually becomes unsafe to live in. The bottom line is the undesired consequences of financial fragility, if left unattended, could be gigantic from the household level to the entire nation.

2.4 Factors and Sources of Financial Fragility

Lusardi et al. (2011) found that factors affecting American adults' financial fragility are 1) low household income, 2) low education, 3) lack of financial knowledge, 4) having children, 5) enormous asset loss, and 6) unemployment. Meanwhile, Gjertson (2015) discovered similar findings. He found that emergency savings, which could reflect financial fragility, increased with more earning and age. Whereas the marital status, which is not single, could make the emergency savings lower. Not only the mentioned factors but Hasler et al. (2017) also found that those who have education below degree level would have much more fragility than those who hold degrees. He found a relationship between indebtedness and financial fragility as well. Besides financial and demographic factors, Anderloni et al. (2012) found that impulsivity combined with credit card debt made Italians more financially fragile. They suggested, along with other studies, that education could help lower such fragility. And with the ongoing COVID-19 pandemic, financial education has become ever-increasingly important. Clark et al. (2020) discovered that, during the pandemic, those who have more financial knowledge were better protected against the financial shock caused by the pandemic.

When it comes to the source of financial fragility, there are three possible sources: 1) lack of liquidity, 2) income and expense volatility, and 3) changing work nature.

The first possible source, the lack of liquidity, when combined with a high level of debt, could cause financial fragility (Hasler et al., 2017). An underwater person has minimal liquidity. Whenever the person encounters a sudden cost, even in a tiny amount, he/she could not afford the cost. In an extreme case, low-income workers have to cut necessary consumption to have enough money for such an immediate expense (Mullainathan & Shafir, 2009). Nonetheless, having no liquidity together with no debt does not prevent a worker from being financially fragile. The worker could be financially fragile if he/she mismanages his/her finance so that her income and expense are barely in the black. This situation leaves a tiny room for an unexpected cost. When it comes, workers must borrow money or pawn his/her assets to cover the cost. At worst, that worker might have to skip paying bills or use a payday loan (Board of Governors of the Federal Reserve System, 2019).

The second possible source is income and expense volatility. Morduch and Schneider (2017) indicated that income and expense volatility are fundamental causes of financial fragility. This finding is consistent with a report by Naiyaraksaree (2017a) that around 30 percent of Thai workers are real gig workers. In the United States case, the Board of Governor (2019) found that 3 in 10 American adults did at least one gig work in the month before the 2018 survey. Gig working has become increasingly popular worldwide, including in Thailand, since they can manage their schedule and choose the job they want.

The third possible source of financial fragility is the ever-changing nature of work. Although the workers have more freedom in their schedule, it comes with the cost of career stability. Naiyaraksaree (2017b) pointed out that the nature of gig work, which is short and without a valid contract, makes the income unstable. These workers might also risk getting a delayed payment or not getting paid at all. In her report, around 80 percent of Thai respondents expressed income volatility as their top concern. This finding is consistent with the Board of Governor's (2019) report that gig workers are more financially fragile than those who do gig work as their side jobs.

3. Research Methodology

3.1 Regression Model

This research uses the Panel Logistic Regression model to calculate the chance that a worker becomes financially fragile with the following equations:

$$\begin{aligned} Fragile_{it} = & \alpha_1 + \beta_1 \ln RWIK01stg_{it-1} + \beta_2 \ln ROIK01stg_{it-1} + \beta_3 \ln DRK01stg_{it} + \\ & \beta_4 Age_{it} + \beta_5 DepenRatio_{it} + \gamma_1 LowSec_{it} + \gamma_2 HS_{it} + \gamma_3 Vocat_{it} + \\ & \gamma_4 College_{it} + \gamma_5 Married_{it} + \gamma_6 OtherMarital_{it} + \gamma_7 HHhead_{it} + \\ & \gamma_8 Sex_i + \gamma_9 Urban_{it} + \gamma_{10} EverPoor_i + \varepsilon_0 \end{aligned} \quad (1)$$

Where

$$Fragile_{it} = \begin{cases} 1 & \text{if } sav_{it} < 3,000 \text{ THB} \\ 0 & \text{if } sav_{it} \geq 3,000 \text{ THB} \end{cases} \quad (2)$$

And

$$sav_{it} = RWIK_{it} - RAEK_{it} \quad (3)$$

I use the Panel Logistic Regression because 1) I would like to make use the most from the panel data, and 2) the research questions are about financial fragility, which measures worker's inability to afford an immediate, inevitable, and unexpected cost. The answer to the fragility question would be either yes or no, although it is proxied through the monthly savings threshold. Therefore, a discrete choice model combined with a panel data feature would be appropriate to the research questions.

3.2 Variable Description

The worker's saving variable (sav_{it}) is derived from subtracting worker's monthly real wage income ($RWIK_{it}$) with the worker's monthly real expenses ($RAEK_{it}$). And the worker's financial fragility ($Fragile_{it}$) equals 1 when the worker saves on average more than 3,000 THB per month in that year and equals 0 if otherwise. According to the literature, assets and the ability to borrow from friends, relatives, and financial institutions also affect financial fragility. However, due to the dataset limitation, which did not collect worker's assets, this study not include the asset variable. The best possible approach to cope with this problem is to use savings, which there is the difference between income and expense, as the proxy of the liquid assets on hand. The approach also includes limiting the financial fragility definition to the liquid asset on hand while excluding borrowing or selling and pawning illiquid assets.

The $\ln RWIK01stg_{it}$, $\ln ROIK01stg_{it}$ and the $\ln RDRK01stg_{it}$ variables are natural log-transformed variables of wage income, other income, and monthly debt repayment, respectively. Before log-transformation, a minuscule amount of 0.1 Satang or 0.000001 thousand THB would be added to these three financial variables to prevent observation omission from having zero value. The first two financial variables are in

lagged terms to avoid endogeneity from not including an asset variable in the regression model. Simultaneously, the debt must be in a present term because it is the current factor that affects this period's savings, and consequently determining the financial fragility.

This study uses 12 control variables, of which two are discrete, and the rest are dummy variables. These two are Age_{it} which represents the workers' age and $DepenRatio_{it}$ which indicates the dependency ratio. This research defines the dependency ratio as the ratio between the number of wage-earning household members and the number of family members 15 years old and above.

The rest control variables are as follow:

1) $LowSec_{it}$ (Lower Secondary Education) equals one if the worker completed the highest education at the lower secondary level and equals zero if otherwise.

2) HS_{it} (High School Education) equals one if the worker finished the highest education at the high school level and equals zero if otherwise.

3) $Vocat_{it}$ (Vocational Education) equals one if the worker obtained a vocational diploma and equals zero if otherwise.

4) $College_{it}$ (College Education) equals one if the worker obtained at least an undergraduate degree and equals zero if otherwise.

5) $Married_{it}$ equals one if the worker was married in that year and equals zero if otherwise.

6) $OtherMarital_{it}$ equals one if the worker had a marital status other than married and single and equals zero if the worker was either single or married.

7) $HHHead_{it}$ equals one if the worker was the household head in that year and equals zero if otherwise.

8) Sex_i equals one if the worker is male and equals zero if the worker is female.

9) $Urban_{it}$ equals one if the worker lived inside the municipal area in that year and equals zero if the worker lived outside the municipal area.

10) $EverPoor_i$ equals to one if the worker's $RWIK_{it}$, at least once in the six waves of the Panel SES, fell below the poverty line designated by the Office of the National Economic and Social Development Council (NESDC) and equals zero if the worker's income had never fallen under the poverty line. Since the deflator's CPI was based on the 2015 price level, the poverty line would be based on the 2015 as well while taking difference between urban and rural area into account.

3.3 Anticipated Results

Financial fragility indicates a worker's inability to afford an immediate, inevitable and unexpected expense of 3,000 THB using only cash or savings in bank accounts. The results would be as follows if they are consistent with the theoretical frameworks and the literature.

1) Lagged real wage income must significantly reduce the possibility of being financially fragile. (Gjertson, 2015; Hasler et al., 2017; Keynes, 1936; Lusardi et al., 2011)

2) The effect of wage income would be weaker than the impact of other income since the worker would save from other income more than the wage income according to the Permanent Income Hypothesis by Friedman (1957).

3) Worker's age would statistically reduce the probability of having financial fragility (Ando & Modigliani, 1963; Clark et al., 2020) because the worker would earn more as his/her career progress.

4) Dependency and the non-single marital status would significantly increase the chance of having financial fragility. (Gjertson, 2015; Lusardi et al., 2011)

5) Experiencing extreme income volatility, even at least once, to the poverty level would leave a financial scar and significantly increase the chance of becoming financially

fragile (Morduch & Schneider, 2017). The background behind this expected relationship of the *EverPoor_i* is the dataset limitation which did not collect income and expense at least in a monthly basis. Therefore, I cannot calculate the income volatility within a year. One way to overcome this limitation is to measure income volatility at the extreme level using the poverty line as the threshold of volatility. If the worker's average monthly income dipped hardly under the poverty line in any survey period, then he/she was experiencing extreme income volatility.

4. Data and Results

This study employs the same dataset as Ponpunthin (2020), which used the Panel Socioeconomic Survey data from the NSO. In addition to the mentioned research, this study screens only workers who earned wage income throughout all the survey waves. The screening ensures that the panel dataset is genuinely balanced. This study scopes only Thai non-agricultural workers between 22 and 60 years, the working-age range in Thailand. Most Thai students graduate at the age of twenty-two, and most Thais retire at the age of sixty.

Beside the unavailability of asset variable and monthly income variable in the dataset, there is another limitation I must express as a research caveat. This Panel SES dataset only collects formal workers in Thailand. Around 54 percent of 37.9 million Thai workers are in the informal sector (National Statistical Office, 2021). Of those who are informal workers, approximately 44.4 percent work in the non-agricultural sector. Therefore, around 9.05 million Thai informal and non-agricultural workers are not represented in this dataset. This research only studies Thai non-agricultural workers' financial fragility in the formal sector with the mentioned limitation. The future research would need another panel dataset that deals specifically with the informal workers to complete the full picture of Thai non-agricultural workers' financial fragility.

4.1 Descriptive Statistics

Almost half (45%) of Thai non-agricultural workers are financially fragile. It means that these workers will be unlikely to afford a sudden cost of 3,000 THB using only cash or savings. This finding is consistent with Lamsam et al.'s (2019) result that more than half of Thais had less than 3,000 THB in their savings accounts.

These Thai workers mostly had their savings of around 3,800 THB per month. Most of them earned around 10,800 THB with expenses of about 7,200 THB. They mainly did not make any extra income, and they mostly had no monthly debt repayment burden. These statistics might sound odd. I shall discuss the possible reasons in the next section.

In terms of population, most Thai workers are male, with a median age of around 41. They were married and lived in municipal areas. Almost half of them (46%) were household heads with a dependency ratio of 29 percent approximately. Since all educational dummy variables have a median of zero, it could be implied that most Thai workers had education below the lower secondary level.

Speaking of poverty, almost 3 in 10 Thai non-agricultural workers experienced poverty at least once between 2005 and 2017. The percentage of those once-poor workers is astonishing since it implies that nearly 30 percent of Thai non-agricultural workers had encountered extreme income volatility to the level of poverty.

Table 1: Descriptive Statistics

Variables	Panel SES 2005 - 2017				
	Median	Mean	Std. Dev.	Min	Max
Fragile	0.000	0.449	0.497	0.000	1.000
sav ('000 THB)	3.772	6.749	24.402	-804.213	814.601
RAEK ('000 THB)	7.159	10.027	17.853	0.031	824.083
RWIK ('000 THB)	10.776	16.775	21.746	0.000	835.488
ROIK ('000 THB)	0.000	0.980	5.325	0.000	160.095
RDRK ('000 THB)	0.000	0.608	5.371	0.000	368.175
AGE (year)	41.000	40.327	8.301	22.000	60.000
DepenRatio	0.286	0.269	0.214	0.000	1.000
LowSec	0.000	0.111	0.314	0.000	1.000
HS	0.000	0.107	0.309	0.000	1.000
Vocat	0.000	0.116	0.321	0.000	1.000
College	0.000	0.306	0.461	0.000	1.000
Married	1.000	0.705	0.456	0.000	1.000
OtherMarital	0.000	0.095	0.293	0.000	1.000
HHHead	0.000	0.463	0.499	0.000	1.000
Sex	1.000	0.557	0.497	0.000	1.000
Urban	1.000	0.542	0.498	0.000	1.000
EverPoor	0.000	0.282	0.450	0.000	1.000

Source: Author's calculations.

After classifying descriptive statistics by financial fragility status, several findings could hint the relationships between these factors and financial fragility.

According to the educational attainment segment in Table 2, the percentage of financially fragile observations decreases dramatically from around 66 percent for those who attained upper primary education to only about 20 percent for those who have degrees. This percentage decrease might hint that the education attainment could help Thai workers reducing the chance of becoming financially fragile.

In the case of a household head, someone might posit that the household head percentage, who are financially fragile, should be lower than the household member. They might reason that household heads are supposed to hold the household asset, thus lower the chance of becoming financially fragile. However, the data in table 2 shows otherwise. Around half of the household heads are financially fragile, while only 4 in 10 household members are financially fragile. Further regression result is needed to confirm the relationship between being a household head and the chance of having financial fragility.

Income level also plays a role in financial fragility. According to the RWIK Quintile segment in Table 2, the higher the income quintile, the lower the number of workers being financially fragile. In the introduction section, I mentioned that those who have high income could have financial fragility like low-income earners even though much less percentage than the lower income. Those in the top quintile could still have some financial fragility. Around 6 percent of the top 20% of earners are financially fragile. These findings should hint that income should not be the sole determinant of working becoming financially fragile. Education and income level are perhaps the main factors in this research.

Table 2: Descriptive Statistics by Fragility

	Observations by Fragility		
	YES	NO	Total
<i>Educational Attainment</i>			
Uneducated	86	63	149
Lower Primary	344	111	455
Upper Primary	1,394	714	2,108
Lower Secondary	465	368	833
Highschool	332	471	803
Vocational	328	547	875
Undergraduate	392	1,572	1,964
Master	34	298	332
Doctorate	0	5	5
<i>Being a Household Head</i>			
YES	1,794	1,692	3,486
NO	1,581	2,457	4,038
<i>RWIK Quintile</i>			
1st	1,440	62	1,502
2nd	978	529	1,507
3rd	581	924	1,505
4th	283	1,223	1,506
5th	93	1,411	1,504
Total	3,375	4,149	7,524
<i>Marital Status</i>			
Single	528	974	1,502
Married	2,450	2,856	5,306
Widowed	144	102	246
Divorced	123	106	229
Separated	129	108	237
Total	3,374	4,146	7,520

Source: Author's calculations.

4.2 Results

The following table is the results from the Panel Logistic Regression with their marginal effects calculated under the assumption of zero fixed-effect using a STATA command created by Long and Freese (2014). Results in the following table are classified by occupation types: government employee, private employee, and laborer. Although it is possible to organize by geographical regions, workers did not work in the same areas

in every survey wave. Migration existed even though the reasons behind migration were not stated in the dataset.

Table 3: Panel Logistic Regression Results

Marginal Effects (Assuming zero fixed effect)	Dependent Variable (Fragile = 1 if sav < 3,000 THB)							
	All Occupations		Government Employee		Company Employee		Laborer	
L.lnRWIK01stg	-0.009	***	-0.01	***	-0.009	***	-0.007	***
	(0.002)		(0.003)		(0.002)		(0.003)	
L.lnROIK01stg	0.001		0		0.002		0.002	
	(0.001)		(0.001)		(0.002)		(0.003)	
lnRDRK01stg	0.004	***	0.001		0.006	***	0.012	**
	(0.001)		(0.002)		(0.002)		(0.005)	
Age	-0.009	***	-0.009	***	-0.01	***	-0.006	***
	(0.001)		(0.001)		(0.001)		(0.002)	
DepenRatio	-0.017		0.029		0.01		-0.244	***
	(0.031)		(0.049)		(0.046)		(0.071)	
LowSec	-0.088	***	-0.086	*	-0.071	**	-0.091	**
	(0.022)		(0.044)		(0.029)		(0.045)	
HS	-0.166	***	-0.104	***	-0.173	***	-0.046	*
	(0.022)		(0.038)		(0.029)		(0.080)	
Vocat	-0.176	***	-0.099	***	-0.189	***	-0.078	
	(0.023)		(0.037)		(0.032)		(0.109)	
College	-0.338	***	-0.238	***	-0.336	***	-0.4	***
	(0.017)		(0.029)		(0.027)		(0.122)	
Married	0.036	*	0.005		0.073	***	-0.019	
	(0.019)		(0.030)		(0.027)		(0.043)	
OtherMarital	0.054	**	0.013		0.082	**	0.007	
	(0.027)		(0.046)		(0.038)		(0.054)	
HHHead	0.076	***	0.042	*	0.078	***	0.128	***
	(0.016)		(0.025)		(0.023)		(0.035)	
Sex	-0.044	***	-0.01		-0.056	**	-0.087	**
	(0.016)		(0.027)		(0.023)		(0.037)	
Urban	-0.042	***	-0.024		-0.054	***	0.007	
	(0.014)		(0.022)		(0.021)		(0.034)	
everpoor	0.204	***	0.21	***	0.188	***	0.087	***
	(0.018)		(0.034)		(0.027)		(0.034)	
Workers	1,254		418		670		166	
Observations	6,270		2,090		3,350		830	

Source: Author's calculations.

Notes: 1. Standard errors are in parentheses.

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

3. Marginal effects were calculated using Long and Freese (2014)'s STATA command

4. Workers' occupations stated here are in 2017.

From the Panel Logistic Regression results in table 3, the two most prominent factors contributing to the chance of becoming financially fragile are educational attainment and history of falling into poverty. Across all occupation groups, the higher education a worker attained, the lower the worker's probability of becoming financially fragile. The effect of a college education is strongest in the laborer group, followed by the company employee group and the government employee group. Laborers may benefit most from the college education because this occupation group might include freelancers whose skills are needed to be high and updated all the time. In contrast, the government employees with job security might not need to update their skills as much as the laborer group.

While educational attainment reduces financial fragility substantially, the history of falling into poverty aggravates the financial fragility. This effect applies to all occupation groups, with severity magnitude varies across groups. The government employees tend to be the most affected group. Unless they work for extra jobs or earn any unscrupulous income, these government employees only have one income source: their salary. And their pay is relatively lower than the company employees. When they experience unemployment or furlough for any reason, including the pandemic, they would suddenly fall into poverty since they have no income during a particular period. Thus, a history of falling into poverty occurs. Meanwhile, the laborer group tends to be the least affected. The reasons could be that their incomes are already low, so the history of falling into poverty is no stranger to them, or they are naturally skilled in earning income from various sources, thus less effect from a single income source shock.

For the financial variables, real wage income in the previous period slightly helps reduce the chance of becoming financially fragile. In contrast, the real other income in the last period does not affect the financial fragility. These relationships might imply that Thai non-agricultural workers tend to save or build liquid assets mainly from their primary income source. Meanwhile, the real monthly debt repayment helps increase the worker's financial fragility, with the laborer group affected most by this factor. These findings for the financial variables are consistent with the literature that income reduces financial fragility and the debt exacerbates the fragility.

And for the demographic variables, only the age variable helps decrease the financial fragility across all occupation groups. In contrast, the urban variable only reduces financial fragility for the company employee group. When it comes to marital status, any status other than single does significantly increase the chance of becoming financially fragile. This marital finding is not surprising since the workers must have more financial burdens to take care of, such as mortgages, school fees, and etc. And becoming a household head does have a significant impact on worker's fragility. The household head tends to have more financial burden than the family members and thus more financial fragility.

4.3 Sensitivity and Robustness Check

Table 4 shows that the results are robust even by changing the regression model from the Panel Logit to the Panel Probit – all signs remain the same with slight magnitude variation. And the results are insensitive to the threshold changing in the dependent variable.

Table 4. Sensitivity and Robustness Check Results

Marginal Effects (assuming zero fixed effect)	Fragile = 1 if sav < 3,000 THB		Fragile = 1 if sav < 2,000 THB	
	Panel Logit	Panel Probit	Panel Logit	
L.lnRWIK01stg	-0.009 *** (0.002)	-0.009 *** (0.002)	-0.008 *** (0.001)	
L.lnROIK01stg	0.001 (0.001)	0.001 (0.001)	0 (0.001)	
lnRDRK01stg	0.004 *** (0.001)	0.004 *** (0.001)	0.004 *** (0.001)	
Age	-0.009 *** (0.001)	-0.009 *** (0.001)	-0.007 *** (0.001)	
DepenRatio	-0.017 (0.031)	-0.021 (0.031)	-0.006 (0.030)	
LowSec	-0.088 *** (0.022)	-0.090 *** (0.022)	-0.059 *** (0.020)	
HS	-0.166 *** (0.022)	-0.169 *** (0.022)	-0.133 *** (0.021)	
Vocat	-0.176 *** (0.023)	-0.179 *** (0.023)	-0.147 *** (0.022)	
College	-0.338 *** (0.017)	-0.339 *** (0.017)	-0.28 *** (0.017)	
Married	0.036 * (0.019)	0.036 * (0.019)	0.053 *** (0.018)	
OtherMarital	0.054 ** (0.027)	0.054 ** (0.026)	0.063 ** (0.025)	
HHHead	0.076 *** (0.016)	0.074 *** (0.016)	0.089 *** (0.015)	
Sex	-0.044 *** (0.016)	-0.044 *** (0.016)	-0.044 *** (0.015)	
Urban	-0.042 *** (0.014)	-0.042 *** (0.014)	-0.030 ** (0.014)	
everpoor	0.204 *** (0.018)	0.207 *** (0.018)	0.205 *** (0.016)	
Workers	1,254	1,254	1,254	
Observations	6,270	6,270	6,270	

Source: Author's calculations.

Notes: 1. Standard errors are in parentheses.

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

3. Marginal effects were calculated using Long and Freese (2014)'s STATA command

5. Conclusions and Discussions

5.1 Conclusions

Financial fragility is a worker's inability to afford an immediate, inevitable, and unexpected cost of 3,000 THB using only cash or savings in bank accounts. Such fragility could happen to anyone regardless of socioeconomic status. In the Human Resources literature, the results of financial fragility could eventually be in productivity loss and absenteeism in organizations. And yet, there is no study about financial fragility in Thailand. Therefore, I conduct this research to investigate whether Thai non-agricultural workers, especially in the formal sector, have financial fragility and what factors contribute to such fragility. The panel Socioeconomic Survey (SES) data shows that almost half of Thai non-agricultural workers are financially fragile. The data also reveals that educational attainment and income level might have some relationships with fragility. According to the Panel Logistic Regression results, two factors contributing the most to the financial fragility are 1) educational attainment and 2) history of falling into poverty. The more education a worker has, the less financially fragile that worker becomes. And if that worker once fell into poverty in any period, he/she would have much higher financial fragility than those who never experience poverty. Other factors do have a significant effect on the fragility, although they have a much lower magnitude.

5.2 Discussions

There is one variable that I do not mention in the results in section 4. That variable is the dependency ratio. Although results for other variables are consistent across occupation groups, the dependency ratio results are peculiar since the variable does not affect the two employee groups. But it significantly affects the laborer group. The more dependent the laborer has, the less financially fragile that laborer becomes. I could think of two possible reasons to explain these results. The first one is that the laborer, especially freelancers, could take advantage of tax deductions on dependents such as old parents, spouses, and children. Another reason could be that as the laborer has more dependents, he/she has more incentive to become more active in earning income. Thus, he/she might have more income, which could result in more monthly savings and less financial fragility.

The reader should take a caveat when it comes to the laborer group. Results from this group might not be as precise as the other groups due to low observation numbers. Such a low number of workers in the laborer group is not surprising since they primarily work in the informal sector, whose data is not available in the panel dataset.

Since the dataset I use is the same as Ponpunthin (2020), I would like to reiterate some dataset limitations on the financial variables. The income and expenses could be precise only if the workers record their budgeting in detail. However, the reality is the opposite. Unless workers can memorize their salaries or see their slips, the income figure would not be accurate. For the debt figure, there is a stigma mentioned in Ponpunthin's research that people tend to talk about their sex lives rather than their credit card debts. Therefore, SES respondents might not give accurate debt figures, resulting in a possible inaccurate debt variable.

6. Recommendations

6.1 We Need More Financial Education, and It Needs to be Pragmatic.

Results show that worker's educational attainment is the most crucial factor in helping workers escape from financial fragility. Education is the ladder to a higher income which could lead to higher savings and less financial fragility. The higher pay means more financial options, whether it is credit cards, mortgage, car loan, or personal loan. Education is also a key to broader knowledge and skills, especially in the age of social media and YouTube. Higher education implies higher financial knowledge because it equips people with essential skills to obtain financial knowledge successfully. This financial knowledge is vital in surviving financially through the COVID-19 pandemic. Clark et al. (2020) showed that those who have more financial knowledge are more likely to survive financially during the pandemic since they know how to manage their finance better than those who have no financial knowledge.

And yet, the Royal Thai Government never officially equips any student with financial knowledge, either practically or theoretically. Moreover, the opportunity to obtain a good quality education in Thailand is concentrated in Bangkok, Thailand's capital city. Good quality education should belong to all Thais, regardless of socioeconomic class. Educational institution names should not be a mockery simply because of differences in academic quality. Everybody deserves to be treated equally with respect as the true owner of Thailand.

Speaking of financial education, it must be pragmatic. It must not come from baseless gurus' suggestion without any research backup. An example of such an unfounded suggestion, especially during the COVID-19 pandemic, is 6-month emergency savings. Many so-called gurus on social media blame unemployed people who lined up to get food and water that they did not save 6-month of their income as their emergency savings. These gurus think these unemployed people deserve their fate. However, these so-called gurus never cite that the 6-months emergency savings concept was originated from the Johnson and Widdows' (1985) research. They never think of the harsh reality of saving six months of income. They do not consider that it takes at least 54,000 THB to save for six months of minimum wage. I wish these gurus to tell those unemployed why they did not save 54,000 THB right in their faces and see the unemployed's reactions. After that, these gurus might have a better clue in real life.

6.2 Make Financial Buffer Easy and Automatic

Not only the COVID-19 pandemic reveals the crisis of financial literacy among Thai workers. It also shows another unspoken crack in financial resiliency among Thai workers: the lack of financial buffers. The COVID-19 pandemic exposed the drawback of being efficient in the short term while leaving no cushion for any unimaginable shock to come (van Dalen & Henkens, 2020). And this research also shows that the Thailand case is no exception, even though the research dataset was before the pandemic. Whenever a worker has a history of income volatility to the level of poverty, his/her financial fragility skyrockets.

Having some financial buffers alone might not be enough to deal with a financial shock, especially in today's world, which is volatile, uncertain, complex, and ambiguous (VUCA). The best way to deal with this issue, in my opinion, is to make the financial buffer automatic since inertia is one of the top reasons that workers do not save (Thaler, 1990). Therefore, I propose two automatic financial buffers to the Bank of Thailand and the Thai Banker's Association.

The first proposed automatic financial buffer is the ‘Automatic Income Buffer’ (AIB) per Ponpunthin’s recommendation to soften the income volatility, increase savings adequacy, and reduce the possibility of becoming financially fragile.

To ensure the automatic financial buffer’s effectiveness, I also proposed the second automatic financial buffer called ‘Change for Chance,’ which is the savings account that keeps the change from monthly debt repayment. This proposed savings account is modified from the Mortgage Reserve Account (MRA) by Moulton et al. (2015) and the Debt Management Plan (DMP) by Heisler & Lutter (2015), and the interest calculation is adapted from the Savings Accelerator Account (SAA) by Khashadourian (2015).

Change for Chance (C4C) is a savings account without a passbook. It is automatically opened right after the loan application approval. The debtor can opt-out as he/she wishes. It has features like an ordinary savings account. However, it keeps the change every time the debtor pays. For example, a monthly mortgage payment is 6,190 THB; the bill would charge 6,800 THB. Every month the debtor pays, 6,190 THB will pay the mortgage, and the rest 610 THB will go to the C4C account – no extra deposit slip needed. In case the change is less than 10% of the monthly repayment, the bank can consider adjusting the change-keeping amount near ten percent. For example, a monthly payment of 6,490 THB plus its ten percent would equal 7,139 THB. The bank may consider charging 7,100 or 7,200 THB upon an agreement with the debtor.

The interest calculation for C4C starts with 0.1% APR on the first month of deposit with 0.1% APR increment every month and capped at 2.4% APR in the 24th month. If the debtor wants to withdraw the fund, the account balance must be at a minimum of 3,000 THB (financial fragility threshold). The interest rate will be reset to 0.1% APR every time the debtor withdraws. Whenever the savings reaches 24-months of maturity, the bank may consider issuing a cheque or transfer to the debtor’s desired account. The cheque would be the principal plus interest ex 3,000 THB. This fund kept from ‘Change’ would provide a ‘Chance’ for the debtor to start a business or repair his/her home. After giving a check or a transfer, the balance must be 3,000 THB if the debtor needs emergency savings after cashing the cheque.

Banks will get benefits from this scheme by providing the debtors some financial security. Suppose the debtor experiences any economic shock such as lower-than-usual income, unemployment, life accident, and etc. He/she can ask the bank to debit his/her C4C account to pay the debt or rent for at least one month without restructuring the loan or facing eviction. Policymakers will also get benefits from sound financial well-being among Thais. Thai workers would have some income security from both automatic savings accounts – AIB and C4C. They can cope with financial problems themselves without seeking help from the government in the first place. The workers become more financially resilient, which in turn helps to save the public budget.

The bottom line is ‘Change for Chance’ savings account was designed to help Thai workers automatically save their money through debt repayment. It provides an incremental interest rate to prevent unnecessary temptation to withdraw money. After two years of automatic deposit, workers can invest or spend their money while retaining some emergency purposes.

Finally, using the C4C account and the AIB account, which helps stabilize income, a financial buffer would be easier to make. Thai workers can enjoy sound financial well-being and less likely to become financially fragile.

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