Factors Affecting Saving Adequacy
of Thai Non-Agricultural Workers

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Abstract

This research examines savings adequacy of Thai non-agricultural workers using the Panel Socio-Economic Surveys from the National Statistical Office. The savings adequacy threshold is derived from a Krungthai Macro Research report. Theoretical frameworks used in this research are Permanent Income Hypothesis, Life Cycle Hypothesis, and Theory of Mental Accounting. The Panel Regression and Panel Logistic Regression results show that there are seven factors significantly affecting the savings adequacy of Thai non-agricultural workers. These factors are 1) real wage income, 2) real other income, 3) real monthly debt repayment, 4) college education, 5) being a household head, 6) sickness, and 7) living in urban area. The first, second, and fourth factors affect savings adequacy positively, while the remaining factors affect negatively.

Keywords: savings, saving adequacy, non-agricultural workers, Thai workers, personal finance

1. Introduction

Personal financial behavior and financial satisfaction directly affect labor productivity; and bad financial behavior can result in work absence (Joo, 1998). Examples of bad financial behaviors are overspending, credit overuse, consistently using a credit card up to its limit, having no emergency savings, paying bills late, having no retirement savings, and frequently receiving loan rejections because of a bad credit history (Joo & Grable, 2000). Workers' stress, including financial stress, are well known to be linked with productivity-hindering behaviors, such as work absence, slacking off, leaving early, human errors, lack of work concentration, and workplace accidents (Williams et al, 1996). Therefore, financial behavior problems must not be neglected. With proper education and counseling, workers' financial behaviors could be significantly improved (Grable & Joo, 1999). However, to my knowledge, there are almost no companies in Thailand that offer financial counseling as a part of its employee benefits package, and accessing outside financial counseling costs time and money. It is likely that most low-income Thai non-agricultural workers – such as factory workers and laborers – do not have access to this type of counseling. Bad financial behaviors due to a lack of access to financial counseling or education can result in financial stress and eventually lead to lower worker productivity. Hence, it is critical for workers to have financial education backed by micro-level economic research.

As mentioned earlier, having no emergency savings and no retirement savings are parts of bad financial behaviors which can result in financial stress, especially when workers experience a financial shock. Having some savings is, therefore, vital in mitigating negative financial shocks. According to Keynes (1936), savings can be an emergency shock buffer, a children's education fund, a retirement fund, an occupational fund, a budget for travelling and leisure, etc. Thais acknowledge the importance of savings; however, a NIDA Poll (2017) conducted by the National Institute of Development Administration (NIDA) found that 48% of Thai income earners did not have any savings at all. Furthermore, 42% of those who saved stated they did not have adequate amounts of emergency savings. These situations are also supported by the Bank of Thailand (2016) survey which found that a third of Thai income earners had zero savings; and 37.3% of those who saved indicated that their emergency savings covered less than 3 months of expenses.

Thailand has recently entered into an aging society, which means the growth of the elderly population is outpacing the growth of other age groups. Having adequate savings for retirement is essential; yet, virtually half of the nation has no savings at all. It is not an exaggeration to state that Thailand is currently facing a savings crisis. With this crisis, it is imperative to conduct a study that addresses factors behind the savings adequacy of Thai workers in order to promote and improve the adequacy of savings among the workforce. The more workers who attain savings adequacy, the more financially resilient they will be, and the less likely they will fall into financial distress. This research is one of the first to study the factors affecting savings adequacy for Thai non-agricultural workers using an adequacy threshold developed by Krungthai Macro Research (2018), together with the Panel Socio-Economic Surveys (SES) from the National Statistical Office. This research studies Thai non-agricultural workers in an employment relationship, including government officials, state-owned-enterprise (SOE) employees, company employees, and laborers (business owners and the self-employed are excluded). The income, expenses and debt repayment data collected for the Panel SES are adequate for conducting empirical research on the topic.

2. Literature Review

The first research on savings in Thailand was conducted by Kosiyanon (1974). It used the 1962 and 1968 cross-sectional SES together with 1960 – 1972 National Accounts from the National Economic and Social Development Board (NESDB) to investigate Thai savings behavior. The theoretical frameworks for the study were the Absolute Income Hypothesis (Keynes, 1936), Permanent Income Hypothesis (Friedman, 1957), and the Kaldor (1955) Savings Function. From the ordinary least squares (OLS) results, Kosiyanon confirmed all hypotheses in the framework. She also found that urban savings are higher than rural savings because there were few banks available in the rural areas.

A decade later, Buabai (1984) and Rojthamrong (1985) used the Bank of Thailand Savings Survey to study Thai household savings behavior. The former focused on the difference between urban and rural households, while the latter specifically focused on the savings behaviors of households in

the northeastern region of Thailand. Both studies employed the frameworks of the Absolute Income Hypothesis and the Life Cycle Hypothesis, except the latter study also used the Kaldor Savings Function. Using OLS, they found that household income positively affected savings. In the case of Buabai's (1984) study, Thai households saved less when their family size grew bigger; however, the relationship was positive in some regions. It is possible that the number of working family members, especially in large families, positively affected household savings. While Buabai (1984) focused on family size, Rojthamrong (1985) focused on the number of dependents. Rojthamrong (1985) found that the number of dependents negatively affected household savings, and that household behavior was mostly consistent with the Life Cycle Hypothesis, except for the elderly saved rather than dissaved. He also found that northeastern households saved more if they were farmers or entrepreneurs – a finding that is consistent with Kaldor (1955).

After the 1997 economic crisis in Thailand, household savings gained attention. Chaengsubin (2001) studied Thai household savings behaviors before and after the economic crisis. The study used the 1996 and 1998 rounds of the SES together with the Permanent Income Hypothesis and Life Cycle Hypothesis (LCH) as theoretical frameworks. The OLS results indicate that savings after the crisis increased more than savings before crisis if comparing with the same average increase in household head income. This suggested that Thai households minded their wallets after the crisis. In the same period, another study by Atsawarujikul (1998) was conducted using the 1992/1993 Bank of Thailand Savings Survey under the frameworks of the Absolute Income Hypothesis, Permanent Income Hypothesis, and Life Cycle Hypothesis. This study explored savings differences among five occupation groups, which are 1) agriculture, 2) government officials and state-owned-enterprise employees, 3) traders and entrepreneurs, 4) company employees, and 5) laborers. According to the OLS results, this study found that both permanent and transitory income significantly affected savings across all groups. Moreover, the study found that agricultural workers, traders, and laborers saved more if they lived in a rural areas, implying that the cost of living in an urban areas is higher than in rural areas. The Life Cycle Hypothesis posits there is a relationship between age and personal savings; however, most surveys in

Thailand at that time were at household level. Therefore, Deaton and Paxson (2000) devised a method to transform household-level SES data into individual-level data so that the effect of the life cycle could be more evident. The results were satisfactory – their transformed data supported the LCH better than the SES. They also found that Thai households saved less if the Thai economy grew, possibly implying that economic growth transfers wealth to non-savers in the next generation, leading to more savings than the previous generation.

Despite the importance of micro-level savings research in Thailand, there are only two studies conducted within the past decade. The first one was conducted by Sirisankanan (2013) to inquire about consumption smoothing and precautionary savings of Thai agricultural households. The study was the first and only research on savings that employed the Panel SES data. The Life Cycle Hypothesis and the Permanent Income Hypothesis were the main frameworks used in the study. From two-step Panel Fixed Effects Regression results, it found that precautionary savings existed with the marginal propensity to consume out of permanent income being lower than unity. This result contradicted the Permanent Income Hypothesis in which households are supposed to consume all permanent income and save only transitory income. The second micro-level savings research was performed by Patmasiriwat and Hengpatana (2016) to analyze the saving adequacy of Thai rural households using the 2009 SES data together with the Life Cycle Hypothesis. From their Seemingly Unrelated Regression results, they found that 29% of Thai rural households overspend their income and 47% of these households did not have enough savings to cope with life's uncertainties.

3. Research Methodology

3.1 Research Models

This research uses two models: Panel Regression and Panel Logistic Regression. Each model is explained in the following subsections.

3.1.1 Panel Regression Model

The Panel Regression model is specified as follows:

$$sav_{it} = \alpha_i + \beta_1 lnRWIK01stg_{it} + \beta_2 lnROIK01stg_{it} + \beta_3 lnRDRK01stg_{it} +$$
$$\beta_4 Age_{it} + \beta_5 Age_{it}^2 + \gamma_1 DepenRatio_{it} + \gamma_2 LowSec_{it} + \gamma_3 HS_{it} +$$
$$\gamma_4 Vocat_{it} + \gamma_5 College_{it} + \gamma_6 HHHead_{it} + \gamma_7 Married_{it} +$$
$$\gamma_8 Sick_{it} + \gamma_9 Urban_{it} + \varepsilon_{it} \qquad (1)$$

The variables $RWIK_{it}$, $ROIK_{it}$, and $RDRK_{it}$ are real wage income, real other income, and real debt repayment, respectively, all measured in thousands of Thai baht. Savings, which is designated as sav_{it}, is calculated by subtracting real all expenses in thousands of baht ($RAEK_{it}$) from the sum of $RWIK_{it}$ and $ROIK_{it}$. The value of savings can be positive or negative depending on the difference between the worker's income and expenses at that the time of the survey. A constant (equivalent to 0.1 *satang* or 0.001 baht) is added in every natural log transformation in order to avoid discarding observations that contain zero values. The wage income and other income variables are inspired by the Permanent Income Hypothesis proposed by Friedman (1957). The wage income is comparable to the permanent income component of the PIH in terms of continuity and predictability – workers can predict how much they will earn monthly in the current year. Other income is comparable to the transitory income component of the PIH, which is defined as income that is unpredictable and intermittent. According to Sirisankanan (2013), if the PIH holds in this research, the coefficient on wage income must be near zero, while the coefficients on other income coefficients must be near one. This is because the PIH posits that workers only consume from their permanent income and use transitory income for savings.

According to the Theory of Mental Accounting (MA) by Thaler (1985), it is possible that workers hold both debt and savings at the same time instead of paying off all debts with savings. Gross and Souleles (2002) first observed this phenomenon in their credit card research which was later called the 'Credit Card Debt Puzzle'. Telyukova (2013) stated that the rationale behind this puzzle is that workers hold cash to purchase goods where credit cards are not accepted; they also hold cash as emergency savings. From this theory, the debt repayment variable is used to test whether Thai workers follow the MA theory or not. If yes, the debt repayment coefficient must be positive and significant.

Besides the PIH and MA frameworks, this research also uses the Life Cycle Hypothesis proposed by Ando and Modigliani (1963) to test the effect of age towards savings. If the LCH holds, the age coefficient must be positive and significant since workers are predicted to save more as they get older. The age-squared variable is also used to test the trend of the age-savings relationship. The ratio of dependency also plays an important role in savings. This ratio is defined by dividing the number of non-working family members with the total number of family members. If the ratio of dependency ($DepenRatio_{it}$) increases, workers' savings should decrease because they have more financial burdens (Rojthamrong, 1985).

Educational attainment – which is a proxy for financial literacy – can reflect positive financial behaviors of workers, resulting in better savings adequacy. According to Patmasiriwat & Hengpatana (2016), the educational attainment of the household head can determine the probability of saving adequately. The higher the educational attainment, the lower probability of inadequate savings. Thus, this research includes controls for workers' educational attainment. Education is represented by a set of dummy variables, $Lowsec_{it}$, HS_{it}, $Vocat_{it}$, and $College_{it}$, which control for lower secondary, high school, vocational school, and university completion, respectively. The baseline category is primary education and lower. Positive and significant coefficients are expected for the high school, vocational school, and university dummies.

In Thai households, the household head is expected to be the sole breadwinner in the family. Hence, a worker who is a household head should have less savings and less chance of saving adequately than other working family members. A negative significant relationship is expected for this dummy variable. The remaining variables are control dummy variables. Sirisankanan (2013) used the household head's illness within the past 12 months as a financial shock to Thai agricultural households. This research adapts this variable and defines $Sick_{it}$ as equal to 1 if a worker (not just household heads) was sick within the past 12 months and 0 otherwise. If the $Married_{it}$ equals to 1 if the worker is married at the time of the survey, and 0 means otherwise. According to Atsawarujikul (1998), living in an urban area should cost more than living in a rural area, thus urban workers are expected to have less money available for saving. If this is true, the $Urban_{it}$ dummy

– where 1 means living in an urban area and 0 means otherwise – should have a negative and significant relationship with savings. However, it should be noted that the word 'urban' by the SES definition means municipality, not city or metropolis, whereas 'rural' refers to areas outside municipalities.

3.1.2 Panel Logistic Regression Model

The panel logistic model used for the analysis is specified below.

$$
\begin{aligned}
y_{it} = \ & \alpha_i + \beta_1 RWIK_{it} + \beta_2 ROIK_{it} + \beta_3 RDRK_{it} + \beta_4 Age_{it} + \beta_5 Age_{it}^2 \\
& + \gamma_1 DepenRatio_{it} + \gamma_2 LowSec_{it} + \gamma_3 HS_{it} + \gamma_4 Vocat_{it} + \\
& \gamma_5 College_{it} + \gamma_6 HHHead_{it} + \gamma_7 Married_{it} + \gamma_8 Sick_{it} + \\
& \gamma_9 Sex_i + \gamma_{10} Urban_{it} + \varepsilon_{it}
\end{aligned}
\tag{2}
$$

All variables in this model are the same as the previous model except the sex variable, where 1 means male and 0 means female, and the dependent variable, y_{it}, which is defined as follows:

$$
y_{it} = \begin{cases} 1 \; if \; \frac{RAEK}{RWIK+ROIK} \geq 0.35 \\ 0 \; if \; \frac{RAEK}{RWIK+ROIK} < 0.35 \end{cases}
\tag{3}
$$

If 'y' equals to 1, it means the worker has adequate savings at that time. Otherwise, it means the labor did not save enough at that time. The 35% adequacy threshold is based on the finding in the Krungthai Macro Research (2018) report. The report suggests that in order to retire with the same amount of money under the situation of lesser wage hike in the era of automation, workers should save at least 35.5% of their monthly income.

4. Data and Results

4.1 Data

This research employs data from the Panel Socio-Economic Surveys (SES) conducted by the National Statistical Office in 2005, 2006, 2007, 2010, 2012 and 2017. The Panel SES consists of two books: the household book and the 15-years-and-above family member book. Since this research focuses on

individual Thai non-agricultural workers, only the second book is used. In the second book, there are eight sections, which are 1) general information, 2) sickness and healthcare services, 3) employment, 4) income, 5) expenses, 6) debts, 7) savings, and 8) financial status. This research uses sections one to six. Worker savings is calculated from sections four and five rather than using reported savings in the seventh section so that the savings variable is consistent with the literature.

4.2 Descriptive Statistics

From descriptive statistics in Table 1, most workers have savings around 2,600 baht, whereas most of the officials have around 5,400 baht and laborers have only just 600 baht. When considering the wage income, on median workers earn around 7,700 baht, with officials, employees, and laborers earning 13,300 baht, 8000 baht, and 3,600 baht, respectively. Most of the workers do not earn extra (other) income, and even if they do so, the extra income never exceeds 2,000 baht. The median worker has no monthly debt repayment, with a mean repayment below 1,000 baht. The median age of Thai non-agricultural workers is about 38 years old. Meanwhile, the median of officials' age and laborers' age are around 40 and 43 years old, respectively. The median dependency ratio is quite low across the groups with around 1/3 for the official and employee groups, and 1/4 for the laborer group. Speaking of educational attainment, the official group is likely to be the most educated group among the three groups in the sample, with around 46 percent of the workers in this group holding a university degree. On the other hand, only 1 percent of the laborer group obtains a college degree. Most of the workers are married and most live in the urban areas with the exception of the laborer group which mostly resides in rural areas.

Table 1. Descriptive Statistics

Variables	All			Officials			Employees			Laborers		
	Median	Mean	Std. Dev.	Median	Mean	Std. Dev.	Median	Mean	Std. Dev.	Median	Mean	Std. Dev.
sav ('000 baht)	2.574	5.678	21.848	5.443	9.603	23.711	2.590	5.107	21.050	0.599	1.487	20.391
RWIK ('000 baht)	7.738	12.176	19.799	13.314	18.260	22.351	8.008	11.598	17.445	3.630	4.674	19.918
ROIK ('000 baht)	0.000	0.893	7.387	0.000	1.520	11.324	0.000	0.645	5.524	0.000	0.732	4.280
RDRK ('000 baht)	0.000	0.466	4.856	0.000	0.931	7.706	0.000	0.276	3.049	0.000	0.364	3.781
Age (years)	38.000	37.800	11.700	40.000	38.800	10.900	35.000	35.700	11.300	43.000	42.900	12.100
DepenRatio	0.320	0.280	0.220	0.300	0.280	0.220	0.330	0.290	0.210	0.250	0.260	0.220
Lowsec	0.000	0.130	0.340	0.000	0.080	0.280	0.000	0.150	0.360	0.000	0.130	0.340
HS	0.000	0.100	0.300	0.000	0.120	0.320	0.000	0.110	0.320	0.000	0.040	0.210
Vocat	0.000	0.110	0.310	0.000	0.120	0.330	0.000	0.130	0.330	0.000	0.020	0.140
College	0.000	0.230	0.420	0.000	0.460	0.500	0.000	0.190	0.400	0.000	0.010	0.120
HHHead	0.000	0.360	0.480	0.000	0.400	0.490	0.000	0.310	0.460	0.000	0.450	0.500
Married	1.000	0.630	0.480	1.000	0.680	0.460	1.000	0.590	0.490	1.000	0.670	0.470
Sick	0.000	0.110	0.310	0.000	0.110	0.310	0.000	0.100	0.300	0.000	0.150	0.360
Sex	1.000	0.510	0.500	1.000	0.530	0.500	1.000	0.480	0.500	1.000	0.580	0.490
Urban	0.000	0.500	0.500	1.000	0.520	0.500	1.000	0.550	0.500	0.000	0.300	0.460

Source: Author's calculations.

4.3 Results

4.3.1 Panel Regression Results

Table 2. Panel Regression Results

	(1)	(2)	(3)	(4)
		Dependent variable: sav		
Worker group:	All	Officials	Employees	Laborers
ln(RWIK)	0.496***	0.555***	0.536	0.449***
	(0.038)	(0.097)	(0.049)	(0.059)
ln(ROIK)	0.196***	0.247***	0.196***	0.202***
	(0.033)	(0.063)	(0.044)	(0.070)
ln(RDRK)	-0.013	-0.121	0.115	-0.113
	(0.048)	(0.083)	(0.071)	(0.104)
Age	-0.438***	-0.593	-0.470**	-0.249
	(0.164)	(0.384)	(0.21)	(0.203)
Age2	0.0097***	0.017***	0.0085***	0.0032
	(0.002)	(0.004)	(0.003)	(0.002)
DepenRatio	0.441	-0.15	0.561	-0.655
	(1.176)	(2.377)	(1.538)	(1.875)
LowSec	0.547	1.16	0.435	0.288
	(0.83)	(2.002)	(1.006)	(1.296)
HS	0.721	-0.9	1.536	0.496
	(0.941)	(1.873)	(1.171)	(2.036)
Vocat	0.493	0.646	0.101	2.993
	(1.126)	(2.271)	(1.349)	(2.884)
College	2.248**	-0.587	2.546*	12.190***
	(1.065)	(1.940)	(1.359)	(3.585)
HHHead	-2.030**	-2.89	-3.577***	-0.572
	(0.902)	(1.801)	(1.172)	(0.908)

Married	-0.086	0.711	0.412	-1.278
	(0.763)	(1.707)	(0.939)	(0.922)
Sick	-0.624	-1.88	-0.018	-0.776
	(0.640)	(1.298)	(0.873)	(1.132)
Urban	-0.393	0.252	-0.212	-0.699
	(0.859)	(1.645)	(1.118)	(0.931)
Constant	9.785***	6.615	14.50***	9.094***
	(3.286)	(7.678)	(4.054)	(4.607)
Hausman	FE	FE	FE	RE
Workers	2392	637	1341	414
Obs.	14341	3820	8040	2481

Notes: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are in parentheses. Marginal effects are calculated using Long and Freese (2014)'s STATA command.

Source: Author's calculations.

According to the panel regression results in Table 2, the relationships for log wage income and log other income contradict with the PIH assumption. PIH posits that the marginal propensity to save from permanent (wage) income would be near zero since an agent would consume exactly from the lifetime-projected permanent income. Such agent would also save only from transitory (other) income. However, the results show that workers would save from wage income more than other income across all occupational groups. For the effect of debt repayment toward savings, no significant relationship is found across all groups. Not only the PIH, the results also contradict with the LCH. Instead of being positive significant, the relationship between age and savings is negative significant in the employee group. For the rest variables, the results show that college education attainment positively contributes to the savings of employee and laborer group; while being a household head would significantly reduce savings in the employee group.

4.3.2 Panel Logistic Regression Results

Table 3. Panel Logistic Regression Results

Marginal Effects (assuming zero fixed effect)	(1)	(2)	(3)	(4)
	Dependent variable: y (1 if saving rate $\geq$ 0.35)			
	All	Official	Employee	Laborer
RWIK	0.006***	0.008***	0.006***	0.003
	(0.001)	(0.001)	(0.001)	(0.002)
ROIK	0.003**	0.001	0.005**	0.003
	(0.001)	(0.001)	(0.002)	(0.003)
RDRK	-0.006***	-0.006***	-0.006*	-0.009
	(0.002)	(0.002)	(0.003)	(0.006)
Age	-0.035***	-0.037***	-0.041***	-0.027***
	(0.003)	(0.005)	(0.003)	(0.006)
Age2	0.000***	0.000***	0.001***	0.000***
	(0.000)	(0.000)	(0.000)	(0.000)
DepenRatio	0.003	-0.035	0.033	-0.030
	(0.020)	(0.038)	(0.028)	(0.049)
LowSec	-0.012	0.047	-0.029	0.001
	(0.014)	(0.034)	(0.018)	(0.036)
HS	0.008	0.046	0.002	-0.017
	(0.016)	(0.030)	(0.020)	(0.056)
Vocat	-0.049***	-0.020	-0.056***	0.031
	(0.016)	(0.030)	(0.021)	(0.083)
College	0.016	0.015	0.014	0.246*
	(0.015)	(0.027)	(0.021)	(0.126)
HHHead	-0.166***	-0.125***	-0.162***	-0.233***
	(0.011)	(0.019)	(0.015)	(0.025)
Married	-0.021**	-0.013	-0.025*	-0.015
	(0.011)	(0.021)	(0.014)	(0.026)

Sick	-0.016	0.014	-0.047***	0.018
	(0.013)	(0.025)	(0.018)	(0.028)
Sex	0.038***	0.010	0.033**	0.089***
	(0.011)	(0.020)	(0.014)	(0.027)
Urban	-0.025**	-0.032*	-0.024*	0.004
	(0.010)	(0.018)	(0.013)	(0.027)
Workers	2391	637	1340	414
Obs.	14335	3820	8034	2481

Notes: * p < 0.1, ** p < 0.05, *** p < 0.01. Standard errors are in parentheses. Marginal effects are calculated using Long and Freese (2014)'s STATA command.

Source: Author's calculations.

From the Panel Logistic Regression results in Table 3, the relationship between income and saving adequately is consistent with the results in Table 2, contradicting the PIH. Nonetheless, wage income is only significant with the official and employee groups, while other income is significant only with the employee group. Surprisingly, workers are still rational when it comes to debt. The results show that debt repayment has a negative significant relationship with the chance of saving adequately. This makes sense because the more debt burden a worker must pay, the less money that is left for savings. As for the LCH, the results are counter to this hypothesis across all labor groups. This means that as workers get older, the chance of saving adequately will be slimmer.

Regarding educational attainment, there are two relationships: the peculiar one and the expected one. The peculiar relationship shows that having vocational education would significantly reduce the chance for saving adequately in the employee group. Further investigation is needed to explain this relationship. The expected relationship shows that having a college degree would significantly increase the chance of saving adequately in the laborer group. The word 'laborer' in the Panel SES does not limit only to the people who do manual labor. It also includes those who work in a non-routine schedule like freelancers and part-timers. Having certain skills from college

could help these workers stay ahead among the others, thus more income and more chance for saving adequately.

Consistent with Table 2, being a household head negatively impacts the saving adequacy across all worker types, while the previous results affect only with the employee group. Sickness is found to be related with less chance of saving adequately only with employee group. And living in urban area would significantly reduce chance of saving adequately among officials and employees.

5. Conclusion, Discussion and Recommendations

5.1 Conclusion

A lack of financial counseling or education can lead to bad financial behaviors, and these bad financial behaviors can lead to financial stress and lower worker productivity. Having no savings or having inadequate savings are two types of bad financial behaviors. Surveys show that a large portion of Thai income earners do not have any savings at all, necessitating the importance of having economic research on the saving adequacy of Thai people. However, there is virtually no research regarding to the savings adequacy of Thai workers – especially in the non-agricultural sectors. Therefore, this research is conducted to investigate factors affecting the savings adequacy of Thai non-agricultural workers using a 35-percent saving rate as the adequacy threshold suggested by the 2018 Krungthai Macro Research (2018) report. This research employs all available rounds of the Panel Socio-Economic Surveys from the National Statistical Office under the frameworks of the Permanent Income Hypothesis, Life Cycle Hypothesis, and the Theory of Mental Accounting. According to the results from panel regression and panel logistic regression, there are seven factors that significantly affect the savings adequacy of Thai non-agricultural workers. Factors that affect positively are 1) real wage income, 2) real other income, and 3) college education. Factors that affect negatively are 1) real monthly debt repayment, 2) being a household head, 3) sickness, and 4) living in urban area.

5.2 Discussion

From the descriptive statistics of the three worker groups, most of the workers do not have any monthly repayment. This is peculiar because most of them are supposed to have at least a debt burden from mortgage loan or auto loan since most of them are married. It is possible that survey respondents did not wish to reveal the actual debt burden due to privacy concerns or social stigma toward debtors – as a financial psychologist said in a Gabler (2016) article, "You are more likely to hear from your buddy that he is on Viagra than that he has credit-card problems." Survey question framing might also be a reason as well. The question asks survey respondents to report debt repayment on a monthly basis, while certain types of debt require lump-sum repayments instead.

There is a data limitation which needs to be discussed here. This limitation is the accuracy of the expense records. Unless the respondents did some personal accounting, it is probable that the expenses will be inaccurate because they might guess or recall these figures from memory. This is contrary to the income records which could be more accurate since respondents have pay-slips or know their wage figures.

5.3 Recommendations

In an era in which gig workers and flexible-hour work are becoming more popular among workers around the world, unsteady and unstable income is undeniably inevitable. However, the results from this research suggest that an increment of steady income improves the chance of saving adequately. Therefore, it is a great challenge for workers, governments, and employers to smooth workers' incomes in the era of the gig economy. A possible solution to smooth such income is to set an automatic buffer in which a portion of income is automatically debited from workers' income accounts and deposited to buffer savings on a monthly basis. The proportion of the debit

could be either fixed or vary with the size of income in order to take advantage of above-average income. Once the income in any month falls below around 20 percent of the normal income level, income subsidies would be automatically withdrawn from the buffer and deposited back to the income accounts.

In Thailand and other Asian nations, a household head is often expected to be the sole breadwinner in the household with some households having two or more income-earners. From the results, being a household head greatly reduces a chance of saving adequately. Moreover, if these household-head workers are laid off, the catastrophe would not end with the workers themselves. Massive unemployment would become a domino effect which could result in poverty or destitution in many cases, lack of funds for children to attend school, deteriorating health conditions household members, rampant crime across the nation, and much more. Thus, it is critical to pull the next domino out before it falls and hits another domino. To pull such a domino, the government must take swift action against massive unemployment by giving or partially lending a time-limited (6 months or 1 year) stipend to the household head which just covers essential expenses for an entire family while urgently reskilling/upskilling and seeking another job.

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