Malaysian Journal of Economic Studies 53(2): 279–295, 2016 ISSN 1511-4554

Financial Preparedness for Income Shock among Malaysians

Yiing Jia Loke*
Universiti Sains Malaysia

Abstract: Income disruptions can have devastating effects on a household's welfare particularly when households are financially unprepared. Furthermore, unlike unexpected events such as death or illnesses, there is no insurance that provides for a family in the event of a job loss or pay cuts. This paper empirically identifies the socio-demographic factors, financial attitude and financial knowledge that can explain the varying differences in preparedness of Malaysians for income shock. The study employs the data from the OECD (International Network in Financial Education) Pilot Study on Measuring Financial Literacy in 2010. The majority of respondents (79%) failed to meet the minimum guideline of having emergency funds equivalent to at least three months of living expenses if they lose their main source of income. Based on ordered probit analysis, education, reliable income and financial knowledge were found to contribute positively to individuals' financial preparedness for income shock. However, having prudent financial attitude did not necessarily contribute to better financial preparedness for income shock. Lastly, savings by investment were found to help individuals to be more financially prepared for income shock compared to individuals who save conservatively through traditional savings channels only.

Keywords: Emergency savings, financial literacy, personal finance,
JEL classificatio-n: D14, D91

1. Introduction

Pay cuts, retrenchment, the inability of the main breadwinner to work due to illness, or the death of the main breadwinner, are considered unplanned events that will require the reorganisation of household financial resources. If adequate liquid funds are not in place to help households to weather the sudden income shock, affected households may turn to unsecured loans which come with exorbitant interest rate charges. As a result, ill-prepared individuals and households may fall into a vicious debt cycle.

In the 2008 global economic crisis, the UNDP (2009) reported that 33,599 individuals in Malaysia were retrenched and 34,383 had suffered pay cuts in the period from October 2008 to May 2009. The Sun (2011) reported that 10% of those who seek financial counselling and debt management from AKPK (the Credit Counselling and Debt Management Agency) had done so due to retrenchments that resulted in them being unable to manage their debt. While there is insurance and social security to help families cope with unexpected events such as death, illness or disability, there is no insurance that provides for a family or an individual in the event of a job loss or pay cut. As such, it is important for households and individuals to prepare adequate emergency funds to help survive a crisis.

* School of Social Sciences, Universiti Sains Malaysia, 11800 Penang, Malaysia. Email: *yjloke@usm.my*
The author would like to thank Bank Negara Malaysia for the data used in the study. Opinions expressed are those of the author. This work was supported by Universiti Sains Malaysia's Research University Grant (Grant no: 1001/PSOSIAL/816213).

The widely adopted definition of an emergency fund is derived from Johnson and Widdows (1985) who argued that emergency funds are financial holdings that are available to cover living expenses without drastically altering the household standard of living in the event of an income shock. Johnson and Widdows (1985) used three measurements of emergency fund holdings – quick, intermediate and comprehensive – which differ in terms of the liquidity of assets. There is debate on the adequate or minimum emergency funds that a household should have in the event of income disruption. The minimum adequacy is having funds equivalent to three months of living expenses; this is based on the average unemployment period of a worker (Garman & Forgue, 1997; Greniger, Hampton, Kitt, & Achacoso,1996; Hanna & Wang 1995; DeVaney 1994). Greninger et al. (1996) found strong consensus among financial planners and educators that liquid assets for emergencies should equal a minimum of two and half to three months of living expenses. However, the rule of thumb is that consumers should hold liquid assets sufficient to cover three to six months of living expenses as this is regarded as the average period of unemployment and a laid-off worker will be re-employed in three to six months (Johnson & Widdows, 1985). Hence, in this study, a household is considered to be well prepared for income shock if the household is able to sustain itself with existing funds for at least three months in the event of an income shock.

The objective of this study is to empirically determine the factors that will significantly affect the financial preparedness of households for an income shock. This study is timely as no such studies have been conducted in Malaysia; moreover, the data were collected soon after the global crisis of 2007–2008, which resulted in a widespread moderate retrenchment and pay cuts among Malaysians. No such nationwide data on consumer finances have been available prior to this survey. Apart from this study being one of the first to examine the ability of Malaysians to weather an income shock, the study extends the existing literature on emergency fund holdings in several ways.

First, the existing literature investigates holdings of emergency funds based on the types of emergency funds held by households (Anong & DeVaney, 2010; Bhargava & Lown, 2006; Chang, Hanna, & Fan, 1997; Huston & Chang, 1997) rather than the actual period of an individual's ability to sustain an income shock as used in this study. Measuring the actual period of an individual's sustainability in the face of an income shock gives a more definite notion of the individual's ability to weather an income shock rather than types of emergency fund holdings. Moreover, each type of emergency fund holding may vary in the amount available to buffer an individual from an income shock.

Second, so far existing studies have not considered financial knowledge as one of the plausible factors that can determine a household's or individual's financial emergency planning. Financial knowledge is found to play an effective role in shaping an individual's financial decision making, such as retirement planning, stock market participation and investment (Mandell & Klein, 2007; Lusardi, 2008a; 2008b; Van Rooij et al., 2011; Fox, Bartholomae, & Lee 2005; Hilgert et al., 2003). Similarly, while financial behavioural and attitudinal measurements have been incorporated in analyses for other types of financial decision making, these factors have so far not been considered in studies on financial planning for emergencies. This study incorporates selected financial behavioural and attitudinal factors in the model on financial preparedness for income shock.

Third, in addition to income levels, this study includes the reliability and regularity of income receipt as determinants of the levels of financial preparedness for income shock. Notwithstanding the importance of income levels in affecting the ability of individuals to plan for financial emergencies, the flow of income receipt may also play a role in individuals' financial planning. The plausible influence of the reliability of income receipt has largely been ignored in existing studies.

On using ordered probit analysis, this paper found that education, reliable income, household size, age, financial knowledge and savings preference play a significant role in households' preparedness for income shock. On the other hand, prudent financial behaviour and attitude do not necessarily translate to better preparedness for income shock.

2. Literature Review

Existing empirical studies on emergency fund holdings have mainly used socio-demographic and economic variables such as age, years of education, marital status, race, employment status, occupation and homeownership in modelling the determinants of emergency fund holdings (Bhargava & Lown, 2006, Worthington, 2004, 2005; Chen & DeVaney, 2001; Hachter, 2000; Chang et al., 1997; Chang & Huston, 1995). In summary, these studies found that older households, those with higher income and educational levels, and larger household sizes are more likely to maintain emergency fund holdings.

Apart from individuals' personal characteristics, emergency fund holdings are also affected by savings behaviour. Several types of variables are used to measure savings behaviour and these include savings motivation and savings planning horizons. Furthermore, risk tolerance and income uncertainty (e.g. the expectation of future income changes) have also been examined. These variables are incorporated into the analysis on emergency fund holdings by Huston and Chang (1997), Anong and DeVaney (2010), Bhargava and Lown (2006), Bi and Montalto (2004). These studies found that those with longer saving planning horizons and those who are willing to take some financial risk are more likely to have adequate emergency funds. Further, while Chang et al. (1997) found that those who expect their future income to decline are more likely to have adequate emergency fund holdings, Bhargava and Lown (2006) and Huston and Chang (1997) did not find significant effects of income certainty on the probability of having adequate emergency funding. On the other hand, Chang and Huston (1995) found that household preferences have a stronger influence than income on determining whether a household has adequate emergency funds.

3. The Econometric Model

The dependent variable in this study is the level of financial preparedness for an income shock. To elicit respondents' preparedness for income shock, the respondents are asked, "*If you lost your main source of income, how long could you continue to cover your living expenses for, without borrowing any money or moving house?*" The respondents choose the following categories that best describe their situation: less than a week, at least a week but not one month, at least one month but not three months, at least three months but not six months and six months or more. From the five categories, the level of financial preparedness for income shock is merged into three tiers defined as strong, moderate

and weak. The categorisation of the levels of financial preparedness is based on Johnson and Widdows (1985), who pointed out that an individual should have funds equivalent to three months of living expenses at minimum and a maximum of six months. Therefore, respondents who are able to sustain themselves for three months or more are categorised as having strong financial preparation in place for income shock; respondents who are moderately prepared financially for income shock are able to sustain themselves for at least a month but fewer than three months; respondents who are able to weather income shock for less than a month are categorised as being weak in terms of financial preparation for income shock. Based on the minimum guidelines, the moderate and weak groups failed to meet the minimum adequacy for emergency fund holdings. However, given the high percentage of respondents (42.8%) who admitted that they can only sustain themselves less than a month, a tiered categorisation is used to distinguish between the severely vulnerable group (weak) and the vulnerable group (moderate).

The level of financial preparedness for income shock (dependent variable) is categorical and ordinal with clear ordering. An appropriate statistical model to explain the ordinal variations of the financial preparedness level is the ordered probit model (McCullaph 1980; McKelvey & Zavoina 1975). In short, the dependent variable of the level of financial preparedness for income shock, also known as the outcome variable in the ordered probit model, is characterised as follows:

- Strong: sustainability for three months or more
- Moderate: sustainability for at least a month but fewer than three months
- Weak: sustainability for less than a month

Financial preparedness is given a score of 0,1 and 2 which indicates strong, moderate and weak financial preparedness.

The ordered probit model is usually justified on the basis of a latent variable, that is, a variable that is not directly observed but rather inferred (through a mathematical model) from other variables that are observed (directly measured). In general, the ordered probit model is written as:

$$y^* = \beta' x + \varepsilon \quad (1)$$

where y^* is the latent and continuous measure of financial preparedness levels coded as 0, 1, 2; β' is the vector of estimated parameters and x is the vector of explanatory variables; ε is the error term $\varepsilon \sim N(0,1)$ with cumulative distribution denoted by $\phi(\bullet)$ and density function denoted by $\varphi(\bullet)$.

The observed and coded discrete financial preparedness level, y, is derived from the model as follows:

$$y^* = 0 \text{(strong) if } y^* < \mu_1 \quad (2)$$
$$y^* = 1 \text{ (moderate) if } \mu_1 y^* < \mu_2 \quad (3)$$
$$y^* = 2 \text{(weak) if } y^* < \mu_1 \quad (4)$$

μ_1 and μ_2 are threshold variables in the probit model. The threshold variables are unknown and determined by the maximum likelihood estimation procedure for the ordered probit.

Given the cumulative normal function, the probability for each level of financial preparedness is

$$\Pr(y=0)=\Phi(\mu_1 - \beta'x) \quad (5)$$

$$\Pr(y=1)=\Phi(\mu_2 - \beta'x)-\Phi(\mu_1 - \beta'x) \quad (6)$$

$$\Pr(y=0)=\Phi(\mu_2 - \beta'x) \quad (7)$$

Using the maximum likelihood estimates, the marginal effects of explanatory variables are derived by differentiating between equations (5) to (7) for the respective probabilities. However, for categorical explanatory variables, the marginal effects of the explanatory factors on the probability of levels of financial preparedness is taken as the differences between the predicted probability when variable *x* takes the value 0 and the predicted probability when the variable *x* takes the value 1[1].

4.Data and Variables

4.1 Data

The data were obtained from the Central Bank of Malaysia and were collected for the OECD (International Network on Financial Education) Pilot Survey on "Measuring Financial Literacy" conducted in 2010. Malaysia is among the 14 countries that participated in the survey. The survey was carried out nationwide, covering Peninsular Malaysia and East Malaysia. The sample was stratified according to age, gender, income group, state and ethnic group. Of the total sample size of 1,046, data for 1,000 respondents was used in this study as the remaining 46 respondents did not provide a response or refused to respond to the question on their ability to sustain themselves following an income shock.

The survey comprised questions on financial knowledge, behaviour, and attitudes relating to various aspects of financial literacy including budgeting, money management, short- and long-term financial planning and financial product choice. Questions on the socio-demographic details of respondents were also included in the survey.

4.2 Variables

The choice of explanatory variables is guided by existing empirical studies on preparedness for emergencies and holdings of emergency funds, namely those of Anong and DeVaney (2010), Bhargava and Lown (2006), Bi and Montalto (2004), Ding and DeVaney (2000), Huston and Chang (1997), and Chang, Hanna and Fan (1997), amongst others.

The variables are broadly divided into socio-demographic variables, financial attitudinal and behavioural variables, and financial knowledge and behaviour. The socio-demographic variables include age group, gender, household income, ethnicity, region and location of residence, household size and marital status. Given the regional economic disparities in Malaysia and also this being of the first nationwide financial well-being survey conducted in Malaysia, region of residence is included in the analysis. The region of residence is categorised by five dummy variables (northern, central, eastern and southern regions of Peninsular Malaysia and East Malaysia), while location of residence refers to whether the respondent resides in an urban or rural area.

[1] For example, the marginal effects for a dummy variable, x as Chinese on the probability that y=1, is the difference between the predicted probability when Chinese = 0 and the predicted probability when Chinese = 1.

Financial attitudinal variables are measured using a five-point Likert scale ranging from 'strongly agree' to 'strongly disagree' in response to these statements: 'I find it more satisfying to spend money than to save it for the long term (spend)', 'I tend to live for today and let tomorrow take care of itself (live)', 'Money is there to be spent (money)'. Binary dummy variables are used: '1' is given to those who agree or strongly agree to the statements given while a value of '0' is given to those who think otherwise. Similarly, financial behavioural variables are also measured using a five-point Likert scale ranging from 'always' to 'never' in response to these statements: 'I keep a close watch on my personal financial affairs (close watch)' and 'I make sure that I have sufficient savings to cover emergency needs (emergency)'. Binary dummy variables are created to capture those who respond 'always' or 'frequently' to each of the statements whereby a value of '1' is given to those who respond 'always' or 'frequently' while a value of '0' is given to those who respond otherwise.

Respondents' financial knowledge is gauged using a set of 10 questions that assess their numeracy skills (such as simple division, computation of interest and compound interest) and knowledge of selected financial concepts (such as time value of money, definition of inflation, relationship between risk and returns, and diversification). A full score would imply that a respondent has successfully answered all the 10 questions while a zero score indicates that a respondent could not answer a single question correctly. In other words the financial score ranges from a minimum value of 0 to a maximum value of 10. The score obtained is used as a proxy for respondents' financial knowledge.

Respondents' savings preferences are also considered in the model through the use of a binary dummy variable to distinguish between those who save conservatively in traditional channels such as savings in banks, cooperatives and with family members and those who diversify their savings by investing part of them.

4.3 Characteristics of Survey Respondents

Table 1 presents the mean value for each of the variables for the overall total sample and for every level of financial preparedness for income shock. The mean value presented in Table 1 gives the breakdown of each characteristic for every level of financial preparedness. Therefore, the mean value in each column for each category of variable will add up to 100%.

Of the 1,000 respondents, 208(20.8%) are found to have strong financial preparation for an income shock. A further 364(36.4%)are found to be moderately prepared financially as they would be able to sustain themselves for up to a month but fewer than three months if they lose their main income. On the other hand, 428 (42.8%) would be able to sustain themselves for less than a month (weak)if they lose their main source of income. This group is considered to have weak financial preparation for an income shock and thus is considered as the most vulnerable group.

A cursory analysis from Table 1 shows that a respondent with better financial knowledge has stronger financial preparation than a respondent with weaker financial knowledge. The average financial knowledge score of a person with strong financial preparation (7.1) is higher than the sample average (6.3) compared to a person with moderate (6.2) and weak (6.0) financial preparation for an income shock.

Table 1. Variable definitions and the mean value of explanatory variables for each level of financial preparedness

Variable	Financial preparedness Definition	Strong	Moderate	Weak	Full sample
Continuous variables					
Household size	Number of persons in household	3.45 (6.94)	2.87 (1.92)	2.82 (1.72)	2.97 (3.56)
FK Score	Score of financial knowledge	7.11 (2.09)	6.21 (2.04)	6.02 (2.19)	6.32 (2.15)
Binary explanatory variables (yes=1; no=0)					
Ethnicity					
Malay	Ethnicity is Malay	46.7	51.7	50.5	50.1
Chinese	Ethnicity is Chinese	31.2	30.5	29.9	30.4
Indians	Ethnicity is Indian	8.2	9.3	10.0	9.4
Bumi	Ethnicity is East Malaysian natives	13.9	8.5	9.6	10.1
Income group					
Low income	Monthly household income of less than RM1,000	7.7	14.8	12.1	12.2
Lower mid income	Monthly household income of RM1,000-RM3,500	47.5	45.9	51.2	48.5
Upper mid income	Monthly household income of RM3,501-RM7,000	39.4	32.7	32.2	33.9
High income	Monthly household income above RM7,000	5.3	6.6	4.4	5.4
Male	Gender is male	64.9	57.1	59.1	59.6
Region of residence					
Northern	Resides in the northern region of Malaysia	16.3	25.3	28.79	24.9
Central	Resides in the central region of Malaysia	27.9	30.2	29.4	29.4
Southern	Resides in the southern region of Malaysia	17.3	12.9	15.6	15.0
Eastern	Resides in the eastern region of Malaysia	14.9	17.0	10.7	13.9
East Malaysia	Resides in East Malaysia	23.6	14.6	15.4	16.8
Urban	Resides in an urban area	61.1	64.0	63.4	63.2

Continued on next page

Table 1. Continued

Marital status					
Married	Marital status is married	54.3	55.5	59.6	57.0
Single	Marital status is single	37.5	33.8	32.2	33.9
Divorce	Marital status is divorce or widow	8.2	10.7	8.2	9.1
Reliability of income					
Regular	Income is regular and predictable	65.4	57.3	56.4	58.4
Seasonal	Income varies from season to season	27.9	35.0	38.4	34.8
Irregular	Income is irregular	6.7	7.7	5.2	6.2
Education level					
Tertiary	Tertiary as highest education level	31.7	20.9	9.6	18.3
Diploma	Diploma as highest education level	10.1	9.6	11.2	10.4
Secondary	Secondary school as highest education level	50.5	58.8	61.2	58.1
Primary	Primary education level or no formal education	7.7	10.7	18.0	13.2
Age groups					
Age 18 - 24	Age is 18-24 years old	24.0	22.5	18.7	21.2
Age 25 - 29	Age is 25-29 years old	10.6	12.1	12.8	12.1
Age 30 - 39	Age is 30-39 years old	27.9	25.5	23.2	25.0
Age 40 - 49	Age is 40-49 years old	17.3	17.6	20.8	18.9
Age 50 - 59	Age is 50-59 years old	10.1	12.1	13.8	12.4
Age 60	Age is 60 years old and above	10.1	10.2	10.7	10.4
SaveInvest	Savings includes investment	44.2	23.1	9.6	21.7
Financial attitudes and behaviour					
Spend	More satisfying to spend money than to save for it long term	29.3	35.7	36.7	34.8
Live	Tends to live for today and let tomorrow take care of itself	19.2	28.0	26.2	25.4
Money	Money is there to be spent	36.1	41.8	51.9	44.9
Closewatch	Keeps close personal watch on personal financial affairs	73.5	80.8	82.2	80.0
Emergency	Have sufficient savings to cover emergency needs	67.4	70.1	75.5	71.8
Sample size		208	364	428	1000

*Standard deviations in parenthesis; the sum value in each column for each category of variable will add up to 100%

Around 12.2% of the sample are low income earners with a household income of less than RM1,000 (USD245) while only 5.4% are categorised as high income earners with a household income of more than RM7,000 (USD1720). The middle income group makes up the majority of the total sample with 48.5% in the lower middle income group and 33.9% in the upper middle income group. It is found that while low income earners make up 12.2% of the total sample, they make up only 7.7% of those who have strong financial preparation. The total sample comprises 59.6% male and 40.4% female respondents. Males are slightly more financially prepared than females as 64.9% of those who have strong financial preparation are males.

While respondents with regular and predictable income make up 58.4% of the total sample, it is found that 65.4% of those with strong financial preparation have regular and predictable income. In other words, having a regular and predictable income enables a respondent to have better and stronger financial preparation for income shock.

On comparing the breakdown of respondents according to educational level in the total sample, it is found that despite only 18.3% of the respondents having tertiary education, 31.7% of those with strong financial preparation have tertiary education, while only 10% of those who have weak financial preparation have tertiary education. This suggests that tertiary education contributes positively to financial preparation for income shock.

The majority of the respondents save through traditional channels such as savings in banks and cooperatives and only 21.7% of the total respondents diversify their savings in investment portfolios such as stocks, properties and gold holdings. While only 21.7% of the total sample diversify their savings portfolio, it is found that such respondents make up 44.2% of those with strong financial preparation for an income shock. It appears that a savings portfolio that includes other financial products help to create a better buffer for income shock than those who only save through traditional channels.

The majority of the respondents appear to have prudent and responsible financial attitudes whereby the majority disagree that it is more satisfying to spend money than to save it for the long term, to live for today and let tomorrow take care of itself and that money is there to be spent. Similarly, 80% and 71.8% of the respondents claim that they keep a close watch on their personal financial affairs and have sufficient savings for emergency needs respectively, but only 67.4% and 73.5% of these, respectively, have strong financial preparation. This suggests that prudent financial behaviour and attitudes do not necessarily translate to better financial preparation for an income shock.

5. Empirical Results

Table 2 presents the estimates of the ordered probit (column 2) and the marginal effects of the explanatory variables on levels of financial preparedness for income shock (columns 3–5). The ordered probit model identifies several significant variables associated with the different levels of financial preparation. A test on the equality of the threshold points of μ_1 and μ_2 was conducted and the null hypothesis that the threshold points are equal was rejected. The coefficients μ_1 and μ_2 were found to be significant at 1% level and this justifies the use of the ordered regression model. A positive coefficient in the estimate for the ordered probit indicates a higher probability of membership in the highest category (weak financial preparedness) and a lower probability of membership in the lowest category (strong financial preparedness).

Table 2. Maximum likelihood estimation of ordered probit for financial preparedness and marginal effects of explanatory variables on the probabilities of financial preparedness

Variables	Estimates	Marginal effects of explanatory variables on the probabilities of financial preparedness+		
		Strong	Moderate	Weak
(1)	(2)	(3)	(4)	(5)
Household size	-0.033**	0.81**	0.03**	-1.14**
	(0.014)	(0.004)	(0.001)	(0.005)
FK Score	-0.057***	1.42***	0.60***	-2.02***
	(0.019)	(0.005)	(0.002)	(0.007)
Ethnicity (reference = Malay)				
Chinese	-0.082	2.07	0.88	-2.95
	(0.096)	(0.024)	(0.010)	(0.034)
Indian	0.074	-1.86	-0.79	2.65
	(0.136)	(0.034)	(0.014)	(0.048)
Bumi	0.005	-0.01	-0.05	0.17
	(0.192)	(0.048)	(0.020)	(0.068)
Income (reference = low income)				
Lower mid income	-0.048	1.20	0.05	-1.70
	(0.128)	(0.032)	(0.014)	(0.046)
Upper mid income	-0.143	3.54	1.50	-5.04
	(0.144)	(0.036)	(0.015)	(0.051)
High income	-0.115	2.86	1.21	-4.07
	(0.207)	(0.052)	(0.022)	(0.074)
Male	-0.090	2.26	0.96	-3.21
	(0.079)	(0.020)	(0.008)	(0.028)
Region of residence (reference = central)				
Northern	0.149	-3.73	-1.59	5.32
	(0.110)	(0.028)	(0.012)	(0.039)
Southern	-0.035	0.88	0.37	-1.26
	(0.123)	(0.031)	(0.013)	(0.044)
Eastern	-0.091	2.28	0.97	-3.25
	(0.139)	(0.035)	(0.015)	(0.049)
East Malaysia	-0.034	0.86	0.36	-1.22
	(0.161)	(0.040)	(0.017)	(0.057)
Urban	0.154*	-3.87*	-1.64*	5.51*
	(0.087)	(0.022)	(0.009)	(0.031)
Marital status (reference = married)				
Single	-0.034	0.84	0.36	-1.19
	(0.120)	(0.030)	(0.013)	(0.043)
Divorce	-0.140	3.48	1.47	-4.96
	(0.141)	(0.035)	(0.015)	(0.050)

Reliability of income (reference = regular)				
Seasonal	0.217***	-5.43***	-2.30***	7.73**
	(0.083)	(0.021)	(0.009)	(0.030)
Irregular	-0.039	0.96	0.41	-1.37
	(0.163)	(0.041)	(0.017)	(0.058)
Education (reference = tertiary)				
Diploma	0.406***	-10.12***	-4.30***	14.42***
	(0.146)	(0.036)	(0.016)	(0.052)
Secondary	0.296***	-7.39***	-3.14***	10.52***
	(0.104)	(0.026)	(0.011)	(0.037)
Primary	0.482***	-12.02***	-5.10***	17.13**
	(0.149)	(0.037)	(0.016)	(0.052)
Age (reference= age30s)				
Age 18-24	-0.009	0.22	0.09	-0.31
	(0.140)	(0.034)	(0.015)	(0.050)
Age 25-29	0.095	-2.38	-1.01	3.39
	(0.137)	(0.034)	(0.015)	(0.049)
Age 40-49	0.148	-3.69	-1.57	5.26
	(0.114)	(0.028)	(0.012)	(0.040)
Age 50-59	0.279**	-6.96**	-2.96**	9.92**
	(0.133)	(0.033)	(0.014)	(0.047)
Age 60	0.343**	-8.56*	-3.63*	12.19*
	(0.152)	(0.038)	(0.016)	(0.054)
Save Invest	-0.750***	18.97***	8.05***	-27.01***
	(0.097)	(0.023)	(0.013)	(0.033)
Financial attitudes and behaviour				
Spend	-0.051	1.27	0.54	-1.81
	(0.091)	(0.023)	(0.010)	(0.032)
Live	-0.005	0.01	0.05	-0.02
	(0.099)	(0.025)	(0.011)	(0.036)
Money	0.333***	-8.31***	-3.53***	11.84***
	(0.080)	(0.020)	(0.089)	(0.028)
Closewatch	-0.100	-2.49	-1.05	3.54
	(0.103)	(0.026)	(0.011)	(0.037)
Emergency	0.159*	-3.96*	-1.68*	5.64*
	(0.089)	(0.022)	(0.009)	(0.032)
μ_1	-0.798***			
μ_2	0.330***			
Likelihood ratio	-962.77			

[+] All probabilities are multiplied by 100 and therefore are in percentage terms. Asymptotic standard errors are in parentheses

** p< 0.10; ** p< 0.05, *** p< 0.01.*

The positive coefficient estimates as detailed in Table 2 show that a respondent who lives in an urban area, has a seasonal income, non-tertiary education (diploma, secondary or primary), aged 50 years and above, agrees that money is there to be spent and always ensures that there are sufficient savings for emergency needs, is more likely to be less prepared financially for an income shock. On the other hand, the negative coefficient estimates in Table 2 (column 2), indicate that a respondent with a larger household, a higher financial knowledge score and who saves through investment is more likely to be prepared financially for an income shock.

However, based on the ordered probit estimates alone, the effects of changes in the explanatory variables on the probability of membership in the intermediate group (moderate financial preparedness) is ambiguous. For this reason, the discussion of estimated coefficients of the ordered probit analysis is kept general and the discussion will focus on the marginal effects of each explanatory variable on the respective financial preparedness levels (columns 3–5). A positive value indicates that an increase in the magnitude of the explanatory variable increases the probability that a respondent will be at a specific level of financial preparedness.

Overall, it is found that the variables of ethnicity, income level, region of residence and marital status have no significant effect on a respondent's financial preparedness for an income shock. A respondent with a larger household is more likely to have stronger financial preparation for income shock. For example, for every additional household member that a respondent has, the probability of being in the strong and moderate financial preparedness groups increases by 0.81% and 0.03% respectively, and reduces the probability of being in the weak financial preparedness group by 1.14%. This result contradicts those of Chang and Huston (1995) and DeVaney (1994), who found that larger households are less likely to meet the minimum guidelines of having at least three months of funds for emergency purposes. Having a larger household appears to motivate a respondent to be more prepared for emergencies so that family members will not be affected too greatly should the respondent be made redundant. Commitment and responsibility towards their dependents' welfare appears to be a significant motivator for respondents to plan for financial emergencies such as an income shock.

A respondent who has higher financial knowledge is more likely to have better financial preparation for an income shock. For example, from the results it is found that for every 1 unit increase in the financial score, the probability of the respondent being in the strong and moderate financial preparedness groups increases by 1.42% and 0.60% respectively, and decreases the probability of being in the weak financial preparedness group by 2.02%. This finding corroborates existing studies that show financial knowledge contributes positively to financial planning (Mandell & Klein, 2009; Lusardi, 2008a; 2008b; Van Rooij et al., 2011; Fox et al., 2005; Hilgert, Hogarth, & Beverly 2003). A respondent residing in an urban area reduces the probability of having strong and moderate financial preparedness by 3.87% and 1.64% respectively, and increases the probability of having weak financial preparedness by 5.51%.

Financial preparedness for income shock cuts across income levels as income is found to have no significant effect on the level of financial preparedness towards income shock. However, the reliability and regularity of income receipt is found to have a significant effect on the level of financial preparedness. A respondent whose income varies seasonally

is less likely to have strong or moderate financial preparedness and correspondingly more likely to have weak financial preparedness compared to a respondent whose income receipt is regular and predictable. The result contradicts Mishra and Chang (2009) whose study on precautionary savings among farm households, found that farm households that face higher income variability are more likely to hold more precautionary savings compared to households with lower income risk. The finding in this study appears to show that although a respondent is aware that his or her receipt of income varies seasonally and might be expected to prepare for income shock, the unpredictability of income receipt hinders the respondent from undertaking financial preparation for such a shock.

Educational level is found to matter in financial preparation for income shock. Lack of tertiary education (diploma/vocational, secondary or primary) is found to reduce the probability of having strong or moderate financial preparedness and to increase the probability of being in a position of weak financial preparedness compared to a respondent with tertiary education. In other words, those who have tertiary education are able to weather income shock better than those with non-tertiary education. Corroborating the findings of Bhargava and Lown (2006), Chen and DeVaney (2001), Ding and DeVaney (2000), and Huston and Chang (1997), this result suggests that those with tertiary education are more aware of the need to have emergency funds to buffer against income shock.

In terms of the effect of age on financial preparedness, it is found that respondents who are 50 years old and above are less prepared financially than those who are between 30 and 39 years old. Respondents who are aged 50–59 years and 60 years above are more likely to have weak financial preparation by 9.92% and 12.19% respectively. This finding contradicts those of Bhargava and Lown (2006), Chen and DeVaney (2001), Ding and DeVaney (2000), and Huston and Chang (1997) who found that older respondents are most likely to have adequate fund holdings.

Respondents who diversify their savings channels to include investments in stocks, properties, commodities, etc., are found to be more likely to have strong or moderate financial preparation for an income shock compared to respondents who save through traditional channels. In fact, a respondent who saves by investing funds will reduce the probability of having weak financial preparation by 27.01% compared to a respondent who only saves through traditional channels. Respondents who diversify their savings channel to include holding an investment portfolio can be considered willing to take some financial risk, whereas those who save through traditional channels are considered as unwilling to take any financial risk. This result appears to correspond with the findings of Bhargava and Lown (2006) and Huston and Chang (1997), who found that households that are willing to take some financial risk are more likely to have adequate emergency fund holdings than households that are not willing to take any financial risk.

Of the three financial attitudinal variables, only the statement 'money is there to be spent' is found to be significant. Contrary to the *a priori* expectations, it is found that a respondent who agrees that money is there to be spent reduces the probability of having weak financial preparation and increases the probability of having strong financial preparation for an income shock. On the other hand, only one of the financial behavioural variables is found to be significant and this refers to the statement that 'I ensure that I have sufficient savings for emergency needs'. However, this result is contradictory, as respondents who claim that they always or frequently ensure that they have sufficient

savings for emergency seem to have a higher probability of being ill-prepared financially. This appears to indicate that respondents may not have been truthful in their responses or that their understanding of having sufficient savings for emergency needs falls below the minimum guideline for emergency funds.

6. Conclusion

The existing empirical literature on emergency fund holdings does not differentiate between the levels of financial preparedness among individuals but rather focuses on whether individuals have emergency funds or not and the type of emergency funds that individuals hold. Analysing the level of financial preparedness helps to distinguish between those who are vulnerable and those who are moderately or well prepared financially for an income shock. This is particularly relevant in today's uncertain economic condition.

Overall, these results indicate that most of the socio-demographic variables, with the exception of household size, educational level, age group and location of residence, do not have significant effects on an individual's level of financial preparedness. In addition to the aforementioned factors, better financial knowledge and savings that incorporate investments contribute positively to a respondent's financial preparation for an income shock. However, it is found that having a prudent financial attitude and behaviour do not necessarily contribute to better financial preparedness for an income shock. The findings in this study highlight several important implications.

First, it is disturbing to find that those entering retirement age (age 50 and above) are poorly prepared for financial emergencies compared to younger individuals, such as those aged between 30 and 39 years. The fact that the older generation have a weak buffer against income shock, signals another problem, namely that these individuals are unlikely to be well prepared to sustain themselves through their golden age.

Second, educational attainment and financial knowledge play a key role in helping individuals to be financially prepared for financial emergencies such as an income shock. Those with tertiary education are better prepared than those with a diploma, or secondary or primary education. Higher education helps to expand an individual's horizon and thinking skills, which encourages such individuals to plan ahead. As a result, individuals with tertiary education are better prepared for financial emergencies such as income shock. Furthermore, apart from attaining higher education, individuals with better financial knowledge are found to be more financially prepared. Higher educated individuals may find it easier to grasp basic financial concepts and numeracy skills and hence are more competent in applying the financial knowledge and skills to financial affairs As the majority of respondents had not attained tertiary education, it would seem to be important to intensify financial education programs at the school level. This is to minimise the prospect of individuals being marginalised due to educational attainment.

Third, prudent financial behaviour does not guarantee that individuals are financially prepared for income shock. Contrary to *a priori* expectations, the study found that those who frequently ensure that they have sufficient savings to cover emergency needs are less financially prepared than those who rarely or never plan sufficient savings to cover emergency needs. This suggests that households need to be educated on the minimum amount of emergency funds required to help them cushion financial emergencies such

as income shock. On the other hand, for those who did not agree that money is there to be spent, their actions seem to contradict their way of thinking, as these individuals are found to be more likely to be ill prepared for income shock than those who think otherwise. This finding could imply that measuring an individual's financial behaviour by means of self-assessment, as was the case in this survey, may not capture the actual financial psychology traits of an individual. Insights from behavioural economics may be helpful to examine the underlying cognitive and behavioural biases of an individual.

Fourth, it is found that individuals who diversify their savings by investing either in investment products, property, business or foreign currencies are in a better position in terms of preparedness for an income shock. Although greater risks may be involved in investing savings, such savings may be able to generate higher returns and help individuals create wealth. As long as an individual engages with good financial planners and fund managers, they are better prepared financially for an income shock.

Finally, several findings in this study contradict the existing literature on individuals' preparedness for emergencies, such as those relating to age, household size and the non-significance of income. While existing studies show that older individuals and those with smaller households are more likely to meet the minimum guideline for emergency fund holdings, the findings of this study show otherwise. This suggests that households in different countries (regions) may behave differently and may be affected by different factors. Existing findings, derived predominantly from studies conducted using US data, cannot be generalised to developing countries or an Asian country such as Malaysia. However, as the findings are based on a sample size of 1000 respondents only, caution should be exercised on the generalisation of the findings and a larger sample size may be needed for future research.

References

Anong, S.T., & Devaney, S.A. (2010). Determinants of adequate emergency funds including the effects of seeking professional advice and industry affiliation. *Family and Consumer Sciences Research* Journal, *38*(4),405-419.

Bi, L., & Montalto, C. (2004). Emergency funds and alternative forms of saving. *Financial Services Review*, *13*, 93-109.

Bhargava, V., & Lown, J.M. (2006). Preparedness for financial emergencies: Evidence from the Survey of Consumer Finances. *Financial Counseling and Planning*, *17*(2), 16-26. Retrieved from http*://ssrn.com/abstract=2232126* (Accessed on 25 May 2015).

Chang, Y.R., & Huston, S.J. (1995). Patterns of adequate household emergency fund holdings: A comparison of households in 1983 and 1986. *Financial Counseling and Planning*, *6*,119-128.

Chang, Y. R., Hanna, S., & Fan, J. X. (1997). Emergency fund levels: Is household behaviour rational? *Financial Counseling and Planning*, *8*(1), 47-55. Retrieved from http*://content.csbs.utah.edu/~fan/research/08-1997ChangHannaFanFCP.pdf (Accessed on 25 May 2015).*

Chen, C., & DeVaney, S.A.(2001). The effect of life cycle stages and saving motives on the probability of emergency fund adequacy. *Proceedings of the Association for Financial Counseling and Planning Education* (pp.176-185). Columbus, OH: Association of Financial Counseling and Planning Education.

DeVaney, S. A. (1994). The usefulness of financial ratios as predictors of household insolvency: Two perspectives. *Financial Counseling and Planning*, *5*, 5-26. Retrieved from https*://www.afcpe.org/assets/journals/vol_51.pdf* (Accessed 25 May 2015).

Ding, J., & DeVaney, S. A. (2000). Predictors of emergency funds adequacy. *Proceedings of the Asociation for Financial Counseling and Planning Education* (pp. 56-63). Columbus, OH: Association of Financial Counseling and Planning Education.

Fox, J., Bartholomae, S., & Lee, J. (2005). Building the case for financial education. *The Journal of Consumer Affairs*, *39*(1), 195-214.

Garman, E., & Forgue, R. (1997). *Personal finance*. (pp.77-78). Boston, Mass: Houghton Mifflin Company.

Greninger, S.A., Hampton, V.L., Kitt, K.A., & Achacoso, J.A. (1996). Ratios and benchmarks for measuring financial well-being of families and individuals. *Financial Services Review*, *5*, 57-70.

Hanna, S., & Wang, H. (1995). The adequacy of emergency funds to cover household expenditures. *Consumer Interests Annual*, *41*(1),224-225.

Hatcher, C.B. (2000). Should household establish emergency funds? *Financial Counseling and Planning*, *11*(2), 77-83.

Hilgert, M., Hogarth, J., & Beverly, S. (2003). Household financial management: The connection between knowledge and behaviour. *Federal Reserve Bulletin*, July, 309-322.

Huston, S., & Chang, Y. R. (1997). Adequate emergency funds holdings and household types. F*inancial Counseling and Planning*, *8*(1), 37-46. Retrieved from http*://afcpe.org/assets/pdf/vol816.pdf* (Accessed 25 May 2015).

Johnson, D. P., & Widdows, R. (1985). Emergency fund levels of households. In K.P. Schnuttgrund (ed.) *Proceedings of the 31st Annual Conference of the American Council of Consumer Interests*, pp. 235-41.

Lusardi, A. (2008a). *Financial literacy: An essential tool for informed consumer choice?* Paolo Baffi Center Research Paper No. 2009-35. Retrieved from http*://ssrn.com/absract=1336389* (Accessed 30 May 2015)

Lusardi, A. (2008b). *Household saving behaviour: The role of literacy, information and financial education programs.* (NBER Working Paper No. 13824. Retrieved from http*://www.nber.org/papers/w13824.pdf* (Accessed 30 May 2015).

Mandell, L., & Klein, L. S. (2007). Motivation and financial literacy. *Financial Services Review*, 16(2), 105-116.

McCullaph, P. (1980). Regression models for ordinal data. *Journal of the Royal Statistical Society. Series B. Methodological*, *42*(2), 109–142. Retrieved from http*://www.jstor.org/stable/2984952* (Accessed 25 May 2015).

McKelvey, R.D., & Zavoina, W. (1975). A statistical model for the analysis of ordinal level dependent variables. *Journal of Mathematical Sociology*, *4*(1), 103–120.

Mishra, A. K., & Chang, H. H. (2009). Factors affecting precautionary savings of self-employed farm households. *Agricultural Finance Review*, *69*(3), 300-313.

*The Sun (*2011). AKPK sees a drop in counselling cases, The Sun Daily, 28 November 2011. Retrieved from http://www.thesundaily.my/news/222756 (Accessed 30 May 2015).

UNDP (2009). The *global financial crisis and the Malaysian economy, impact and responses,* Kuala Lumpur: UNDP (pp. 28, Table 16).

Van Rooij, M., Lusardi, A., & Alessie, R. (2011).Financial literacy and stock market participation. *Journal of Financial Economics*, *101*(2), 449-472.

Worthington, A.C. (2004). Emergency fund in Australian households: An empirical analysis of capacity and sources. *Financial Counseling and Planning*, *15*(1), 21-30. Retrieved from http:*//eprints.qut.edu.au/2322/1/2322.pdf* (Accessed 25 May 2015).

Worthington, A. C. (2005). A note on households' choice of emergency finance. *Economics Bulletin*, *4*(4),1-7.