International Journal of Management, Finance and Accounting

Factors Affecting Accumulation of Household Debts in Malaysia

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Abstract

Since 2000, the ratio of debt to income among Malaysian households has been showing an upward trend. This paper examines the factors affecting accumulation of household loans into two main categories, housing loans and consumption loans. The purpose of this separation is to study the impact of savings on housing loans and consumption loans individually, which has not been researched in a Malaysian context prior to this. By adopting the Vector Error Correction Model (VECM), we found that cost of living, house prices and savings impacts accumulation of housing loans and consumption loans differently. There is a positive relationship between savings to housing loans. Cost of living on the other hand has a negative relationship with accumulation of consumption loans. House prices is negatively related to consumption loans. This study fills in the literature gap on the impact of household's savings on accumulation of both housing and consumption loans. Among the policy implications proposed by this paper is to rectify and influence the root causes of inflation.

Keywords: Household Debt; Housing Loans; Consumption Loans; Cost of Living; House Prices; Savings.

1.   Introduction

The Organisation for Economic Co-operation and Development (OECD) defines household debt as "household liabilities that require payments of interest/principal to the creditors at a fixed date in the future" (Organisation of Economic Co-operation and Development (OECD), 2020). In the case of Malaysia, Bank Negara Malaysia (BNM) (2017) defines household loans as the total of borrowings made by individuals in the economy which includes personal financing, credit cards, loans for the purchase of tangible goods such as properties and motor vehicles, as well as loans for the purchase of securities and others (BNM, 2014a). Household debt can be divided into two main components namely housing loans and consumption loans (Prinsloo, 2002). Housing loans refers to the total money borrowed by households for the purchase of residential properties (Khan et al., 2016; Sahiq et al., 2018). In the context of Malaysia, BNM defines consumption loans as the sum of money borrowed by individual households for personal use, purchase of vehicles and consumer durables as well as credit cards (Soh et al., 2017).

The percentage of household debt to GDP ratio as reported by BNM has increased from 67.2% in 2002 to 83.0% in 2018 (Bank Negara Malaysia (BNM), 2019d). It was observed that Malaysians prefer to opt for loans from non-financial institutions, thus having families and friends as the most important source of financial assistance (Loke, 2016). Since non-financial institutions borrowings are unregulated, there is a high likelihood of household debt in Malaysia being underreported. Loke (2016)'s findings is consistent with findings by Chotewattanakul et al. (2019) where they found that indebted households in Thailand are likely to opt for loans from unregulated financial institutions when they could not afford to borrow from banks. Loans for the purchase of properties and consumption loans has been increasing from 2003 to 2018 (BNM, 2019a, 2019b). The increase is at the same direction as the increase in cost of living as measured by the Consumer Price Index (CPI) (Department of Statistics Malaysia (DOSM), 2019). Agensi Kaunseling dan Pengurusan Kredit (AKPK) in their AKPK Financial Behaviour Survey 2018 (AFBeS'18) (Agensi Kaunseling dan Pengurusan Kredit (AKPK), 2018) found out that 3 out of 10 Malaysian working adults need to borrow in order to purchase essential goods leading to the high level of indebtedness among households in Malaysia. This suggests that households in Malaysia need to borrow money in order to finance their

necessities. This scenario motivates the investigation of the relationship between cost of living and the accumulation of both housing and consumption loans in Malaysia.

In the effort to reduce bankruptcy cases among Malaysians, BNM in 2006 established AKPK which is an agency responsible to educate Malaysian on financial literacy as well as giving financial counselling to those in need. However, in recent years, expansionary government policies for boosting house ownership are more common than policies to rein in household and consumption loans. Among strategies taken by the Ministry of Housing and Local Government (MoHLG) and banks in boosting house ownership are the Youth Housing Scheme (SPB) 2020 by the National Savings Bank (BSN) (Bank Simpanan Nasional (BSN), 2020), Private Ownership of Affordable Homes Scheme Skim (Perumahan Mampu Milik Swasta (or MyHome) in 2013 by MoHLG (Jabatan Perumahan Negara, 2013), First Home Deposit Fund Scheme (MyDeposit) by MoHLG (Jabatan Perumahan Negara, 2016) and many more. Besides the ministry and banks, the Central Bank of Malaysia also came out with the Affordable Homes Fund (Dana) in 2019 (BNM, 2018). Therefore, we should expect the continued domination of housing loans and the increase in overall level of household debt in Malaysia.

Problem Statement

Household loans such as housing loans and consumption loans are financial instruments that are used by individuals in the economy to smoothen their consumption when they are financially constrained. In the long run, a high percentage of loans to income will jeopardise economic growth (Kim, 2011) and increase income inequality (Wood, 2019). There are a number of economic indicators that have been proven to cause the increase in household loans. The continued rise in cost of living, house prices and savings have been proven to impact the accumulation of household loans as a whole in Malaysia (Azwani Mohamad Azmin et al., 2019; Mainal et al., 2016; Rahman & Masih, 2015; Zain et al., 2019). However, existing studies only identified the impact of savings on overall households' loan without studying going into detail how savings will affect housing loans and consumption loans as two different instruments.

Research Objectives and Significance

The objective of this study is to determine the impact of cost of living, house prices and savings on the accumulation of housing and consumption loans in Malaysia in the short run and long run. This study is significant because loans acting as vital financial instrument for households, can be utilised when households are financially constrained or when they want to opt for other ways to finance their consumption aside from paying the total price to the seller or service providers. Since consumption loans and housing loans serve different purposes, studying the factors affecting accumulation of these loans can be beneficial to various groups of people. This study will provide empirical evidence for researchers especially on the relationship between savings and these two types of loans since at this point of time, there is limited literature that have studied the impact of savings on the accumulation of household loans.

In addition, as this study explores the impact of savings on the accumulation of household debt, the findings can be used by policymakers in regulating the market of loanable funds for households. Currently, the government seems to be spending a huge sum of money in boosting house ownership among Malaysia by giving out stamp duty exemption and subsidising purchase of houses, among other initiatives. Evidence between savings and accumulation of housing loans among households in Malaysia can help guide the government to use savings as a new tool in boosting homeownership in Malaysia.

2.   Literature Review

Underlying Theories on Household Debt

In studying the household debt, works of literature mentioned the popular Life Cycle Hypothesis (LCH) that was developed by Franco Modigliani. As cited by (Kim et al., 2015), LCH refers to borrowing decisions made by households that are based on future income (Modigliani & Brumberg, 1954). Households who are financially unstable, will only borrow when they expect their income to increase in the future and once their income has increased, they will also start to save. Based on this definition, it is clear that this theory associates borrowing decisions with several factors such as income, age, savings.

To assess the relevance of this theory in the context of Malaysia, this study has gone through several existing works of literature. Zakaria et al. (2017) in their paper mentioned that borrowing decisions among urban households in Malaysia is in line with

LCH where age is an important aspect in classifying whether households are having a high or low level of debt. According to them, the probability for younger households to have a high level of debt is higher as compared to the probability of older households to have a high level of debt.

In addition, Mainal et al. (2016) studied the impact of savings on household debt in five selected country members of Association of Southeast Asian Nations (ASEAN) which are Thailand, Malaysia, Indonesia, Singapore and Philippines. They confirmed the relevance of LCH in Malaysia when they found a significant positive relationship between savings and debt in Malaysia and Indonesia. Khan et al. (2016) found out that there is a significant relationship between independent variables (income and population growth) and dependent variables which are housing loans and consumption loans. These findings further confirm the relevancy of this theory in the case of Malaysia.

Despite being preferred and followed by other researchers, a study by Kim et al. (2015) found that debt accumulation among households in the United States is not in line with LCH but is in accordance with Post Keynesians account of consumption. Kim et al. (2015) also mentioned that according to Post Keynesians account of consumption, households consume based on their current income and wealth taking account of psychological factors. LCH is also being criticised because it does not take into account the ability for constrained variables to change (Nizar, 2015).

Dependent Variables: Housing Loans and Consumption Loans

Malaysian studies on determinants of debt usually focus on household debts, or break down the analysis into housing loans and consumption loans. According to Prinsloo (2002), two main elements of household debts are consumption loans and housing loans (as cited in Ncwadi & Malindini (2016)). Some literature divided household debt into housing loan and consumption loan (Khan et al., 2016; Nizar, 2015; Soh et al., 2017) while others study household debt as a whole (Ma'in et al., 2016; Rahman & Masih, 2015).

For works of literature that observed household debt as a whole, they found that increase in the price of residential properties will lead to an increase in household debts (Ma'in et al., 2016; Rahman & Masih, 2015; Zain et al., 2019). As per mentioned before, Mainal et al. (2016) discovered that household debt and savings are significantly positively related. As for cost of living, Azwani Mohamad Azmin et al. (2019) found a positive

relationships from cost of living to household debt as a whole. According to Mainal et al. (2016), there is no significant relationship between cost of living and household debt as whole because households lose their ability to borrow when the inflation rate is high.

On the other hand, Khan et al. (2016) in their discussion on the determinants of household debt in Malaysia divided household debt into consumption loans and housing loans. This is because they expected that their selected independent variables would impact consumption loans and housing loans differently. Their expectation is then proven true when they found that Food Price Index (FPI) has a positive relationship on consumption loans but a negative relationship on housing loans. House prices does not affect consumption loans but affect housing loans significantly. None of the works of literature identified have studied the relationship between savings to consumption loans and housing loans in Malaysia.

Housing loans are also known as mortgages where it refers to the borrowings made by individuals in the economy for the purchase of residential properties (Khan et al., 2016; Soh et al., 2017). Works of literature that study housing loans and consumption loans separately share different definitions of consumption loan. However, the difference is minimal. Soh et al. (2017) included loan for the purchase of consumer durables in their consumption loan but Khan et al. (2016) did not. Other four common components of consumption loans among these two literature are loans for the purchase of vehicles and securities, credit card debt and loan for personal use.

The upward trend in loans disbursed for purchase of properties by households is correlated with the increase in the Malaysian House Price Index (HPI) (National Property Information Centre (NAPIC), 2009, 2018). The big share of housing loans in the total of household loans in Malaysia is associated with the extremely expensive price of houses (Zain et al., 2019). The increase in house prices causes households to buy homes immediately as they are afraid the price will keep on increasing in the future, as a study by Hamizan (2021) shows that macroeconomic factors have significant influences on house prices in Malaysia. Moreover, this increase also causes households to borrow more money to purchase the same size of house. Other than that, a high amount of housing loans also can be associated with a high home ownership rate of 72.5% among Malaysians in 2011. When other OECD countries experience the surge in household debts, the level of

household debt in Germany fell during 2000 to 2015 due to their low rate of homeownership (OECD, 2017).

Relationship between the Dependent Variables with Cost of Living, House Prices, and Savings

In studying the relationship between cost of living and compositions of household debt in Malaysia, there are two different indicators that were used by existing literatures which are Consumer Price Index (CPI) and Food Price Index (FPI). CPI measures the increase in average prices of different types of goods in a basket while FPI measures the increase in average prices of food.

Identified literature that studies the relationship between cost of living and housing loans found rather contradicting results. Works of literature who use Consumer Price Index (CPI) to measure cost of living found that when CPI increases, housing loans will decrease but at a low value because the relationship between CPI and housing loans are not significant and negative (Nizar, 2015; Nordin et al., 2018). The commonality between these two literatures is that they are using the same method of analysis which is the Autoregressive-Distributed Lag model (ARDL).

Another measure for the cost of living is the FPI which was selected by Khan et al. (2016). They found out that FPI Malaysia has an inverse relationship with housing loans but positive relationship with consumption loans. Sahiq et al. (2018) in their study on determinants of accumulation of housing loans found a positive and significant relationship between cost of living and housing loans. Their justification was that as the cost of living increases, households demand more house financing because they want to fulfil their basic needs as well as to enhance their quality of life.

Similarly, with housing loans, Nordin et al. (2018) who uses CPI found a weak relationship between cost of living and consumption. However, Khan et al. (2016) who uses FPI as a proxy for cost of living has found a positive significant relationship between cost of living and the growth of consumption loans in Malaysia. Findings by both Nordin et al. (2018) and Khan et al. (2016) combined tell us that the increase in average prices of different types of goods (CPI) impacted household debt minimally but the increase in average prices of foods will increase the growth of consumption loans in Malaysia.

Since the housing loan made up a large percentage of household debt in Malaysia, it is important to consider the price of residential properties in studying the determinants of household debt. Many works of literature have studied the impact of residential properties to household debt (Khan et al., 2016; Ma'in et al., 2016; Rahman & Masih, 2015; Stockhammer & Wildauer, 2018; Zain et al., 2019). Ma'in et al. (2016); Rahman & Masih (2015); and Zain et al. (2019) found a positive relationship between house price and household debt in general. In fact, Stockhammer & Wildauer (2018) discovered that the price of residential properties is the most significant variable that contributed to household debt in 13 OECD countries among other independent variables such as income inequality, interest rates and credit market deregulation.

In addition, Sahiq et al. (2018) who studies the factors influencing housing loans in Malaysia found that house prices and housing loans relationship are positively significant. According to Sahiq et al. (2018), an increase in the price of houses increases the demand for houses and housing loans because consumers wanted to buy houses as they are afraid that house prices in Malaysia may get even more expensive in the future. Most homeowners now buy houses to reside instead of for investment purposes.

The increase in the supply for household debt by banks during property boom (Herring & Wachter (1999) and Lorenzoni (2008), cited by Tai, 2016) is biased towards housing loans leads to the reduction in the supply of consumption loans (Chakraborty, Goldstein & Mackinlay (2014) and Loutskina and Straham (2015), cited by Tai, 2016). In the United States, the growth in house prices impacted the consumption loans negatively, especially among households who do not own a house. Even worse, these credit constraints among households who do not own a house worsen their financial stability. The impact of the growth in house prices is insignificant to households who own a house (Tai, 2016). In the Malaysia context, it was found that house price is not significant to the growth of consumption loans (Khan et al., 2016).

Savings can be defined as the remainder of disposable income after subtracting consumption. Savings and debt are being discussed together in life-cycle theory. It suggests that a household will borrow when their income is low and save when their income is high. Among the five selected ASEAN countries (Malaysia, Thailand, Indonesia, Philippines and Singapore), Malaysia and Indonesia are the only two countries whose household savings and household debts are positively and significantly related to each other (Mainal

et al., 2016). This finding suggests that household debt will increase when household savings increase (BNM, 2014b). There are contradicting findings in South Africa that suggesting a one-way negative relationship from household savings to household debt (Ncwadi & Malindini, 2016). These findings were explained by high inequality among households in South Africa. More than half of its households, especially the low income earners, cannot afford to save (Ncwadi & Malindini, 2016).

There was an upward trend in savings by households in Malaysia from 2003 until 2018 (BNM, 2008, 2019c). According to Mainal et al. (2016), increase in savings encourages household borrowings in two Association of Southeast Asian Nations (ASEAN) countries which are Malaysia and Indonesia. This positive relationship between savings and household debt in Malaysia is due to improvement in credit worthiness among the households that allow them to acquire loans. Besides, since the purchase of houses requires homeowners to spend a lot on down payment and other fees, households will only borrow once they have saved enough to pay the down payment and other fees. Accumulation of household debt in the UK from 1992 to 2007 is also associated with the increase in bank deposits by households (Chadha et al., 2016). In addition, Japan is one of the OECD countries that does not experience the rise in level of household debt after the 2007-2009 Financial Crisis because house buyers in Japan accumulated a high amount of savings before buying a house thus enabling them to borrow less amount of money (OECD, 2017).

Xu (2017) who studied the relationship between savings and housing loans in China found a positive and significant relationship between the variables. This is because, in China there is a government policy called China Housing Provident Fund which requires employers to contribute a certain amount to the account on a monthly basis. The savings accumulated from this account can be used for purchase of houses, renovation or even construction of new houses. The reason why China Housing Provident Fund increases the demand for housing loans is because under this policy, households can use the money for down payment of their house purchases. Besides, account holders are also entitled to cheaper down payment and monthly debt repayment at lower interest rates. To conclude, China Housing Provident Fund increases the housing loans in China because it allows households to borrow at cheaper costs.

In the case of Germany, savings increase the amount of housing loans. This is because households who save will have a better financial history as compared to households who do not save. Therefore, it is easier for households with savings to get housing loans from financial institutions (Burghof & Schairer, 2017). There is also a positive relationship between savings and consumption loans in Singapore. When savings decrease, aggregate consumption debt decreases because households use their savings to pay off their debt. Behaviour of households in Singapore towards debt is the same behaviour of households in Malaysia. People of these two countries prioritise paying off their debt (Agarwal et al., 2020). In Uganda, savings is facilitated by group savings which is a community based financial institution. Burlando et al. (2020) found that the existence of group savings makes it easier for households in both rural and urban areas of Uganda to use financial services for both savings and debt.

In summary, this paper proposes an empirical study the impact of savings, in addition to house prices and cost of living indicators on two separate variables – housing loans and consumption loans. Past literature focused on the aforementioned independent variables' impact on household debt as a whole, but this paper intends to uncover the nuanced relationship between the variables on housing loans and consumption loans separately. This is because, housing loans are a major component of household debt, and ought to be studied as a separate dependent variable, with a focus on the relationship of savings with housing loans.

3.   Research Methodology

Research Design

This study is conducted to find out the relationship between selected economic indicators on the accumulation of household loans in Malaysia. It uses time series data and employs quantitative statistical data analysis. The scope of this study is 16 years of quarterly data of Malaysia cost of living, house prices, savings, housing loans and consumption loans available publicly at the website of Bank Negara Malaysia (BNM) and National Property Information Centre (NAPIC).

Data collected from BNM comprises of the amount of loans disbursed by purpose, CPI and saving deposits by individuals. HPI is retrieved from the National Property Information Centre (NAPIC). This study applies quarterly data to examine how dependent

variables are affected by independent variables based on the works of Khan et al. (2016) and Nizar (2015).

Time-series data for two independent variables, HPI and CPI are based on different years. Therefore, this study follows Zain et al. (2019) and rebased HPI and CPI to 2010. The formulas to rebase HPI and CPI for quarter q and year n to 2010 to create HPI_{RB} and CPI_{RB} are described in Eq. 1 and Eq. 1 below:

$$HPI_{RB} = {HPI_n}/{HPI_{2010}} \quad (Eq.\,1)$$

$$CPI_{RB} = {CPI_n}/{CPI_{2010}} \quad (Eq.\,2)$$

Existing studies (Khan et al., 2016; Mainal et al., 2016; Nizar, 2015) included the amount of loan disbursed for the purchase of securities in their calculation of consumption loan. However, this study will follow the initial definition of consumption loan from BNM where the total of consumption loan disbursed equals to loans disbursed for the purchase of passenger cars and consumer durables, personal loans and credit cards.

The period of observation of this study is from Quarter 1 2003 until Quarter 4 2018, which consists of 64 observations. Housing loans is defined as 'loan disbursed for the purchase of residential properties' and consumption loans is defined as 'sum of loan disbursed for the purchase of consumer durables and passenger cars, loan for personal uses and credit cards'. Savings is defined as 'saving deposits by individuals'. These three variables are measured in terms of millions of Malaysian Ringgit and are sourced from the Malaysian central bank's quarterly statistical reports. Cost of living is measured using the Consumer Price Index (CPI) while house prices are measured using the HPI with 2010 as the base year for both indices. CPI data is obtained from the Department of Statistics Malaysia time series data, while HPI data is obtained from NAPIC's annual HPI reports.

Based on the LCH and the separate housing loans and consumption loans models proposed by Khan et al. (2016) and Nizar (2015), the following models in Eq. 3 and Eq. 4 are specified:

$$LHL_t = \beta_{0,t} + \beta_1 CPI_t + \beta_2 LHPI_t + \beta_3 LSAV_t + \varepsilon(1)_t \quad (Eq.\,3)$$

$$LCL_t = \beta_{0,t} + \beta_1 CPI_t + \beta_2 LHPI_t + \beta_3 LSAV_t + \varepsilon(2)_t \quad (Eq.\,4)$$

where *LHL*: Log of Housing Loans, *LCL*: Log of Consumption Loans, *LCPI*: Log of Consumer Price Index, *LHPI*: Log of House Price Index, *LSAV*: Log of Savings by Households, and $\varepsilon(n)$: Error Term.

All variables are transformed to natural log following an existing study by Khan et al. (2016).

Econometrics Methodology

This study will test the stationarity of each variable using the Augmented Dickey-Fuller (ADF) test and Phillip-Perron (PP) tests. Eq 3 and Eq 4 are modelled as Model 1 and Model 2 respectively. Both Model 1 and 2 will be estimated using autoregressive models and tested for short run Granger Causality. Diagnostics tests of Jarque-Bera normality test, LM serial correlation and the CUSUM tests are also conducted.

4.   Results and Analysis

Table 1 shows the summary of descriptive statistics of selected macroeconomic data from Quarter 1 2003 until Quarter 4 2018. The mean ranges from 4.62 to 11.46. The mean value for all variables is greater than their median values except for HPI. This indicates HPI is skewed to the left while other variables skewed to the right. This claim can be further supported by statistics on skewness where skewness for all variables has a negative value but the skewness for HPI is positive.

Table 1: Descriptive Statistics

Variables	LHL	LCL	LCPI	LHPI	LSAV
Mean	8.52	9.39	4.62	4.75	11.46
Median	8.60	9.53	4.62	4.66	11.51
Maximum	8.98	9.86	4.80	5.27	11.89
Minimum	7.84	8.66	4.43	4.33	10.86
Std. Dev	0.35	0.34	0.11	0.32	0.33
Skewness	-0.31	-0.57	-0.11	0.32	-0.41
Kurtosis	1.61	2.07	1.86	1.57	1.77

Jarque-Bera	6.19	5.80	3.61	6.59	5.83
Probability	0.05	0.06	0.16	0.04	0.05

The dispersion of the variables can be measured using standard deviation. All variables are volatile at the same magnitude at around 0.3 except for CPI which has the lowest volatility at 0.1. Next, Kurtosis tells about the distribution of the data in terms of thickness of the tails and the sharpness of the peak. The variable that has Kurtosis value less than 3 is said to be platykurtic while data that has Kurtosis values more than 3 is said to be leptokurtic. In this case, all variables are platykurtic indicating that the variables have a flat distribution.

Table 2 presents the result for stationarity tests. The result for all variables for both ADF and PP tests are consistent except for *LHPI*. According to ADF, *LHPI* is not stationary at first difference. However, PP suggests otherwise telling that *LHPI* is stationary at first difference. According to Kim et al. (2015), in the case of discrepancy between results from ADF and PP, results from PP should be selected. PP is preferred as compared to ADF because ADF tends to overestimate the existence of unit roots. Therefore, it can be concluded that *LHL, LCL, LCPI, LHPI* and *LSAV* are stationary at first difference.

Table 2: Unit Root Tests Results

	ADF			
	At Levels		First Difference	
	Constant (t_μ)	Trend (t_τ)	Constant (t_μ)	Trend (t_τ)
LCL	-2.20	-2.62	-7.77***	-8.09***
LHL	-1.58	-2.63	-6.94***	-6.93***
LSAV	-1.57	-1.05	-7.44***	-7.68***
LHPI	-0.64	-2.93	-1.36	-1.15
LCPI	-0.61	-3.52	-6.92***	-6.89***
	PP			
LCL	-2.38	-2.45	-10.54***	-11.80***
LHL	-1.89	-2.72	-12.35***	-15.76***

LSAV	-1.74	-0.97	-7.43***	-8.00***
LHPI	0.88	-1.85	-7.21***	-7.36***
LCPI	-0.71	-3.01	-7.66***	-7.85***

Notes: ***, ** and * denotes rejection of the null hypothesis at the 1%, 5% and 10% level respectively.

Following Akaike information criterion (AIC) and Schwarz information criterion (SC), the lag length selected for both Model 1: Housing Loan (Eq. 3) and Model 2: Consumption Loan (Eq. 4) is 1, based on Table 3.

Table 3: Lag Selection

	Model 1: Housing Loans		Model 2: Consumption Loans	
Lag	AIC	SC	AIC	SC
0	-8.80	-8.66	-9.27	-9.13
1	-20.43*	-19.73*	-20.64*	-19.93*
2	-20.25	-18.98	-20.52	-19.25
3	-19.98	-18.15	-20.41	-18.58
4	-19.97	-17.58	-20.35	-17.95

Note: * indicates lag order selected by the criterion
AIC: Akaike information criterion
SC: Schwarz information criterion

Table 4 shows the Johansen-Juselius (JJ) cointegration test results for that both the Trace statistics and the Max Eigenvalues. Both tests confirm that there are two cointegrating relationships between the variables for Model 1 (Eq 3). As for Model 2 (Eq. 4), there is only one cointegrating relationship.

For a model to be considered as stable, its Error Correction Term (*ECT*) must be negative. If the coefficient shows a negative sign, the variables are interpreted to have positive relationships. On the flip side, positive coefficients indicate an inverse relationship between the variables.

Based on Tables 5 and 6, the *ECT* which measures the speed of adjustment for both Model 1 and Model 2 are negative and significant. The negative and significant values of *ECT* coefficients denote the presence of long run causal relationships from independent variables to dependent variables in Model 1 and Model 2.

Table 4: Johansen-Juselius Cointegration Tests

Trace Test

Hypothesized Number of Cointegrating Equations	Model 1: Housing Loans	Model 2: Consumption Loans
	λ-trace	λ-trace
None*	62.42**	58.15**
At most 1*	30.00*	27.41
At most 2	11.70	8.66
At most 3	1.50	3.77

Maximum Eigenvalue Test

	λ-max	λ-max
None*	32.10**	30.74*
At most 1	18.31**	18.75
At most 2	10.20	4.89
At most 3	1.50	3.77

Table 5: Coefficients Estimates of VECM for Model 1 Housing Loans (*LHL*)

Parameter Estimated	LHL	LCPI	LHPI	LSAV	ECT
Elasticities (*t*-statistics)	1.00	-0.62 (-0.69)	-0.09 (-0.61)	-0.57 (-2.29)**	-0.38 (-3.32)

Table 6: Coefficients Estimates of VECM for Model 2 (*LCL*)

Parameter Estimated	LCL	LCPI	LHPI	LSAV	ECT
Elasticities	1.00	-3.82	0.49	0.04	-0.22

(*t*-statistics)	(-3.91)***	(2.70)***	(0.14)	(-2.89)***

Table 5 shows that there is a significant positive relationship between household savings (LSAV) and housing loan (LHL) in the long run. This finding is consistent with existing literature such as Burghof and Schairer (2017) and Agarwal et al. (2020).

Table 6 shows that there is a significant positive relationship between consumer prices (LCPI) and consumption loans (LCL) in the long run. This finding is consistent with existing literature such as Nizar (2015) and Sahiq et al. (2018). Consistent with Khan et al. (2016) and Tai (2016), house prices (LHPI) is found to have a negative and significant long run relationship with consumption loans (LCL). As shown in Table 6. 1% increase in LHPI will cause households in Malaysia to accumulate less consumption loans by 0.49%.

The Granger Causality test results are shown in Tables 7 for Model 1 and Table 8 for Model 2. For Model 1, at 10% level of significance, household savings (LSAV) is found to granger cause LCPI in the short run. For Model 2, at 5% level, LCPI granger cause LCL in the short run. In addition, LCL granger cause LHPI in the short run.

Table 7 Granger Causality Test for Housing Loans (*LHL*)

	χ^2 statistics			
Dependent Variables	ΔLHL	ΔLCPI	ΔLHPI	ΔLSAV
ΔLHL		0.07	1.18	1.24
ΔLCPI	0.10		0.08	3.20*
ΔLHPI	0.50	0.66		0.00
ΔLSAV	2.01	2.46	2.01	

Notes: ***, ** and * denotes rejection of the null hypothesis at the 1%, 5% and 10% level respectively.

Table 8 Granger Causality Test for Consumption Loans (*LCL*)

	χ^2-statistics			
Dependent Variables	ΔLCL	ΔLCPI	ΔLHPI	ΔLSAV
ΔLCL		6.25**	2.10	1.58
ΔLCPI	0.44		0.04	0.05

ΔLHPI	4.20**	2.09		0.07
ΔLSAV	0.22	0.26	0.004	

Notes: ***, ** and * denotes rejection of the null hypothesis at the 1%, 5% and 10% level respectively.

Sahiq et al. (2018) in their paper cited Brooks (2008) that Jarque-Bera test is being used to determine the distribution of the error term, Breusch-Godfrey LM Test to test the existence of serial correlation and White test is to test whether the variance is constant or not. Findings from the model are preferred and considered reliable if their error term is normally distributed, the models have no serial correlation and the variance is constant.

The diagnostic tests results are reported in Table 9. Both Model 1 and 2 are normally distributed and the Breusch-Godfrey Serial Correlation LM Test also indicates no serial correlation. The White and ARCH tests are also not significant, implying that the variance for both models are constant. Finally, the CUSUM line for both models lies within the 5% significance line, an indication of dynamically stable models.

Table 9: Results for Diagnostic Tests

Diagnostic Tests	F-statistics (p-value)	
	Model 1	Model 2
Jarque-Bera Normality Test	0.89 (0.64)	0.69 (0.71)
Breusch-Godfrey Serial Correlation LM Test	1.46 (0.23)	2.56 (0.12)
Heteroskedasticity Test: White	1.11 (0.17)	1.42 (0.17)
Heteroskedasticity Test: ARCH(1)	1.43 (0.24)	0.61 (0.44)

5.   Discussion and Recommendation

There is long run relationship running from household savings, house prices and consumer prices to consumption loans. Household savings positively affect housing loans. Thus, in purchasing a house, borrowers will need to incur a lot of costs such as down-payment and

other necessary fees. The increase in savings of borrowers will increase their capacity to acquire a loan and buy a house. The continued upward trend in house prices demands the borrowers to have a high amount of savings. According to Lin and Lai (2003), increase in house prices will increase the amount of mortgage as well as downpayment costs. Therefore, an increase in savings will make mortgages more accessible for households who want to buy a house.

Since savings is found to have a significant and positive relationship with the demand of housing loans, the government of Malaysia, though the Ministry of Finance and the Economic Planning Unit should encourage savings specifically for the purchase of residential properties in boosting homeownership among Malaysians. Tax exemptions for savings up to a higher quantum than currently available, as well as savings matching schemes, are some of the policies that could be rolled out. Intervention in lowering debt levels of young consumers should be carried out by government agencies such as AKPK, not only when the individual is deemed insolvent. This can save the government a lot of money as compared to current strategies in Home Ownership Campaign 2019 (HOC 2019). Existing strategies in HOC 2019 such as duty stamp exemption costs a lot of money to the government as those who gain are property speculators who have the capital to invest, not the genuine home buyer looking for a roof over their head. With the increased savings earmarked for home purchase through savings policies, the government will not be footing the property purchase costs directly, and there will be more potential first-time property buyers in the market.

However, cost of living has a negative impact on the consumption loans. When the price of goods and services increase, household will need more money to finance their daily consumption. Households may need to borrow money in the form of personal loans or use their credit cards to finance their consumption. Thus, the government, through the Ministry of Domestic Trade and Consumer Affairs, the Ministry of Agriculture, and the Economic Planning Unit should continue the initiative to investigate the food and basic necessities supply chain to reduce leakages and profiteering by businesses. By controlling the cost of living indicators such as food inflation, consumers can save more, and therefore would be able to qualify for housing loans.

House prices also negatively affect consumption loans. An increase in the price of houses reduces the ability of borrowers to take up consumption loans.

In the short run, household savings is found to granger cause consumer prices. Consumer prices affects consumption loans and consumption loans affects house prices in the short run.

6.   Conclusion

Although the topic of factors affecting household debts in Malaysia is not novel in Malaysia, there are limited reference on the relationship between savings to both consumption and housing loans. Therefore, future research could focus on utilising different proxies and consider studying the accumulation of household debts according to income groups.

This study found out that the independent variables impact both household and consumption loans differently. The rise in cost of living increases the accumulation of consumption loans but not housing loans. Conversely, as house prices become more expensive, households in Malaysia can afford less consumption loans. Savings only impact housing loans but not consumption loans.

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