CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Chapter 2 looks at past studies that are relevant to the underlying theories and recent studies on the determinants of household debt as well as the role played by household debt in economic growth and banking crises. This review of related literature also identifies scholarly discoveries that are relevant to the research topic. Finally, this chapter aims to understand the debates and discussions in the area, as well as identify the gaps and remaining critical issues for further research.

2.1.1 Definition of Household Debt

It is important to understand the meaning of household debt in order to identify the reasons for its upsurge. There is no agreed definition on what constitutes household debt even though most researchers have employed the terminologies provided in previous studies. For example, Büyükkarabacak and Valev (2010) conceptualised household credit as a reference to household debt in the literature. The Organisation for Economic Co-operation and Development (OECD) defined household debt as an obligation or liability to pay interest or principal by households arising from borrowing money on credit. Two eminent categories of household debt have thus been formed, namely secured debt and unsecured debt (Girouard et al., 2006). Secured debt refers to debt backed by an underlying asset, such as a mortgage debt. Mortgage debt is collateralised by houses, buildings, or land. Unsecured debt, on the other hand, affirms the condition that a creditor holds no

prerogative over the assets of the defaulting borrower. Credit card, personal loan, and motor vehicle loan are among the debts where the debtor's assets are exempted from creditors' claims.

There is scant data on household debt for all countries. Although each country has its own data, the definitions and measures used are different. Among the sources of reliable data on household debt that cover several countries are BIS and Global Debt Database. This study justifies the operational definition of household debt by referring to the BIS definition. BIS defines household debt as credit to households and non-profit institutions serving households, defined as sectors under the System of National Accounts 2008 (2008 SNA). The 2008 SNA is the latest version of the international statistical standard for national accounts adopted by the United Nations Statistical Commission (UNSC). This study refers to household debt as credit to households based on the BIS database.

2.1.2 **Debt from the Islamic Perspective**

The Arabic term for debt is "*dayn*", which is defined as "an obligation to be fulfilled" (Zakaria et al., 2012). Debt is discouraged in Islam, as reflected in the hadith. It was reported on the authority of 'Amr b. al-'As that the Messenger of Allah SWT (peace be upon him) said, "All the sins of a Shahid (martyr) are forgiven except debt" (from Sahih Muslim, Book 20, Hadith 4649).

Islam emphasises that borrowers should be cautious with debt management. The Prophet SAW taught Muslims to be very careful with debt. It was narrated by Abu Hurairah r.a. that when the body of a dead person was brought to the Prophet SAW for prayers, he would ask whether the person had any debt, and if the answer was no, he would pray. At

another time, another body was brought before him and he asked, “Has he any debt?” If the answer was yes, he would say, “You observe the Prayer for your companion”. However, the Prophet SAW later on observed the funeral prayer for all, but this does not mean that debt can be left unpaid, as explained in another hadith that the soul of the believer is kept hanging by his debt until it is paid. Therefore, it is pertinent for Muslim borrowers to ensure that their debts are settled immediately.

Islam teaches that debt should be settled according to the agreed contract. Contractual debt is termed as “*qard*” in the Quran. The word “*qard*” is derived from the Arabic word “*qirad*”, which means to cut. It is called *qard* as it cuts a certain part of the lender’s property by giving a loan to the borrower. Allah SAW says in surah Al-Baqarah (2:282):

> “*O ye who believe! When ye contract a debt for a fixed term, record it in writing. Let a scribe record it in writing between you in (terms of) equity. No scribe should refuse to write as Allah hath taught him, so let him write, and let him who incurreth the debt dictate, and let him observe his duty to Allah his Lord, and diminish nought thereof. But if he who oweth the debt is of low understanding, or weak, or unable himself to dictate, then let the guardian of his interests dictate in (terms of) equity. And call to witness, from among your men, two witnesses. And if two men are not (at hand) then a man and two women, of such as ye approve as witnesses, so that if one of the two erreth (through forgetfulness) the one of them will remind. And the witnesses must not refuse when they are summoned. Be not averse to writing down (the contract) whether it be small or great, with (record of) the term thereof. That is more equitable in the sight of Allah and surer for testimony, and the best way of avoiding doubt between you; save only in the case when it is actual merchandise which ye transfer among yourselves from hand to hand. In that case it is no sin for you if ye write it not. And have witnesses when ye sell one to another, and let no harm be done to scribe or witness. If ye do (harm*

to them) lo! it is a sin in you. Observe your duty to Allah. Allah is teaching you. And Allah is knower of all things." (Al-Quran, Al-Baqarah 2:282)

The main concern of this divine revelation is to protect the rights of both parties — the lender and the borrower — to avoid conflicts between them in case one of them forgets to repay the debt or that he has received payment. Besides, Allah highlighted the "*qard al-hasan*" debt in the Quran, which is a benevolent loan to help the needy and poor. *Hasan* is an Arabic word which originates from "*ihsan*" and it means kindness. *Hasan* is an act that benefits persons other than those from whom the act originates without any obligation. Perhaps the word *hasan*, understood in the context of *ihsan*, is meant to imply that the transaction is possible only when a person is fully aware that he or she is making a loan to someone in need without expecting anything in return from him, but only in order to please Allah SWT. As Allah SWT says, "If you loan to Allah, a beautiful loan (*qardh al-hassan*), He will double it to your (credit), and He will grant you Forgiveness" (Qur'an, Al-Tagabun:16–17).

In a hadith of the Prophet SAW, Imam Bukhari narrated that a man used to give loans to the people and he would say to his servant, "If the debtor is poor you should forgive him so that perhaps Allah may forgive us". So, when he met Allah, Allah forgave him. The teachings of the Prophet SAW provide a solution to social problems such as poverty and for better economic development.

2.2 Theoretical Review on Economic Growth

One of the thrusts of sustainable development goals (SDGs) is to promote sustained, inclusive, and sustainable economic growth. Understanding the SDGs, policymakers have

introduced various strategies to sustain economic growth, such as contractionary monetary policy, financial liberalisation, and lower interest rates, among others. Financial institutions have adjusted quickly to the goals by actively serving as mediators between households and firms. Hence, credit has increased substantially to fill the gap between the money demand and supply. Credit also enhances the purchasing power of households and supports consumption as a function that increases the aggregate output of a country, thus spurring the economic growth.

The influence of household borrowing on economic growth has received a fascinating interest among researchers in recent years with growing numbers of scholars attending to the issue. The idea of economic growth goes back to Solow's (1956) growth model found in the neoclassical growth theory. It functions as a baseline for many models concentrating on growth analyses. The model focuses on two main variables, namely capital and the size of labour.

$$Y = f(K, L) \tag{2.1}$$

where a single good (output) is produced using two factors of production, namely labour (L) and capital (K).

Later, the endogenous growth model innovated by Romer (1986), Lucas (1988), and Barro and Sala-I-Martin (1997) emphasised that technological innovation and the development of human capital permanently drive economic advancement. Romer (1986) argued that technological progress is endogenous. While Lucas (1988) based his theory mainly on the decisions made by households, Romer (1986) focused on the decisions made by firms. In his 1986 article, Romer presented a fully specified model of long-run growth in which knowledge is assumed to be an input in production that has increasing marginal

productivity. Romer's model can be viewed as an equilibrium model of endogenous technical change in which long-run growth is driven primarily by the accumulation of knowledge by forward-looking profit-maximising agents. Both Romer (1986) and Lucas (1988) contributed to the new or endogenous growth model, which asserts that the rate of technological progress with the help of human capital determines the speed of per capita growth in the long term.

Since the model incorporates the idea of diminishing returns, Mankiw et al. (1992) extended the model by adding human resource, physical asset, and technological change, which are defined as exogenous sources of long-run growth.

$$Y_t = K_t^{\alpha}(A_t\, L_t)^{1-\alpha} \tag{2.2}$$

where *t* is at time, $0 < \alpha < 1$ is the elasticity of output with respect to capital K_t, and *Y* represents income growth. A_t refers to labour-augmenting technology or "knowledge", thus $A_t\, L_t$ represents effective labour.

The existing literature provides extensive theoretical and empirical research models that associate housheold debt with growth. However, studies on the link between household debt and economic growth are scarce albeit gaining importance. One such study by Cecchetti et al. (2011) and Gómez-Puig and Sosvilla-Rivero (2017) considered household debt in the growth model following the Barro and Sala-I-Martin (1997), there is need for lagged income growth. Hence the model includes y_{t-1} and all variables are in logarithm forms.

$$y_{i,t} = \gamma y_{i,t-1} + \beta_j X_{i,t} + \varepsilon_t \tag{2.3}$$

where y_{t-1} is the one-period lagged real GDP per capita growth for country *i* at time *t* with γ to capture the conditional convergence of the economy to its steady state. β_j are the parameters to be estimated and X_{it} is a set of explanatory regressors of the independent variables, at time *t* for country *i*, ε_{it} represents the error term and *i* represents the country-specific effect.

Several explanations have been suggested on how household debt could pave the way for economic growth. Firstly, households borrow to fund their consumption when there are unexpected changes in income and expenditure (Ando & Modigliani, 1963). In particular, household debt funds consumption and boosts the aggregate demand, thus promoting economic growth. In addition, as projected earnings are expected to grow, it thus positively relates to debt accumulation. Temporary income shocks may also motivate this relationship to finance consumption (Mian et al., 2015). Secondly, households are motivated to acquire debt for the purpose of asset accumulation (Jappelli et al., 2013). The desire to own a home or several properties leads to financial innovation to lure households to take on more loans. As such, debt spurs technological advancement A_t that links to economic growth.

Thirdly, debt accumulation is also motivated by the desire of households to undertake investment for their children through asset net worth (Friedline & Song, 2013). From another perspective, debt is also undertaken to invest in human capital (Han & Mulligan, 2001). College undergraduates, for instance, finance their education with the expectation of gaining higher remunerations. Indirectly, debt enhances human capital development and boosts economic growth. These reasons are therefore inbred in technological changes and human capital improvements.

2.2.1 **Theoretical explanation for debt and economic recession**

While the discussion above shows that household debt spurs growth, others have argued that excessive debt may distort economic growth. As mentioned before, household borrowings are expected to smoothen household spending and increase the aggregate output through consumption. Opportunistic individuals will try to increase their household borrowings to invest in property assets, thus boosting economic growth. Nonetheless, household debt may cause economic severity.

The well-known idea of how debt can cause prolonged economic severity is represented by the debt deflation theory by Irving Fisher (1933). According to this theory, excessive debt accumulation forces the agents to actively deleverage their mortgage debt, resulting in asset price slump. Consequently, an increase in the real debt burden invigorates the vicious cycle of debt deflationary effect. Fisher (1933) claimed that the Great Depression echoed this theory. Myers (1977) extended the model by proposing that debt-overhang distortions have adverse impacts on economic growth. Debt-overhang is defined as the condition in which a defaulting firm has no interest to invest in lucrative future investments due to its large debt burden. Such condition may cause the marginal return that the firms receives from that investment to fall and discourage investment activities. In the financial sector, this phenomenon discourages financial institutions from providing more lending.

Meanwhile, Minsky's (1982, 1986) Financial Instability Hypothesis provides an alternative perspective, positing the economy's interdependency with the financial sector through thick and thin. During the complacent phase of the economy, the agents are prone to actively participate in debt-financed investments and boost the economic boom. The

subsequent high leverage in corporate debt as the main source of investment triggers financial instability, followed by a severe economic recession, which is usually termed as the bust phase. There is enormous empirical evidence supporting the model discussed above, though the model is limited to firms' financial stability and ignores the household balance sheet.

As witnessed in the most recent financial crisis 2008, an overleveraged financial system can cause major crises (Beck & Demirgüç-Kunt, 2009) and prolong the economic slowdown (Mian et al., 2013). Following the financial crisis in 2008, Koo (2011) contended that the inability to repay high household debts could trigger a sluggish economic recovery. Several theoretical models have recently been developed from this standpoint (see Eggertsson & Krugman, 2012; Hall, 2011; Midrigan & Philippon, 2011). Eggertsson and Krugman (2012) modelled a theoretical framework that materialised the works of Fisher (1933), Minsky (1982, 1986), and Koo (2011). The main extension of this model is the assumption that households are heterogeneous agents with impatient debtors and patient creditors whereby some agents are forced to hold debt and are deleveraged by the sudden awareness that assets are overvalued, thereby pressuring the interest rate downwards. Even a zero lower-bound interest rate would not seem as lucrative to borrowers, which is referred to as the Minsky Moment. Hence, the economy may be stuck in a liquidity trap. Similarly, Hall (2011) argued that household borrowing constraints, excess stocks in housing and consumer durables, and asset price slump were sources to the sub-mortgage crisis in the US. These models are supported by Midrigan and Philippon (2011), who focused on home equity borrowing and wage rigidity issues that reduced liquidity and caused serious unemployment. Meanwhile, the influence of household debt and housing during the Great

Recession further motivated substantial theory-based studies, such as those by Eggertsson and Krugman (2012), Guerrieri and Lorenzoni (2017), and Midrigan and Philippon (2011).

2.2.2 Empirical Literature on the Economic Growth Model

This section reviews the empirical literature on household debt and growth based on the latest modified version of the endogenous model which incorporates the role of household debt and other variables including initial income, capital, population growth, human capital, trade openness, and inflation.

2.2.2.1 Household Debt and Economic Growth

Consequent to the 2008 global financial crisis, several studies have examined the effect of household debt on growth. Cecchetti et al. (2011) is among the early studies that revealed the implications of household debt for growth. Between 2011 and 2020, several papers have discussed the direct effect of household debt on growth.

Cecchetti et al. (2011) found a positive relationship between household debt and growth up to certain level of the debt. Subsequently, Bahadir and Valev (2020) found that the effect of household debt on growth varies across countries. Nevertheless, almost all the studies revealed that household debt is detrimental to economic growth. This relationship is applicable to all types of economies, regardless of whether they are advanced or emerging economies. Table 2.1 shows that household debt is detrimental to the economic growth of advanced economies such as the OECD countries (Cecchetti et al., 2011; Puente-Ajovín & Sanso-Navarro, 2015), the US (Kim et al., 2016), and European Union (EU) countries (Sassi & Gasmi, 2014; Gómez-Puig & Sosvilla-Rivero, 2018; Bahadir & Valev, 2017,

2020). The empirical evidence has also been found in developing countries such Malaysia (Koong & Lee, 2016; Khan et al., 2017) and India (Sikarwar et al., 2020), and in panel analysis (Angeles, 2015; Mian et al., 2017; Lombardi et al., 2017; Park et al., 2018; Alter et al., 2018).

Household debt seems to have a negative relationship with growth in the long run. Cecchetti et al. (2011) analysed 18 OECD countries from 1980 to 2010 and found that household debt contributed to positive growth but only up to a certain level. Beyond the threshold of 85% of GDP, the impact was deemed highly ambiguous. The study also examined public and corporate debt and found consistent result with the previous literature. Lombardi et al. (2017) extended the research by including a dataset of 54 economies over 1990 to 2015 and demonstrated that household debt boosted GDP growth and consumption but had a long-run negative impact on consumption when the household debt to GDP ratio exceeded 80%.

On the other spectrum, Kim (2016) investigated the impact of household debt on GDP in the US and the results support the negative long-run relationship between household debt and output and show that household debt has its own business cycle. Mian et al. (2017) confirmed that household debt has its own cycle and partly caused the severe slowdown in growth in a panel dataset of 30 countries from 1960 to 2012. In a wider sample, Park et al. (2018) investigated the impact of household debt and corporate debt on growth in 38 countries and proved that household debt accumulation is associated with higher output growth in the very short run but lower output growth after three years. Similarly, Bahadir and Valev (2017) found evidence for the convergence in the levels of credit to household and business across European countries and proved the convergence is

associated mostly with household debt, limiting its benefit for economic growth. In a recent study that extended on their previous work, Bahadir and Valev (2020) looked at the role of institutions in 29 EU countries from 1995 to 2013 and found the effect was stronger in countries with weak institutions where the fraction of consumer credit in the total household credit was greater. The study shows that the effects of household debt on growth vary across countries, depending on each country's institutional quality.

Other studies done on an individual setting in developing countries found a negative relationship between household debt and growth in the long run. Koong and Lee (2016) investigated the existence of asymmetric cointegration between household credit and economic growth in Malaysia over the sample period of 2000 to 2014 and showed that household debt significantly has its own cycle to return to its long-run equilibrium path following a negative credit shock (i.e., credit crunch) or after a positive credit shock (i.e., credit boom). Correspondingly, Khan et al. (2017) confirmed the existence of a long-run relationship between household debt and GDP in Malaysia based on the Johansen cointegration test. Moreover, the study in India by Sikarwar et al. (2019) confirmed the negative effect of household debt on growth.

Puente-Ajovín and Sanso-Navarro (2015) investigated the effect of three types of debt on growth: government debt, non-financial corporate debt, and household debt, for 16 OECD countries from 1980 to 2009. The findings support the results of Cecchetti et al. (2011). Sassi and Gasmi (2014) assessed empirically the effects of the household credit market on the economic growth of 27 EU countries and found a negative link. The study also assessed the role of enterprise credit market growth and found it to be positive. Similarly, Angeles (2015) in a study on 34 countries proved that credit to firms has a

positive effect on growth, while the higher occurrences of crises are mainly due to credit to households. Also, Gómez-Puig and Sosvilla-Rivero (2018) analysed the effects of different sources of nonfinancial debt (household, corporate, and government) accumulation on economic growth in 10 euro-area countries during the 1980 to 2015 period. The study found that a reduction in household debt in those countries may be crucial to stimulate consumption and growth.

2.2.2.2 Capital

Capital input denotes investment, referring to asset accumulation for wealth increment and the further creation of wealth (Ugochukwu & Chinyere, 2013). Domestic saving is the most important source of investment funds (Mason et al., 1988). According to Keynes (1936), higher savings via increased investments stimulate economic growth. The proposed development models bolstered this approach (see Domar, 1946; Harrod, 1939; Solow, 1956). Domestic saving finances aggregate investments with labour augmenting technological changes, which are exogenous in defining the equilibrium growth of per capita output (Solow, 1956; Swan, 1956). A positive influence of gross saving on economic growth was also observed (see Cecchetti et al., 2011; Gómez-Puig & Sosvilla-Rivero, 2017). Thus, investment is an important variable for economic growth.

2.2.2.3 Population growth

Population growth as a proxy for labor, plays an important role as a control variable (Checherita et al., 2012; Woo & Kumar, 2015). An early study by Kuznets (1967) concluded that aggregate population growth has no significant effect (or perhaps even some

positive effect) on economic growth (Heady & Hodeg, 2009). However, the Malthusian Theory of Population argues that the pressure of an increasing population on food supply will destroy the wellbeing and cause life misery. Moreover, a growing population will lead to a limited supply of land, thus lowering the standard of living (Dao, 2012). Hence, recent studies concluded that population growth negatively affects economic growth (Checherita et al., 2012; Woo & Kumar, 2015).

2.2.2.4 Human Capital

Labour input or human capital is viewed as an important variable that denotes productivity because the expansion of human capital reflects more innovative activities, generating more ideas that will likely attract investors' interest (Grossman & Helpman, 1991). Solow (1956) argued that the level of output can be influenced by years of education, represented by the numbers of years spent at school. Barro and Lee (2013) used the average years of secondary schooling among 15 year-olds and older population in the initial year as a proxy for human capital. Barro and Lee (1994) examined the sources of economic growth for 116 countries from 1965 to 1985 and confirmed that human capital, based on the secondary schooling years of females and males, is positively related to growth. Extensive research has been done following the studies of Barro and Lee (1994, 2013). However, the results contradict to that of Radelet et al. (2001), which found a positive effect of human capital on growth. Nevertheless, the results are consistent with the empirical evidence documented by Barro (2003) and Cervellati and Sunde (2011), which proved that human capital proxied by life expectancy decreases growth. They explained that the improvements in life expectancy among an ageing population with a high prevalence of health problems

consequently lead to low productivity and reduction in a country's growth. In a recent study, human capital proxied by life expectancy at birth was found to have a positive effect on growth (Gomez et al., 2018). Thus, the impact on economic growth whether positive or negative depends on the different measures used for human capital

2.2.2.5 Trade openness

Trade openness is an important factor for economic growth. It affects economic growth, particularly for an open economy. Open economies precede trade openness arising from international market activities, such as an increases in exports and imports. Seghezza and Baldwin (2008) posited that trade openness boosts labour productivity through knowledge transfer. In addition, it allows the participating countries to acquire advanced technologies from leading nations. Hence, output and employment are maximised by international trade among different participating countries (Salvatore, 2010). Moreover, in an open economy, there are exportation and importation of goods between countries. It is therefore expected that trade openness facilitates economic growth through the aggregate consumption and output. Furthermore, investment growth is encouraged by trade openness (Yanikkaya, 2003). Theoretically, Krueger (1998) asserted the positive influence of trade openness on growth. In fact, the positive effect of trade openness on growth has been empirically proven (see Barro & Sala-i-Martin, 1997; Frankel & Romer, 1992). Meanwhile, Were (2015) showed that trade exerts a positive and significant effect on economic growth in developed and developing countries, but its effect is not significant for the least developed countries which largely include African countries. In contrast, Ulasan (2014) showed that lower trade barriers are not associated with higher growth in a cross-country

analysis. In recent studies, Alam and Sumon (2019) and Raghutla (2020) found a positive influence of trade on growth in Asian countries and emerging countries, respectively.

2.2.2.6 Inflation

Inflation has also been debated as an essential macroeconomic indicator of economic growth. Rising inflation means an increased opportunity cost of holding cash, thereby decreasing the demand for money (Sidrauski, 1967). Moreover, allocating more resources to finance inflating prices is a cost for firms (Gokal & Hanif, 2004). Inflation raises uncertainty about the future profitability of investment projects. Firms and households tend to perform poorly due to conservative investment strategies (Barro, 2013). Inefficient resource allocation also squeezes profitable investments and causes an economic slowdown (Fisher, 1993). Barro (2013) stated that an increase in the average inflation results in a reduction in the annual growth rate of real GDP per capita. Nevertheless, Brito and Bystedt (2010) found that a lower inflation rate has an insignificant influence on growth in emerging markets. Meanwhile, some studies found non-linearity in the inflation-growth relationship (Baglan & Yoldas, 2014; Balcilar et al., 2017). Due to the mixed findings of the previous studies, inflation is included in the growth model of this study.

2.2.3 Literature Gap for RO1 and RO2

Table 2.1 presents a summary of the studies on the effect of household debt on growth for the period of 2011 to 2020. A review of the extant literature revealed three gaps. First, the literature works discussed above examined the effect of household debt on growth by using individual countries and panel dataset. Mian et al. (2017) conducted a study on 30

countries and argued that the BIS credit series, drawn from individual countries' sectorial financial accounts (flow of funds), are fairly comparable across countries. Their study covered 68 percent of countries listed in the scope of this study. Also, Park et al. (2018) extended the study on the 38 countries based on the BIS database which covered 88 percent of countries in this study. Hence, the study reconfirmed the link between household debt and growth based on the dataset obtained from BIS and covered a broader range compared to the studies conducted by Mian et al. (2017) on 30 countries and Park et al. (2018).

Secondly, previous research works agreed on the negative effect of household debt on growth. Nonetheless, limited empirical research traces the role of institutional quality in the household debt-growth nexus albeit a plethora of discussions have been held on the effect of institutional quality, particularly in boosting growth. The few exceptions to previous studies include the work of Bahadir and Valev (2020) which focused on the EU countries which represents only 46.5 percent of countries included in this study. Hence, the study cover broader sample which covers advanced and emerging economies. The intuitions behind the role of institutional quality in encouraging household debt to lead to economic growth can be narrated in some justifications. Low institutional quality, such as government instability, high corruption, or too much loosening of the regulations, may not able to cope with financial market instability, which then influences the negative effect of household debt on growth. However, the effect of household debt can be buffered with strict regulations in nations with high institutional quality. In fact, when institutions and policy are most effective, the impact of a rising debt-to-GDP ratio on growth appears to be positive in the medium term but turns negative when institutions and policy are the least

effective, regardless of household debt levels (IMF, 2017). Thus, the existing study attests possible gaps in discussing this matter.

Thirdly, the bias-corrected LSDV was scarcely used in previous studies. While GMM is commonly used, there is a possibility of biased results due to the high instrumental variables in small cross-sections. Hence, the bias-corrected LSDV is deemed suitable for this study alongside the GMM for robustness test. Further discussion on the advantage of LSDVC is discussed in section 3.4.3.

Thus, this study fills the gaps in the existing literature by examining the household debt-growth model and discussing the role of institutional factors that may curtail the adverse effect of household debt on growth by employing a bias-corrected LSDV for the investigated countries.

Table 2.1: Summary of studies on household debt and economic growth

	Author	Method	Sample	Household debt	Institutions
1.	Cecchetti et al. (2011)	LSDV	18 OECD countries	negative	nil
2.	Sassi & Gasmi (2014)	OLS, IV, GMM	27 EU	negative	nil
3.	Angeles (2015)	GMM	34 countries BIS	negative	nil
4.	Puente-Ajovín & Sanso-Navarro (2015)	Granger	16 OECD	negative	nil
5.	Kim (2016)	VECM	US	negative	nil
6.	Koong & Lee (2016)	Cointegration	Malaysia	negative	nil
7.	Mian et al. (2017)	OLS, GMM	30 countries BIS	negative	nil
8.	Lombardi et al. (2017)	CS-ARDL	55 countries	negative	Legal protection of creditors
9.	Bahadir & Valev (2017)	GMM	30 EU	negative	ICRG
10.	Khan, Abdullah, & Samsudin (2017)	Toda-Yamamoto non-causality test	Malaysia	negative in the long run	nil
11.	Gómez-Puig & Sosvilla-Rivero (2018)	Threshold time series	10 EMU countries	negative	nil
12.	Park et al. (2018)	OLS	38 countries BIS	negative	nil
13.	Sikarwar, Goyal & Mathur (2020)	OLS	India	negative	nil
14.	Bahadir & Valev (2020)	GMM	29 EU	negative	ICRG

2.2.5 The Role of Institutional Quality in the Relationship between Household Debt and Economic Growth

Demirgüç-Kunt and Detragiache (1999) argued that financial innovation such as financial liberalisation or deregulation increases the probability that a banking crisis will erupt. Nevertheless, the effect of financial liberalisation on the fragility of the banking sector is weaker when the institutional quality is strong. According to Acemoglu et al. (2003), many banking crises are caused by weak political and economic institutions and lead to macro-economic turmoil (Demirgüç-Kunt & Detragiache, 1998). This event explains the importance of institutional quality in strengthening economic performance in the existence of debt.

A famous theory highlights the importance of institutional quality, which can be traced to the study of Levine (1998), who emphasised the importance of the legal environment for economic advancement and its impact on economic growth. Various studies have demonstrated the link between economic growth and institutional quality. For example, North (1990) highlighted the influence of institutional change on economic performance. Other prominent contributions that support the same institutional view include the studies of Hall and Jones (1999) and Acemoglu et al. (2001), who argued that strong private property rights are associated with higher growth of income per capita. Even more, the "pro-institutions" researchers argue that the proximate factors (such as physical and human capital) are themselves functions of institutional quality (Acemoglu et al., 2014). Khan (1995) confirmed that institutional factors tend to complement the neoclassical growth model. Moreover, Jappelli et al. (2013) asserted that the poor quality of institutional frameworks, such as weak execution of indentures and asymmetrical information, fostered financial crises and caused higher credit defaults. Thus, it can be concluded that

institutional quality plays an important role in influencing economic growth. Indeed, a meta-analysis by Efendic et al. (2011) confirmed the positive effect of institutions on growth.

On a different dimension, the role of institutions in the relationship between financial systems and growth has also received attention in the literature. Some studies found a strong positive correlation between institutional quality and financial growth. Law and Habibullah (2009) extended the Solow growth model and found that well-developed institutional quality and financial market lead to improved GDP per capita in East Asian economies based on estimations using Ordinary Least Square (OLS) and cointegration test. Demetriades and Law (2006) analysed a wider dataset of 72 countries for the period of 1978 to 2000 using the mean group (MG) and pooled mean group (PMG) and highlighted that financial development has greater effects on economic performance for countries with advanced financial systems that are rooted within a sound institutional framework. Using the GMM estimator, Law et al. (2017) found non-linearity between financial development and growth in a panel dataset of 87 countries and proved the role of institutions in reducing the finance curse phenomenon. In a recent study, Khan et al. (2019) investigated the impact of institutional quality on growth using the International Country Risk Guide (ICRG) database, i.e., government stability, democratic accountability, bureaucratic quality, corruption, and law and order by employing 2SLS results. The study found that institutional quality plays an important role in influencing the impact of credit development on growth for 15 emerging and growth-leading economies. In contrast, Gazdar (2015) found that the institutions factor has no significant influence on the relationship between credit and

growth on a sample of MENA countries. However, the study proved that institutional quality plays an important role as an interaction term.

Several studies have extended the household debt-growth model by incorporating institutional quality albeit the number is still small. In a study on 42 heavily indebted poor countries, Asiedu (2003) indicated that institutional factors should be integrated in the growth model for debt-relief programmes to be successful. A study by Lombardi et al. (2017) analysed the financial development index and legal credit protection using the cross-sectional autoregressive distributing lag model on a panel dataset of 54 economies over 1990–2015. Financial development plays a minimal role in reducing the negative impact of higher household debt on growth, and a stronger negative effect of creditor protection tends to cause more drag on the long-run growth at higher levels of household indebtedness. Jappelli et al. (2013) investigated on whether institutional factors (i.e., effective legislation, management on the sharing of information, and regulation on personal bankruptcy) triggered the accumulation of household debt during the subprime loan crisis based on European panel data and confirmed the financial fragility hypothesis in which all institutional factors significantly affected the variable. Coletta et al. (2014) looked at the household debt behaviour in relation to a series of economic sluggishness and highlighted that high-quality bankruptcy laws has a positive impact on household lending and a negative correlation in the longer period for insolvency resolutions among 33 countries over the period of 1995 to 2013. Bahadir and Valev (2020) assessed institutions as part of the household debt model and found it to be negative based on data on 29 EU countries throughout 1995–2013. The study also discovered that the effect is stronger for countries

with weak institutions where the proportion of consumer credit in the total household credit is greater.

Several studies explained that weak institutions may impede growth through the role of financial institutions. Jha (2019) found a positive correlation between the financial liberalisation index and corruption. Reasonably, Blackburn and Forgues-Puccio (2010) found that high levels of corruption cause financial liberalisation to become more attractive but may or may not improve economic development, depending on the good or poor quality of governance. Hence, financial liberalisation in a low-quality institutional setting can cause downside risk to economic expansion. Also, the main causes of the subprime mortgage crisis were lax financial screening and financial lending deregulation (Agarwal et al., 2014; Gerardi et al., 2010; Keys et al., 2010; Zinman, 2015). The intuition behind these threads of empirical evidence is that higher levels of institutional quality encourage household debt to provide better economic growth. Thus, this study aims to examine the role of institutional quality in the link between household debt and growth.

2.3 Theoretical Review: Determinants of Household Debt

What, then, could be the other factors causing an upsurge in household debt? Recently, this question has yielded various clues to economists. Several studies have attempted to understand the factors determining the household debt accumulation. Among the prominent scholars in the field, Fisher (1930) provided evidence of the great effect of consumption on household debt. According to Fisher, insufficient earning to finance consumption causes households to borrow. A leading explanation of why some households may borrow to finance consumer expenditure comes from the life cycle hypothesis (LCH) (Modigliani & Brumberg, 1954), which states that households may, during their earlier years, have a desired or required level of consumption which exceeds their current income. This gap can be financed by consumer borrowing to be repaid out of future income as grounded in Friedman's (1957) permanent income hypothesis (PIH). PIH argues that individuals are driven to make consumption decisions based on their projected earnings prospect rather than their current earning, especially when it is minimal. Accordingly, Ando and Modigliani's (1963) LCH, which is the evolution of the earlier LCH, contends that individuals save at an early age, accumulate wealth during the middle age, and dis-save at retirement days. Households accumulate wealth, particularly owning assets for investment; thus, debt becomes important to finance the budget constraint for wealth as well. LCH and PIH consider debt as an apparatus for a person's stable life cycle consumption and highlight that households make a loan when earnings are lower than expected. Here, household debt can be explained through consumption and income.

In this setting, the present study is grounded on LCH and PIH as a theoretical basis (see Ando & Modigliani, 1963; Friedman, 1957). Nevertheless, limited studies have

suggested the appropriate function of household debt. Some researchers have challenged that it has limitations. The model has been extended with the role of lagged household debt, house price, interest rate, inflation rate, and unemployment. The change in the stock of debt is regressed on its own lagged value (Hatropp, 1992). Ortalo-Magne and Rady (1998) extended the framework by including the variable of housing price in the life cycle theory. Besides, Iacoviello (2008) stated that household debt increases because households want to smoothen their consumption in uncertain conditions rather than due to a significant gap between income and expenditure. Still, the decision of households to spend their money may infer the intention to take up loans. Meanwhile, Tudela and Young (2005) highlighted that the long-run increase in debt relative to income has mainly been associated with the rise in homeownership and the reduction in the level of inflation over the 1990s. From the macro panel view, Rubaszek and Serwa (2014) proposed that the model of household debt is a function of the interest rate spread, unemployment rate, income, and housing price.

Accordingly, based on the review of the theoretical evolution above, household debt (HD) is a function of lagged household debt (HD_{t-1}), income (Y), consumption (CON), interest rate (LIR), unemployment rate (UN), inflation rate (INF), working population (WPOP), and house price (HPIR):

$$HD = f(HD_{t-1}, Y, CON, LIR, UN, INF, WPOP, HPIR) \quad (2.3)$$

2.3.1 Literature on the Contemporary Causes of Household Debt

LCH and PIH have been used to explain the consumer debt behaviour in research on household debt. Particularly, research on the cause of the rapid increase in household debt is due to its repercussion on economic stability, which unexpectedly led to the 2008 global financial crisis. The sharp increase in household debt in the US before the crisis has attracted the attention of economists. Nonetheless, many studies in the US focused on micro-data rather than macroeconomic factors.

Among the early examples, studies in both the US and the UK offered a simulation analysis of the heterogeneity in household behaviour in asset accumulation, which is explained through the life cycle model. An optimising model to elucidate the rise in cumulative debt in the US was advanced by Barnes and Young (2003). They calibrated the life-cycle consumption behaviour within the overlapping generation's framework and used the US household micro-data to understand the household consumption and asset-accumulation behaviour. The study argues that US household indebtedness is associated with consumption smoothing and depends on expectations about income growth, house prices, interest rates, and demographic changes. Tudela and Young (2005) argue that higher interest rates, lower house prices, and lower pension incomes would cause a reduction in household spending and change the equilibrium of debt-income ratio in the UK. In a recent study, Durguner (2020) used the 1998 and 2007 Survey of Consumer Finances data to examine the changes in household debt and borrowing behaviour following a decline in lending standards and suggested that the deregulation practices by financial institutions encouraged households to desire more debt, particularly among credit-constrained households.

Meanwhile, Debelle (2004) conducted a study on the US, Norway, and Netherlands and showed that easing liquidity constraints, lower inflation, and low interest rates led to an increase in household debt. Philbrick and Gustafsson (2010) found that the debt ratio was positively dependent on house price but negatively dependent on interest rates in the long run. In the short run, it was positively dependent on the consumer sentiment index and changes in house prices but negatively dependent on the error term and inflation. Chrystal and Mizen (2005) employed the model of macro vector error correction and found that interest rate spread, inflation, and net labour income drive consumer lending in the long-term UK economy.

Macroeconomic factors have attracted research in several countries such as Australia and Korea since these countries experience high ratios of household debt to GDP. The possible causes of increasing debt among Australian households were studied by Meng et al. (2013) via the Cointegrated Vector Autoregression (CVAR) model. The study found that the level of household borrowing was significantly influenced by the interest rate. Further, domestic debt was positively affected by the population size in the economy, GDP, and house prices. Hence, the rapid increase in household debt was related closely to high house prices as a result of low interest rates. In the Korean context, data from the study of Kim et al. (2014) revealed that favourable funding conditions by financial institutions along with careless behaviour towards lending among banks and increases in house prices led to an upsurge in domestic indebtedness. All of these factors are accounted for by the stock of household debt accumulation.

Meanwhile, in a study conducted in South Africa, Meniago et al. (2013) claimed that GDP, house price, household consumption, expenditure and savings, and inflation

negatively depended on household income and prime rate, though some variables were found to be insignificant (i.e., house prices, real prime rate, saving) based on the findings of their long term co-integration analysis. In contrast, changes in real debt were shown to negatively depend on GDP and changes in house price based on the short-term analysis via the error correction model (ECM). Nagano and Yeon (2014) investigated the household debt determinants in Japan and found similarity to the US, as the degree of regional banks' market competition and the state of bank management's soundness influenced the aggressiveness of the residential mortgage loan business.

Recently, a considerable amount of research has focused on macro panel data. Rubaszek and Serwa (2014) analysed the determinants of household behaviour by focusing on EU and OECD countries using both simultaneous and empirical estimations. The findings indicate that domestic borrowing was negatively influenced by the interest rate spread. Meanwhile, a positive outcome was observed for the house price index and GDP per capita. In another study, Rashid et al. (2017) analysed the rise in household debt in 55 countries. Among others, income, inflation, and income inequality were found to have a significant impact on debt. However, the study focused on income inequality and disregarded the role of house price. In another examination of 13 OECD countries, Moore and Stockhammer (2018) employed the ECM to study the countries within the timeframe of 1993–2011. The findings of the study show residential prices as one of the macroeconomic factors which had the highest impact on household debt. In the latest findings of a cross-analysis of 33 advanced countries, Coletta et al. (2019) considered both factors of supply and demand. Within 1995–2016, the rise in house price and household

wealth had a positive relationship with household debt. It was further observed that the supply-side variables were more stable in explaining household debt.

In a study done on developing countries, Catherine et al. (2019) analysed eight Asian countries and found income, working age, interest rate, unemployment, inflation, and house price significantly affected household debt. The sign of interest rate varies across the countries. Kusairi et al. (2019) examined macro panel data from the Asia Pacific countries from 1994 to 2016 by focusing on the labour market and found that household consumption, housing price index, and labour force had a long-run positive relationship with household debt. In contrast, the unemployment rate and dependency ratio had a long-run negative relationship with household debt. Based on these previous literature works, in both individual and cross-country analyses, household debt changes were driven by house prices.

2.3.2 Empirical Studies on the Determinants of Household Debt

Based on the review of the empirical research above, this study identifies the possible contemporary factors that cause a rise in household debt, following LCH and PIH.

2.3.2.1 Income

According to Friedman's (1957) permanent income hypothesis (PIH) and Ando and Modigliani's (1963) life cycle model (LCM), households make loans when earnings are lower than expected. Households will save in cases of unexpected increase in income with the intention of allocating to the best possible consumption throughout their lifetime. In addition, purchasing assets through borrowing is made attractive when there is growth in income (Barnes & Young, 2003). Guerrieri and Lorenzoni (2017) argued that households

borrow due to temporary income changes. Thus, GDP per capita as a proxy for income is considered as an important variable in explaining the rapid increase in household debt. The study by Meniago et al. (2013) in the context of Africa discovered that household debt levels in the country were negatively and significantly affected by GDP. Similarly, Kim et al. (2017) studied the effect of income on household debt in the UK. They proposed that increases in income would reduce household debt. A rise in household debt increases the household bankruptcy rate because many households are not able to repay the bank. In contrast, Meng et al. (2013) utilised the Cointegrated Vector Autoregression (CVAR) model and Australia's quarterly data to examine the impact of GDP on household debt. They found that GDP positively explains household debt. Debelle (2004) discovered that small changes in income have more impact on household debt, implying that the household sector is more sensitive to changes in income. This finding is supported by Dynan and Kohn (2007) and Catherine et al. (2016), who applied the rational expectation and found that earnings expectations lead to an increase in household debts. Meanwhile, Wildauer and Stockhammer (2018) stated that changes in fixed income levels such as salary do not affect the aggregate spending rate or household loan rate.

2.3.2.2 Consumption

The fundamental explanation of household debt lies in the life cycle model (LCM). The basic consumption function of LCM emphasises that households will borrow to finance their household consumption needs, both in durables and non-durables. Besides, Iacoviello (2008) stated that household debt increases because households want to smoothen their consumption under uncertain conditions rather than due to a significant gap between

income and expenditure. Still, the decision of households to spend their money may infer the intention to take up loans. Hence, Meniago et al. (2013) included household consumption as part of the household debt model and found that household debt was significantly and positively affected by changes in household consumption. Likewise, Khan et al. (2016) and Kusairi et al. (2019) found a positive relationship between household debt and household consumption. The reason is that households make similar decision choices, implying that households take bank loans to obtain additional financing for consumption and housing expenses.

2.3.2.3 House price

The dynamic change witnessed in the phenomenon of household borrowing may also be attributed to changes in house prices. A postulation concerning house price and household debt has been generated. Wealth accumulation explains the behaviour of household demand for the housing sector, reflecting that the asset has a value which increases over time and increases the value of holding the asset. The LCM posits that households accumulate wealth, particularly owning the asset for investment; thus, debt becomes important to finance the budget constraint for wealth. Households' decision to accumulate assets results in household indebtedness (Miles, 1992). The increase in projected future earning allows individuals to borrow for asset accumulation or asset investment. Thus, house price is a key element of wealth that explains the surge in household debt. The key determinant of household debt is the changes in house price since mortgages have been shown to be a contributor to the growth of household debt (Christelis et al., 2017; Dynan & Kohn, 2007; Mian & Sufi, 2014). There is similar evidence showing

that inflated house prices cause household debt to increase (see Ma'in et al., 2016; Meniago et al., 2013; Wildauer & Stockhammer, 2018; Kim et al.; 2017).

2.3.2.4 Working population

The LCM posits that young households play an important role in household borrowing, assuming that income is negative at the beginning of work life. According to Turinetti and Zhuang (2011), the increase in household debt is explained by the higher percentage of the working age population. Furthermore, the empirical evidence in the study of Krishnan et al. (2015) shows that young individuals have more financial accessibility, particularly in borrowing and lending activities. Hence, it is argued that young individuals are expected to have higher levels of debt during their working age as they anticipate that their income will grow while accumulating wealth during their middle age. Betti et al. (2001) reached a similar conclusion that being indebted is an unavoidable and normal occurrence for young individuals or households. Yilmazer and Devaney (2005) found the likelihood of holding each type of debt and the amount of each type of debt compared to total assets decrease with age. Catherine et al. (2016) found a negative link between the working population and household debt. In contrast, Khan et al. (2016) shows that household debt is positively affected by the working population. Hence, there is a need to consider the working population in the household debt model**.**

2.3.2.5 Lending interest rate

Lending interest rate refers to the cost of holding loans or borrowings from the bank. Hence, lower lending rates cause the demand for household debt to increase. Otherwise, an

increase in the interest rate on loans distracts agents from borrowing. Barnes and Young (2003) argued that the household indebtedness in the US is associated with consumption smoothing and depends on expectations about income growth, house prices, interest rates, and demographic changes. As such, lending interest rate is an important factor in determining the household debt. Following the model, Tudela and Young (2005) proposed a framework for understanding the UK household indebtedness. Similarly, the study contended that changes in household borrowings depend on the interest rate. Most of the studies argued that the lending interest rate plays an essential role in explaining the changes in household debt from the supply side. Extensive empirical findings are in line with the fundamental underpinnings which highlight a negative relationship between interest rate and household debt (Meniago et al., 2013; Meng et al., 2013; Nagano & Yeom, 2014; Rubaszek & Serwa, 2014; Kim et al., 2014). Nevertheless, some studies found a positive link between these two variables (Catherine et al., 2016; Park & lee, 2019). Meanwhile, some other studies found no significant effect of interest rate on household debt (Rashid et al., 2017). Thus, the household debt model considers the lending interest rate as one of the factors affecting household debt.

2.3.2.6 Inflation rate

The long-run increase in debt relative to income has mainly been associated with the rise in homeownership and the reduction in inflation levels during the 1990s (Tudela & Young, 2005). Some studies suggest that low inflation could lead to rising household debt because it may reduce the financial constraints on households (Debelle, 2004). When lower inflation leads to lower interest rates, less income is needed to pay the reduced scheduled

payment, which encourages lending. Hence, lower inflation erodes principal more slowly. Empirically, Meng et al. (2013) found that a lower inflation rate increases the household debt. In contrast, some studies found that inflation has a positive influence on household debt (Meniago et al., 2013; Kim et al. 2014; Catherine et al., 2016). Hence, this study includes inflation rate in the model.

2.3.2.7 Unemployment

Rubaszek and Serwa (2014) included unemployment rate in their study. The sudden shock of losing a job may influence households' decision on debt. Household debt increases following a low rate of unemployment, which is signalled by a good labour market and indicates a strong ability to pay off debt obligations due to the stable household income generation. Hence, unemployment is one of the pivotal factors that determine the changes in household debt. During the economic boom, a lower unemployment rate indicates a high number of households with a stable job, which creates positive incomes and cash flows. Hence, households tend to consume more and use credit to finance budget constraints. Mian and Sufi (2010) found a high correlation between unemployment and household leverage in the US. Berisha and Benzaros (2017) showed a link between increasing household debt and higher rates of unemployment. Meanwhile, Meng et al. (2013), Bethune et al. (2015), and Kusairi et al. (2019) found that unemployment rate negatively explains household debt. In contrast, Catherine et al. (2016) indicated a mixed relationship between unemployment and household debt in various Asian countries.

2.3.3 **Literature Gap for RO3**

This study identified two gaps based on the review of the existing literature. First, very few studies offer empirical evidence from the macro-panel data standpoint and second, scarce empirical evidence is available to prove the role of financial development in stimulating the growth of household debt accumulation, except the findings of Nagano and Yeom (2014) on bank efficiency, Kim et al. (2014) which used financial deposits, and Rashid et al. (2017) which used credit supply. The studies found a positive sign between financial activities and household borrowings, implying that banks' overall attitude towards household loans during the period was highly positive. While numerous studies argued that the rise in household debt is led by the supply side, very few have provided empirical evidence. Particularly, this study uses a comprehensive proxy for the financial development index proposed by Svirydzenka (2016).

Well-functioning financial markets, banks, insurance companies, and other financial intermediaries are important for modern society. Credit availability and debt play a crucial role in this system and thus in the overall economy. A poorly-developed financial system causes problems as the supply and demand of finance cannot or only poorly match. With no possibility of participating in financial markets, many projects could not be realised and it would be difficult to generate wealth. A review of previous empirical studies on the factors determining household debt indicates that empirical research in this area is still lacking. Thus, this study considers the importance of financial development in explaining household borrowings.

Table 2.2: Summary of studies on the determinants of household debt

	Author	Sample	Estimation Method	Other factors	Macroeconomic factors	Income	Demographic	IR	UN	INF	CON	HPI	FD
1	Meniago et al. (2013)	South Africa	CVAR	household saving	Yes	-		-		+	+	+	
2	Meng et al. (2013)	Australia	CVAR	number of new dwelling approved, government incentives		+	+	-	-	-		+	
3	Nagano & Yeom (2014)	Japan	OLS	bank competition (+) and soundness (-)	Yes		+		-			+	-/+
4	Rubaszek & Serwa (2014)	OECD	panel ECM	Individual income uncertainty	Yes	+		-	-			+	
5	Kim, Lee, Son, & Son (2014)	Korea	OLS/2SLS	Supply side	Yes	+		-		+		+	Dep+
6	Khan, Abdullah, Samsudin (2016)	Malaysia	ARDL	dependent variable; mortgage debt (MD) and consumer debt (CD)	Yes	CD + MD +	CD + MD + (WP)	CD + MD -		CD + MD -		MD+	
7	Catherine, Yusof, & Mainal (2016)	8 Asian countries	OLS	individual country	Yes	-	- (WP)	-/+	-	+		+	
8	Rashid et al. (2017)	55 countries	GMM	Income inequality	Yes	-			-				Credit+
9	Moore & Stockhammer (2018)	13 OECD	panel ECM	Income inequality	Yes	-/+	-					+	
10	Coletta, De Bonis, & Piermattei (2019)	33 EU countries	POLS/GMM	origin of the legal system, quality of credit registers, quality of bankruptcy laws and time to resolve insolvencies, life expectancy	Yes	+	+					+	
11	Park & Lee (2019)	28 OECD countries	OLS/GMM	Corporate income tax	Yes	-		+	-			+	

	Author	Sample	Estimation Method	Other factors	Macroeconomic factors	Income	Demographic	IR	UN	INF	CON	HPI	FD
12	Kusairi, Muhamad, Musdholifah & Chang (2019)	Asia-Pacific	MG, PMG	Labor market	Yes	+	-		-		+	+	
13	Durguner (2020)	U.S		lax lending regulation		+	+					+	

Notes: IR = interest rate, UN = unemployment, INF = inflation, CON = consumption, HPI = house price, FD = financial development, Dep = Financial deposits, Credit = Credit supply, CVAR = cointegrated VAR, OLS = Ordinary Least Square, ECM = Error Correction Model, 2SLS = two-stages least squares, ARDL = Autoregressive distributed lag, GMM = generalised method of moments, POLS = pooled OLS, MG = mean group, PMG = pooled MG, WP = working population, EU = European Union, and OECD = The Organisation for Economic Co-operation and Development.

2.3.4 **Financial Development and Household Debt**

Financial development has been recognised as one of the leading factors for economic growth in the related economics literature (Beck & Demirgüç-Kunt, 2009; Demetriades & Law, 2006; Law & Habibullah, 2009; Levine, 1997). Also, financial development has been credited as the most probable cause of rising household debt. Ample evidence signifies the positive influence of economic development on financial advancement. Nevertheless, research focus has shifted towards the tremendous growth of financial lending in hastened financial crises in spite of the presence of a dynamic financial system.

The postulation concerning the effect of financial development on household debt can be explained in a simple way. According to Beck and Demirguc-Kunt (2009), financial institutions and financial markets' efficiency can influence financial globalisation. This also shows the confidence that the households of local people and foreign investors have that financial development provides a supportive environment to attract lending and borrowing activities. In addition, progressive changes in institutional quality such as financial deregulation and less government control provide a competitive environment for financial institutions. Hence, the competing financial institutions actively seek new market penetrations, thus supporting the increase in debt at the household level (Fatoki, 2015).

Notable literature works found a relationship between the huge accumulation of household debt and the financial system. The rapid increase in household debt is significantly related to bank' efficiency as well as growth in financial institutions' deposit and credit supply (Nagano & Yeom; Kim et al., 2014; Rashid, et al., 2017). Sufi (2012) analysed US household debt during the period of 2000 to 2007 and posited that the sharp increase was primarily driven by an expansion in the credit supply. The author further

argued that financial innovation led to a sharp increase in debt levels that were unaccompanied by improvements in borrowers' permanent income or productivity.

Several studies have emphasised the indirect role of financial development in promoting credit growth. The association of increased household debt with financial development in terms of differences in financial innovation, financial depth, and inclusion is enlightened in several studies. Goodhart and Hofmann (2008) found that credit and house prices were influenced by the development of broad money. The correlation was stronger in the sample period of 1985 to 2006 due to financial liberalisation in industrialised countries. Stockhammer and Wildauer (2018) tested the financial deregulation argument based on a panel dataset of 11 OECD countries for the period of 1980 to 2011 and found evidence that it boosted credit supply. Svirydzenka (2016) demonstrated a high correlation between debt level and the financial development index in European countries. Campbell and Hercowitz (2005) suggested that financial development preceded the tremendous increase in household debt at the end of 1982. Boz and Mendoza (2014) used households in a small economy as a sample to demonstrate that financial innovation explained for the huge increase in household debt and land prices.

Another study validated that financial deregulation, relaxing financial constraints, and financial innovation significantly eased the household sector's access to credit (Campbell, 2006; Campbell & Hercowitz, 2005; Debelle, 2004). For example, Debelle (2004) suggested that easing the liquidity constraint is the most significant factor for the rapid increase in household debt. This is especially true since a lower liquidity constraint eases the burden of borrowers to own houses, particularly among lower-income earners (Jappelli & Pagano, 1989). Furthermore, Campbell and Hercowitz (2005) found that

relaxing the restriction on financial lending to households caused debt growth and triggered the volatility of outputs to fall significantly. In Canada, Turdaliev and Zhang (2019) revealed that household debt fluctuations are mainly driven by housing demand and banking sector shocks and highlighted that leveraged households are more vulnerable to contractionary monetary policy shock.

To date, scarce research has focused on the association between financial development and household debt changes. Following the discussion on the different aspects of financial development such as financial innovation, financial liberalisation, financial institutions, and financial policy, this study is interested to examine the combination of those financial development aspects, which can be explained by the financial development index, and its influence on the increase in household debt. This study considers financial development as an important factor that has a pivotal impact on household debt. Thus, the study extends on the literature works by analysing the effect of financial development on household debt.

2.4 Review of Selected Literature Works on Systemic Banking Crises

Numerous studies have focused on early warning models with various approaches. A seminal study in this area was the effort of Kaminsky and Reinhart (1996), which used the signalling approach to examine 76 currency crises and 26 banking calamities among five industrial and 15 developing countries from 1970 to 1995. Their work was extended to banking, financial, and economic crises. Kaminsky et al. (1998) introduced several indicators and used the non-parametric signalling approach, known as "the evolution of a number of economic variables". According to this approach, a possible currency crisis is signalled when a related variable deviates from the normal level beyond a certain threshold value, usually within a specific time period. This work successfully established 105 indicators for the early warning system of currency crises.

Later, Kaminsky and Reinhart (1999), using the univariate signalling approach, found that currency crises deepened banking crises. Using the multivariate logit model in a large sample of developing and developed nations, Demirgüç-Kunt and Detragiache (1998) attempted to identify the possible variable as early warning signal for banking crises for the period of 1980–1994. The study listed the basic explanatory variables, which consist of macroeconomic variables, financial variables, and institutional factors. The leading indicators of banking crises are: I) macroeconomic variables (real GDP growth, change in terms of trade, nominal depreciation, real interest rate, inflation, and fiscal surplus); II) financial variables (financial contagion, private credit, and growth of real private credit); and III) institutional factors (e.g., deposit insurance and legal protection).

Bussiere and Fratzscher (2006) employed the multinomial logit regression-based EWS by differentiating three states of the economy, namely, tranquil, crisis, and post-crisis

periods. Using similar selected indicators from macroeconomic, financial, and institutional variables of past EWS studies for a set of 20 open-emerging markets, the study proved that their multinomial logit model was comparable and robust for the period covered, which was 1993 to 2001. Meanwhile, Davis and Karim (2008) compared the EWS for banking crises by referring to Demirgüç-Kunt and Detragiache (1998) and Caprio and Klingebiel (2003) and the dataset of independent variables were derived from macroeconomic and financial variables.

Numerous studies have suggested credit growth as among the leading indicators of crises. For example, among the pioneer studies on EWS, Frankel and Rose (1996) and Kaminsky et al. (1998) found that domestic credit growth was associated with currency crises along with misalignments in real exchange rate and depletion of international reserves. Kaminsky and Reinhart (1999) also found that the rapid increase in credit and the monetary aggregates are associated with currency and banking crises. Demirgüç-Kunt and Detragiache (1998) included private credit as one of the financial variables that indicate systemic banking crises and found a positive link between private credit growth and crises.

In a recent study, Bańbuła and Pietrzak (2017) established the EWM using a number of potential variables from the early 1970s until 2014. The authors confirmed that credit growth, property prices, and growth in the contribution of the financial sector to GDP generated the most accurate signals for banking crises. Joy et al. (2017) employed the method of classification and regression tree combined with random forest extension to predict currency and banking crises among 36 developed nations for the period of 1970–2010. The study demonstrated that the banking sector's inverted or shallow curve and low interest rate spreads were the most significant short-run indicators of banking crises, while

overvalued exchange rates and high domestic short-run rates were currency crises' strongest predictors. Apart from that, a significant unconditioned signal for crises was observed when the model included the domestic credit gap.

Geršl and Jašová (2017) conducted an empirical study on credit-based variables and their function as an EWS for banking crises in developing nations. The results highlighted that the most influential elements of an early warning indicator are changes in the credit-to-GDP ratio and nominal credit growth. In another related study, Vašíček et al. (2017) used the Bayesian model averaged in 25 OECD countries to examine several variables that have a potential predictive power for financial stress. They proved that in at least three of the countries, prominent indicators of financial stress include decreasing household debt and unemployment, falling home prices, and increasing government bond and consumption.

2.4.1 **Household Debt and Banking Crises**

There are several noticeable studies that examined rising household debt as a leading indicator for crises (see Babecký et al., 2012, 2013; Angeles, 2015; Bańbuła & Pietrzak 2017). The previous work by Babecký et al. (2012) found that the total household debt helps predict banking crises. Babecký et al. (2013) argued that rising household debt during an economic expansion anticipates banking crises, which consequently lead to currency crises. Similarly, based on 34 countries, Angela (2015) found that household debt significantly predicts banking crises. Bańbuła and Pietrzak (2017) asserted that the credit boom prior to the financial crisis 2008 was mainly due to rising household debt, based on their data on Sweden. Their study was focused on the EWS for non-crises countries.

Angeles (2015) analysed the role of household credit in financial crises in 39 countries and proved that most of the crises were mainly caused by credit to households.

While only a few findings have shown the link between household debt and banking crises, many studies have proven empirically that household debt can trigger financial crises, causing economic slowdown and recession. Ample empirical evidence has been collected and the latest findings matched the facts presented in the above section. A recent study by Park et al. (2018), which examined in depth the recessions in both advanced and emerging economies and the impact in reducing consumption and investment, confirmed that household debt predicts future crises. Hence, a higher household debt to GDP ratio is expected to increase the probability of banking crises. Additionally, Garber et al. (2019) demonstrated that the gravest recession in Brazil's history from 2014 to 2016 was preceded by a substantial increase in household debt from 2003 to 2014. Meanwhile, Bezemer and Zhang (2019) investigated 51 economies and demonstrated that the rise in household mortgage debt in the five years before the 2007 global financial crisis was associated with a 2.1% average growth loss in the five years after the crisis.

In other strands of literature, Gärtner (2013) analysed a dataset of 48 US states from the years 1929 to 1939 and confirmed that household debt overhang, such as a higher debt to income ratio, slowed down the economic recovery. In addition, Schularick and Taylor (2012) used a long historical panel data of 14 developed countries from 1870 to 2008 and found a similar correlation, that is, increased household leverage was a powerful predictor of financial crises in post-war crises. Jordà et al. (2013) proved that debt accumulation caused costlier financial crises than normal recessions since the calamities were not only on output but also on investments, lending, interest rate, and inflation. Jordà et al. (2015)

extended the dataset to 17 advanced economies and emphasised that the sharp increase in housing lending before 2008 caused a deeper economic downturn and sluggish recovery. The study extended by scrutinising the function of credit lending and interest rate, and it proved that both played significant roles in house price bubbles. Cecchetti and Kharroubi (2015) demonstrated that resource allocation was distorted by credit booms, especially in the construction sector, leading to a slowdown in productivity growth.

2.4.2 Literature Gap for RO4

Household debt has gained the attention of economic experts and many studies have been done to examine its impact on economic recession. However, few studies have provided empirical evidence on the predictive power of household debt on banking crises. Hence, this study seeks to reconfirm the role of household debt in increasing the probability of banking crises and to contribute to the existing literature on this area.

2.5 Chapter Summary

This chapter has reviewed the concepts, theories, expectation models, and relevant literature on the impact of household debt on economic growth, the determinants of household debt, and the role of household debt in increasing the probability of banking crises. The chapter began with a discussion of eminent underlying theories of growth model and previous studies on the impact of household debt on economic growth. Then, the discussion extended to past studies on institutional quality in the growth model by linking it to household debt. In the subsequent sections, the behaviour of household debt was discussed along with the life cycle and permanent income hypotheses to confirm the

macroeconomic determinants that explain the rapid surge in household debt. Macroeconomic determinants such as GDP per capita, working population, unemployment, interest rate, inflation, household consumption, and house price are among the important explanatory variables identified. In addition, the literature works on the impact of financial development on household debt were also discussed. Next, the chapter explained the role of household debt as one of the indicators in the early warning signal (EWS) for banking crises. This chapter has also highlighted some gaps in the literature which motivated the current study to explore this research area.