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The Effect of Household Debt on the Stability of the Banking System in Vietnam

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ABSTRACT

Purpose: The aim of the study is to examine the impact of household debt on the banking system stability in Vietnam and proposes the policy implications to minimize the impact of household debt on the banking system.

Methods: The study uses the method of autoregression (Vector Autoregression) with micro-level and macro-level data from 20 commercial banks to examine the issue.

Findings: This study assesses the impact of household debt on the banking system in Vietnam and proposes some policy implications to promote positive effects and limit the negative impacts of household debt on the stability of the banking system in Vietnam.

Implications: Policymakers need to perfect the policy framework to reduce the risks of the Vietnamese banking system from excessive household debt.

Originality: This study is the first attempt in the Vietnamese context to examine the impact of family household debt on the Vietnamese banking system.

KEYWORDS

Banking system stability, Household debt, VAR, Vietnam

JEL CLASSIFICATION

C58, G21, G51

I. Introduction

After the global financial crisis in 2008, household debt/GDP in Vietnam increased higher than the average of new countries, even higher than the second largest economy in the world - China. The ratio of household debt/ GDP rapidly grew to 66.2 % in 2020 (higher than in 2019 by 62.18%). (SBV, 2020) The global financial crisis of 2008 started with an unregulated and subprime mortgage crisis in the USA, specifically: mortgage banks did not care about the individual and household capacity to pay. By the end of the 2008 third quarter, more than half of the USA real estate market value are loans, with one-third of this amount being uncollectible accounts. This led to a chain break in the US financial industry which started in mid-September 2008 (Sanders, 2008). Subprime mortgages accounted for 16% of total mortgage loans but made up 50% of defaults (Toàn Thiện, 2009). This shows a strong relationship between the main cause of financial instability and the banking instability system in the US in 2008 was directly related to the loan of individuals and households. The lack of control and subprime mortgage lending by US banks to individuals and households is the cause of instability in the banking system and the financial crisis in the USA. This is one of the important lessons learned in the safety supervision of the financial system in general and the banking system in particular.

Household is an important part of the Vietnamese economy and plays an important essential role in the financial stability of Vietnam. During the development process, the capital used by the household for consumption and business mainly comes from loans from a financial intermediary. Household debt has both positive and

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negative impacts on financial stability. The short-term growth of household debt may be associated with high economic growth and low unemployment; however, this effect can be reversed in about 3-5 years (IMF, 2017). On the positive side, households take out loans to invest in production and business or invest in financial assets (stocks, bonds) or non-financial assets (houses, education, etc.). This can improve the efficiency of the economy, and stimulate economic growth, which helps to enhance the macro-financial stability accordingly. However, in the long run, when households face shocks that negatively affect their income; it affects their ability to repay the principal debt as well as their ability to pay interest on loans to financial intermediaries. This threatens the stability of the financial system, especially the banking system. In recent years, household debt in Vietnam has grown dramatically, in 2013 household loans represented 28% of the total loans of the four largest state banks in Vietnam, and by 2020 this rate had reached 46%. The household's rising debt balance has increased the size of the group debt size compared to GDP size, from 25% to 61%. This suggests that the optimistic psychology of the household's future income is willing to trade, borrowing more for spending at the moment. The results have raised an increasing concern about household debt repayment. Moreover, if consumption growth is not associated with economic growth, the probability of household default will increase, which affects financial intermediaries and causes financial instability. The situation of household debt development in recent years shows that management agencies need to be more concerned with the relationship between household loans and Vietnamese financial stability. The study topic on the impact of household debt and the stability of the banking system has received interest from many scholars such as (Cynamon & Fazzari, 2008), (Kim, 2016), (Murugasu Chang Wen Huei Tng Boon Hwa et al., n.d.), (Lombardi et al., 2017), among others. However, these researches are mainly conducted in developed economies such as the U.S. or countries that use the euro currency. The article analyzes the impact of household debt on the stability of the banking system in Vietnam during 2010-2020. Research results show that when there is a sudden rise in household debt, the minimum capital adequacy ratio gradually grows.

The rest of the paper is organized as follows: section two deals with a review of empirical studies and introduces the theoretical framework; section three discusses the methodology of the study; section four is on the discussion of empirical results; section five summarizes and concludes the entire study.

II. Review of Literature

Empirical Studies

Many articles which already researched this topic have received much interest from scholars. Cynamon and Fazzari, (2008) shows that the expansion of consumption is accompanied by a significant increase in household debt in the US. According to the authors, household debt can provide resources to stimulate economic growth in the short term, but when the accumulation of household debt becomes excessive, it will negatively affect consumption and output as well as sow seeds for the economy, long-term financial instability when there are negative shocks to household income. Kim, (2016) shows that in the short term (usually from 1 to 3 years) a positive growth rate of GDP is related to an increase in household debt. However, in the long term (from 3 to 5 years) when debt accumulation becomes excessive, household debt will create a negative impact on GDP. Lee Wen et al., (2019) examining the impact of household balance sheets on private consumption in Malaysia shows that an increase in household debt will negatively affect the stability of the banking system. Lombardi et al., (2017) show that the long-term negative effects of household debt on consumption tend to increase sharply when the ratio of household debt to GDP exceeds

60%. For GDP growth, that negative effect seems to occur when the household debt-to-GDP ratio exceeds 80%.

At the same time, the research shows the results that there are many differences in the level of different impacts of household debt on GDP between countries due to the differences in the characteristics of each country in economic management. In addition, the study also indicates the direct impact of household debt on GDP through the credit risk of household debt when the rate of interest increases or household income declines or indirect effects on GDP, which are related to the reduction of household debt, and household spending. On that basis, the author recommends that central banks monitor the development of household debt by monitoring household spending behavior, especially after economic shocks, in order to promptly adjust the negative impact of household debt on macroeconomic and financial stability. In Vietnam, the subject of this study has not received adequate attention. Therefore, this research is conducted to analyze the impact of household debt financial stability in a developing country such as Vietnam.

Theoretical Framework

Financial stability is the state in which: (i) key organizations in the financial system are capable of performing the financial intermediation without external support, including the government; (ii) the major markets are in good standing, making participants can trade at prices that reflect the intrinsic value and are suitable with fundamental macroeconomic factors; (iii) the financial system operates on market discipline; financial safety nets, payment, clearing and settlement systems operate efficiently.

Financial stability can be seen from two levels: safety and macroprudential. (Mendelsonas, 2014), which is also called the microeconomic approach and macroeconomic approach of financial stability.

Table 1. The macro-and microprudential perspectives compared

	Macroprudential	**Microprudential**
Proximate objective	limit financial system-wide distress	limit distress of individual institutions
Ultimate objective	avoid output (GDP) costs	consumer (investor/depositor) protection
Model of risk	(in part) endogenous	Exogenous
Correlations and common exposures across institutions	important	irrelevant
Calibration of prudential controls	in terms of system-wide distress; top-down	in terms of risks to individual institutions; bottom-up

Source: Borio (2003)

Within this article, the authors explore the aspect of microprudential. Accordingly, the study examines the impacts of household debt on the stability of the banking system.

According to (Alam et al., n.d.-a), the higher household loan may cause a threat to the safety and stability of financial institutions, mainly commercial banks. In most countries, these risks are largely due to the outstanding loans of banks to households. These risks are not only related to direct credit and indirect credit but also to the financing gearing risks of financial institutions.

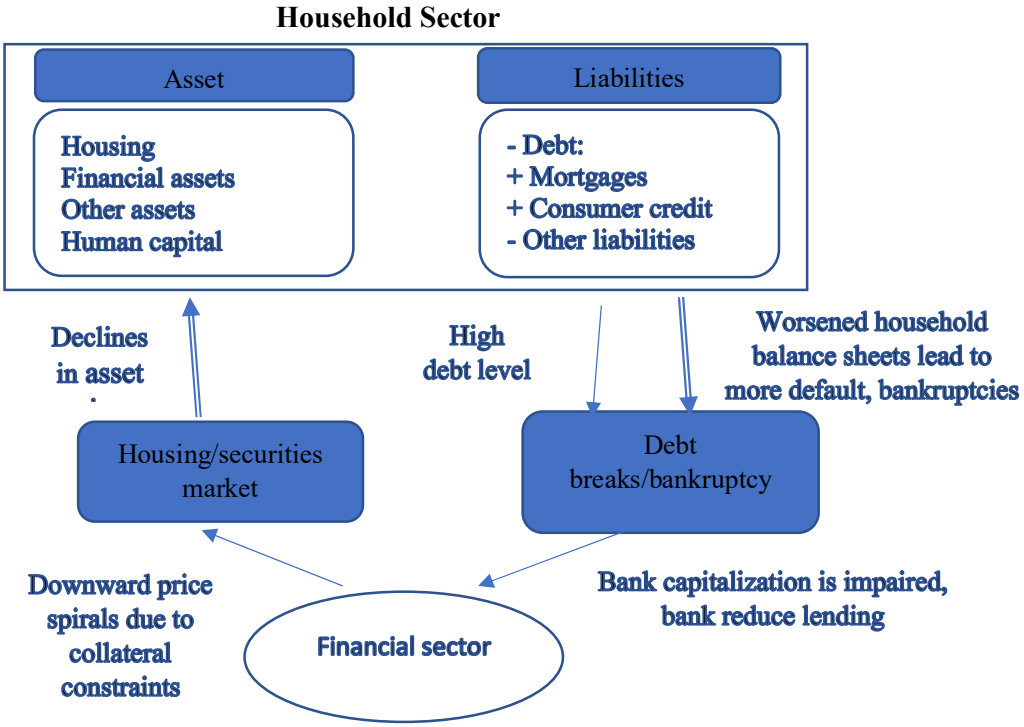

Figure 1. Impact of households debt on financial institutions (Source: Alam et al (n.d.))

The credit risk is directly associated with the likelihood that a household (borrower) will default. Debt breaks occur when the cost of repaying a loan (principal and interest) becomes overwhelming for a household due to interest rate increases or income falls (as in the period of recession). This was observed in Australia. Based on observations of micro-bank data, (Read et al., 2014) indicated that the household in Australia had a high debt expense/income rate and failed to meet their payment obligations of mortgage loans. Moreover, if the interest rate rises higher, the banks will face a higher loss in default because rising interest rates reduce the value of collateral, especially house prices, and the debt recovery value will also be affected. In countries where the legal framework of debt collection and resolution does not allow loans to be fully recovered (e.g. China, Brazil, India, South Korea, and Mexico), the sell-off can lead to a deeper fall in collateral values and potentially higher losses for banks.

Indirect credit risk for household debt arises from household spending cuts. As mentioned above, a decrease in household consumption can affect the output (the income of the economy) and thus increase the overall credit risk. Attempting to reduce the loan burden of highly indebted households can trigger a recession, whereby banks' non-household lending assets (mainly loans to businesses, and organizations) are likely to be affected. The arguments cited above imply that direct and indirect bank risk to households is positively correlated, mortgages seem to underperform as households cut consumption.

The safety and stability of banks may be threatened by financial risks. Some banks finance mortgages by issuing insured bonds, which are held mainly by insurance companies and banks (Zabai, 2017). The network of partnerships can become a channel for the transmission of financial stress since any drop in the insured value of a

bank can quickly affect the value of its assets. To minimize the risk of default and spread, the insured bond needs to have dual recourse, which means the buyer has recourse both against the collateral and the issuer. Invoice securitization removes credit risk from the bank's balance sheets and transfers it to investors. If high leverage is reduced, such transfers can reduce financial stability risks. However, the 2008 global financial crisis indicated that securitization poses risks that need to be understood and managed by investors.

The above discussion suggests that household debt-related indicators can be as good predictors of systemic banking distress as general credit metrics. Credit deviation and the sum of DSR are important indicators (Drehmann & Juselius, 2014); (Jordà et al., 2016). Although credit skewness is often considered the best leading indicator of long-term distress (C. E. V Borio & Drehmann, 2009); (Detken et al., 2014), the composite DSR index provides many warning signals which are close to the onset of a crisis (Drehmann & Juselius, 2014). (Read et al., 2014) showed that Australian households had a high Debt Servicing Ratio (DSR) and failed to meet their mortgage payment obligations.

III. Methodology

The study performs an in-depth analysis of the effects of household debt on the stability of the banking system in Vietnam through the z-score and the bank's adequacy (represented by the capital adequacy ratio minimum and bad debt). The paper uses the VAR autoregression model to decompose the variance and find the impact of household debt on each bank to consider a specific relationship between household debt and stability. The estimation of the impact of household debt on the stability of the banking system is assessed through the VAR model (p) of the form:

$$y_t = \alpha + \sum_{i=1}^{p} A_i\, y_{t-i} + u_t \dots\dots\dots (1)$$

In which: y_t is a vector of variables; p is latency. The variables of the model include Household debt, Effective score (Z-score), and Safety (NPL, CAR).

In this article, the Z-score, NPL, and the minimum capital adequacy ratio are represented by the banking sector stability. These three indicators are commonly used in studies such as Fernández et al (2016), Dwumfour (2017), Alam et al, Goetz (2018), Diaconu and Oanea (2015), Diaconu and Oanea (2014), Carretta et al. (2015).

Household debt is determined by taking the logarithm of household debts. In this paper, the author collects personal credit data from the DSIBs (Domestic Systematically Important Banks)

The Z-score is an indicator that compares the buffer zones (capitalization and returns) with the potential risk (the volatility of returns). The Z-score is defined as follows:

$$z = \frac{k + \mu}{\sigma} \dots\dots\dots\dots\dots\dots\dots\dots (2)$$

In which:

k is the owner's equity in percentage.

μ is the percentage of assets in equity.

σ is the standard deviation of the income on assets as a representative of for-profit fluctuations.

The Z-score coefficient has been widely used by researchers, specifically: Fernández et al (2016) analyze bank stability by 4 indicators including the Z-score, Non - Performing Loan (NPL), the ratio of loan loss provisions to total gross loans (PROV) and standard deviation of personal credit to GDP ratio normalized to the mean (SD_FD). His study (Dwumfour, 2017) uses the Z-score; bank regulatory capital to risk-weighted assets, bank non-performing loans to measure bank stability. Goetz (2018), Diaconu and Oanea (2015), Diaconu & Oanea (2014), Carretta et al (2015) all use the Z-score to measure bank stabilization. Altunbas et al (2010) measures bank risk by either the expected default frequency (EDF) or Z-score. Fratzscher et al

(2016) uses a set of system-averaged Z - scores to measure national banking stability in advanced and emerging markets.

Some other indicators are also proposed by Schinasi (2004) to assess financial soundness at the level of organizations (financial) and groups of financial institutions (called Financial Soundness Indicator), such as capital adequacy ratio (CAR) and Non-Performance Loan (NPL) Capital Adequacy Ratio is determined according to the Basel II Treaty stipulating the adequacy ratio for banks with the following formula:

$$CAR = \frac{C}{RWA + 1\ .5*(K_{OR}+K_{MR})} \dots\dots\dots\dots (3)$$

- C: Capital;
- RWA: Risk-weighted asset;
- K_{OR}: Capital requirements for operating risks;
- K_{MR}: Demand for market risks;

Non - Performing Loan - NPL is calculated by dividing the total debt by the following formula:

$$NPL = \frac{Non-Performin\ \ loan}{Total\ loans} \dots\dots (4)$$

The data at the bank level (consisting of Z-score, capital adequacy ratio, and non-performing Loan - are studied and collected from audited financial statements and annual reports of 20 commercial banks in Vietnam. For data on household debt, due to the restriction on data in commercial banks, the study uses credit data of individuals and households of credit institutions, this data is collected from DSIBs.

IV. Results and Discussion

Table 2 shows statistical descriptions of variables in the research model.

Table 2. Classification of publications in Sub-disciplines of Accounting and Finance

Items	Obs	Mean	Max	Min	Median
car	253	14.04167	54.92	8.02	12.5
log.crd_hh	233	10.03913	13.00024	6.041406	10.12225
NPL	253	2.12468	12.56	0.008306	1.830678
z_score	253	1.39553	7.702591	-0.01191	1.153382

Source: The group of authors synthesizes and calculates

Figure 2 shows the credit of commercial banks, large banks have a relatively higher volume of personal loans than other banks, such as VCB, and CTG. However, some small banks are currently having a strategy to focus on personal lending such as VCB, which has a much higher personal credit than other banks of the same level. The individual credit growth of some banks is higher than the total credit growth. However, this is not a common point for the banks in the sample. The average credit growth of individual credit compared with total credit is also confirmed. Nevertheless, by the year 2019, the average growth of individual credit is higher than total credit growth.

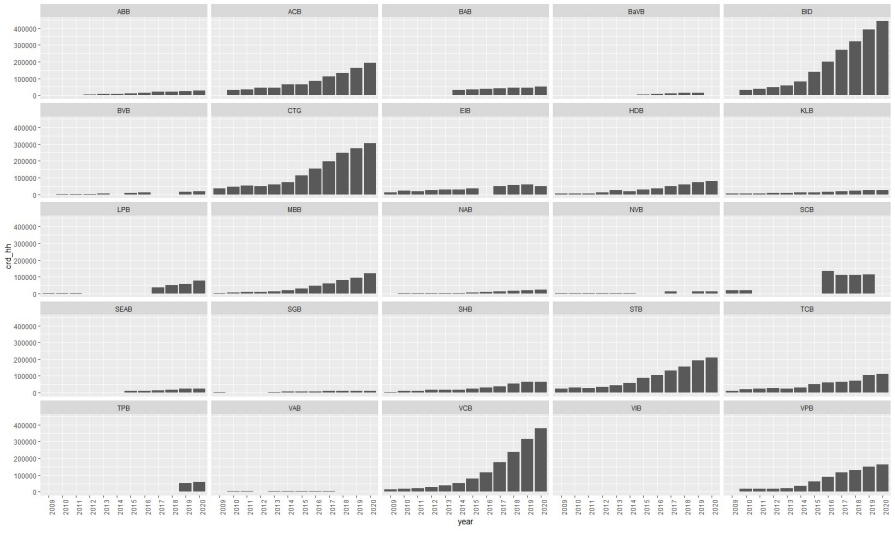

Figure 2. A detailed description of household credit

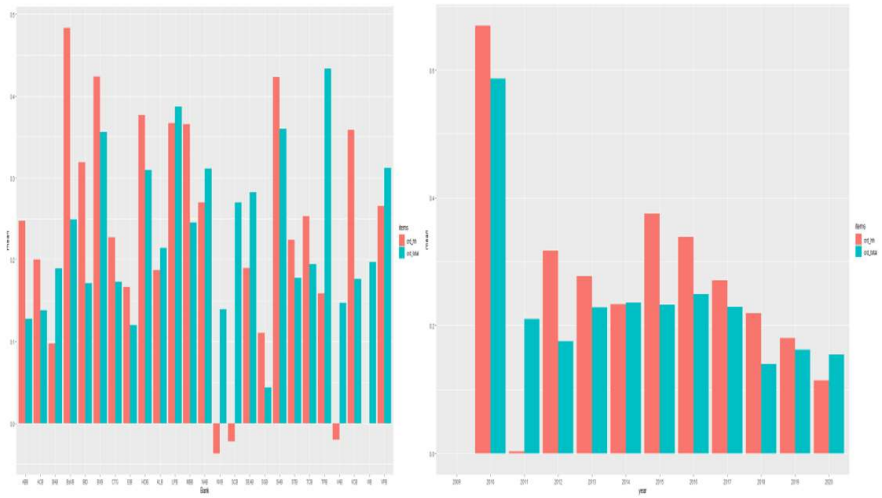

Figure 3. Average individual and total credit growth

According to table 3, the safety ratio (CAR) of the banks in the sample mostly shows a downward trend, with large banks such as VCB, and CTG, so the CAR ratio is near the threshold of safety regulations. Evaluation of the research team on the relationship between personal credit growth (1) and personal credit (long form) (2) with security indicators, performance indicators such as CAR, Z-score, and NPL indicates that these indicators have a low relationship with personal credit in log form, safety and performance indicators have a high but negative correlation.

Table 3. Calculation results of variables

Bank	car_cor_1	z_score_cor_1	npl_cor_1	car_cor_2	z_score_cor_2	npl_cor_2
ABB	0.49	-0.49	0.46	-0.81	0.47	-0.56
ACB	0.12	-0.06	-0.14	-0.21	0.56	-0.43
BAB	-0.03	-0.73	0.37	-0.96	0.48	-0.67
BVB	0.04	0.15	-0.62	0.21	-0.77	0.58

BID	-0.54	0.35	-0.20	-0.07	-0.77	-0.89
BVB	-0.96	-0.44	-0.57	-0.87	-0.88	-0.42
CTG	0.05	-0.47	-0.35	-0.43	-0.75	0.34
EIB	0.89	0.37	-0.60	-0.65	-0.81	0.46
HDB	0.12	-0.34	0.53	-0.68	0.21	-0.02
KLB	0.41	0.43	-0.54	-0.83	-0.93	0.15
LPB	-0.06	0.64	-0.21	-0.61	-0.92	0.01
MBB	-0.11	-0.27	0.14	-0.77	-0.03	-0.55
NVB	0.43	0.45	0.08	-0.55	-0.44	-0.57
SCB	-0.06	0.46	0.50	-0.50	-0.98	-0.63
SeAB	0.14	-0.29	0.12	-0.94	0.96	0.48
SHB	0.53	0.33	0.02	-0.85	-0.64	-0.18
STB	-0.39	-0.11	0.39	0.04	-0.83	0.20
TCB	0.10	-0.05	-0.32	0.71	0.60	-0.81
VCB	0.09	-0.54	0.00	-0.03	0.00	-0.91
VPB	-0.18	-0.13	0.17	-0.53	0.91	0.69

Note: Models (1) represent the relationship between household credit growth with the stability of the banking system, the model (2) made up the log-type relationship between household credit and system stability

The result of the VAR model

Table 4 presents the estimated results from the VAR model. The results show that individual credit has a very minor impact on the performance score variables and stability of banks. Particularly in the VAR model, the stability of banks is affected by the growth of personal credit and bad debt, and the coefficient of impact is in the same direction as expected.

Table 4. The result of the VAR model

	log.crd_hh	**z_score**	**Car**	**NPL**
lag1_log.crd_hh	0.0097	0.1741	-0.0347	0.5666
	-0.1805	-0.6483	-0.433	-0.9978
lag1_z_score	-0.0466	0.8884	-1.4428	-0.4533
	-0.886	-0.5385	-1.2973	-1.2414
lag1_car	-0.7069	0.5893	0.4145	-1.588
	-0.8889	-0.585	-0.4936	-0.9098
lag1_npl	0.1929	-1.509*	-0.0095	0.255
	-2.3949	-0.6993	-0.9762	-1.0459
lag2_log.crd_hh	-0.0184	0.0754	1.8166*	0.276
	-0.2068	-0.2706	-0.8868	-0.4707
lag2_z_score	-0.3266	0.1658	-0.3818	1.8704
	-0.945	-1.3927	-0.7778	-1.9904
lag2_car	0.9919	0.2572	0.0472	1.3413*
	-0.7589	-0.4789	-0.2902	-0.6364
lag2_npl	0.7704	0.8227	-2.0282*	-2.037
	-1.0554	-2.7325	-0.7994	-1.1824
Const	-0.0027	-0.001	0.3065**	0.021
	-0.0093	-0.0664	-0.1122	-0.0902

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$

Source: the result of the running model is from Stata

The response function indicates that when there is a sudden rise in personal credit, the bank's safety ratio gradually runs and this increase began a downward in the 3rd year. The bad debt ratio, impact of this ratio immediately reduces the prudential ratio and it only began in the 3rd year. The effective score does not have a major impact on the security of the bank and according to this model, the score hurts the security of the bank.

The results of table 4 present that when there is a sudden growth in personal credit, the capital adequacy ratio steadily grows and this increase starts to fall in the third year. The results of the study are in agreement with the studies of Cynamon & Fazzari (2008), Kim (2016), Lombardi et al (2017). This is consistent with reality in Vietnam, a rise in personal credit is synonymous with investment and consumption, which contributes to an increase in capital from the economy to the bank, helping to increase the capital adequacy ratio. As for the bad debt ratio, the impact of this ratio immediately reduces the capital adequacy ratio, and this rate only began to recover in the third year. Bad debts are always likened to the blood clot of the banking system. The bad debts appear, and the banks must deduct the reserves, this affects the profits and the safety ratio of the bank. For effective scores, there is no major impact on the security of banks and according to this model, this score hurts the safety of banks.

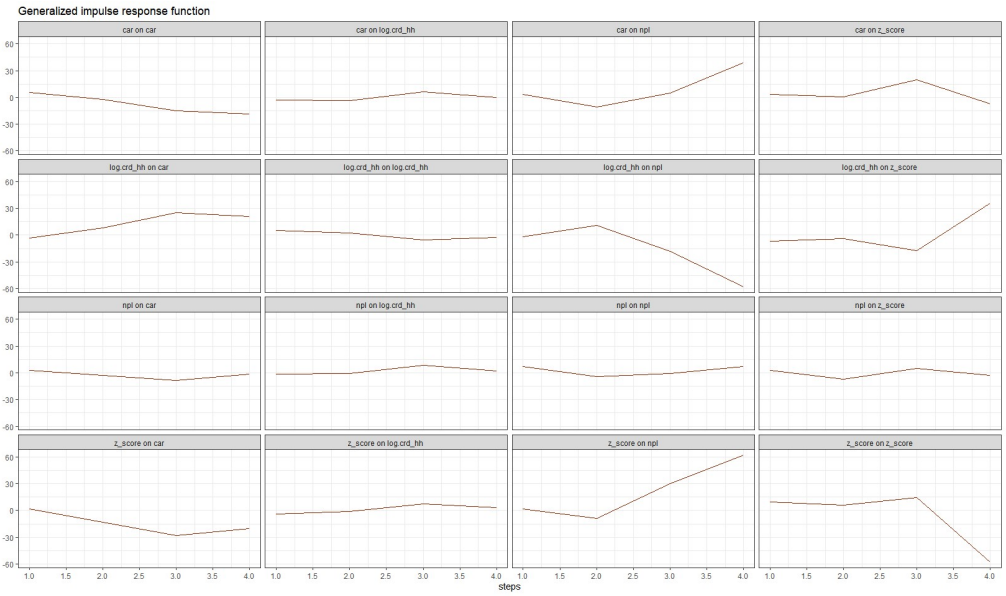

Figure 4. The result from the response function

Thus, the result of the VAR model shows that the household debt to GDP ratio of Vietnam was at 66.16% in 2020 and this ratio far exceeded the average of emerging economies (53,9%) Thương (2021). The research by Alam et al., n.d.-b) and Alter et al (2019) indicates that if the household/GDP ratio exceeds 65%, it will destabilize the financial system. With the current high household debt-to-GDP ratio, the risks of Vietnamese institutions to households are also high, especially when households are shocked which reduces their ability to repay such as decreased income or increased interest rates.

V. Conclusion

The 2008 global financial crisis showed that household debt was an important factor contributing to maintaining financial stability in a country, even globally. Through the use of the method of self-regression with the data of 20 commercial Vietnam, the article analyzes the impact of household debt on the stability of the banking system in Vietnam during 2010 - 2020. Research results show that when there is a sudden rise in household debt, the minimum capital adequacy ratio gradually grows and tends to fall in the third year. In addition, bad debt reduces the minimum capital adequacy ratio of the bank, which begins to recover in the third year.

If the full statistics of individuals'/households' debt include non-official loans such as loans from acquaintances, families, non-profit organizations, and even pawn loans (quite common in Vietnam), the proportion of personal/household debt is higher.

The article conducts research in terms of Vietnamese household debt data conditions on non-existent international databases such as the IMF, CEIC, and BIS. In the system of domestic credit institutions, there is no separate classification of household debt, but it aggregates individual customer debt. On the other hand, in reality, apart from borrowing from formal credit institutions, households owe loans from informal credit institutions. Within the scope of this article, due to limited access to data, the authors only analyze data on household debt in a domestic system of credit institutions. Currently, the State Bank is conducting a separate classification for the group of household debt in the system of credit institutions. As a result, the research team expects that in the near future, there will be more data sources to continue studying the impact of household debt on the stability of the banking system in Vietnam. Therefore, although the impact of household debt on financial stability is found, the extent of the impact is not clear. Thus, in subsequent studies, the research team will consider this relationship to better explain the impact of household debt on the stability of the Vietnamese banking system.

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