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The Effects of Credit Supply Shocks on Malaysia's Economy

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ABSTRACT

This study has examined the impacts of credit supply shocks and other common economic shocks (aggregate demand & supply and monetary shocks) on Malaysia's macroeconomic variables, using the Bayesian structural vector autoregressive (SVAR) model and employing sign restrictions. The results showed that an expansionary credit supply shock positively affected the Malaysian economy, consistent with the existing literature. Based on the variance decomposition finding, credit supply shocks explained a significant portion of the anticipated variation in the GDP growth, inflation, and, most importantly, credit growth in Malaysia. This study further decomposed total private non-financial corporate loans into two components: households and non-financial firms. Unlike other economies that have extensively researched this subject matter (US, UK, Euro Area), the growth rate of households and non-financial firms differed greatly in Malaysia. The empirical findings revealed considerable distinctions between these two components, indicating that different treatments or policy formulations are required rather than employing the same policy to boost or govern Malaysia's credit market.

JEL Classification: E44, E51

Keywords: Credit supply shocks; SVAR; Sign restrictions; Macroeconomics; Monetary Policy

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INTRODUCTION

Following the Global Financial Crisis (GFC) of 2008-2010, research interest has been resurgent in the financial-real economy nexus. Research interest in credit supply shocks, particularly, has received attention in recent literature. Credit supply shocks are "shocks that can alter the ability and willingness of monetary and financial institutions to extend credit to non-financial enterprises and consumers," according to (Abildgren, 2012). Credit supply shocks can be explained by various factors, including; changes in bank financing, unanticipated changes in bank capital, changes in potential borrowers' risk perceptions, changes in industry structure, and changes in the degree of competition among banks (Gambetti and Musso, 2016). Peersman (2012) stated that banking structure innovation makes it more profitable for banks to securitise their debts. This innovation encourages banks to provide more loans in the secondary market, increasing their capacity to provide new loans regardless of monetary policy changes.

Academics have recently attempted to determine the effects of this shock on the real economy, particularly in the aftermath of the GFC. Among the effects, credit growth fell independently of monetary policy, along with a slump in output, and scholars have tried to determine how much credit supply shocks contributed to the economic slowdown. Most of this research was conducted in advanced economies. Among the research studies are; Busch et al. (2010) for the UK, De Nicoló and Lucchetta (2013) for the G7 countries, Moccero et al. (2014) for the Euro Area, Gambetti and Musso (2016) for the US, UK, and Euro Area, and Mumtaz et al. (2018) for the US.

In comparison to other advanced economies during the GFC, Malaysia only experienced a small reduction in output during the current financial crisis. However, as illustrated in Figure 1, the impact of the Asian Financial Crisis of 1997-1998 was far greater than that of the Global Financial Crisis. Despite the surging interest in studying credit supply shocks during the Global Financial Crisis, a lack of research on the impacts of credit supply shocks has been conducted in Malaysia. The explanation for the gap in the literature might be that Malaysia's reduction in loan growth during the crisis was not as severe as in developed nations, which was likely due to Malaysia's financial restructuring following the Asian Financial Crisis. This research argues that the restructuring comprised several credit market changes in Malaysia and that these innovations have contributed to credit supply shocks.

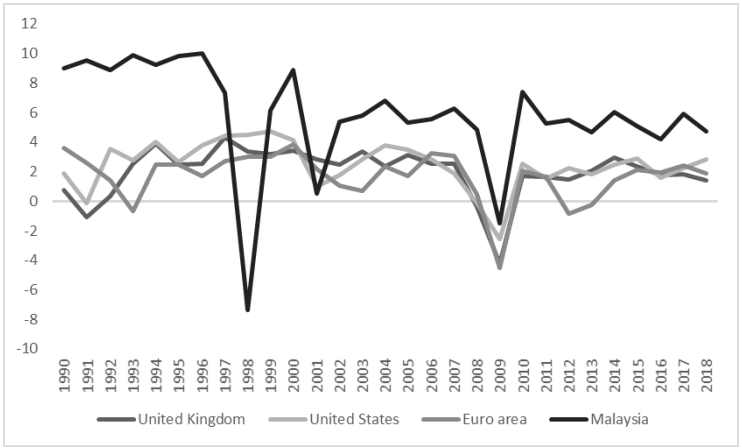

Figure 1 Annual GDP Growth (annual % change) for Malaysia, the UK, US, and Euro Area

The lack of studies on credit supply shocks in Malaysia may be due to the unclear link between household and Non-Financial Corporations (NFC) loans and output. Especially during the Global Financial Crisis of 2009, when GDP growth plummeted to -6% while loan growth only fell from 12% to 4%. This situation is in stark contrast to the economies extensively studied on the issue, where loan growth plummeted dramatically over the same period (e.g., US, UK, Euro Area). Surprisingly, there was a big rise in loan growth from 2007 to 2008, which preceded the reduction in loan growth.

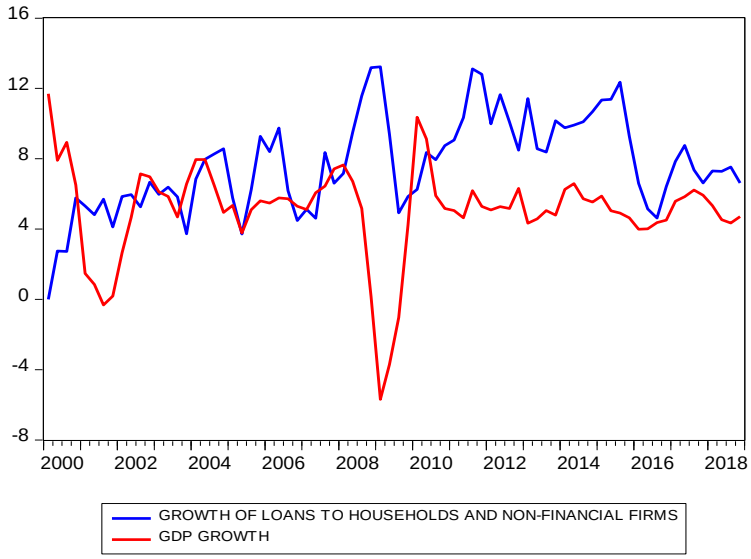

Figure 2 Quarterly GDP Growth and Loans to Households and Non-Financial Corporations Growth[1] in Malaysia, 2000-2018

Many studies on Malaysia have attempted to link the financial sector to the real economy. Extensive studies have been conducted on the relationship between financial development and economic growth (Choong et al., 2003; Ang, 2008; Anwar and Sun, 2008; Majid, 2008; Noor and Ramli, 2017)). Another research aspect concerns Malaysia's bank loans and macroeconomic variables (Tang, 2000; Vaithilingam et al., 2003). Research on the financial sector that specifically identifies and examines the impacts of credit supply shocks in Malaysia is still lacking.

The 1998 Asian financial crisis severely impacted the Malaysian economy and banking system. To limit further damage, Bank Negara Malaysia (BNM), the Central Bank of Malaysia, launched a Financial Restructuring Framework, a 10-year financial sector master plan implemented from 2001 to 2011, consisting of three main phases. The first phase focused on strengthening the financial infrastructure and enhancing the capacity of domestic banks in Malaysia. The second phase focused on increasing competition in the domestic financial sector. Finally, the third phase introduced new foreign competition and focused on integration into the global financial sector. During these phases of the Financial Sector Master Plan, many innovations were introduced, such as; lifting interest rate controls, issuing new foreign bank licenses, and regulating employee treatment. The Financial Sector Blueprint was introduced later in 2011 to provide a new path for financial restructuring in Malaysia. Under this new framework, additional innovations have been made in Malaysia's financial structure. Some of the innovations in the restructuring process have led to credit supply shocks, as defined above.

Specifically, the research questions of this study were: first, what are the impacts of credit supply shocks on Malaysia's macroeconomy? Second, what are the decomposed impacts of credit supply shocks on their respective components of Malaysia's GDP? Accordingly, the main objectives of this study were: first, to identify credit supply shocks in Malaysia and examine their impacts on the macroeconomic variables of Malaysia. Second, to decompose total credit in Malaysia into households' and non-financial corporations' loans and examine the impacts of each credit supply shock on their respective components of Malaysia's GDP. This study's contributions to existing literature have been twofold. First, there has been a lack of studies attempting to identify credit supply shocks and investigate their effects in Malaysia, and the present study contributes to this research gap. Secondly, this research has contributed to the literature on credit supply shocks by separating the credit of Malaysian households and non-financial corporations due to their heterogeneous growth rates. Unlike most countries that have already been extensively studied, Malaysia had an almost equal weighting of total credit from both components.

The remainder of the present study is structured as follows. Section 2 discusses the empirical approach and describes the data. Section 3 discusses the results. Finally, Section 4 provides conclusions and policy recommendations.

[1] Both in annual % changes.

METHODOLOGY

This study's approach to identifying credit supply shocks in Malaysia is presented in this section. The section begins with a quick overview of the SVAR model. The identification technique used in this research followed the algorithm in Arias et al. (2014), and the reasonings behind each restriction have been discussed. Finally, the model's data and the decision concerning the number of lags in the system using the lag length criterion are discussed. Busch et al. (2010), Peersman (2012), Bijsterbosch and Falagiarda (2015), Gambetti and Musso (2016), and Mumtaz et al. (2018) rach employed the SVAR model with sign restrictions to identify credit supply shocks. With regards to empirical simulations, Mumtaz et al. (2018) showed that VAR models with sign restrictions could capture credit supply shocks judiciously. For this reason, the present study chose to use the SVAR framework's sign restriction method to identify credit supply shocks and investigate their impacts on Malaysia's macroeconomics

SVAR Model With Sign Restrictions

Firstly, each series was regressed on its own lagged term along with the lags of other variables. As such, a reduced-form VAR is presented below:

$$Y_t = K + A_1 Y_{t-1} + A_2 Y_{t-2} + \ldots + A_p Y_{t-p} + \mu_t \quad (1)$$

where Y_t is the matrix of endogenous variables, $t = 1, \ldots, T$. T is the sample size, $\mu_t \sim N(0, \Sigma)$ are the reduced-form error terms, p is the lag, and $K, A_1, \ldots, A_p$ and Σ are matrices of the model's parameters. K is the vector of constant terms, $A_i, i = 1, \ldots, p$ is an n × n matrix of the AR coefficients, whereas $\Sigma = E(\mu_t \mu_t')$ is the n × n covariance matrix of the error term vector μ_t. The error terms are the unpredictable factors of Y_t, given the variables included and considering the lagged values of the included series, which has no economic interpretation without further assumptions.

This research could have used the structural form instead of Equation (1) to solve that, as follows:

$$B_0 Y_t = k + B_1 Y_{t-1} + B_2 Y_{t-2} + \ldots + B_p Y_{t-p} + \varphi_t \quad (2)$$

where $k, B_1, \ldots, B_p$ are defined the same as $K, A_1, \ldots, A_p$, n × n matrix B_0 is the contemporaneous reactions of the variables to the structural shocks, and the n × 1 vector of structural shocks (or structural innovations) φ_t with a zero mean and with a diagonal covariance matrix Σ_φ, also shows that the number of variables matches the number of shocks.

The structural shocks from the reduced-form VAR could be recovered by multiplying both sides of Equation (2) by B_0^{-1}, resulting in:

$$B_0^{-1} B_0 Y_t = B_0^{-1} k + B_0^{-1} B_1 Y_{t-1} + B_0^{-1} B_2 Y_{t-2} + \ldots + B_0^{-1} B_p Y_{t-p} + B_0^{-1} \varphi_t \quad (3)$$

Yielding the results of:

$$K = B_0^{-1} k \quad (4)$$

$$A_i = B_0^{-1} B_i \quad (5)$$

$$\mu_t = B_0^{-1} \varphi_t \quad (6)$$

$$E(\mu_t \mu_t') = \Sigma = B_0^{-1} B_0^{-1\prime} \quad (7)$$

The model was estimated using a Minnesota prior using Bayesian techniques. The hyperparameters were chosen using a grid search to find the combinations that optimised marginal likelihood. Sign restrictions on the contemporaneous impulse response functions were used to identify the shocks. The Dieppe et al. (2016) BEAR Toolbox, provided by the European Central Bank, was used to perform the estimation and sign restrictions on the impulse response function approach following the Arias et al. (2014) algorithm.

Shock Identification

Five structural shocks in this study's VAR system were identified as the baseline model had five endogenous variables. Identifying all five shocks, on the other hand, entailed difficult identification constraints and raised the computing cost (Busch et al., 2010). On the other hand, identifying a considerably lower number of shocks might lead to many inexplicable dynamics. Thus, this study identified four shocks: aggregate demand, aggregate supply, credit supply, and monetary policy shocks, following Bijsterbosch and Falagiarda (2015) and Gambetti and Musso (2016) for the same variables. One shock was left unspecified to function as a buffer and consider the impacts of missing variables. All the restrictions were only in place during the impact period, as noted in Table 1. The following constraints were applied to identify structural shocks:

An expansionary aggregate demand shock is expected to boost production, inflation, loan, and policy rates during the impact period. According to the theoretical literature, aggregate demand shocks drive production growth and inflation in the same direction. On the other hand, the impact on loan growth does not appear to be evident. An expansionary aggregate demand shock, for example, may cause individuals to spend more; as a result, loan growth may increase, but consumers may also withdraw more money from their bank accounts for spending. As a result, bank finances are depleted, and loan growth may be stifled or even reversed. As a result, this study did not impose any restrictions on loan growth. Concerning the policy rate, a central bank responds to an increase in aggregate demand by raising the interest rate to minimise inflationary pressures, as the monetary policy dictates. The relationship between lending rates and the policy rate in Malaysia raises the lending rate. As a result, this study kept the policy and the lending rates positive.

On impact, a positive aggregate supply shock boosts output while lowering prices. In terms of loan growth, a positive aggregate supply shock that lowers costs may boost investment, and companies may borrow more to finance such new investments. Firms may, however, be able to fund these larger investments through other ways (for example, extra cash earned when raw material costs have decreased), which would not raise loan growth. Furthermore, because there is no clear central bank response when output rises and prices fall, the influence on the policy rate is ambiguous, which leads to an uncertain response of the lending rate. The reactions of loan growth, the lending rate, and the policy rate are left uncontrolled due to these ambiguous impacts. This constraint is adequate since it is the only shock discovered by this research that caused production and prices to move in opposite directions.

An expansionary monetary policy shock is restricted to; raising output, inflation, and loan growth and lowering the lending and policy rates. The inflation and output level restrictions are based on the theory of the monetary transmission mechanism. The drop in the loan rate illustrates the notion that bank lending interest rates are closely linked to the policy rate[2]. Finally, the reaction of loan growth is constrained to be positive due to the monetary transmission mechanism's bank lending channel.

Meanwhile, an expansionary credit supply shock is limited to raising; production, inflation, and loan growth while lowering the lending and policy rates. During an expansionary credit supply shock, banks are expected to exogenously boost loan availability for the private sector by raising loan amounts or lowering lending rates. As a result, loan growth is pushed above market equilibrium, resulting in an overstock. The market's surplus of money lowers the loan rate even further. As a result, a credit supply shock causes loan growth and lending rates to move in opposing directions. This research also imposed constraints on other variables for an expansionary credit supply shock, following Hristov et al. (2012), because these restrictions were insufficient to distinguish credit supply shocks from others discovered. Thus, production, inflation, and policy rate responses were constrained. Due to a positive credit supply shock, this study restricted the output to be positive. As credit becomes less expensive, enterprises raise their investment, and households want more for spending. Thus, this study limited output to be positive.

Meanwhile, as the economy grows, businesses will raise their pricing in anticipation of increasing prices. As a result, this study limited inflation's response to be positive. As a result of this inflationary pressure, the central bank would have to raise the policy rate to keep the price level in check, as dictated by monetary policy rules.

[2] Kamarudin et al. (2018) found an asymmetric response of the bank lending rate due to changes in the policy rate in Malaysia. The bank lending rate responds faster to a decrease in the policy rate but does not respond to upward movements of the policy rate. To keep identification straightforward, this study assumed that the responses are symmetrical. However, it was noted that this could be a worthy consideration for the future research.

Table 1 Identification Scheme

VARIABLE / SHOCKS	Credit Supply	Aggregate Demand	Aggregate Supply	Monetary Policy
GDP	+	+	+	+
CPI	+	+	-	+
POLICY RATE	+	+	**?**	-
LENDING RATE	-	+	**?**	-
LOAN GROWTH	+	**?**	**?**	+

Note: All the restrictions are imposed on the impact period only.

The Data

The variables employed in the baseline scenario are described in this section. This research used quarterly data from the first quarter of 2000 to the last quarter of 2018. For production and inflation, the X-12 function in the Eviews Version 9 software application was used to make seasonal adjustments. The following data to was used to perform this study's estimates: Real GDP, Consumer Price Index, Loans to Households and Non-Financial Corporations, Lending Rate[3], and the Overnight Interbank Rate.

International Financial Statistics provided the data for real GDP (IFS). The Bank for International Settlements provided data on the Consumer Price Index and loans to households and non-financial enterprises. Average lending rate statistics were obtained from BNM, the Central Bank of Malaysia, as a proxy for the lending rate, which is the weighted average lending rate on loans granted by commercial banks. Finally, overnight interbank rate data were used from BNM, Malaysia's Central Bank, to proxy for the short-term rate or policy rate.

Lag Selection

This research performed lag length criterion tests to identify the right lag duration for the model. The Final prediction error and the Akaike information criteria proposed using three delays. However, the Schwarz information criterion and the Hannan-Quinn information criterion suggested using two. In the baseline model, the latter was chosen.[4]

Table 2 Results of the Lag Selection Criteria

Lag	LR	FPE	AIC	SC	HQ
0	NA	28.21003	17.52906	17.60719	17.56063
1	3003.885	2.18E-05	3.456329	3.925117	3.64572
2	130.3246	1.46E-05	3.05208	**3.911526***	**3.399299***
3	51.90403	**1.42e-05***	**3.024042***	4.274145	3.529086
4	36.58935	1.48E-05	3.067885	4.708646	3.730757
5	25.29539	1.64E-05	3.166233	5.197651	3.986931
6	30.31482	1.76E-05	3.233851	5.655926	4.212375
7	34.16633	1.85E-05	3.275519	6.088251	4.41187
8	34.4283	1.93E-05	3.310268	6.513657	4.604445
9	47.35653*	1.86E-05	3.263181	6.857228	4.715185
10	32.39573	1.95E-05	3.298325	7.283029	4.908155
11	33.29213	2.03E-05	3.321731	7.697092	5.089387
12	37.39389	2.04E-05	3.311961	8.077979	5.237444

Note: *indicates the lag order selected by the criterion.

EMPIRICAL RESULTS

As mentioned in the preceding section, the SVAR model was estimated using Bayesian techniques, and the shocks were identified using sign restrictions. With 5,000 iterations and 2,000 retained draws, the model used the Minnesota prior for the SVAR coefficients and the covariance matrix. The chosen lag was two quarters.

Effects of Expansionary Credit Supply Shock on The Macroeconomics of Malaysia

The shaded region in Figure 3 depicts the median of the replies and the 68 per cent confidence interval. The credit supply shock was normalised to reduce the median lending rate response by 10 basis points (0.1%) on impact for a more direct interpretation of the results. On impact, GDP growth jumped by 2.2%. However, the

[3] A few studies have used spread in the estimation of credit supply shocks (e.g., Mumtaz et al., 2018). This study followed Gambetti and Musso's (2016) reasoning to use the lending rate instead of spread.

[4] This study applied 3 lags for a robustness test and did not compromise the results.

reaction only lasted two months. Gambetti and Musso (2016) found a strong but short-term impact on GDP growth in the United States, the United Kingdom, and the Eurozone. Inflation rose by 2% and remained strongly positive, though slower, until the fourth quarter. Loan growth increased by 4.1% before becoming negligible after six quarters at a falling pace. During the negligible interval between the second and fifth quarters, the loan rate continued to respond adversely throughout the five years. The short-term rate rose by 1.3% and remained substantial for just three quarters.

The findings of the variance decomposition analysis are then presented. The forecast error variance decompositions of each variable to all shocks are shown in Figure 4. It can be seen that credit supply shocks accounted for around 12% of the anticipated variation in the GDP growth after four quarters, rising to 15% after five years. Although it was not the largest contribution to the expected GDP growth variation, this study nevertheless considered 15% to be significant. Another interesting finding from this study was that after five years, the forecast variance of GDP growth explained by credit supply shocks was slightly higher (12%) than the forecast variance of GDP growth explained by monetary policy shocks. This result indicated that credit supply shocks were more important in influencing GDP growth variation than monetary policy shocks.

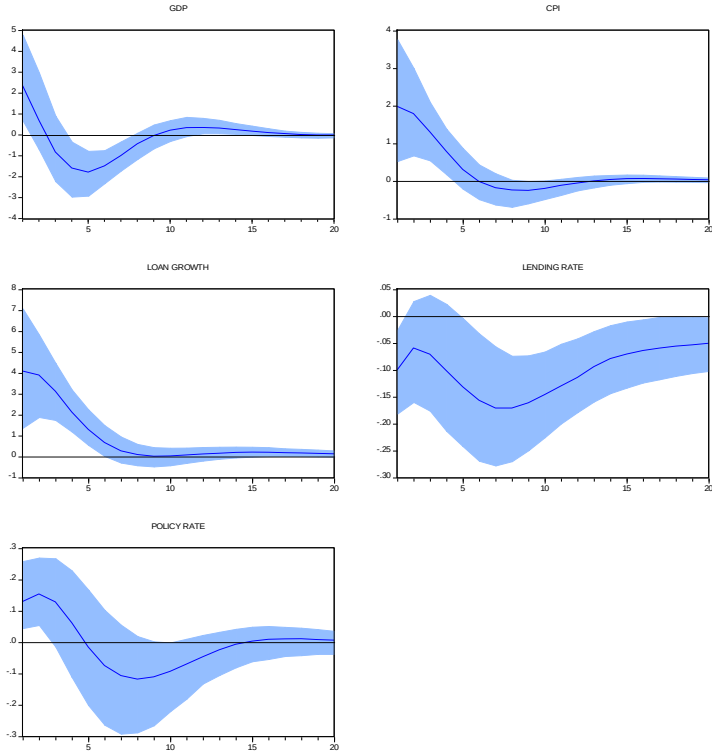

Figure 3 Impulse Responses to An Expansionary Credit Supply Shock

Credit supply shocks explained the greatest portion of the forecast error variance of credit growth (32% in the first year and 28% in the fifth year), showing that credit supply shocks were the most important factors determining credit growth variation. Furthermore, monetary policy was the least relevant shock affecting loan growth prediction variation (14%). In the fifth year, aggregate demand shocks accounted for 23% of the expected variation in inflation, followed by credit supply and aggregate demand shocks accounting for 21% each. At the same time horizon, monetary policy shocks only accounted for 17% of the variance. This finding indicated that credit supply shocks substantially impacted Malaysian inflation.

Aggregate demand shocks accounted for 41% of the forecast variation in loan rates in the fifth year, followed by aggregate supply shocks (20%). The credit supply = and the monetary policy shocks accounted for 11% of the expected volatility in lending rates. This outcome indicated that aggregate demand shocks had a greater impact on lending rates than credit supply shocks since credit demand shocks are often associated with aggregate demand shocks, and banks often set loan rates based on the demand for loans. Aggregate demand and aggregate supply shocks accounted for the greatest volatility in the policy rate forecast. At year 5, monetary policy shocks accounted for around 14% of the predicted variation. With 8% at year 5, the credit supply shock explained the least share of the policy rate.

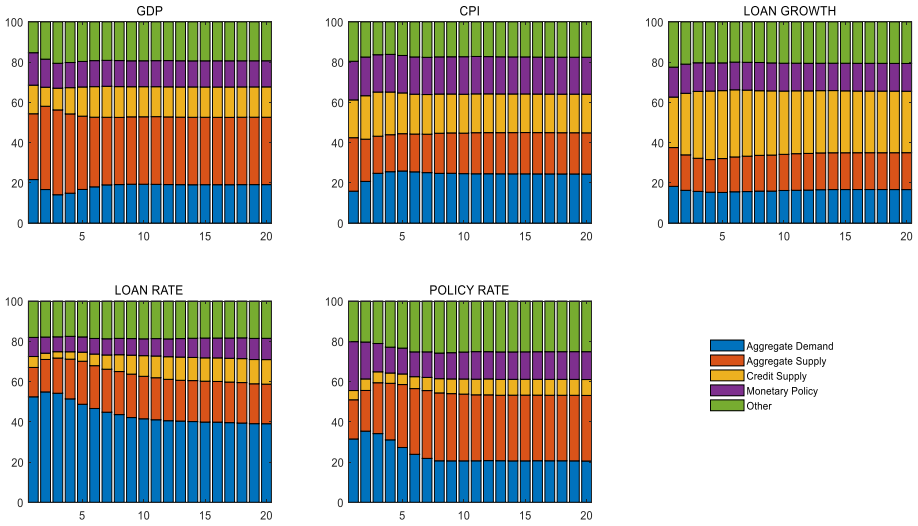

Figure 4 Forecast Error Variance Decomposition

Next, this research decomposed total loans to household and non-financial firms in this subsection.[5] The percentages of loans to households and loans to non-financial corporations are shown individually in Figure 5. The distribution was nearly identical during the study period, indicating that each had equal weight. As a result, it was critical to examine if the replies differed across families and enterprises, as both contributed equally to the total loans under consideration. Different responses may indicate that the government should take a different strategy or approach to different components to formulate policies.

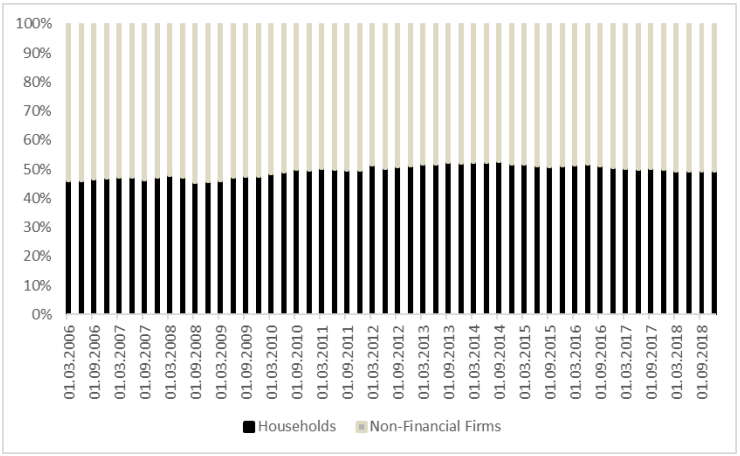

Figure 5 Decompositions of Household and Non-Financial Corporation Loans (% of Total Loan)

The growth rate of household and non-financial enterprise loans was then examined. Each growth rate is shown in Figure 6 with the overall loan growth rate. Before the Global Financial Crisis, the high rate of overall loan growth was due to a surge in non-financial business credit growth. When the financial crisis struck, non-financial enterprises' lending growth slowed to less than 1%. Household loans, on the other hand, functioned as a cushion during this time and remained high. As a result, the reduction in total loans for private non-financial sectors was not as severe as in other economies, particularly in the United States, the United Kingdom, and the Eurozone, as Gambetti and Musso found (2016). Figure 7 shows the same variables for the US, the UK, and the Eurozone. The main difference between this and Malaysia's graph is that during the crisis, household loan growth in these nations fell along with the increase in NFC loans. As a result, overall loans to private non-financial firms dropped dramatically in these three economies, particularly in the United States and the United Kingdom.

[5] Data separating loans for households and non-financial firms only started from first quarter of 2006 for Malaysia, as provided by Bank for International Settlements.

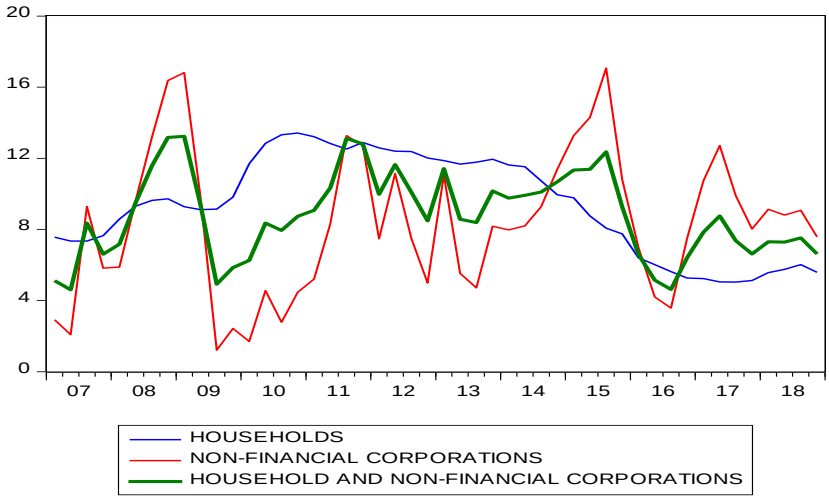

Figure 6 Growth Rate of Households, Non-Financial Corporations, and Household Plus Non-Financial Corporations Loans in Malaysia (% changes)

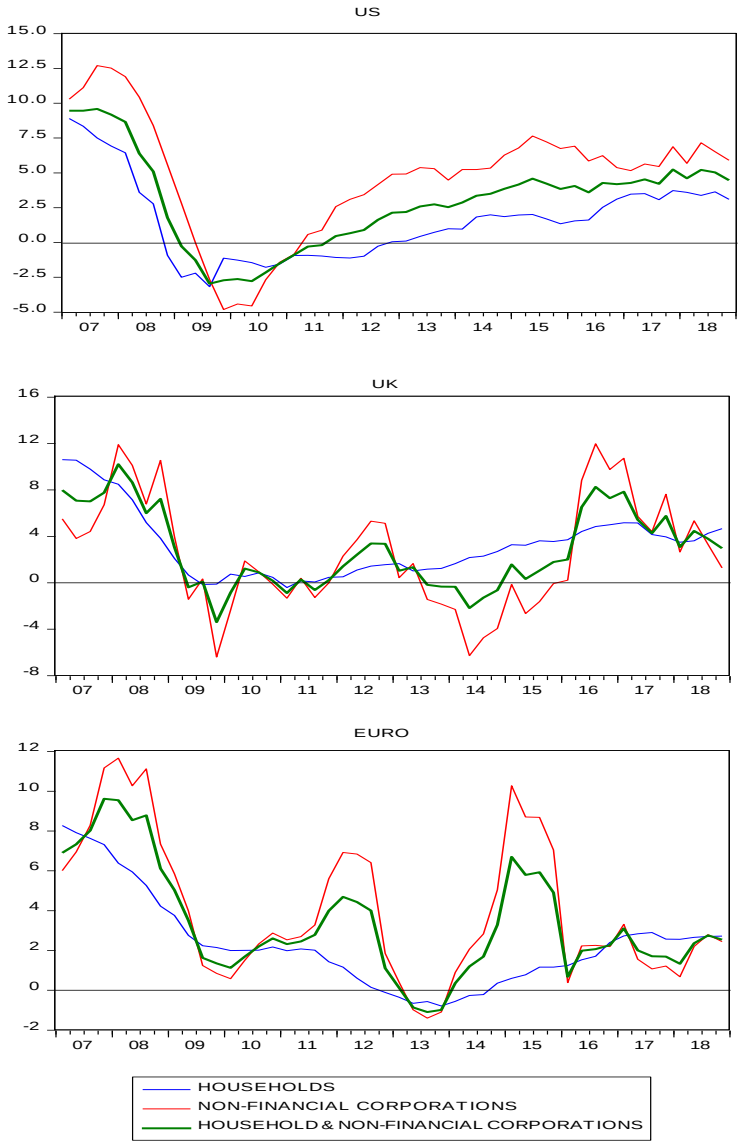

Figure 7 Growth Rate of Households, Non-Financial Corporations, and Household Plus Non-Financial Corporations Loans (US, UK, EUROZONE) (% changes)

The estimation of the model was re-run by sequentially substituting total household and non-financial company loans with these two components. For the Netherlands data set, Duchi and Elbourne (2016) separated households and non-financial enterprises and substituted GDP growth with corresponding contributions to GDP, namely; consumption and investment. Thus, the present study substituted GDP growth in the household model with consumption growth and investment growth in the non-financial firms model. The growth of final consumer spending was used as a proxy for consumption growth, and the growth of gross capital formation as a substitute for investment growth. Both figures came from Malaysia's central bank. X-12 was used to adjust these additional data for seasonality, and the growth rate was determined year-on-year.

Households

First, this study examined households' share of total private non-financial company credit. Consumption grew by 8.5% due to an expansionary household credit supply shock (which lowered the lending rate by 0.1% on impact), while inflation rose by 3.8%. Consumption growth and inflation had a short-term positive reaction, lasting only two and four quarters, respectively.

An expansionary household credit supply shock led to a 1.4% rise in household loan growth in the first period, and the positive effect lasted for three months. The negative lending rate reaction to expanding credit supply shocks was only significant upon impact from the eighth to the twelfth quarters. Finally, the policy rate rose by 1.8% on impact but only lasted for three quarters.

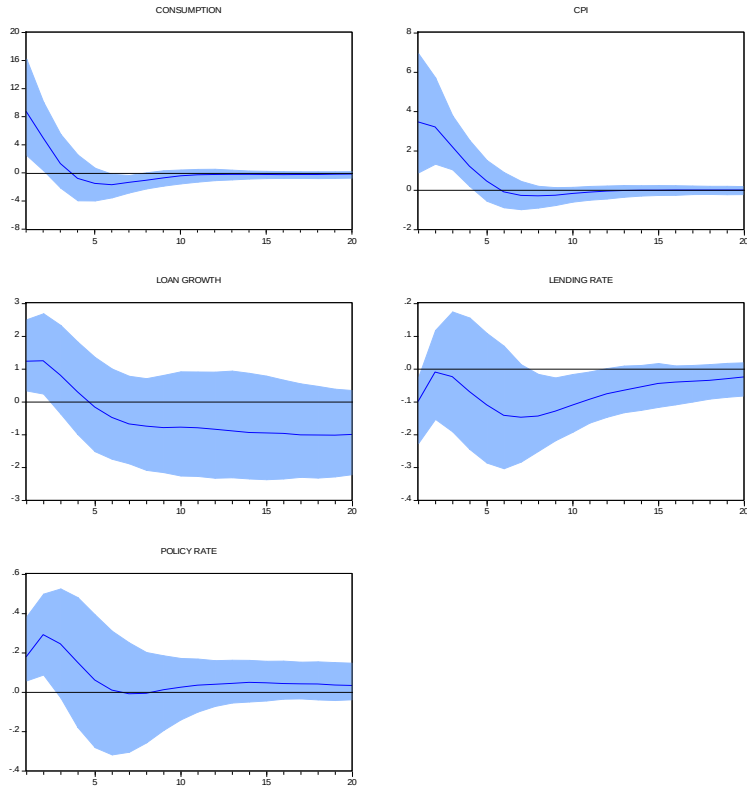

Figure 8 Impulse Responses to An Expansionary Household Credit Supply Shock

The variance decompositions of consumption and credit growth in the household credit model were analysed. The most significant drivers of the predicted variation of consumption growth were aggregate supply and aggregate demand shocks. The credit supply shock accounted for 14% of the expected variation in consumption growth in the fifth year, whereas the monetary policy shock accounted for just 10%. Finally, it's worth noting that household credit supply shocks had little impact on the anticipated variation of household loan growth, with monetary policy shocks accounting for most of the variance. In the fifth year, household credit supply shocks accounted for just 9% of the expected variation in household loan growth, whereas monetary policy shocks accounted for 26%.

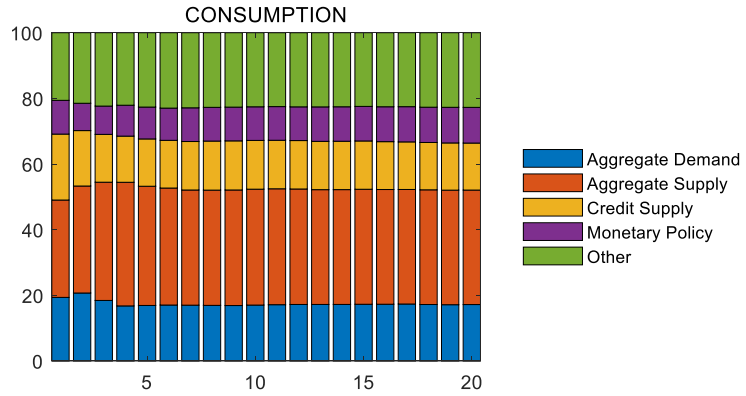

Figure 9 Forecast Error Variance Decomposition of Consumption Growth (Households Model)

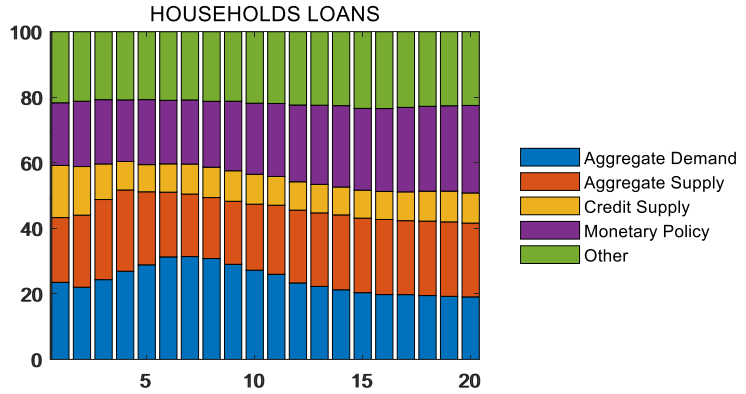

Figure 10 Forecast Error Variance Decomposition of Household Loan Growth (Households Model)

Non-Financial Corporations

The impact of an expansionary NFC credit supply shock decreased the loan rate by 0.1% and increased investment growth by 13%. Inflation rose by 2.8% on impact in reaction to the expansionary NFC credit supply shocks and lasted for three quarters. The impact of an expansionary NFC credit supply shock boosted NFC loan growth by 11%, and the favourable reaction lasted for six quarters. For 15 quarters, the loan rate decreased dramatically, with the highest impact in the sixth quarter, when the lending rate fell by 0.14%.

Looking at the variance decomposition of investment growth in the NFC model, it can be seen that aggregate demand and supply shocks continued to be the most significant contributors to projection variation over the next five years. In year 5, NFC credit supply shocks accounted for 13% of the expected volatility in investment growth. It's worth noting that monetary policy shocks accounted for a larger share of anticipated volatility in investment growth than NFC credit supply shocks. After four quarters, NFC credit supply shock explained 37% of loan growth estimate variation, and its contribution shrank to 30% after five years, but it remained the most significant driver. It was followed by aggregate demand and supply shocks, accounting for 17% of the total. With 15% in year 5, monetary policy shock was the smallest contributor to the projected variance for NFC loans.

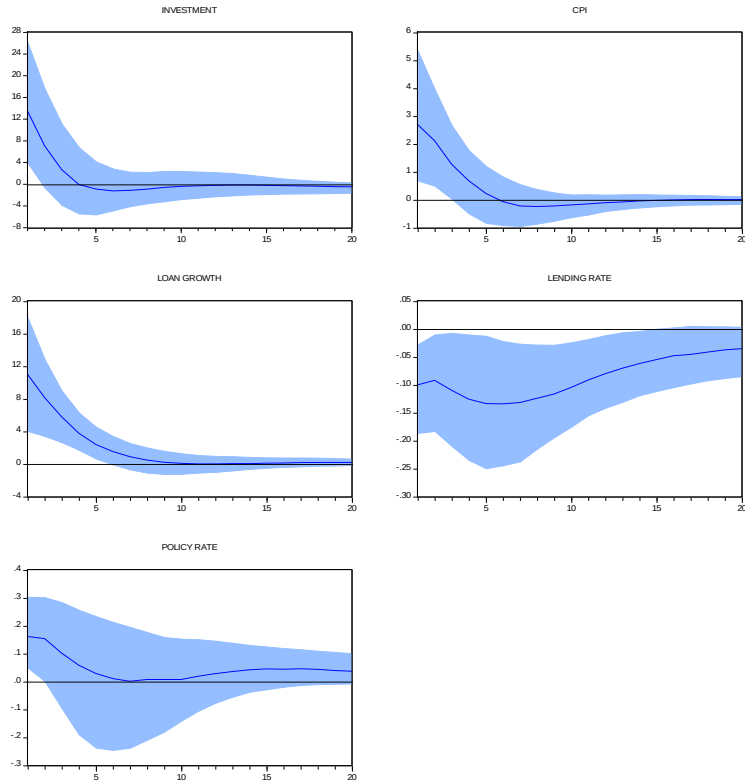

Figure 11 Impulse Responses to An Expansionary NFC Credit Supply Shock

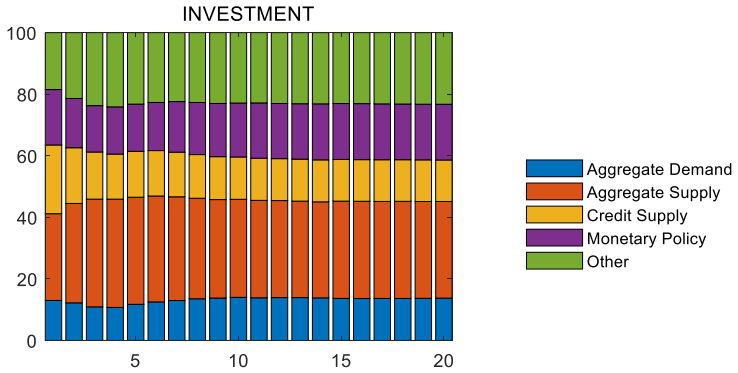

Figure 12 Forecast Error Variance Decomposition of Investment Growth (Non-Financial Corporations Model)

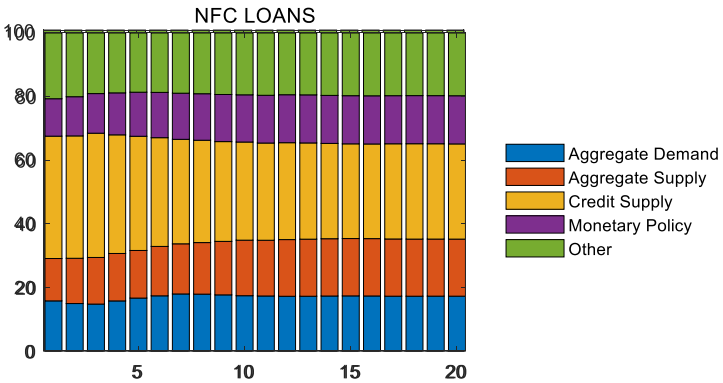

Figure 13 Forecast Error Variance Decomposition of NFC Loan Growth (Non-Financial Corporations Model)

CONCLUSIONS

This study investigated the empirical significance of credit supply shocks to the Malaysian economy within a structural VAR framework. The research found that credit supply shocks substantially affected output from the main impulse response results. An expansionary credit supply shock (normalised to decrease the lending rate by 0.1%) increased output by 2.2% on impact. Credit supply shocks also caused loan growth to increase significantly by 4% on impact. The variance decomposition analysis showed that credit supply shocks significantly influenced the forecast variance of GDP growth, inflation, and especially credit growth. It was also found that credit supply shocks were more important in explaining the forecast variance of credit growth than monetary policy shocks.

It was found that consumption and investment increased due to respective expansionary credit supply shocks when breaking down the total credit into households and non-financial firms. A few noticeable differences were found between the credit supply shocks of households and non-financial firms: 1) the response of the lending rate in the NFC model was significantly negative throughout the 20 quarters, while in the household model, it was only significant from the 8^{th} to 12^{th} quarter. 2) a 0.1% decrease in lending rate due to credit supply shocks resulted in an 11% increase in the growth of NFC loans on impact, while it was only 1.2% for households' loans. 3) Variance decomposition analysis showed that credit supply shocks were the most important shock to explain the forecast variance of credit growth for NFC. In contrast, the forecast variance of credit growth explained by credit supply shocks was much less important for the household model, and monetary policy shocks mostly explained it.

The findings suggested that credit supply shocks significantly shocked the Malaysian economy. Credit supply shocks might be utilised to improve Malaysia's economic development when needed, but they must be handled with caution because they are associated with greater inflation and, most crucially, a larger level of debt in the economy. Because households and non-financial enterprises contribute to various components of the GDP, policymakers in Malaysia might select which sector to promote individually. There are various prices associated with each option. Expansionary credit supply shocks to NFC boost investment growth, but at the cost of increased debt levels in NFC. Expansionary credit supply shocks to households cause less growth in consumption but have a considerably smaller influence on debt growth.

For further research, it is suggested that examining the impacts of credit supply shocks could be conducted on different sectorial outputs or prices. For example, Lim and Lau (2018) studied the dynamic relationship between residential property prices, housing loans, construction output, and interest rates. They found that bank lending, construction output, and interest rates exhibited positive elasticities toward housing values in the short and long run. However, they did not consider credit supply shocks in influencing house prices. Insight into the outcome could be a good extension of the present study. Such further investigation applies to other sectors as well to aid policy formulations. Another area that could be explored is how global uncertainties could affect the impacts of Malaysian credit supply shocks. Hoque et al. (2020) showed that global uncertainties negatively affected Malaysia's monetary and financial markets. It could also be beneficial to policymakers to see how the impact of these global uncertainties is transmitted to the Malaysian economy through credit supply shocks.

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