ANTICIPATED AND UNANTICIPATED MONETARY VARIABLES EFFECTIVENESS IN MEASURING FINANCIAL STABILITY IN MALAYSIA DURING CRISIS

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ABSTRACT

This study aims to investigate whether the anticipated and unanticipated changes in monetary variables can influence stock returns during a crisis. The financial stability was measured by the stock returns which was the dependent variable of the study. The independent monetary variables used were the interest rate, inflation rate, exchange rate, money supply and the GDP. All the variables were measured in the form of anticipated and unanticipated monetary variables. The analysis began with a unit root test that revealed that both anticipated and unanticipated monetary variables were having unit root problems at level but not at 1st difference. Thus, the variables were found to be integrated at 1st difference. The ARDL method was used to establish the long-run relationship and error correction modelling for the short-run relationship. Monthly data from January 2010 to September 2020 were used. The anticipated monetary variables did have a long-run relationship with stock returns, but all the monetary variables were insignificant at a 5 per cent significance level. However, the anticipated monetary variables did establish a short-run relationship with stock returns. Unfortunately, when unanticipated monetary variables were used both short-run and long-run relationships were established. All the unanticipated monetary variables were significant in explaining the changes in the stock returns except for the unanticipated interest rate.

INTRODUCTION

In March 2020, the Malaysian government experienced a health pandemic, and the World Health Organization declared a lock down. The lockdown which began in China was later implemented in various developed and developing nations. It brought the entire world economy to a stand still. The government had no choice but to proceed with the lockdown since the health care system in the country could not cope with the increase in number of cases. There was no vaccine, and the spread was drastic in the early 2020. In Malaysia the massive and ongoing outbreak created a profound impact to the economy especially the financial market. The number of cases began to increase significantly until the government decided to implement

movement control order when the financial market was in a verge of collapse. Unfortunately, it brought many sectors into jeopardy. Many workers in the agriculture, tourism, manufacturing, entertainment, service industry was either laid off, receive a pay cut or even force to take unpaid leave. This lead to the closure of many small and medium scale business. Many were not able to sustain themselves. This lead to bankruptcy.

Thus, the government had to weigh the benefit and the cost of the lock down. The benefit would be to prevent the spread of the disease. This will help to flatten the contagion curve as fast as possible and the economy can recover fast. Moreover, the government can also reduce its medical cost if the number of cases declines. This decreases the government expenditure for a country which is already deficit in certain developing countries. Some countries especially the developing countries opt to borrow money or in kind to cope with the pandemic. Contribution in terms of mask, protective outfit for health care workers, gloves and also sanitizers flew in from other countries to collectively combat the virus. If the number of cases declines the need to borrow will also decline.

As for the cost of the lock down, it can be analysed from various perspective. First, the negative consequences of the lock down would be increase in the number of those who have mental health issues like anxiety, depression and panic attacks, increase in domestic violence, suicidal rate and the number of deaths due to other diseases like cancer because there are not enough healthcare workers or facilities to attend to all of them. Second, due to loss of jobs, unemployment increases. This has resulted in loss of income. Loss of income leads to reduced purchasing power in the family which decreases the standard of living. Those in the lower income bracket faces dilemma when they do not have the essential goods to feed their children. Third, the loss of income decreases the demand for goods. A fall in the demand for goods reduces the sales and service tax collected by the government. In addition, loss of income also decreases the personal income tax collected by the government. This results in a deficit at the government budget. Based on the evaluation using the cost and benefit analysis and due to political pressure, many countries had to opt to implement the lock down even though by doing so it would cost them more.

In order to curb the economic stress, the Malaysian government came up with various economic stimulus using macroeconomic policies. The fiscal stimulus package was either in the form of cash hand outs or in kind. This helped to boost the economy by increasing aggregate demand in the nation. The increase in aggregate demand creates excess demand. This leads to an increase in price and also output. The Malaysian government found that the increase in the general price level was still manageable during the pandemic. Unfortunately, the cash hand outs were given in a blanket basis. Those who were affected by the pandemic or not were given subsidy by the government as long as you belong to the income bracket or category announced by the government. This resulted in mismatch of resources as well as leakages.

Thus, they decided to further boost the economy by using the next macroeconomic policy, the monetary policy. Monetary policy is one of the tools used by the country to stabilize the economy through price stability. Since many lost their source of income, the government decided to ease the monetary policy by implementing expansionary monetary policy. In this expansionary monetary policy, the government gave a moratorium for six months for those

who borrowed money from banks. The moratorium began in April and lasted until September, 2020. The bank rate was also reduced as much as 25 points to encourage borrowing. The aim of the government was to boost the domestic economy. When domestic economy grows, aggregate demand will increase. Output or GDP will increase. Since the inflation or deflation rate was -1.14 per cent thus the expansionary monetary policy was found to be appropriate to boost domestic demand without worrying about the disruption in price stability.

PROBLEM STATEMENT

Even though the fiscal stimulus package and the expansionary monetary policy was implemented, the economic growth declined during the pandemic, many citizens lost their income because they were either laid off or forced to take a pay cut. This automatically reduced the amounts of deposits in the bank. Deposits are essential to create money or money supply. At the same time deposits are also important for the monetary transmission to take place. The effectiveness of the monetary transmission mechanism declined as deposits decreased. The theory quantity of money claims that when money supply decreases, price level will decrease resulting in deflation. The anticipated money supply declined. The money did not have an impact on the real variables like output and employment in the long run. Thus, money was considered neutral. The neutrality of money due to the dynamism of the financial system to convert all disequilibrium in the money market and capital market to be equilibrium. Moratorium declines the creation of money. A reduction in money supply increases the interest rate because money supply is less than money demand. An increase in interest rate, will increase the demand for bond. Demand for bond increases but the demand for equity declines. The development of the capital market in Malaysia is still below compared to the developed country. Thus, a decline in the demand for equity decreases the trading in the capital market.

Moreover, when deposits decline, the amount to be created as loan or dispersed as credit declines. With the implementation of moratorium for loan owners indicates that the government intervene by practicing expansionary monetary policy. With moratorium the loan owners are exempted from paying loans for 6 months. This reduces money supply. When money supply reduces, money demand will be greater than money supply. To balance the money market to achieve equilibrium, money demand should also be decreased by decreasing income. A decline in money supply will shift the aggregate demand to the left. Thus, price level and output level also decline. Therefore, the objective of the government to maintain price stability, increase output and employment will not be fulfilled. When money supply also decreases through the moratorium, money demand will be greater than money supply. Citizen will be wanting to pay higher interest rate. This increases external premium finance. External premium finance is the interest that the investors are willing to pay which is higher than the market interest to get loan. This encourages adverse selection. The cost of doing business increases. The amount demanded for loan declines due to increase in cost. Investment declines and eventually decreases aggregate demand. A decline in aggregate demand will not be able to increase output and employment. It will further decrease the general price level.

In addition, due to decrease in purchasing power, citizen can resort to alternative source of funding to sustain their consumer expenditure and businessmen resort to authorized and

unauthorized money lenders. This created unanticipated money supply. Unanticipated money supply creates shocks in the economy in the short run. This makes money non neutral. Changes in the unanticipated money supply increases nominal variables like price, output and employment. In the long run, changes in the real variables due to unanticipated money supply will be neutral if there is no impact due to a stable, resilient and strong financial system.

From the balance sheet point of view, increase in the cost of borrowing money increases interest expenses. When interest expenses rise, net income declines. A decline in net income will reduce the retained earnings. This reduces owner's equity. Similarly, an increase in interest will stimulate demand for bond but reduces the demand for equity. This also decreases owner's equity. The value of assets decreases and the liability increases through increase in the mortgage for bank and notes payable. Overall, the net worth of the firm declines. This decreases aggregate demand eventually decreasing output, employment and price level. Both bank lending channel and the balance sheet channel are used to explain the credit view under the monetary transmission channel.

Malaysia is a developing nation that depends on the banking system. 70 per cent of the financing depends on the banking structure of the country. The financial system in Malaysia is still bank based like India. An increase in interest rate declines investment and eventually the aggregate demand. To stimulate the economy, Bank Negara Malaysia decreased the interest rate as much as 25 points to increase the demand for loans. Distributing loans is also based on credit worthiness. During the health pandemic, the credit worthiness of individual and firms have decline. Thus, the amount of loan distributed will not fulfil the expectation. Even government reduces interest rate, demand for loan becomes questionable because losing of jobs, decline in pay and reduction in profit. Thus, adverse selection might take place posing a threat to the financial system on increase of non performing loan in the long run. This might not stimulate aggregate demand as expected in the short run but in the long run the banking system should be more cautious with the non performing loans which can destroy the stability of the financial system, decrease output and employment. This is clearly proven by the deflation of -1.14 per cent. In 2020, Malaysia's economy contracted by 5.6 per cent as compared to 4.4 per cent in the previous year. Overall, all sectors recorded negative growth with the Services sector decelerated 5.5 per cent (2019: 6.2 per cent), Manufacturing 2.6 per cent (2019: 3.8 per cent) and Agriculture 2.2 per cent (2019: 2.0 per cent). However, two other sectors, namely Construction and Mining & quarrying sectors recorded two digits decline of negative 19.4 per cent (2019: 0.4 per cent) and 10.6 per cent (2019: -0.6 per cent) respectively. This is known as an effect through bank lending channel.

RESEARCH OBJECTIVES

The overall study aimed to investigate whether the anticipated and unanticipated monetary variables were effective in influencing the financial stability in Malaysia during a crisis.

LITERATURE REVIEW

The Effectiveness of Monetary Transmission Channel in Developing Economics

Ufuk Can, Mehmet Emin Bocuoglu and Zeynap Gizem Can (2020) claims the effectiveness of targeting inflation differs based on the monetary transmission channel used by the central bank of the nation. Turkey, an emerging economy used the interest rate channel where the federal fund rate was changed. The federal fund rate changes influence the output in Turkey. The fluctuation in the output measured using the vector auto regression method was due to changes in asset pricing and liquidity. Disyatat and Vongsinsirikul (2003) supports that interest rate channel has a great impact on price but it only has a transitory effect on output. Since the economy of Thailand is highly integrated economy thus the exchange rate also has an impact to the economy of Thailand. Similarly, in a small and emerging economy like Sri Lanka, the monetary transmission channel worked effectively in credit channel, exchange rate channel and also the interest rate channel. It had a great influence on the asset price and income.

Study by Kamin, Turner and Van 't dack (1998) claim that understanding and implementing the transmission process is important in designing and implementing the monetary policy. This is because it can influence the balance sheet position, the financial system deepening process and the expectation of the future policy. In recent years it has been argued that monetary policy in any nation should focus on price stability only and not on output or employment. How should we decide the appropriate number for inflation rate, 2 per cent and 3 per cent. These figures are usually discussed in industrialized nation other than zero. But there is problem in statistical measurement and relative price of adjustment that varies in each sector. The inflation rate is relatively positive and small in industrialized nation. But the inflation targeting in a developing country is much higher. This is because of the political instability that takes place in these countries. Political pressure for the central banks to practice expansionary monetary policy makes it difficult to fulfil monetary policy goals. When a developing country is dependent on international trade, changes in the external factors will influence the exchange rate channel and the money channel through money supply. The financial strength should be strong enough to be able to absorb the shocks as soon as possible. If the country fails in having a sophisticated financial system, then diversification can distort the stabilization process. In addition, the more integrated and open an economy, inflow and outflow of foreign capital takes place. This makes a country's capital account sensitive to these inflows and outflows. Therefore, it affects the reserve in the official financing of the balance of payment. In a developing nation the amount of reserve is not enough to sustain deficit in the balance of payment. Thus, the monetary policy is used to stabilize the balance of payment as well as the exchange rate of the nation.

Abdul Aleem (2010) stresses that effectiveness of the monetary transmission channel depends on the financial and legal structure of the country. The author claims the effectiveness of monetary policy in the developing nation and emerging economics depends on the influence of central banks like the Federal Reserve, European Central Bank and Bank of Japan. The author claims that India has a bank-based economy. Since 2005, bank credit to the commercial sector accounts for more than 70 per cent of the total domestic credit. The ratio of currency deposits has declined since 1999. Thus, it is proven that bank is an important financial intermediation and non financial institution lacks alternative sources of funding. The empirical

evidence proved that the bank lending channel plays an important role in transmitting the changes in the money supply impact towards the real sector. The bank lending channel was also deemed important because the lower market capitalization by the listed company in India compared to developed country shows that India' capital market is not fully developed. Asset pricing channel did not really influence the real sector. Moreover, the Reserve Bank of India always practice unanticipated changes in money supply to stabilize the exchange rate. This further weakens the exchange rate channel.

Ooi Sang Kuang (2020) states that Malaysia's financial system can be characterised as full of banking services, growing capital market and international openness. The total asset of the financial system is 386 per cent of the country's GDP where more than 50 per cent of the financial assets originates from the banking system. This means that banking system is an important financial intermediary in Malaysia. Since the financial crisis that took place in 1997, there has been a significant change in the financial system in Malaysia. Before the crisis, the banking system consists of large number of small companies. After the crisis, in 1998 the banks merged and consolidated into nine domestic banks. By 2006 the banks were more resilient, effective, competitive and responsive towards the changes in the economic conditions. The strengthening of the financial restructuring has improved the balance sheet of the financial institution. Later the financial institution began to focus in upgrading the operation efficiency for their customers. This was supported by the internal study conducted by Bank Negara Malaysia. The study revealed that bank efficiency increased due to declining trend in the net interest margin. The tight interest margin was found to be associated to bank efficiency in many studies conducted by previous researchers. This was followed by Bank Negara Malaysia in designing the New Interest Rate Framework in 2004 which resulted in liberalization at asset pricing. This increased the level of competition in the financial system.

Since the crisis, Malaysian had greater proportion of loans allocated for households and businesses. They can raise capital by the issuance of bond and equity through the banking system. These progress shows the development of the capital market. This also improved the availability of funds through private debt securities and equity. The increase in bank competition and efficiency enables the transmission of the monetary policy to be effective. The pass-through effect of the interest rate channel will not be disrupted. Unfortunately, almost 87 per cent of SME financing comes from sources other than the banking system. It comes from the self funding, informal sectors, government grants and development fund from foreign sources. These funds are distributed below the market rate to the SME-s. This will cause the effectiveness of the transmission of monetary policy distracted. Moreover, the Bank Negara Malaysia has numerous times intervene in the money market to strengthen the exchange rate for Ringgit Malaysia. This has disrupted the exchange rate channel in the monetary transmission channel.

METHODOLOGY

The study aims to investigate the effectiveness of the monetary policy implemented by the government to overcome economic stress due to crisis created by political scandals and health pandemics and financial crisis. The economic stress in a country can be identified by measuring the financial stability of the country. Monetary policy has a significant impact on the country's

financial stability because it deals with the Central Bank that maintains the reserve which is stated in the Balance of Payment and the exchange rate stability. Monetary policy also deals with controlling of money supply that can influence the inflation rate and the interest rate. Thus, it can be concluded that monetary policy is a highly sensitive macroeconomic policy that deals with both internal and external shocks. It is not political driven policy like the fiscal policy. The monetary policy oversees the financial performance of the country through monetary variables like interest rate, inflation rate, exchange rate and money supply. The data published in the Financial Reports are all known as anticipated variables. Unfortunately, Malaysia is a country that experiences various shocks both internal and external. These shocks created the variables to be extremely volatile. Volatility results in risk. The risk created by these volatilities is known as systematic risk which cannot be diversified through diversification in portfolio. The impact of this risk can be reduced through a stable financial system. In economics, researchers look at the impact in two-time frame, short run, and long run. If the impact of the shocks influences the monetary variables in the short run or long run, it can be concluded that the financial system was not able to absorb the shocks at the specific time period. Thus, the financial system was not strong enough to enable the shock to be neutralized and does not influence the stock returns. A sustainable, resilient and strong financial system is a system that is able to absorb shocks fast and neutralizes its impact. Unlike monetary policy, fiscal policy is more discretionary because the decision to spend as government expenditure and collect tax differ according to the political needs of the country.

Most researchers in the field of finance or economics usually use the anticipated variables to do the analysis. But the anticipated variables do not reflect the real situation. It has statistical adjustments to the data to overcome missing values. It does not include the leakages and the mismanagement. All these issues are usually included in the error term. The error term reflects the deviation between the predicted and the actual observation. Since the expected value does not reflect the real value, the deviation is the element that needs to be considered in the policy making. It reveals the shock. Thus, this study did not only use the anticipated monetary variables, but it used the unanticipated monetary variables. The unanticipated monetary variables were taken from the study done by Barro (1980) and by Geetha (2010). The anticipated monetary variables are regressed with lagged one and two of the anticipated monetary variables. The error term obtain from the regression of each monetary variables will be powered by two to obtain the variance. The variance represents the unanticipated monetary variables. Thus, the monetary variables chosen in this study were interest rate, exchange rate, consumer price index and money supply M_2. All these variables were converted to unanticipated. The data was obtained from the Malaysian Financial Report from January, 2010 till September, 2020. There was a monthly observation of 117.

The analysis began by running a unit root test. The ADF and the PP tests aims to identify whether the monetary variables were stationary. The monetary variables were run three times. First the anticipated monetary variables. Second the unanticipated monetary variables and third as the averaged unanticipated monetary variables. The aim is to determine the differences in the results obtained which the policy makers should take into consideration. The variables were run at level and first difference. The unit root test was run with only intercept and intercept with trend. The unit root did not include the structural Breaks. The result revealed that at level both intercept and intercept with trend were not stationary for all the monetary variables in

anticipated, unanticipated and averaged unanticipated form. The variables were only stationary at first difference.

The analysis extended to determine the long run relationship between the different forms of monetary variables with the stock returns. The anticipated monetary variables were found to bound or establish long run relationship but unfortunately all the monetary variables were insignificant at 5 per cent significance level. But when the monetary variables were converted into unanticipated monetary variables, the bound was established in the long run. In addition, other than unanticipated interest rate, all other monetary variables like unanticipated money supply M2, unanticipated exchange rate and unanticipated consumer price index were able to explain the changes in the stock returns at 5 per cent significance level in the long run. When the averaged unanticipated monetary variables were used, the bound test failed to establish the long run relationship and the monetary variables were also found to be insignificant at 5 per cent significance level.

This was followed by the establishment of short run relationship between the different form of measuring monetary variables with stock returns. The anticipated monetary variables seem to have a short run relationship with stock returns. Similar outcome can be found when the averaged unanticipated monetary variables were used. The error correction term had a negative sign, and it was significant at 5 per cent significance level. The negative sign and the significance show the dynamics for the equation to reach equilibrium in the long run. When the unanticipated monetary variables were used, the coefficient terms were significant but positive. The result indicated that it is positive and significant because the vector error correction was run using second differences. If the vector error correction is run with first differences than it will show a negative sign and significant. Finally, diagnostic test was conducted for the error term for serial correlation, heteroscedastic and normality.

FINDINGS

Unit Root Test Results

Table 1 Shows the Augmented Dickey Fuller Test without the structural break
(without converting it to unanticipated values)

Variables	Intercept				Trend & Intercept			
	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)
LGCPI	-1.8254	0.3668	-8.6657	0.0000	-0.6854	0.9715	-8.962	0.0000
LGEXCR	-0.926	0.7772	-7.6000	0.0000	-2.692	0.2418	-7.584	0.0000
LGIR	-1.5251	0.517	-13.889	0.0000	-1.8114	0.6936	-13.921	0.0000
LGM2	-2.419	0.1385	-11.760	0.0000	-1.7045	0.7843	-12.215	0.0000
LGSR	-1.3015	0.627	-11.523	0.0000	-3.137	0.1022	-11.507	0.0000

Table 1 shows the Augmented Dickey Fuller test results using anticipated monetary variables. The data were tested using the intercept and also intercept with trend. The monetary variables tested were consumer price index, exchange rate, interest rate, M_2 of money supply and stock returns. At level, all the monetary variables were found to be insignificant. This is because the estimated T Statistics for all the monetary variables had a probability value of greater than 0.5. Thus, it can be concluded the variables were insignificant at 5 per cent significance level. They were not stationary at levels. When the variables were differentiated at 1st difference, the estimated T Statistics for all the anticipated monetary variables had a probability value of less than 0.5. Thus, it can be concluded at 1st difference all the monetary variables were significant at 5 per cent significance level. Thus, it can be concluded that all the monetary variables included in this study were stationary at 1st difference. Similar result was also found when the data were analysed using intercept and trend. This indicates after differentiating the data by including intercept and trend, the data became stationary at 5 per cent significance level.

Table 2 Shows the Augmented Dickey Fuller Results for unanticipated monetary variables.

Variables	Intercept				Trend & Intercept			
	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)
LGUCPI	-1.7804	0.3887	-8.6740	0.0000	-0.7223	0.9687	-8.894	0.0000
LGUEXCR	-0.9735	0.7612	-7.5550	0.0000	-2.662	0.2543	-7.536	0.0000
LGUIR	-1.799	0.3795	-13.587	0.0000	-2.0360	0.5756	-13.591	0.0000
LGUM$_2$	-2.282	0.1791	-11.799	0.0000	-1.698	0.7466	-12.198	0.0000
LGUSR	-1.258	0.647	-11.499	0.0000	-3.102	0.110	-11440.	0.0000

Table 2 shows the Augmented Dickey Fuller test for unanticipated monetary variables. The variables were tested with intercept and also with intercept and trend. But the monetary variables were converted into unanticipated values following the Barro (1988) method. At the level, the unanticipated monetary variables had an estimated T value with probabilities higher than 0.5 indicating the unanticipated monetary variables were not stationary at 5 per cent significance level. But when the values were differentiated at 1st difference, all the unanticipated monetary variables were significant at 5 per cent significance indicating the variables were stationary at 1st difference. Similar outcome was found when the intercept and trend were included in the analysis.

Table 3 Shows the Philip Perron test result for anticipated changes in monetary variables

Variables	Intercept				Trend & Intercept			
	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)
LGCPI	-1.812	0.373	-7.952	0.0000	-0.531	0.981	-8.193	0.0000
LGEXCR	-0.743	0.8300	-7.483	0.0000	-2.229	0.4688	-7.466	0.0000
LGIR	-1.082	0.721	-3.973	0.002	-1.139	07.917	-4.994	0.0004
LNM2	-1.448	0.556	-1.696	0.430	-3.077	0.116	-1.793	0.701
LGSR	-0.816	0.810	-3.333	0.015	-3.134	0.103	-3.430	0.052

Table 3 shows the anticipated values of the monetary variables where the Philip Perron stationary test was conducted. The estimated T values at the level showed that the variables were not stationary at 5 per cent significance level for both intercept and intercept with trend. This was due to the probability values of the estimated T values were more than 0.05. In contrast when the anticipated values of the monetary values were differentiated at 1st difference, the estimated T values all had a probability value of less than 0.05. Therefore, the variables were stationary at 1st difference with intercept and intercept with trend. Table 4 shows the stationary test result for Philip Perron when the monetary variables were converted to unanticipated with intercept and intercept with trend. The result revealed that at level the estimated T Statistics for the unanticipated monetary variables were having probability values of more than 0.05. In contrast when they were differentiated, the probability values of the estimated T Statistics showed values less than 0.05. This means the unanticipated monetary variables were all stationary at 1st difference.

Table 4 Shows the Philip Perron with unanticipated variables

	Intercept				Trend & Intercept			
Variables	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)	Level (T-statistic)	Level (Prob.)	1st Difference (T-statistic)	1st Difference (Prob.)
LGUCPI	-1.765	0.396	-7.599	0.0000	-0.602	0.977	-8.223	0.0000
LGUEXCR	-8.209	0.809	-7.512	0.0000	-2.259	0.453	-7.493	0.0000
LGUIR	-1.468	0.546	-14.042	0.0000	-1.727	0.773	-14.249	0.0000
LGUM$_2$	-2.323	0.166	-11.788	0.0000	-1.694	0.748	-12.916	0.0000
LGUSR	-1.258	0.647	-11.486	0.000	-3.183	0.092	-11.479	0.0000

Table 5 Shows the bound test result for the anticipated monetary values

Test statistic	Value
F-statistics	3.1633

Table 5 shows the bound test result between the anticipated monetary variables and the stock returns. The result revealed that the estimated F Statistics had a value of 3.1633. This indicates that the estimated F Statistics value was greater than the critical value of F for the bound test at level I(0) which is 2.56 at 5 per cent significance level. This means the anticipated monetary variables will bound and create a long run relationship at level. It can bound and create a long run relationship at level (2.2) and 1st difference (3.09) at 10 per cent significance level because the estimated F Statistics are greater than the mentioned critical value.

Table 6 Shows the coefficient and the estimated T values for the anticipated monetary variables at different lag length.

Independent Variables	ARDL (1, 0, 2, 2, 0)
LGCPI	-0.6129 (0.5411)
LGEXCR	1.5611 (0.1213)
LGIR	0.0484 (0.9143)
LGM2	0.8103 (0.4424)
C	0.0062

Table 6 indicates the long run relationship between the anticipated monetary variables and the stock returns at different lag length. All the anticipated monetary variables were insignificant at 5 per cent significance level. This is because the estimated T values were less than the critical value of T at 5 per cent significance level. The anticipated monetary variables were insignificant in establishing long run relationship with stock returns.

Table 7 Shows the ECM for the anticipated monetary variables and the stock returns.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CointEq(-1)	-0.113396	0.025396	-4.465054	0.0000

Table 7 shows the error correction term has a coefficient with a negative sign and it is significant at 1 per cent significant level (t= -4.465054, p=0.0000). This indicated that there is short run relationship between the anticipated monetary variables and the stock return. Table 8 reveals the diagnostic test for the long run relationship between the variables. For the serial correlation, probability value of 0.7566 indicates hypothesis null cannot be rejected. Thus, it can be concluded that there is no serial correlation in the model. Similarly, the heteroskedastic reveals a probability value of 0.2277. Hypothesis null cannot be rejected. There is no heteroscedastic problem in the model. Finally, the normality test confirms that hypothesis null cannot be rejected that the data is normally distributed.

Table 8 Shows the correlation analysis on the anticipated monetary variables and the stock returns.

Correlation	LGSR	LGM2	LGEXCR	LGIR	LGCPI
LGSR	1.000000				
LGM2	0.716433	1.000000			
LGEXCR	0.748270	0.818075	1.000000		
LGIR	-0.097179	-0.293198	-0.061905	1.000000	
LGCPI	0.7777526	0.964210	0.888186	-0.147159	1.000000

Table 8 shows that there is a strong relationship between money supply M_2 and stock returns. Similarly, there is also a strong relationship between consumer price index and exchange rate with stock return where respectively the correlation value is 0.716433, 0.748270 and 0.7777526. The value of money supply M_2 and consumer price index seem to have a correlation value of 0.964210 which is greater than 0.9 indicating the existence of multicollinearity problem. The relationship between consumer price index and the exchange rate also high with a correlation value of 0.888186. Since the value does not exceed 0.9 thus it need not necessarily be removed. No doubt consumer price index and money supply M2 have a high correlation, but the variables were not removed since the aim of the study was to see the effectiveness of the monetary policy in handling the crisis. Thus, the inclusion of all monetary variables was important.

The study was extended by converting all the anticipated values of the monetary variables to unanticipated. The bound test result in Table 9 shows that the estimated F Statistics was greater than the critical value of F at 1 per cent significant level. Thus, it can be concluded that the unanticipated monetary variables bound with the stock returns in the long run.

Table 9 Shows the bound test result between the unanticipated monetary variables and the stock returns.

Test statistic	Value
F-statistics	23.5E+27

Table 10 Shows the long run relationship between the unanticipated monetary variables and the stock returns

Independent Variables	ARDL (1, 0, 2, 2, 0)
LGUCPI	5.510669 (0.0000)
LGUEXCR	-3.953752 (0.0001)
LGUIR	-0.815517 (0.4164)
LGUM$_2$	-4.776219 (0.0000)
C	0.0020

Since all the monetary variables were converted to unanticipated values, the ARDL shows that unanticipated consumer price index, unanticipated exchange rate and unanticipated money supply of M$_2$ were significant in explaining the changes in the stock returns in the long run with the probability values of 0.000, 0.0001 and 0.0000 respectively. The unanticipated consumer price index had a positive coefficient. This means that when consumer price index increases the stock returns increases. But the unanticipated exchange rate and the unanticipated money supply M$_2$ both had negative relationship with stock returns. The only monetary variable that did not influence stock returns was the unanticipated interest rate (Refer to Table 10). Table 11 shows the short run relationship between the unanticipated monetary variables and stock returns.

Table 11 Shows the error correction modelling between the unanticipated monetary variables and the stock returns.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CointEq(-1)	-0.517331	3.84E-09	1.35E+08	0.0000

Table 11 reveals that the error correction term was significant and negative. This means there is a short run relationship between the unanticipated monetary variables and the variables were dynamic enough to reach equilibrium if there was disequilibrium in the economy. Table 17 shows the diagnostic test results. The findings revealed that there was no serial correlation problem, heteroscedastic issues as well as normality problem when unanticipated monetary variables were used in establishing the long run and short run relationship with stock returns.

CONCLUSION

The study aimed to identify the effectiveness of the monetary policy in influencing the financial stability during a crisis in Malaysia. The monetary variables were differentiated into anticipated and unanticipated monetary variables. The financial stability was measured using stock returns meanwhile the monetary variables were represented by money supply, consumer price index, interest rate and exchange rate. Monthly data from January 2010 to September 2020 were used. The analysis began with a unit root test followed by ARDL and error correction modelling.

Therefore, it can be concluded the best result was obtained when the unanticipated monetary variables were used to establish long run and short run relationship with stock returns.

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