International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 04, 2020
ISSN: 1475-7192

The Impact of Monetary Policy on Inflation

Hamidah Ramlan

Abstract*—the objective of this study is to scrutinize an association between inflation, consumption and saving in Malaysia. The Data was collected and retrieved from www.bursamalaysia.com, Bank Negara and Statistic Department cover from period of 1990 to 2018. Throughout, this study uses multiple linear regressions to run the dependent variable saving with its independent variables. The result shows a statistically significant relationship between the inflation, consumption and saving.*

Index Terms: *exchange rate, inflation, interest rate, money supply.*

I. INTRODUCTION

Malaysia has been generally effective in adjusting solid financial development with moderate levels of inflation in the periods going before and taking after the Asian Crisis. Yet, the way out from the seven-year-old swapping scale peg in July 2005 and the late conformity in regulated fuel costs require a superior comprehension of the determinants of inflation. Downplaying the elements of expansion will likewise be imperative for surveying the proper macroeconomic approach blend.

The monetary policy refers to a policy which employs the central bank's control of the supply of money as an intrument for achieving the objectives of the general economic policy. A monetary policy may aim to achieve the optimum level of employment and output, price stability, balance of payments equilibrium or other goals of the government's economic policy with the regulation by the central bank. The central bank influences the total amount and the cost of credit primarily by affecting the cash reserves of commercial banks in the economy. (Vengedasalam,2010)

Extant studies have investigated the relationship between monetary policy and inflation (Dimitrijević, and Ivan, 2013; Andrei, Ana Michaela, 2014; and Kumo, Wolassa Lawisso,2015) to name few; however all of the studies thus not particularly focus on the monetary policy. Given that, monetary policy in Malaysia is growing with significant contribution in uplifting the economic, thus, finding the importance of its monetary policy is also crucial. Hence, objective of this study is to identify the relationships between monetary policy with inflation by in Malaysia.

The reminder of paper is organized as follows. Next section reviews the past studies related to the monetary policy and inflation and then followed by hypothesis development. Next, presents the data and methodology used. In the following section, this study discusses the results. Finally, concludes the paper and highlights the policy implications.

Acconnting and Finance Department, Universiti Tenaga Nasional, Muadzam Shah, Pahang.

DOI: 10.37200/IJPR/V24I4/PR201566
Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

II. LITERATURE REVIEW

Research done by Daniel Riera Crichton (2006) examines the relation between inflation, money supply exchange rate and interest rate have a significant effect on each other. Monetary policy as measured by money supply, interest rate, and an exchange rate can account for most or all of the change in the inflation. The study found a significant relationship between money supply and inflation in Malaysia. Consistent to the finding, Sajjad Gul (2011) found that a positive relationship between the money supply and inflation, supporting that an increasing the money supply can change the inflation rate.

Francis and Stephen (1985) with their research the relationship between government deficit, money growth, and inflation. The study utilized ANOVA and Pearson correlation analyses for empirical investigation. The relationship between monetary policy and inflation is when the monetary authorities stabilize the interest rates, causing an expansion in the money supply that ultimately leads to an impact on the inflation rate.

Chaudhry (2011) examines the relation foreign exchange rate with inflation in Pakistan. Empirical results indicated that the rise in foreign exchange reserves leads to lower the rate of inflation in Pakistan during the study period.

Kaul (1987) with their studies on the role of monetary sector with inflation. The study indicates the relationship between money supply, interest rate and exchange rate have found significant long run effect with inflation. Audu, Nathan and Amaegberi (2013) with their study, exchange rate fluctuation and inflation targeting in an open economy found that interest rate and exchange rate were positively significant with inflation. The findings shows depreciation of the exchange rate as this will turn lead a decrease the inflation.

Alvarez, Robert and Warren (2001) with their studies on interest rate and inflation shows that the central element of the instrument of monetary policy is to be the short term interest rate. The monetary policy should be focused on the control of inflation and the inflation can be reduced by increasing short term interest rates. They also said that inflation can be controlled by controlling the rate of growth of the money supply. In this context they consider that the interest rate and money supply are giving the impact on inflation through the economy as the high interest rates as well as with high inflation.

Mishkinand Frederic (1982) examines the relation between the interest rate and inflation. The study found that a negative correlation between ex-ante real interest rates and expected inflation.

Tariq Mahmood Ali, Muhammad Tariq Mahmood and Tariq Beshir (2015) with the studies of the impact of interest rate, inflation and money supply on exchange rate volatility in Pakistan which is they found that exchange rate and money supply is more effective to inflation and has a significant impact and have a relationship towards inflation.

Mpofu, R. T. (2011) studied the money supply, interest rate, exchange rate and oil price influence on inflation in South Africa. The study indicates that approximately 97% of the consumer price index movement is explained by the money supply, exchange rate, interest rate and oil price. The study confirmed that money supply and exchange

DOI: 10.37200/IJPR/V24I4/PR201566
Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

rates have a strong positive relationship with inflation and have to be managed. Interest rates and oil price, on the other hand, have a significant negative relationship with inflation and should be part of a macroeconomic policy framework. This requires managing the delicate balance between a desirable level of inflation in support of economic growth and development and an unacceptable level of inflation that leads to price instability.

Roberts (2006) studied the relationship between the changes in monetary policy, which the variables are money supply, interest rate, and open market operation can account for all of the change in the inflation. The findings show a significant positive correlation between money supply and inflation.

Hardouvelis (1988) with his studies the post-October 1979 response of exchange rates and interest rates to the new information contained in the first announcement of fifteen US macroeconomic series. According the result, an increase in interest rates are accompanied by an appreciation of the dollar, which is consistent with models that increase price rigidity and absence of purchasing power parity.

Hamburger, Michael J. and Burton (1981) with their research money growth and inflation: A regime switching approach. The findings show a significant positive correlation between money supply and inflation.

In broadest sample, Monfared, and Akın, 2017 dissect the impact of exchange rate with inflation usedtheannual data for the period 1976-2012 in Iran. They found that that there is a direct relationship between Exchange rate and inflation. An increase in foreign exchange rates makes the inflation goes up. According to the results, both the money supply and the exchange rate affect the inflation in the positive direction. Contribution of the money supply on inflation is greater than the exchange rate.

Therefore, from the issue raised by previous study, the hypotheses developed for the current study are as follows:

Hypothesis 1:-.

There is a relationship between money supply, exchange rate, interest rate and inflation.

Hypothesis 2:-

There is a significant impact between money supply, exchange rate, interest rate and inflation.

III. DATA AND METHODOLOGY

The purpose of this study, is to study and analyze the role and efficiency of monetary policy in controlling inflation in Malaysia. Specifically, the study will focus on two primary objectives: 1. To examine the significant impact of monetary policy and inflation in Malaysia. 2. To determine the relationship between monetary policy and inflation in Malaysia.. The sample size in this study consists of inflation, exchange rate, money supply and interest rate for period from 1995 to 2018 on a quarterly basis. The data was collected from Department Statistics, Bursa Malaysia and Bank Negara. There are two main variables as shown in table 1 below:

DOI: 10.37200/IJPR/V24I4/PR201566
Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

Table 1: Dependent and independent variables

Variables
Dependent
Exchange rate
Money supply
Interest rate
Independent
Inflation

This research study is to test the relationship between energy firms' performance and liquidity, thus, multiple regression model was applied.

The multiple regression equations can be represented as follows:

$$INF_{it=}\alpha + \beta_1 MS_{1it} + \beta_2 IR_{2it} + \beta_3 ER_{3it} + \varepsilon_{it}$$

IV. RESULTS AND DISCUSSION

Descriptive Statistics Results

The result of descriptive statistics is tabled in table 2.

The descriptive table describe the data that have been used. The data consist of four variables which is inflation, money supply, interest rate, and exchange rate. The mean shows the average of those variables and money supply have the highest mean from all the variables. The standard deviation is show the relation between mean and its sample. However, looking the maximum value, mean as well as standard deviations indicate that all figures have shown in positive values.

Table 2: The Descriptive Statistics Results

	Mean	Std. Deviation	N
Inflation	83.4461	15.51013	100
Money supply	561769.1740	433157.21155	100
Interest rate	7.2002	1.31603	100
Exchange rate	.3147	.05136	100

Pearson Correlations Results

DOI: 10.37200/IJPR/V24I4/PR201566
Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

As reported in Table 2, the robustness check for Pearson correlations to the entire model in the multivariate for model equation signifying the estimators as represented by Pearson and significant values were not seriously affected by the presence of multicollinearity since all values reports below than 0.8 except for current ratios stands at 0.956. The Pearson Correlation analysis is to determine whether the dependent variable have relationship with independent variables. The correlation is significant at the 0.01 level (2-tailed).

Table 3: Pearson Correlations Results

		Money supply	Exchange rate	Interest rate	Inflation
Money supply	Pearson Correlation	1	-.307**	-.511**	.956**
	Sig. (2-tailed)		.002	.000	.000
	N	100	100	100	100
Exchange rate	Pearson Correlation	-.307**	1	.430**	-.506**
	Sig. (2-tailed)	.002		.000	.000
	N	100	100	100	100
Interest rate	Pearson Correlation	-.511**	.430**	1	-.576**
	Sig. (2-tailed)	.000	.000		.000
	N	100	100	100	100
Inflation	Pearson Correlation	.956**	-.506**	-.576**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	100	100	100	100

**. Correlation is significant at the 0.01 level (2-tailed).

Multivariate Regression Results

Table 4: Model summary result

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.982[a]	.965	.964	2.94948

a. Predictors: (Constant), exchange rate, money supply, interest rate

This is the model summary result that is important to know how strength the predictors. On this table we will more focus on R Square value. R Square value must be more than 0.5 until 09 but the best range value is between 0.6 until 0.7. My value for R Square which is 0.965, means 96.5% shows the highest great value for my inflation.

Table 5: ANOVA Result

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22980.715	3	7660.238	880.546	.000[b]
	Residual	835.144	96	8.699		
	Total	23815.859	99			

a. Dependent Variable: Inflation

b. Predictors: (Constant), exchange rate, money supply, interest rate

DOI: 10.37200/IJPR/V24I4/PR201566
Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

The ANOVA result is shows that the F is 880.546 with 0.000 significance level that is less than 0.05. These ANOVA result shows that a good sign that they have a relationship among the variables.

In this study, multivariate regression was used to analyses between each independent variable (money supply, exchange rate and interest rate) with dependent variable (inflation rate) This study was tested with significant value α=0.05.

The Relationship between Money supply, exchange rate, interest rate With Inflation.

In auxiliary, as refer to **Table 6**results evidence a positive relationship between money supply (+38.836) at 1% significant level with inflation. Otherwise, negative relationship with exchange rate (-10.526). This result shows the money supply and exchange rate do exert an impact on the inflation. The R-square value of 0.965, indicating a strong relationship across selected variable. The results indicates 96.5% percent of the amount of variation in inflation can be attributed to money supply, interest rate and exchange rate. The negative relations for exchange rate indicates a depreciation exchange rate is preferences in supporting the reduce inflation. Additionally, Audu, Nathan and Amaegberi (2013) also evidenced negative association between exchange rate with inflation. Thus, by depreciation exchange rate able to reduce the inflation. While, the result for money supply corroborate with the study done by John M. Roberts (2006) with a significant positive relations with inflation.

Table 6: Regression Results for Inflation

	Standardized Coefficients		
	Beta	t	p. value
(Constant)	0.364	34.908	0.000
Money supply	0.869	38.836	0.000
Interest rate	-0.035	-1.501	0.137
Exchange rate	-0.224	-10.526	0.000

a. Dependent Variable: Inflation

$$INF_{it=}364 + 0.869MS_{1it} + -0.035IR_{2it} + -0.224ER_{3it} + \varepsilon_{it}$$

Variables	Results	Sig. Level	Hypothesis
Money Supply	**Regression** • **Significant = 0.000** **Correlation** • **Significant = 0.000**	**0.01** **0.01**	**Accept H(1)** **Accept H(2)**
Interest Rate	**Regression** • **Not Significant = 0.137** **Correlation** • **Significant = 0.000**	- **0.01**	**Reject H(1)** **Accept H(2)**
Exchange Rate	**Regression** • **Significant = 0.000** **Correlation** • **Significant = 0.000**	**0.01** **0.01**	**Accept H(1)** **Accept H(2)**

DOI: 10.37200/IJPR/V24I4/PR201566
Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

V. CONCLUSION

This study integrates the findings on the impact of monetary policy on inflation.The correlation and regression results support hypotheses 1 and 2 as depicted in Table 3, 4 and 5 that the F statistics is substantiated at the 1% significant level for inflation (880.546). Therefore result implying the null hypotheses that the regression coefficients are zeros except interest rate (0.137) can be rejected at 1% level of significant for the model thus are fits for prediction. Hence, the hypotheses can be accepted implying the ability of money supply and exchange rate in influencing the inflation from Malaysia perspective is concerns.

Thus, one of the limitations of current study is that the findings were based on only a limited number of years for money supply, interest rate and exchange rate sample. Researchers must therefore consider further extending this analysis by incorporating others additional indicators of economic indicators such as economic growth, unemployment and foreign direct investment. It will also be quite useful if additional studies are performed to confirm the relationships analyzed.

VI. ACKNOWLEDGMENT

This study is part of the research under Pocket Grant, job number of RJO10436494/POCKET/2019015. I would like to thanks to UNITEN for financially support.

REFERENCES

1. D. Vengedasalam, , & Madhavan, K. , Principles of Economics. Shah Alam: Oxford Fajar. 2010.
2. B. Dimitrijević, and Ivan Lovre. "Essay on monetary policy and economic growth." Journal of Central Banking Theory and Practice 1.3, 2013,p.p 111-138.
3. A. Andrei, Ana Michaela,. "An Optimal Control Model of Macroeconomic Policies and the Impact on Romanian Macroeconomic Indicators." ,2014.
4. W. Kumo, Inflation Targeting Monetary Policy, Inflation Volatility and Economic Growth in South Africa. No. 2154. 2015.
5. R.C. Daniel.. 2006 “Inflation Dynamics in Malaysia”, presented the Asian Pacific Division on September 6, 2006
6. G. Sajjad. “Impact of Money Supply on Inflation in Pakistan”, Interdisciplinary Journal Of Contemporary Research In Business vol. 3 (8),2011 pp.398-423.
7. W. A. Francis & Stephen M. Miller. “The Relationship Between Government Deficit, Money Growth, and Inflation”, Journal of macroeconomics, Vol 7(4) 1985, pp.447-467
8. Chaudhry, Imran Sharif, et al. "Foreign exchange reserves and inflation in Pakistan: evidence from ARDL modelling approach." International Journal of Economics and Finance3.1 (2011): 69-76.
9. Kaul, Gautam. "Stock returns and inflation: The role of the monetary sector." Journal of financial economics 18.2 (1987): 253-276.

DOI: 10.37200/IJPR/V24I4/PR201566
Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

10. Amita Bhandari, Anantha N. Naik, Shaila Lewis. "Smart Drug Delivery Systems as Game Changers in Therapeutics." Systematic Reviews in Pharmacy 4.1 (2013), 20-25. Print. doi:10.4103/0975-8453.135835
11. Audu, N. P., and M. Amaegberi. "Exchange rate fluctuations and inflation targeting in an open economy: Econometrics approach." European Journal of Accounting, Auditing and Finance Research 1.3 (2013): 24-42.
12. Alvarez, Fernando, Robert E. Lucas, and Warren E. Weber. "Interest rates and inflation." American Economic Review 91, no. 2 ,2001,: 219-225.
13. Ramzi abdulrashed abdulkhaleq gazem, sharada angatahally chandrashekariah (2016) pharmacological properties of salvia hispanica (chia) seeds: a review. Journal of Critical Reviews, 3 (3), 63-67.
14. Mishkin, Frederic S. "Monetary policy and short-term interest rates: An efficient markets-rational expectations approach." The Journal of Finance 37.1 (1982): 63-72.
15. Ali, Tariq Mahmood, Muhammad Tariq Mahmood, and Tariq Bashir. "Impact of interest rate, inflation and money supply on exchange rate volatility in Pakistan." World Applied Sciences Journal 33, no. 4 (2015), pp 620-630.
16. Mpofu, R.T., “Money supply, interest rate, exchange rate and oil price influence on inflation in South Africa”. Corporate Ownership & Control, 8(3), 2011, pp.594-605.
17. Roberts, John M. "Monetary Policy and Inflation Dynamics." International Journal of Central Banking 2(3), 2006.
18. G.A. Hardouvelis, "Economic news, exchange rates and interest rates." Journal of International Money and Finance 7.1 (1988): 23-35
19. M. J. Hamburger,and Burton Zwick. "Deficits, money and inflation." Journal of Monetary Economics 7.1 ,1981,pp. 141-150.
20. Alvarez, Fernando & Atkeson, Andrew,. "Money and exchange rates in the Grossman-Weiss-Rotemberg model," Journal of Monetary Economics, Elsevier, vol. 40(3), 1997, pp. 619-640.
21. F. Alvarez, F., R. E. Lucas,. and Weber, W.E.,. Interest rates and inflation. American Economic Review, 91(2), 2001, pp.219-225.
22. W. G. Dewald,. "Are Money Growth and Inflation Still Related?." Federal Reserve Bank of Atlanta: St. Louis Review80, 1998, pp. 13-24.
23. R. Dornbusch,. "Expectations and exchange rate dynamics." Journal of political Economy 84.6 (1976): 1161-1176.
24. S.S.Monfared, and Akın, F., 2017. The Relationship Between Exchage Rates and Inflation: The Case of Iran. European Journal of Sustainable Development, 6(4), pp.329-340.
25. Miles, Marc A. "Currency substitution, flexible exchange rates, and monetary independence." The American Economic Review 68 (3) , 1978, 428-436.
26. F. Modigliani, and Robert J. Shiller. "Inflation, rational expectations and the term structure of interest rates." Economica 40, no. 157 (1973): 12-43.
27. B. Solnik,. "Using financial prices to test exchange rate models: A note." The journal of Finance 42.1 .1987,pp. 141-149.

DOI: 10.37200/IJPR/V24I4/PR201566
Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020

28. Badparva, E., Baharvand, P.Parasitic contamination of drinking water wells in Rumeshgan, Lorestan Province(2018) International Journal of Pharmaceutical Research, 10 (3), pp. 367-370. https://www.scopus.com/inward/record.uri?eid=2s2.085055451170&partnerID=40&md5=e5376234ddd08280df0bbb348a917246
29. G. L. Tuaneh, and L. Wiri. "Unrestricted Vector Autoregressive Modelling of the Interaction among Oil Price, Exchange Rate and Inflation in Nigeria (1981–2017)." Asian Journal of Probability and Statistics (2018): 1-19.
30. Senthil Kumar,B.,&Dr.Srivatsa, S.K.(2014). Opportunistic Channel Access Algorithm Based on Hidden Semi Markov Model for Cognitive Radio Networks. Bonfring International Journal of Research in Communication Engineering, 4(2), 17-21.
31. Angeline,D.M.D., (2013). Association Rule Generation for Student Performance Analysis using Apriori Algorithm. The SIJ Transactions on Advances in Space Research & Earth Exploration, 1(1), 16-20.

DOI: 10.37200/IJPR/V24I4/PR201566
Received: 22 Sep 2019 | Revised: 13 Oct 2019 | Accepted: 15 Jan 2020