THE IMPACT OF MONETARY POLICY ON ECONOMIC GROWTH IN SRI LANKA: A STUDY ON PANEL DATA

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ABSTRACT

Economic growth is an emerging concept both in developed and developing countries, when determining many economic indicators specifically increasing standard of living, overcoming poverty, decreasing unemployment level, upholding per-capita income and attaining more foreign investments. Meanwhile, monetary policy instruments can be considered as key player in economic growth (GDP). Therefore, main objective of current study is to investigate the impact of Monetary Policy instruments on Economic Growth (GDP) in Sri Lanka. Through a sound literature review: interest rate, exchange rate and money supply considered as proxy of Monetary Policy instruments. Data were in secondary mode which collected from Central Bank publications for the period of 1985 to 2017 on annual basis. Regression analysis model have been used as main analysis tool with descriptive statistics and correlation analysis while it indicates 99.8% of variation on economic growth by the independent variables. The results of this study are highly in line with established empirical findings as the interest rate and exchange rate have been positively affected on economic growth in Sri Lanka with absence of significant relationship. As it reported money supply indicates a significant and positive impact on economic growth by concluding that money supply is the only one monetary policy instrument which significantly impact for the economic growth in Sri Lanka for last 33 years.

Keyword: - *Economic Growth, Exchange Rate, Interest Rate, Monetary Policy, Money Supply*

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1. INTRODUCTION

Economic growth which referred to GDP can defined as one of the measures of national income and output for a given country's economy at a given period of time which based on the total market value of all final goods and services produced within the country in a given period of time (normally one year). The sums of value added at every stage of production of all final commodities are considered at the evaluation process within a country in a given period of time monetarily. It is universal that macroeconomic models have been used in formulation of economic policy almost in every country. These models not only provide an analytical framework to link the demand and supply sides and the resource allocation process in an economy but also may help in reducing fluctuations and enhancing the economic growth which are two major aspects of any economy. (Kira, 2013)

Monetary Policy is simply a combination of instruments with the purpose of creating stability of price levels; controlling the inflation of the country, decreasing the level of unemployment and increasing the level of effective employment to attain a sustainable economic development. Not only for the developed countries in the world but also for the developing countries are equally influenced by the economic behavior of their own with perspective of enhancing the standard of living. Therefore, Monetary Policy is a major component in every economy which directly influenced to the economic growth. The basic instruments that we can clearly identify in each economy are interest rate, exchange rate and money supply. Moreover economic growth helps to determine the level of many economic indicators such as increasing the standard of living, overcoming the poverty, decreasing the unemployment level, upholding the per-capita income and attaining more foreign investments largely. Therefore it is more essential to have effective economic policies to overcome the economic fluctuations.

1.1 Monetary Policy in Sri Lanka

Comparable with many other developing countries in the world, the economic and price stability deemed to be the objectives of Central Bank of Sri Lanka in implementing monetary policies which refers to an absence of higher fluctuations in the general price level of particular economy helping for gaining sustainable economic growth. If the prices are fluctuating in a lower level there may be no more significant impact for the economic decisions and those decisions may not be misrepresented by the stable prices as the efficient division of resources in a certain economy resulted for an economic stability. The Central Bank of Sri Lanka was established in 1950 under the Monetary Law Act 58 of 1949 that owing to the numerous amendments (i.e. amendments in 2002, 2006) in accordance with the international trends in central banking.

In monetary aggregates, money supply is a primary issue which affecting to the price stability. In the Sri Lankan context, various definitions can be found on monetary aggregates related to money supply; base money or high-powered money, narrow money and broad money. Currently, monetary targeting framework is assisting the monetary management in Sri Lanka wit interest rate as the policy instrument. According to this framework the price stability is going to be achieved through the changes in broad money supply as well as it operated through a monetary program. The program is designed by the Central Bank of Sri Lanka by covering the certain areas of the economy such as balance of payment, economic growth, and desired levels of growth in credit and inflation rates. The banking sector is responsible with conducting the Open Market Operations with the corridor of interest rates with related to money supply. Those rates have to be adjusted periodically in line with market conditions as well as economic fluctuations. However, in real practice the Central Bank of Sri Lanka concerned about the movements of exchange rates, fiscal policies to design the monetary policy framework of the country, having a great compliance with market based policy instruments by using the market forces to achieve the desired objectives.

1.2 Research Problem

Economic growth can be encountered with fluctuations because of the changes of monetary policy instruments, government rules and regulations, instability of political background besides more in a certain economy. By considering all those factors, the quantifiable changes as how interest rate will affect to the amount of deposits and loan with relates to the economic growth; will money supply increase the sustainable development of a certain country by controlling the inflation and deflation levels, how the exchange rate movements may affect to the equilibrium of balance of payment in favorable or unfavorable way deemed to be vital in certain economy. In addition, comprised with those factors how an economy can perform an effective monetary policy to achieve a sustainable development is also questionable. When focused on the previous studies, it is noted that there is a disparity on variables selection at large. Amarasekara (2008) had taken interest rate, money growth, and nominal exchange rate as independent variables while Smitha (2010) considered the rate of inflation, credit availability, interest rate, foreign trade and money supply as independent variables. Besides that Hameed (2011), Fasanya (2013), Precious (2014) and Kamaan et al.(2014) which are in line with this study have considered money supply, interest rate, inflation rate, external reserve, exchange rate, repo rate, treasury bills, consumer price index. Therefore, it would be more important to precise the major instruments in monetary policy when determining the economic growth in Sri Lanka. In addition to that there are many studies which have been taken place in global context that quiet parallel on current study. But its results may not absolutely applicable for the Sri Lankan context on account of the changes in economic conditions in each country inherited with its nature. On account of the dearth of studies in Sri Lankan context, it is identified that there is a question to be addressed as “Is there any impact of Monetary Policy on Economic Growth in Sri Lanka?” which also would be a great indicator of the current economic situations of Sri Lanka. The main objective of this study is to identify the relationship between Monetary Policy & Economic Growth in Sri Lanka, while sub objectives lies on to identify the major instruments (Interest rate, exchange rate & money supply) of monetary policy and how those instruments affect to Economic Growth Sri Lanka as well as to recognize the significant economic fluctuations over the selected period.

2. LITREATURE REVIEW

2.1 The use of VARs and different approaches in measuring the effects of Monetary Policy

Amarasekara (2008) a Sri Lankan scholar conducted a study using the Vector Auto Regression (VAR) framework to analyze the effect of interest rate, money growth and the movement in nominal exchange rate on real GDP growth and inflation in Sri Lanka for the time period from 1978 to 2005. The main data source for this study was the International Financial Statistics and the publications of Sri Lanka. The key hypotheses of this study whether empirical evidence from Sri Lanka on the effects of monetary policy on output and prices gathered from VARs with the existing theoretical explanations and empirical findings. In another way here the researcher tested whether output growth and inflation reduce with fewer in monetary policy shocks or whether the reaction of output growth to monetary policy speeder than the reaction of inflation to monetary policy or whether money supply decrease following an increase in interest rate and ultimately, whether the exchange rate appreciates following an increase in the interest rate. The output of the VARs and the empirical findings are broadly in line with each other more especially at the interest rate consideration as a monetary policy variable. When moving to the relationship of the variables under study, at a positive innovation in interest rate the GDP growth and the inflation will decrease when the exchange rate appreciates. At money growth and exchange rate the impact of GDP growth contrast with the established findings of the study. As the researcher expected the exchange rate has an immediate impact on the reduction of inflation as it directly influenced to the inflation rate of a certain country. At the results of this study none of the sub-sample since 1978 can be recognized with a particular targeting regime and in contrast the interest rate, monetary aggregates and exchange rate are consisting with important information related with monetary policy in Sri Lanka. And also it is founded that the unanticipated monetary policy is relatively a small portion of the overall monetary policy while anticipated monetary policy reaction to economic developments describes a huge part of a monetary policy action. It also observed that the anticipated monetary policy contractions are negatively correlated with GDP growth with a delay of 0 to 9 months while both anticipated and unanticipated monetary policy are inversely correlated with inflation with a delay of 28 to 36 months. The scholar also recommended that the findings of this study may help for further researches as well in Sri Lanka.

Kamaan (2014) investigated the impact of monetary policy on economic growth in Kenya in quantitative manner. The VAR method have been used in this study and the findings indicate that the one standard deviation monetary policy shock by the CBR is having a negative or insignificant effect on the output in the first two months and then in next four months it is as positive and insignificant. Then the one standard deviation shock of the interbank rate to inflation and in contrast significant for the first two and a half month of time period. Consequently, the impact may continue to be positive but insignificant up to next six months again. The conclusion can be derived as that will influence the policy decisions will ensure the economic growth of the country. The researcher also made some recommendations at the end of this study as that this study will facilitate the Central Bank of Kenya may formulate the policies in a way that decrease the interest rate to favorable level to prompt economic growth and to achieve a lower level of inflation for their country.

Ridwan (2010) conducted a study with the findings a Meta- analysis by identifying the causes of variation in the impact of the monetary policies on economic development particularly in the US and Europe. The sample of the study drawn from primary studies that uniformly employ Vector Auto Regressive (VAR) model and it is found that there is a large variation of the output effects in terms of their size and timing across the regions or the countries. Here the researchers have been able to determine some key determining sources of variation of the impact of the monetary policy. First manufacturing (as a percentage of GDP) or as a proxy of capital intensity which clearly contributes to describe the cross sectional variation in policy responses. Then it said that an economy with much more alternative funding sources given by the well-developed capital markets mitigate the negative impact of such kind of monetary shocks. After that variation in the rate of inflation too found as significant issue that assist to the various aspects of output effects. Finally, the findings highlighted that the variation in economic size as an important factor and small economies will experience more output losses rather than the larger ones relates to the monetary concept.

Precious and Palesa (2014) explored the role of monetary policy with promoting economic growth in South Africa over the period of 2000 to 2010. In the time series of analysis the study used the Augmented Dickey-Fuller and Phillips Perron unit roots tests as well as Johansen co-integration and Error correction mechanism to identify the long and short run dynamics among the variables. As cited by the researchers it showed the long run relationship among the variables and the money supply, repo rate and exchange rate were insignificant monetary policy instruments which drive the growth while the inflation was seemed to be significant. Therefore the study highlighted that to attract domestic and foreign investment to the country it is needed to create a favorable investment climate for a sustainable economic growth.

Thaddeus et al (2014) conducted a study with establishing that the interest rate, inflation and money supply had negative impact on Nigeria's economic growth in the short run and in long run the exchange rate had positive impact as well. For the purpose of primary analysis of the study a set of Breusch-Godfrey serial correlation, White Heteroskedasticity, Ramsey reset, Dickey-fuller unit root was used. As the study was lined up with short and long run, Ordinary Least Square was used for short run while a set of Johansen co-integration; Granger Causality Tests were used for the estimation of long run. Ultimately, the study conveyed that for a sustainable economic growth the monetary authority must implement short term strategies with the objective of managing periodic volatility in interest rate, money supply and inflation. On the other hand in medium plus long run the strategies must be applied to stabilize the value of domestic currency.

2.2 The impact of Interest Rate, Exchange Rate and Money supply on Economic Growth

Smitha (2010) analyzed the techniques of monetary policy measures to determine its relevance and importance as well as the effectiveness in India with the purpose of achieving the price stability and economic growth. The study have been conducted to cover main three objectives such as to identify the changing role and importance of the selected monetary instrument in India, examine the effectiveness of monetary policy with determining the price stability and in what extend monetary policy impact to the economic growth in India. The study covered time period of 18 financial years starting from 1991. Based on the secondary data the study concluded its findings as there was a great economic impact on monetary policy in Indian economy at the post-reform period and identified that the its role was more in line with attaining price stability and economic growth. The researcher has found that the use of monetary instruments such as Bank rate, CRR, SLR, Repo rate and Reserve rate have been also increased over the year. The rates have been fluctuated on account of the inflation and absorb of excess liquidity in the country. With that impact the short term objectives were quiet successful rather than the long term ones.

Khan M.S (2010), have been argued the changes in the design and conduct of the monetary policy in sub-Saharan African countries as the fluctuations if exchange rates and inflation rates. Here the researcher has provided an overview of the current monetary policy of the country into debate. He discussed the conventional objectives, targets and instruments which were included in monetary policy with the analysis of monetary transmission process with the point of traditional view of money as well as in credit channels. With the stated or target inflation level of the government the problem of dynamic inconsistency and inflationary bias have been examined in this study to have the short run output gains. Among the various solutions for dynamic inconsistency problems, most of the economists agreed with any rules based regime permit a margin of discretion and the idea of discretion and rules are mutually exclusive, have been rejected by the economists as well. Through in this study the researcher provided a detailed discussion on nominal anchors and current monetary frameworks first before going to an evaluation of the output effects of the monetary policy. He mainly focused on the relationship between the growth of GDP and different monetary aggregates in 20 sub-Saharan African economies and the study been also facilitated with the empirical findings for the hypothesis which the credit growth also more closely linked than in money growth to the growth of real GDP in these countries.

Hameed et al (2011), focused on the impact of Monetary Policy on GDP in Pakistan and without any doubt it is highly affected by the Monetary Policy according to their study conclusions. The study investigated hoe the changes in the monetary policy will affect to the economic growth of the Pakistan through inflation. Many other factors also influence the growth factor while in this study the researchers considered how the GDP in Pakistan would respond to the changes in money supply (M2), inflation rate and interest rate in the economy. The researchers have used the studies of previous scholars with determining their hypothesis and for the analysis purpose applied the Regression Analysis method to derive the relationship between the two exists and the data has been collected for the period 1980-2009 as 30 years from the State Bank of Pakistan. As cited in this study, it proved that the interest rate is having a low relationship with GDP while the growth of the money supply directly and highly affect to the GDP of the economy. Apart from those factors there are some other factors which also affect for the GDP.

Nouri and Samimi (2011) evaluated the relationship between money supply and gross domestic product which were having quiet close relationship between each and in this study it examined by adopting the Ordinary Least Squares technique. The data have been gathered from the Central Bank of Iran during the period of 1974 to 2008. According to the Levine and Renelt growth model the researchers found that there is a significant as well as positive relationship between money supply and economic growth in Iran. Ogunmuyiwa and Ekone (2010) according to their study, they investigated the relationship between money supply and economic growth in Nigeria by using the data

for the period 1980-2006. The study employed OLS and Error correction mechanism in order to check the relationship while Granger causality tests for checking the causality. The study found that economic growth is influenced by the level of money supply in the economy.

3. METHODOLOGY

The investigation of this study is highly interacted with economic aspects of the country as economic growth and monetary policy in Sri Lanka. To complete this study in meaningful way, the variables have been selected on the basis of literature by different scholars in different geographical areas. There are four variables in this study; gross domestic product (GDP) reflects the economic growth as dependent variable while money supply, exchange rate and interest rate will be the independent variables.

Hypothesis: Following the studies of Amarasekara (2008), Hameed et al (2011), Nouri and Samimi (2011) and many others assumed that there is a significant relationship between monetary policy and Economic growth in Sri Lanka. According to this study the hypotheses are;

H1: There is a significant relationship between monetary policy and Economic growth in Sri Lanka.

$H1_a$: There is a significant relationship between interest rate and Economic growth in Sri Lanka.

$H1_b$: There is a significant relationship between exchange rate and Economic growth in Sri Lanka.

$H1_c$: There is significant relationship between money supply and economic growth in Sri Lanka.

Data collection and Sampling: The main data sources of this study would be the IMF's International Financial Statistics and the publications of Central Bank of Sri Lanka. Therefore the data will be secondary data as collected through publications. Although many data series required are available from 1950s, and the data were collected since 1985 to 2017 by covering 33 years of time period in order to focus on the effects of Sri Lanka's monetary policy in an open economy framework as well as to identify the most recent implications of the economy. As an investigation on panel data the population and sample of this study will be the Sri Lanka that designed to identify the impact of Monetary Policy on economic growth in Sri Lanka.

Data Analysis: Following analysis tools were used to test the hypotheses of this study such as Descriptive Statistic, Correlation, Coefficients while Regression Analysis as the main tool to draw a better conclusion. To examine the effect of Monetary Policy on economic growth in Sri Lanka, the applicable regression model is shown as follows:

$$GDP = \beta_0 + \beta_1 IR + \beta_2 EX + \beta_3 MS + \varepsilon$$

Where:

B = Shows the constant affecting monetary policy on economic growth

GDP = Gross Domestic Product

IR = Interest Rate

EX = Exchange Rate

MS = Money supply measured by M2

ε = Error Term

Under regression analysis it developed mathematical model to predict a dependent variable by two or more independent variables or in which at least one predictor is non-linear.

4. DATA ANALYSIS

The study has been designed with the analysis tools of Descriptive Statistic, Correlation, Coefficients and Regression Analysis to test whether the created hypothesis which have been used to answer the research questions can be accepted or not.

Table 1 – Descriptive Statistic

	Economic Growth	Interest Rate	Exchange Rate (US dollar)	Money Supply
Mean	14.2209	15.4242	83.9400	13.0927
Std. Deviation	1.37702	2.66962	38.51553	1.43949
Minimum	12.00	10	27.41	10.79
Maximum	16.33	25	155.20	15.51

Source: Research Data

The descriptive analysis Table 1 is showing the descriptive statistics of all the variables which consisting with the Mean, Standard deviation and Minimum and Maximum values of the data set. The mean values of variables are indicating the average values consisting in the data set while standard deviation values imply whether those mean values are concentrated around the mean or scattered far and wide. As it pointed out all the figures in this study; economic growth, interest rate, exchange rate and money supply seemed to be scattered widely with its mean values respectively.

Table 2 – Correlations

	GDP	IR	EX	MS
GDP	1			
IR	0.191	1		
EX	0.985**	0.164	1	
MS	0.999**	0.194	0.986**	1

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

Source: Research Data

Table 2 shows the correlation of the interest rate with economic growth is positively correlated with absence of significant. The result claimed that there is a strongly significant as well as positive relationship between exchange rate and money supply with economic growth.

Table 3 – Results of Regression Analysis

$$GDP = \beta_0 + \beta_1 IR + \beta_2 EX + \beta_3 MS + \varepsilon$$

	β_0	β_1	β_2	β_3
	1.696	-0.001	0.000	0.959*

R Square:0.998 Adjusted R-Square: 0.998 N = 33

*. Significant at 5%

Source: Research Data

The above table 3 is demonstrating the results of the multiple regression analysis which consisting the values of unstandardized coefficients, R Square and Adjusted R Square of the model for the purpose of exploring relationship between the dependent and independent variable. R represents that the correlation between the observed and

predicted values of dependent variable and at R Square value it implies that the 99.8% of variation on economic growth can be explained by the independent variables in this study.

4.1 Results and Discussion

According to the findings of many other scholars in this field, it has been revealed that the monetary policy instruments are highly affected to the fluctuations in economic growth of a certain country and following studies can be considered as comparable investigations with current study.

The study of Hammed and Amen (2011) examined the impact of Monetary Policy on GDP in Pakistan, by applying the Regression Analysis technique for 30 years. The dependent variable of this study was Gross Domestic Product and the independent variables were interest rate, money supply and inflation rate. They assumed that the interest rate has a relationship with GDP and growth in money supply has a relationship with GDP as their hypotheses. At its findings, the researchers found that the interest rate has a minor relationship with GDP while the money supply greatly affects the GDP of the economy. And also they found that there are some other unknown factors which may affect for GDP. On account of the results of this study, the money supply hugely affect for the growth in GDP. The study has able to prove that the money supply is playing a key role with determining the GDP in Pakistan as many Asian Countries do plus in line with the findings of this study. Similar study by Thaddeus et al.(2014) using the independent variables as interest rate, inflation, money supply and exchange rate investigated the impact in relation with the dependent variable, economic growth in Nigeria economy. They have used various types of analysis tools such as VAR model and Ordinary Least Square. It indicated that interest rate, inflation and money supply had negative effects on economic growth in short run while exchange rate had significant positive effect in long run. As these four monetary policy variables have 88% joint probability of affecting the level of economic growth, it concluded that to achieve a sustainable development; the monetary authority must devise short run strategies to manage periodic volatility in interest rate, money supply and inflation while medium and long run strategies for stabilizing the value of domestic currency. This study has been designed with the time spans of the economic activities in relation with monetary policy instruments. With the same perspective of determining the linkage between monetary policy instruments and economic growth, the study of Hameed et al. (2012) considered the variable as money supply (MS), Inflation, Interest rate, Exchange rate, Economic growth, Gross domestic product (GDP), monetary policy (MP). Its results showed that interest rate has negative and significant impact on output. Tight monetary policy in term of increase interest rate has significant negative impact on output. Money supply has strongly positive impact on output that is positive inflation and output is negatively correlated while exchange rate also have negative impact on output which is show from the values.

Accordingly, most of studies have concluded that money supply in each economy highly impact on economic growth of those countries which also statistically proved at current study with Sri Lankan context.

5. CONCLUSION

As the main objective of this study, it focused to identify the relationship between Monetary Policy & Economic Growth in Sri Lanka comprised with interest rate, exchange rate and money supply as the monetary policy instruments. The study was designed with secondary data from publications of Central Bank in Sri Lanka. Although many data series required are available from 1950s, this study used data since 1985 to 2017 over 33 years of time in order to focus on the effects of Sri Lanka's monetary policy in an open economy framework as well as to identify the most recent implications of the economy. Descriptive Statistics, Correlation and Regression Analysis techniques have been used to draw a better conclusion in this study as analysis tools.

The findings clearly revealed that in what extent the independent variables as interest rate, exchange rate and money supply on dependent variable of economic growth have been affected in the considered time period. When consider about each independent variable in relation with dependent variable, the interest rate and exchange rates not significantly related with economic growth while at the money supply, it is the only one factor having significant impact on economic growth in Sri Lanka. According to the findings of this study, all selected monetary policy instruments are having positive impact or relationship with economic growth as both dependent and independent variables are driven to the same direction. Finally it can be concluded that money supply is the only one factor which is significantly impact for the economic growth in Sri Lanka for the last 33 years.

To expand future studies, there are some other instruments which may also affect for the economic growth of a particular country such as repo rate, open market operations, reserve money, customer price indexes, interbank rate and etc. The exchange rate is only weighted on or considered the US dollar rate with Sri Lankan rupee. But it can be spread more than US dollar by weighting with high margin exchange rates in other countries in Europe as well as Asia or any other region. At the money supply, here it recognized as the natural logarithm of broad money (M2) aggregates at the year end. But the Central Bank is providing information regarding all M1, M2, M2b and M4. The M1 is regarded as narrow money and other three are in the mode of broad money. For further researches purposes it can be also get the amounts at M2b or M4 as well. But the determination of money supply may vary on the nature of the study as well as the nature of considered country. There are some interrelated concepts which are moving in line with economic growth and monetary policy in economic point of view. With the economic growth, inflation is having a great relation in each other and those two concepts can be combined to draw a meaningful conclusion. At the monetary policy it can be combined with price stability and also employment level as different concepts to expand this studies scope into wide area.

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