Journal of Business Economics
ISSN 2682-6933 I E-ISSN 2705-9944
2021 Volume 03 Issue 01:174-182

COORDINATION BETWEEN THE FISCAL AND THE MONETARY POLICIES IN SRI LANKA: AN EMPIRICAL STUDY FROM 1960 TO 2018

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Abstract

The monetary policy and the Fiscal policy are playing an energetic role to achieve the macroeconomic goals through sustainable growth and internal, external price stability which are the primary objective of the economy. The awareness of the coordination between the monetary and fiscal policy has been increased after the financial crisis in 2008. This study aims to examine the prevailing coordination between the monetary and the fiscal policy in Sri Lanka over the period of 1960 to 2018. This empirical study confirms the lack of coordination through the independence tests. To test the causality, Granger Causality test by E-Views has been used. Also to measure the extent Coordination between different shocks of the Growth rate and Inflation rate in macroeconomic environment, this study construct matrix called Macroeconomic Environment Matrix and Policy Stance Matrix. The results indicate from 1959 to 2017 there is a lack of coordination between the monetary and the fiscal policies. The extent of coordination in Sri Lanka has grasped 0.345. Coordinating the policies occurred only in 20 years out of 58 years under this research. The conclusion derived from the studies there is 34. % of necessary arrangements which assure the decision taken by both authorities are not contradictory in past from 1960 to now. According to the results, this study suggests that the government should be implement some policies to improve institutional and operational arrangements towards enhancing better coordination of both policies.

Keywords: Monetary Policy, Fiscal Policy, Coordination, Institutional and Operational Arrangements

1. Introduction

The monetary policy and the Fiscal policy are playing an energetic role to achieve the macroeconomic goals through sustainable growth and internal, external price stability which are the primary objective of the economy. These two macroeconomic policies are designed and implemented by different authorities under specific control by the government. And they have their own objectives, resources, instruments and constraints. The effective coordination between the areas of fiscal and monetary policies are very essential to achieve the primary objectives in a sustainable manner. The coordination refers to necessary arrangements which assure the decision taken by both authorities are not contradictory. And both policies wouldn't cause undesirable indirect effects and spillovers to each other in the aim of the macroeconomic policy mix. (Abdel-Haleim, 2016)

The awareness of the coordination between the monetary and fiscal policy has been increased after the financial crisis in 2008. The global crisis consequences posed serious challenges to financial stability all over the world. So the policymakers have given a great concern about the macro policy coordination. The past studies have revealed the lack of coordination causes to the inferior economic performances such as financial instability, exchange rate pressures, higher interest rates, rapid inflation and adverse impact on the economic growth and development. Mostly, in developing countries, the expansionary fiscal policy helps to achieve higher economic growth rates. Meanwhile, it creates an inflationary pressure on the economy when it borrows from the central bank to finance the deficit.

If we emphasize the importance of the coordination of the monetary and the fiscal policy in Sri Lanka, The Governor of the Central Bank of Sri Lanka stressed that

> *"Monetary-fiscal coordination not an easy task to achieve. It is a complex but vital component in overall macroeconomic management… Monetary Law Act has provided an enabling legal environment to maintain the relationship between the fiscal authorities of Sri Lanka. Further, we need to calibrate our policies to achieve the macroeconomic fundamentals"*

(Coomaraswamy, 2017)

Moreover, the need for the extensive coordination arises due to unfavorable macroeconomic climate. The exchange rate fluctuation and inflation have been increased the adverse effect on the overall economic conditions. Balance of payment and Budget deficit financing have grown into burden issues. Further the coordination between the monetary and fiscal is necessary as Sri Lanka is been working toward the economic reforms like Revenue Based Fiscal Consolidation and Flexible Inflation Targeting Framework.

Within this background, this study aims to examine the prevailing coordination between the monetary and the fiscal policy in Sri Lanka over the period of 1960 to 2018. The empirical study confirms the lack of coordination, also provide some suggestion and the policy implementation to increase the coordination between the monetary and the fiscal policy

2. Review of Literature

Recent decades have seen the explosion in the research of both theoretical and empirical which attempt to examine the coordination between monetary and fiscal policy. So it is crucial to review the literature to identify the knowledge and gaps. This section briefly reviews the theoretical and empirical studies in both national as well as international perspective. And then the country comparisons will show the different coordination setup of some countries.

In theoretical viewpoint, according to the classical theory of economic policy, relying on single policy instrument is not enough to achieve the sustainable economic targets the independent movements may disrupt the desired value of the other policy targets. So the desired value of the policy targets will be attained by more than one appropriate policy instruments. Those instruments may include monetary policy and fiscal policy instruments such as interest rate, government expenditure respectively. (Tinbergen, 1956)

Laurence & Piedra (1998) analyzed the issues of the coordination based on a review of the literature in different countries from a different perspective. They found the lack of coordination between fiscal and monetary authority result in the inferior performance of the macroeconomic arrangements. So streamlining the economic performance it suggests the appropriate support of the institutional and operational arrangements of both policies.

Hasan & Isgut (2019) examined the Challenges faced by Asia-Pacific region countries in the coordination of the fiscal and monetary policy. They emphasize the financial crisis posed many threats to policymaker to making a coordinate between two policies. Moreover, the financial development to determine the existence of the coordination. They initiated through the conceptual and practical aspects, that the achievement of the macroeconomic goals requires the appropriate policy mix. The major constraint of the fiscal space should be removed through the desirable policy mix.

Silva & Vieira (2014) analyzed the conduction of the proper policy coordination through the panel data of 113 advance and emerging developing countries. Before and after the crisis. The found the fiscal policy reacts the policy cyclical manner while the monetary policy reacts in the country cyclical manner. The main way to smooth the performance of both monetary and fiscal policies performance is interest rate mechanism in all over the world.

Haleim (2016) investigated the existence of coordination between monetary and fiscal policies in Egypt. He quantifies the coordination of monetary policy and fiscal policy through the shocks and the policy implemented by the relevant authorities in a specific year. The result emphasizes the coordination of both policies weak in the research period (1974-2015)) due to the high deficit. He also investigated and suggested the intuitional arrangements to test the possibilities of the coordination.

Ali & Jayaraman (2001) mentioned after 1990 The Reserve Bank of Fiji posed an act to maintain close coordination between monetary. It soothes the decisions to finance the deficit. And the external reserve maintained efficiently.

Arby & Hanif (2010) examine the coordination of monetary and fiscal policies in Pakistan. Independence between two policies analyzed through the Granger causality test and the coordination between policies analyzed matrix probability. They come to the conclusion that the coordination of two policies was detected only in 12 years. Even though Pakistan established the monetary-fiscal coordination committee the coordination not ensured. And the policy coordinate mostly during the Military regime.

Tabellini (1986) analyze the coordination between the monetary and fiscal policy in the single country on a differential game model approach, where the target variable is the path of government debt across a time. He mentioned that policy coordination increases the speed of convergence to the steady-state and leads the economy closer to the planned target as compared to the outcome of the Non-Cooperative game.

Lambertini, Luca & Rovelli (2001) emphasize the need of the coordination “in-disciplined” fiscal policy possibly unsustainable in long run, and became barrio to independence activities of the central bank and monetize the fiscal deficit. They argue that even the policies are sustainable in long rum the independence decisions and policy stance of the monetary authority undermine by the fiscal authorities policy decisions.

Dharmadhasa (2015) evaluate the monetary and fiscal policy interaction in Sri Lanka and the potential of the monetary policy to enhance the economic output within the fiscal background in the period of 1980-2012. In his thesis, he utilized the Ordinary Least Square method, Augmented Dickey-Fuller (ADF) test Phillips Perron (PP) test and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test. It concluded money supply significantly influence the government expenditure and monetary aggregates influenced at low level on the output of Sri Lanka. They suggest the country requires the fiscal policy adjustment to avoid the effect on the economic growth barriers.

Ehelepola (2014) investigated the welfare maximizing optimal monetary and fiscal policy rules for Sri Lanka through the New Keynesian Dynamic Stochastic General Equilibrium (DSGE) model. Sticky prices, money and taxation used as indicators to both policies. They found according to the three scenario optimized simple monetary policy and fiscal policy rules deliver virtually the same welfare level as in the Ramsey optimal Policy.

In recent decades, the Coordination between monetary policy and Fiscal policy has been identified as a leading factor that affects the financial stability of the country by the researchers. So to examine the monetary policy – fiscal policy nexus, a considerable amount of attempts had been done in both theoretical and empirical bases. Many well-grounded systematic studies also focused on the correlation between both policies in various countries and regions.

Laurence & Piedra (1998), Hasan & Isgut (2019) and Silva & Vieira (2014) have examined the existence of the coordination of the policies from a macro perspective view. They had the same phenomena which the appropriate policy mix was the better solution to the economic problems related to inflation and debt burden in the analyzed countries. And Haleim (2016), Ali & Jayaraman (2001) and Arby & Hanif (2010) investigated the coordination in Egypt, Fiji & Pakistan respectively. They confirmed that there is a lack of coordination and suggested an appropriate policy mix through the institutional and operational arrangements of both policies. Some of these researches used the quantify method to measure the coordination and the other used the qualitative approaches to provide the suggestion. Though there is a considerable shortage on the analyzation of the potential and possibilities relevance to financial market developments.

But few types of research have conducted to examine the coordination in Sri Lanka. Dharmadhasa (2015) and Ehelepola (2014) confirmed the weak performance of the optimal integration of monetary and fiscal policies. Also, they explore the coordination by the different manner through the different tests and their recommendation and suggestion had not been in the way of the institutional and operational perspective. They had the common suggestion to enhance the efficiency rather the efficient coordination. Therefore this research has been undertaken by the researcher to fill the gap

3. Methodology

This empirical study based on both quantitative secondary data which were obtained from the Central Bank of Sri Lanka between the periods of 1960-2017. The coordination between monetary policy and fiscal policy is ensured when both policy institutions depend on each other directions operationally. Lack of coordination could be easily identified when independence is absent. Therefore this study includes (i) the independence tests to test the causality and (ii) measure the extent Coordination between different shocks of the Growth rate and Inflation rate in the macroeconomic environment.

Following the Arby & Hanif (2010) approach, this study used the **Granger Causality test** by E-Views to show the independence between monetary policy and fiscal policy. The stationary tests have been done to explain the normality of the time series. The Changes in the broad money (M_2) to GDP ratio and the Government Expenditure to GDP ratio will indicate respectively monetary policy and Fiscal policy stance. When the independence of the broad money (M2) to GDP ratio and Government Expenditure to GDP ratio is analyzed, the next level will find the existence of the coordination in Sri Lanka. Following the Haleim (2016) methods this study will construct two matrices called *Macroeconomic Environment Matrix and Policy Stance Matrix.*

Table 1: Macroeconomic Environment Matrix

		Inflation Shocks	
		Positive	Negative
	Positive	PP	PN
Growth Shocks	Negative	NP	NN

The Macroeconomic Environment matrix will show the combination of the different shocks of the Growth rate and Inflation rate. According to the data the differences will consider as a shock (positive/Negative).

Table 2: Policy Stance Matrix

		Monetary Policy Stance	
		Contraction	Expansion
Fiscal Policy Stance	Contraction	CC	CE
	Expansion	EC	EE

The Policy Stance matrix shows the combination of the policy (contraction/expansion) monetary and fiscal policy stance. The positive change of the M_2 to GDP ratio and Government Expenditure to GDP ratio consider as expansionary policy stance and the Negative changes indicate the contractionary policy stance respectively in monetary and fiscal policy. Above two matrices were explained separately about the shocks and policy stance which economic should follow in the shock periods. Table 3 shows summarize of the above *Macroeconomic Environment Matrix and Policy Stance Matrix* which purely explain the coordination mechanism in the macro economy.

Table 3: Coordination Matrix

	Policy Coordination	
Policy Coordination	PP ∩ CC	PN ∩ CE
	NP ∩ EC	NN ∩ EE

According to table 3 when there is a positive shock in growth as well as in the inflation that time the monetary policy and the fiscal policy should be contractionary to slow down the inflation. On the other hand, for the negative shocks both policy should be expansionary. Both policies could be coordinate under this four phenomenon.

The matrix cells show the sets of those years which combination of the shocks and the policy stance. The coordination will be assumed when the suitable policy stance in both policies used relative to the shocks in a specific year. The total probability of the intersection of the relative sets will show the coordination between the policies.

The coordination defined as the following

(1) $$\rho = {}^{\omega}/_{\sigma}$$

ω As $n(PP \cap CC) + n(PN \cap CE) + n(NP \cap EC) + n(NN \cap EE)$, and σ as the total number of the years.

If ρ Closer to "0" there is a lack of coordination between monetary and fiscal policy and If ρ is closer to "1" coordination exists between monetary and fiscal policies.

4. Results and Discussion

The fiscal authority of Sri Lanka directing the fiscal policy which influencing the revenue collection and the spending side of the country. Sri Lanka has been a country for long a period which has a higher amount of government expenditure even the revenue is not adequate to finance such a huge expenditure. Especially the recurrent expenditure is increasing rather than the capital expenditure. These situations pull-down Sri Lanka into budget deficit. The main cause of the budget deficit of Sri Lanka is economic growth with inflation. On the other hand Sri Lanka Monetary policy conducted by the central bank of Sri Lanka. The prominent role of the monetary policy is controlling the money supply. Monetary Aggregates important to maintain the capacity of bank lending and also helps to identify the economic vulnerabilities that economy faces through excess credit or money. From the fiscal side, money seems like the prime instrument which helps to bring down high fiscal deficit.

The ratio of Broad money to GDP (M2) is taken as an indicator of monetary policy and the ratio of government expenditure to GDP (Exp) as is used a stance of fiscal policy[1] to investigate the stationary of the time series Augmented Dickey-Fuller (ADF) implemented on the data set

Table 4: Unit root test statistics for broad money & government expenditure

	Level Intercept only	First Difference Intercept only
Broad money	-1.067520	-12.48971
	(0.7227)	(0.0000)
Government expenditure	-0.333485	(-6.413052)
	(0.9129)	(0.0000)

Note: at the 5% significance level, all variables are stationary at first difference
-unit root test regression model is selected with intercept only
-probability values are in parentheses, (p)
Source: Author Constructed

[1] Note that in Arby and Hanif's (2010) approach, the ratio of budget deficit to GDP is used as a stance for fiscal policy. However, using government expenditures as a stance for fiscal policy has become increasingly favorable. (Abdel-Haleim, 2016)

The standard unit root tests, ADF results are reported in Table 4 to show that the Broad money and government expenditure at level are non-stationary but their first differences are stationary.

Granger causality test

Granger causality test on indicators of monetary and fiscal policies and also explore the existence of co-integration between the broad money (M2) and government expenditure (GE). While the Granger causality test determines the impact of past information in one variable on the current value of the other, the cointegration test establishes if there is an equilibrium relationship between the two variables over the long run.

To analyze the coordination between monetary and fiscal policy it much needed to confirm that whether broad money causes to the government expenditure or government expenditure causes to the broad money.

(2) $M2_t = C1 * GE_{t-i} + C2 * M2_{t-j} + U1_t$

(3) $GE_t = C3 * GE_{t-i} + C4 * M2_{t-j} + U1_t$

Where M2 as broad money and GE as government expenditure.

Table 5: Pair-wise Granger causality tests

Null Hypothesis:	Obs	F-Statistic	Prob.
M2_GDP_RATIO does not Granger Cause GE_GDP_RATIO	55	2.53347	0.0529
GE_GDP_RATIO does not Granger Cause M2_GDP_RATIO		0.66800	0.6175

Note: Sample: 1959 2017
Lags: 4
Source: Author Constructed

The above table 5 shows F statistics are greater than the 5% which implies that cannot reject the Null Hypothesis. Broad money does not cause to government expenditure or government expenditure does not cause to broad money. It seems in Sri Lanka from 1959 to 2017 there is a lack of coordination between the monetary and the fiscal policies.

Macroeconomic policy matrix.

After testing the dependency of the two policies the study move to find out the exact amount of coordination. Therefore tables 1 & 2 methodologies applied to Sri Lanka's macro performance. According to the Sri Lankan context the data which were collected from the Central Bank of Sri Lanka, organized as a year with the response to the shocks and the changes in policy stance respectively.

Table 6: Macroeconomic Environment Matrix of Sri Lanka.

		Inflation Shocks	
		Positive	Negative
Growth Shocks	Positive	1962, 1964, 1967, 1968 1973, 1978, 1984, 1988, 1990, 1993, 2000, 2005, 2006, 2010, 2011, 2012	1960, 1966, 1976, 1977, 1997, 2002, 2003, 2014
	Negative	1961, 1963, 1969, 1974, 1980,1983, 1986, 1996, 2001, 2004, 2007, 2008, 2016, 2017	1965, 1975, 1979, 1981, 1982, 1985, 1987, 1989, 1991, 1992, 1994, 1995, 1998, 1999, 2009, 2013, 2015

Source: Author Constructed

The Macroeconomic Environment matrix of Sri Lanka shows the combination of the different shocks of the Growth rate and Inflation rate between the periods of 1960 to 2017. Sri Lanka has less experienced on the inflation shock with a positive economic growth change.

Table 7: Policy Stance Matrix of Sri Lanka

		Monetary Policy Stance	
		Contraction	Expansion
Fiscal Policy Stance	Contraction	1968, 1970, 1973, 1974, 1981, 1983, 1984, 1986, 1989, 1990, 1996, 1997, 1998, 2003 ,2007, 2008, 2010, 2012	1960, 1963, 1965, 1967, 1977, 1979, 1987, 1992, 1999, 2002, 2004, 2011, 2013, 2014, 2016, 2017
	Expansion	1966, 1969, 1975, 2000, 2001	1961, 1962, 1964, 1971, 1972, 1976, 1978, 1980, 1982, 1985, 1988, 1991, 1993, 1994, 1995, 2005, 2006, 2009, 2015

Source: Author Constructed

The Policy Stance matrix shows the combination of the policy (contraction/expansion) monetary and fiscal policy stance of Sri Lanka. Sri Lanka has less experienced on the contractionary of the monetary policy while the fiscal policy is expansionary. Meantime it has a higher experience on Expansionary of both policies.

Table 8: Coordination Matrix

	Policy Coordination	
Policy Coordination	PP ∩ CC	PN ∩ CE
	1968, 1973, 1984, 1990, 2010, 2012	1960,1977, 2002, 2014
	NP ∩ EC	NN ∩ EE
	1969, 2001	1971, 1982, 1985, 1991, 1994, 1995, 2009, 2015

Source: Author Constructed

Table 8. Explain the existence of the coordination of the monetary and the fiscal policy in Sri Lanka in various years between the periods of 1990 to 2017. To denote this condition to the equation (1) according to this information derived from the matrices:

$$\rho = {}^{\omega}/_{\sigma}$$

$$\rho = {}^{n(PP \cap CC) + n(PN \cap CE) + n(NP \cap EC) + n(NN \cap EE),}/_{\sigma}$$

$$\rho = {}^{(6 + 4 + 2 + 8)}/_{58}$$

$$\rho = {}^{20}/_{58}$$

$$\rho = 0.345$$

The extent of coordination in Sri Lanka has grasped 0.345 over the period 1960- 2017. Coordinating the policies occurred only in 20 years out of 58 years under this research. The conclusion derived from the studies there is 34. % of necessary arrangements which assure the decision taken by both authorities are not contradictory in the past from 1960 to 2017.

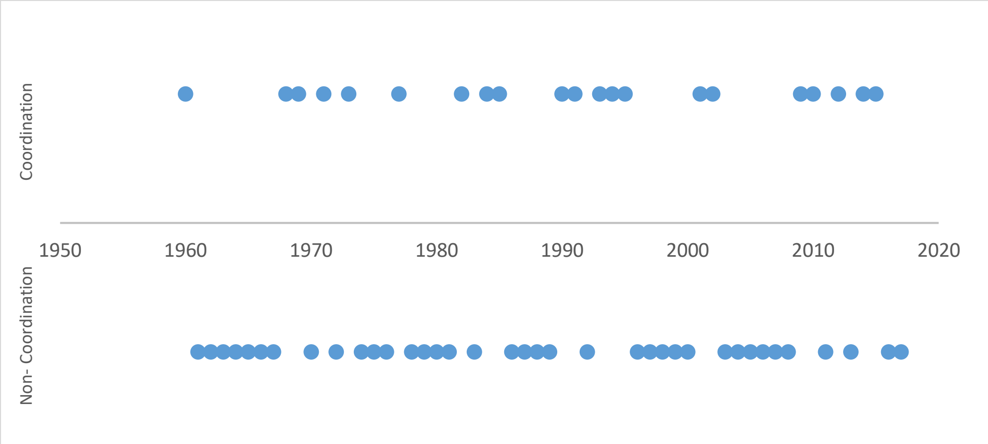

Figure 1: Monetary policy and Fiscal policy coordination in Sri Lanka

Figure 1 explains about the distribution of the collaboration works of the monetary and fiscal policies. It obvious in post Liberalization period the distribution of years in which coordination was observed amount is relatively higher than pre liberalization.

5. Conclusion

The paper discovers the existence of coordination between monetary and fiscal policies in Sri Lanka is not efficient and effective. Contrast to the general phenomena of both Authority, even they pretend that they collaboratively work for the macroeconomic decisions (i.e.: a member from the finance ministry to the monetary board), the empirical evidence has confirmed that there is lack of Coordination between the monetary and fiscal policy. Only 20 years appears that the Central Bank of Sri Lanka's decisions and Fiscal Authority's decisions not contradictory from1960 to 2018. So this study concluded that monetary policy has been independent of the fiscal policy in Srilanka. According to the lack of coordination between the monetary policy and fiscal policy of Sri Lanka, this study suggests some policy recommendation through the review of the works of literature. The brief of the suggestions are:

Institutional Arrangements

1. The central bank independence
2. Eliminating the conflicts between monetary and fiscal policies
3. Limiting direct credit control to the government
4. Budget deficit constraints
5. Central bank profits and losses
6. Relationship between the central bank and the treasury
7. Establishment of the separate debt management office
8. Coordination committees

Operational Arrangements

1. Monetary programming
2. Coordination on a daily basis

Further research could be done in the part is test suitability of the suggestion and investigate those separately. It will help to enhance the efficient and effective coordination between the monetary and Fiscal policy.

Acknowledgment: The researcher wishes to express her gratitude to Dr. AMM. Musthafa Senior Lecturer in Business Economics, Faculty of Management and Commerce, South Eastern University of Sri Lanka and Dr. A.A.M. Nufile Head of the Department of Economics and Statistics, Faculty of Arts and Culture, South Eastern University of Sri Lanka. for their support and encouragement.

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