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Jawaid, Syed Tehseen; Faisal Sultan Qadri, Faisal and Ali, Nasir
IQRA UNIVERSITY

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Monetary-Fiscal-Trade Policy and Economic Growth in Pakistan: Time Series Empirical Investigation

Syed Tehseen Jawaid

IQRA University, Karachi-75300, Pakistan.

Email: stjawaid@hotmail.com

Faisal Sultan Qadri

IQRA University, Karachi-75300, Pakistan.

Email: faysalsultan@yahoo.com

Nasir Ali

IQRA University, Karachi-75300, Pakistan.

Email: nasir_ali@live.com

ABSTRACT: This study empirically examines the effect of monetary, fiscal and trade policy on economic growth in Pakistan using annual time series data from 1981 to 2009. Money supply, government expenditure and trade openness are used as proxies of monetary, fiscal and trade policy respectively. Cointegration and error correction model indicate the existence of positive significant long run and short run relationship of monetary and fiscal policy with economic growth. Result also indicates that monetary policy is more effective than fiscal policy in Pakistan. In contrast, trade policy has insignificant effect on economic growth both in the short run and in the long run. In light of the findings, it is suggested that the policy makers should focus more on monetary policy in order to ensure economic growth in the country. It is also recommended that further research should be conducted to find out such components of exports and imports which lead to the ineffectiveness of trade policy to enhance economic growth in Pakistan.

Key Words: Monetary, Fiscal, Trade, Economic Growth

JEL Classifications: E42, E62, F13, F43

1. Introduction

Economic growth has still been the area of interest for the academicians as well as for the policy makers even though this is also one of those areas where extensive theoretical and empirical researches have been conducted. The reason for this special interest is the important role of economic growth in the improvement of economic, social and political well being of the people across nations.

There is extensive material available in the literature that discusses different determinants of economic growth most of such material is in line with exogenous or endogenous growth theory. It has been increasingly difficult to ignore the importance of monetary, fiscal and trade policy in terms of their contribution for economic growth if one keeps endogenous growth theory in mind.

Despite the broad agreement about the role of several policy variables in economic growth, there have been several disagreements about the relative importance and effectiveness of different policies. Monetarist approach of stimulating the macro economic activity is based on unanticipated increase in the stock of money while fiscal policy is considered as less effective or ineffective because of the crowding out effect. Moreover, the contribution of government or the size of public sector in the aggregate demand has also been controversial among academicians as well as among policy makers. On the other hand, the Keynesians point out several shortcomings of monetary policy especially when an economy gets stuck in liquidity trap and the only way out is the use of fiscal policy.

There have been several studies which found the positive role of trade openness in economic growth.¹ These findings are in line with the prior expectations because trade openness increases the efficiency in the production process which affects economic activities positively. The current study is an attempt to investigate the relationship between monetary, fiscal and trade policy with the economic growth in Pakistan. The objective of the study is to see whether such relationship exists in Pakistan and more importantly, to determine the relative importance of these policies.

The study is organized in the following sections. Section 2 discusses the selected review of previous studies on the same area, section 3 explains the methodology of the current study, section 4 presents the findings and section 5 concludes the discussion and provides some policy recommendations.

2. Review of Literature

Javed and Sahinoz (2005) examined the relationship between economic growth and government spending in Turkish economy with and without using money supply as an explanatory variable. The study employed a quarterly data set for the period 1992:1 to 2003:3 of GNP growth, government spending and money supply. The study checked the long run relationship among these variables by using Engle granger, Philips – Ouliaris and Johansen's co integration test while Granger test is used to check the causality. Engle granger and Philips – Ouliaris found no long run relationship between economic growth and government spending however the evidences of long run relationship were found after the inclusion of money supply in the equation. The study found bi-directional causality between economic growth and money supply after excluding government spending while uni-directional causality between government spending and money supply after excluding economic growth.

Ali et al. (2008) examines the effects of fiscal and monetary policy on economic growth by using annual time series data from 1990 to 2007 in case of South Asian countries² Autoregressive distributed lag (ARDL) model has been used. Results indicate that money supply has significant and positive effect on economic growth in both short run as well as in long run, while Fiscal policy has insignificant effect on economic growth both in the short run and long run. They conclude that monetary policy is a more powerful tool than fiscal policy enhancing the economic growth in case of South Asian countries.

Yucel (2009) analyses the relationship among financial development, trade openness and economic growth in Turkish economy by using the monthly data from January 1989 to November 2007. The authors applied Johansen and Juselius technique to check the long run relationship between variables while employed Granger causality test to find the evidences of causality. The study found that trade openness is positively while financial development is negatively related with economic growth. Granger test found the evidences of bi-literal causality between financial development, trade openness and economic growth.

Mohammad et al. (2009) examines the long run relationship among M2, inflation, government expenditure and economic growth in Pakistan by using annual time series data from 1977 to 2007. Cointegration results show that public expenditure and inflation has significant and negative effect while M2 has significant and positive effect on economic growth in the long run.

Ogunmuyiwa and Ekone (2010) 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 test for checking the causality. The study found that economic growth is influenced by the level of money supply in the economy.

Jawaid et al. (2010) investigates the comparative effect of fiscal and monetary policy on economic growth in Pakistan using annual time series data from 1981 to 2009. Cointegration test confirms positive long run relationship between monetary and fiscal policy with economic growth. However, monetary policy is found to be more effective than fiscal policy in enhancing the economic growth of Pakistan. They suggested that policy makers should focus more on monetary policy than fiscal policy to ensure economic growth however; the short run relationship should also have been checked.

¹ See Sakyi (2011) and Yucel (2009) .

² These countries were Pakistan, India, Sri Lanka and Bangladesh.

Adefeso and Mobolaji (2010) empirically examine the relative effectiveness of fiscal and monetary policy on economic growth in Nigeria. Annual time series data from 1970 – 2007 is employed. Error correction mechanism and co-integration technique have been used in the study. Gross domestic product, broad money, government expenditure and degree of openness have been used in the study. Results indicate that the effect of monetary policy on economic growth in Nigeria is much stronger than fiscal policy. They recommended that policy makers should emphasize on monetary policy for the purpose of economic stabilization in Nigeria.

Taban (2010) re-investigate the government spending-economic growth nexus for the Turkish economy using bounds testing approach and MWALD Granger causality test by using the quarterly data from 1987:Q1 to 2006:Q4. Results show that share of total government spending and the share of government investment to GDP have significant and negative effect on growth of real per capita in the long run. On the other hand, government consumption spending to GDP ratio has insignificant effect on per capita output growth. Results also show that there is bidirectional causality between total government spending and economic growth, unidirectional relationship running from per capita output growth to government investment to GDP ratio.

Sakyi (2011) tested the relationship among trade openness, foreign aid and economic growth in Ghana by using the data set for the period 1984 – 2007. The econometric technique of auto regressive distributive lag model was used to assess the existence of long run relationship. The study found positive short run and long run relationship among trade openness, foreign aid and economic growth. The study also found that the coefficient of labor force participation rate and share of government spending in GDP is significantly and negatively related to economic growth. The study recommended that government should make the policies keeping this negative relationship in mind.

3. Empirical Strategy

In accordance with the empirical studies, the equation for economic growth is expressed as a function of money supply (MS), government expenditure (GE) and trade openness (TO). Following equation is used to examine the effect of monetary, fiscal and trade policy on economic growth:

$$GDP_t = \alpha_0 + \alpha_1 MS_t + \alpha_2 GE_t + \alpha_3 TO_t + \varepsilon_t \quad (1)$$

In equation 1, MS represents money supply which is used as a proxy for monetary policy³, The variable GE represents government expenditure which is used as a proxy for fiscal policy⁴ and TO measures trade openness which is proxied by the share of export and import to GDP which is employed as a proxy for trade policy.⁵ All the data sets used in this study from 1981 to 2009 are taken from various issues of Pakistan economic survey, government of Pakistan and handbook of statistics on Pakistan economy, State bank of Pakistan.

4. Estimation and Results

To determine the existence of long run relationship among the considered variables, conventional unit root tests namely Phillip-Perron (PP) and Augmented Dickey Fuller (ADF) are applied. Results of both tests are given in Table I.

From table I it is clear that all variables in equation 3.1 are integrated of order one i.e $[I(1)]$. This shows that different combination of these series may reveal long run relationship. We, therefore proceed with cointegration test. The test result indicates the existence of autocorrelation in the model. This implies that coefficients are no longer efficient.⁶ Cochrane-Orcutt iterative procedure has been applied to remove the autocorrelation in the model.⁷ The results after removing autocorrelation are given in Table II.

³ See Jawaid *et al* (2010) and Ali, Irum and Ali (2008).

⁴ See Adefeso and Mobolaji (2010) and Ajisafe and Folorunso (2002).

⁵ Any type of trade policy affects the volume of trade (exports and imports). So, in this study we use trade openness as a proxy of trade policy.

⁶ See Gujrati (2004), p. 454.

⁷ See Cochrane-Orcutt (1949).

Table I. Stationarity Test Results

Variables	ADF test statistics				PP test statistics			
	I(0)		I(1)		I(0)		I(1)	
	C	C & T	C	C & T	C	C & T	C	C & T
GDP	-1.86	-2.22	-3.52	-3.67	-1.70	-2.26	-3.50	-3.67
MS	-0.19	-2.49	-3.77	-3.68	-0.19	-1.94	-3.80	-3.71
GE	-0.04	-2.21	-4.06	-3.97	-0.07	-1.66	-4.07	-3.98
TO	-2.17	-2.36	-6.11	-5.88	-2.21	-2.41	-6.06	-5.85

Note: The critical values for ADF and PP tests with constant (C) and with constant and trend (C&T) at 1%, 5% and 10% level of significance are -3.711, -2.981, -2.629 and -4.394, -.612, -3.243 respectively.

Source: Authors' estimation.

Table II. Long run Determinants of Economic Growth.

Variables	Coefficient	t-statistics	Prob.
Constant	3.828	87.68	0.00
MS	0.242	4.96	0.00
GE	0.102	1.83	0.07
TO	0.104	0.69	0.49
Adj. R ²	0.98	F-statistics	717.27
D.W	1.40	Prob.	0.000

Source: Authors' estimations

Table II indicates that monetary and fiscal policies have positive significant effect on economic growth. Coefficient of monetary policy is greater than fiscal policy. This shows that the monetary policy is more effective than fiscal policy to enhance economic growth in the country. These findings are consistent with the results of Jawaid *et al* (2010). On the other hand, trade policy has insignificant effect on economic growth which is consistent with Adefeso and Mobolaji (2010). One of the possible reasons is currency depreciation. There can be several reasons for this finding. Currency depreciation may leads to have the same results. Imports of consumer goods also discourage the domestic production which might result in the same relationship as found in the study.

Instead of Engle-Granger single equation based cointegration test, Johanson (1988, 1991) and extended by Johanson and Juselius (1990) is applied. Johanson and Juselius (1990) have derived two tests (Trace test and Maximum Eigen Value test) for cointegration. The result of Trace and Maximum Eigen Value test statistic are shown in table III.

Table III. Cointegration Test Results

Null Hypothesis No. of CE(s)	Trace statistics	5% critical values	Max. Eigen value statistics	5% critical values
None	80.83	47.85	54.49	27.58
At Most 1	26.33	29.79	14.37	21.13
At Most 2	11.95	15.49	10.95	14.26

Source: Authors' estimations.

The above table shows that Trace and Maximum Eigen Value statistics are above the critical value of 5 percent. Hence they reject the null hypothesis of no cointegration. Therefore, the results confirm the long run relationship of economic growth with monetary, fiscal and trade policies.

Hendry's (1980) general to specific modeling approach has been used to test the short run relationship, where one lag of dependent and independent variables and one lag of error correction term have been used. After experimenting with general form, best fit model is reported in table IV.

The above estimates show that monetary and fiscal policies have positive significant effect on economic growth in short run. In contrast, trade policy has insignificant effect on economic growth in short run. The coefficient of error correction term has expected negative sign and highly significant. This implies that the model converges very quickly to the equilibrium value.

Table IV. Results of Error Correction Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.00008	0.007	0.011	0.991
D(GDP(-1))	0.027	0.197	0.140	0.889
D(MS)	0.247	0.097	2.537	0.019
D(GE)	0.109	0.051	2.131	0.045
D(TO)	0.175	0.135	1.292	0.210
RESID(-1)	-0.758	0.255	-2.973	0.008
Adjusted R-squared	0.473	F-statistic		5.495
Durbin-Watson statistic	2.027	Probability (F-statistic)		0.002

Source: Authors' estimation.

5. Stability Analysis

The stability of relationship is imperative for the effectiveness of monetary, fiscal and trade policies. CUSUM and CUSUM of square of recursive residual (Brown, Durbin and Evans 1975) have been used to check the stability of estimates in the long run.

Figure I. Test of Stability Analysis

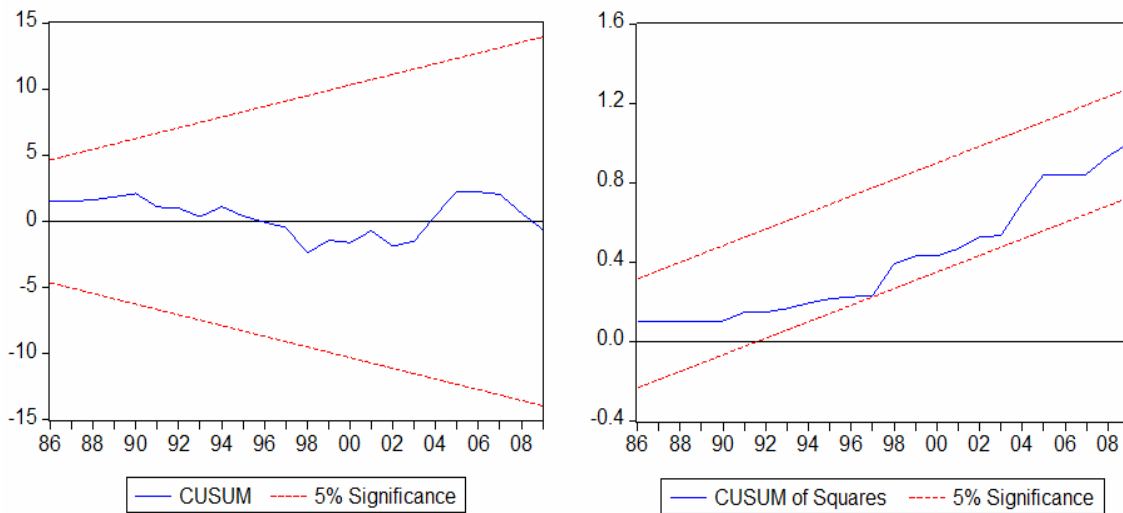


Figure I show that the long run estimates of monetary, fiscal and trade policies with economic growth are stable over the sample period.

6. Concluding Remarks and Policy Implications

In large number of literature has widely been discussed the relationship between monetary, fiscal and trade policy with economic growth. This study empirically examines the effect of monetary, fiscal and trade policy on economic growth of Pakistan using annual time series data from 1981 to 2009. Money supply, government expenditure and trade openness are considered as proxies of monetary, fiscal and trade policy respectively Cointegration and error correction model indicate the existence of positive significant long run and short run relationship of monetary and fiscal policy with economic growth. Result also indicates that monetary policy is more effective than fiscal policy in Pakistan. In contrast, trade policy has insignificant effect on economic growth both in the short run and in the long run. In light of the findings, it is suggested that the policy makers should focus more on monetary policy in order to ensure economic growth in the country. It is also recommended that further research should be conducted to find out such components of exports and imports which lead to the ineffectiveness of trade policy to enhance economic growth in Pakistan.

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