

WORLD INFLATION PERSPECTIVE OF FISCAL POLICY STANCE AND MACROECONOMIC PERFORMANCE IN PAKISTAN: LONG RUN CAUSAL RELATIONSHIP ANALYSIS WITH MULTIPLE BREAK POINTS

Usman Saleem Yousaf¹, Bilal Mehmood²,

¹usmang.qazi@gmail.com, ²dr.bilalmehmood@gcu.edu.pk

^{1,2}Department of Economics, G. C. University, Lahore, Pakistan.

ABSTRACT: Fiscal Policy is one of economic stabilization policy, which helps to promote the economic growth of country, as Pakistan is facing fiscal deficit from its independence with exception of three years and tax to GDP ratio is low. Pakistan is also facing trade deficit due to all these reasons, we have tried to investigate the effect of Fiscal Policy stance at economic growth of Pakistan in world inflation perspective. To capture the effect of world inflation we have taken into account the trade share of Pakistan with our trading countries. Accordingly, this paper investigates the effect of world inflation at fiscal policy stance and economic growth of Pakistan. The data set of 40 years (1973-2013) years is taken from World Development Indicators (WDI) and Economic Survey of Pakistan. Since the expected length of data is substantial, we have applied Vector Error Correction model, Variance Decomposition Analysis, Impulse Response Function, Granger Causality Test and Johansen Co integration technique to find out long run and short run relationship. Break points are a highly likely feature of the long run time series. Variables are Gross domestic product, Trade deficit, Total investment, Worker remittances, Tax revenue, Total expenditure and World inflation. The results try to draw the attention of the policy makers towards the issue that during the period of trade they should be well aware of the inflationary situation of the trading country.

Key Words: GDP, Fiscal Policy, Trade deficit, Johansen cointegration, Breaks points, Granger Causality, World inflation.

1. INTRODUCTION

The fiscal policy is one of the economic stabilization policy which helps to promote the economic growth of the Country, Pakistan is facing fiscal deficit from its independence with exception of three years. Pakistan is facing Trade Deficit, Balance of Payments deficit and Tax to GDP ratio is low due to all these reasons, we have tried to investigate the effect of Fiscal Policy stance at economic growth of Pakistan in world inflation perspective to capture the effect of world inflation. We have taken into account the trade share of Pakistan with other trading countries of the world.

Fiscal Policy means the procedure to be followed in making government expenditures in obtaining government revenue. In simple words, we can say that by fiscal policy, we mean shaping of public taxation and government expenditure. Government revenue raising and its spending activities are called Fiscal Policy.

According to Barro [4], "A balanced increase in productive expenditures and distortionary taxes has strong impact on economic growth but the effect is uncertain". We can say that an Increase in productive expenditures, which are being financed by non-distortionary taxes has a positive effect on per capita income, but this effect is ambiguous, similarly an increase in current expenditure financed by non-distortionary taxes effect the per capita GDP but this effect is neutral.

As far as the historical background is concerned Neo classical economist argued that government should reduce the role of the private sector because it reduces the inflation they further say that if the public debt will increase then the interest rate will increase so inflation will reduce and output will also reduce. New Keynesian economist uses the idea of the multiplier effect in which they explained that if public spending will increase then demand will increase due to this growth will increase.

As stated above, we will link that how the inflation will affect fiscal policy. Pakistan is facing fiscal deficit and budget deficit, Pakistan is a country in which most of the revenues are being spent on current expenditure or non-development expenditure and approximately 16% of total expenditure are being spent on defense and the remaining is being spent on development and other expenditure.

The narrow base of Tax to GDP ratio and the revenue generation in Pakistan is being based on internal and external sources of revenue in order to fulfill the expenditure side of the budget. In Pakistan uncertain political circumstances and narrow tax base have reduced the growth in revenue as percentage of GDP. Due to four continuous change of government two for PML(N) and two for PPP and involvement of caretaker government and world bank supported economic activity have increased the deficit just due to poor economic, political and administrative policies adopted in country.

It is quite clear that current expenditure are the major part of total expenditures so it effect the inflation directly due to demand pull inflation hence it effect the fiscal deficit. Due to

this inflation will increase and many studies have found the relation between inflation and fiscal policy.

Fiscal responsibility and debt limitation act was passed in June 2005 by Musharaf government passed through parliament this law tried to encourage the fiscal management by government. It states that government should clearly formulate its short term and long term fiscal intension

1.1 Objectives

Following are the objectives of the paper:

1. To estimate the elasticity of substitution between labour and capital in banking sector of Pakistan.
2. To find the type of returns to scale that is applicable in banking sector of Pakistan.

2. LITERATURE REVIEW

According to Baro [4], a balanced increase in productive expenditures and distortionary taxes has uncertain impact on economic growth. An Increase in productive expenditures, which are financed by non-distortionary taxes has positive effect on per capita income similarly; increase current expenditure financed by non-distortionary taxes has neutral effect on per capita GDP.

Amin [3] studied the Cameron fiscal policy and economic growth in Kenya by using the data set for 33 years from 1961 to 1994 from different government and financial institution because in Cameron the official data is not available and they have designed the data from different official and government graph, tables and charts about different government figures. They used dummy variable for economic decline, investment showed positive result either it was bifurcated as private and public investment. The growth rate of export is negative and import is positive and significant for measuring Human capital they used primary school enrollment with 7 lags and found its coefficient is positive and significant.

Yasin [35] studied the effect of debt crisis of Pakistan and optimal fiscal policy. They have used 1989-1990 as the base year supply side is catered by using 18 industries out of which 17 sectors are domestic and one is for cross border transactions. They used the household information from HIES 1990-1991 and distributed in four groups on the basis of income and expenditure level. The demand side is gauged by 10 commodities needed for consumption. But was unable to apply CGE model because it need full information of parameters which were not available so they assumed CES specification for agriculture and services they have applied the Cobb Douglas Production Function. They have applied conventional models of fiscal policy and compare the figures of debt and fiscal stimulus.

Authors in [31] studied the effect of fiscal policy and inflation volatility of using monthly data for 5 years, having 60 observations for European countries by using GARCH model they found that fiscal policy has effected inflation volatility. But a positive correlation between these two variables is due to reverse causality. They also found the effect by using panel estimation of a single equation to studied inflation variability for 15 industrial countries and

GLS method is used at OECD countries that fiscal policy has an impact on CPI inflation volatility.

Authors in [13] tried to found out the fundamental determinant of fiscal policy by using Global Fiscal Model by using macroeconomic implications and changing tax policies create government debt, it also affects other countries through government spending on consumption.

Author in [2] studied the effect of fiscal policy on economic growth with reference to Pakistan by using a time series data and applied Auto regressive and distributed lag (ARDL) model and found that Long run relation exist in fiscal deficit and growth and expansionary and contractionary fiscal policy occurs in Pakistan.

Others [6] studied the impact of fiscal decentralization to economic growth by using the annual time series data from 1972 to 2009 and applied AR model of ordinary least square and found fiscal decentralization and revenue have positive and significant impact on economic growth. It has been recommended by the author that fiscal power should be transferred to local and provincial government to raise growth and development.

Other workers [12] studied the impact of fiscal variables on economic development of Pakistan subjecting data set of 30 years using Granger causality test to determine the direction of causality. They have studied the effect of net tax revenue, population growth rate, real interest rate, CPI, government expenditure and gross capital formation they found that fiscal policy is a long run phenomenon rather than short run. In short run we can control it by interest rate and government expenditures but at the cost of inflation.

Brasonian et. al.[5], studied the correlation between the fiscal policy and economic growth a case study of Romania a data set of just 18 years have been taken they have studied the relationship between the distortionary fiscal revenues and other revenues with GDP growth rate found negative impact of distortionary and non-distortionary fiscal revenues at growth.

Ahmad [1] studied the impact of fiscal variables on economic growth of Pakistan a data set of 31 years has been taken they tried to investigate the effect of productive, non-productive, distortionary and non-distortionary taxation as well as the labor force and human capital have been studied by using Auto Regressive Distributed Lag (ARDL) technique on time series data. They found a long run relationship hold among the variables but labour force as a percent of GDP is insignificant and negative.

Others [8] studied the role of fiscal decentralization, economic growth and the role of democratic institutions; basically it is an extended model of [4] endogenous growth model by assuming the public spending will be taken up by the government in three levels federal, state and local. Data set of 38 years has been used and the time series estimation has been done using GMM technique. The study reveals that revenue decentralization increase per capita income of country and a positive externality and expenditure decentralization is negatively related to GDP growth rate. Hence the interaction of revenue decentralization in the presence of democratic institution has positive association with growth.

Elsewhere [14], studied the fiscal policy for growth and employment generation in Pakistan. They have chosen four fiscal variables they have tested four different hypotheses at government expenditure and unemployment, growth rate, unemployment, FDI with unemployment and tax revenue with unemployment a data set of 30 years has been used and Johansen Co-integration technique has been applied. They found a positive and significant relationship between government expenditure and unemployment which is not supported by the null hypothesis. FDI has negative relationship with unemployment which is in the favor of null hypothesis. Again the inflation has been found significant but positive relationship with unemployment which is against the Philips curve.

Some others [34] found that the fiscal determinant of inflation in Pakistan by using time series data of 33 years from 1975-2008. They have used the Johansen Cointegration technique to check the long run relationship between the

variables error correction model was used to check the short run equilibrium and they found that local credit is a fiscal determinant of inflation, gross domestic product and exchange rate is playing a vital role in determining inflation but gross domestic product has negative relationship in short run and long run.

[33] have studied the impact of budget deficit on output ,inflation and balance of trade a data set of 40 years has been used a separate equation for money supply, money demand, output supply export supply and import demand equation has been used by using ARDL technique and found that the budget deficit have significant effect on inflation and balance of trade and changes in money supply have affected the balance of trade so the budget deficit and balance of trade can be effected by money supply.

Others [32] studied the effect of fiscal policy and inflation target in Australia and USA economy and developed a large model of 170 estimated equations small scale VAR model has been used. They found that low interest rated in USA is attached with fiscal policy. They used counter cycle fiscal policy in large scale model of USA and found that fiscal policy is linked with inflation target but an increase in fiscal policy and inflation target is not narrated despite increased volatility of macroeconomic shocks.

3. DATA AND METHODOLOGICAL ISSUES

3.1 Data

The data set of 40 years has been taken from 1973 to 2013 from world development indicators (WDI) and Economic Survey various issues of Pakistan.

$$GDP = \beta_0 + \beta_1 (TRDF) + \beta_2 (WR) + \beta_3 (TINV) + \beta_4 (TAX) + \beta_5 (WINF) + \beta_6 (TEXP) + \mu_t$$

GDP = Natural Logarithm of Gross Domestic Product in (Current US\$).

TRDF = Trade Deficit to GDP Ratio (External Balance on goods & services).

WR = Natural Logarithm of Worker Remittances (Personal Remittances) in (Current US\$).

TINV = Total Investment to GDP Ratio.

TAX = Tax to GDP Ratio.

WINF = Natural Logarithm of World Inflation. (WPI of Five Trading Partners)

TEXP = Total Expenditure to GDP Ratio (Sum of Development, Military and Government Final Consumption Expenditure).

U_t = Error Term.

3.2 Methodology and Results

Stationarity of the variables in time series is a critical issue for the choice of estimation technique. Augmented Dickey Fuller (ADF) test is performed which shows that all variables are stationary at 1st difference.

Table 1: Augmented Dickey Fuller (ADF) Test

Variable	ADF t-stat.	p-value	Stationarity
GDP	-8.30	0.000	1 st difference
TRDF	-7.32	0.000	1 st difference
WR	-9.07	0.000	1 st difference
TAX	-7.87	0.000	1 st difference
TINV	-6.52	0.000	1 st difference
TEXP	-9.21	0.000	1 st difference
WINF	-7.18	0.000	1 st difference

Source: Authors' estimates

Vector error correction model is applied to find out short run relationship and Johanson Cointegration technique is applied to find out long run relationship of the variables. Since time series is quite long i.e. 41 years, break points are quite likely. Therefore, Bai-Perron test has been applied to detect the break points within the time span of 1973-2013. The test reveals two break points at 1979 and 1985. Accordingly, dummies are generated and included in further analysis. A long run relationship is found in this case as shown in Table 2.

Table 2: Johanson Cointegration Test with Break Points

Hypothesized no. of cointegration equations	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.
None *	0.8621	284.3038	197.371	0.000
At most 1 *	0.7897	207.0417	159.530	0.000

At most 2 *	0.7446	146.2349	125.615	0.002
At most 3	0.5338	93.00879	95.754	0.076
At most 4	0.4994	63.24631	69.819	0.150

Source: Authors' estimates.
Trace test indicates 3 cointegrating equations at the 0.05 level.

We applied the Vector Error Correction model (VECM) due to cointegration between the variables. Coefficient of cointegrating term is -0.2638 implying that model is 26% deviated from the equilibrium and after the time period of 2.5 years they will again come back towards the equilibrium. The coefficient of TINV, TAX and TRDF are significant and negative. This shows that they are the responsible in affecting the fiscal policy stance and economic growth of Pakistan. But the coefficient of worker remittance, TEXP and WINF are insignificant WR is positive means that it is affecting the fiscal policy stance positively in short run and TEXP is negative, which means that it is negatively affecting the fiscal policy stance of Pakistan. Here world inflation is showing the negative sign which mean that it is affecting our policy stance negative in short run.

For finding the robustness of long run slopes, we apply two versions of OLS, i.e. fully modified OLS (FMOLS) and dynamic OLS (DOLS). In recent empirical literature, it is customary to check robustness of the slope using these techniques ([15, 16, 18, 9, 20] and [21]). Results in Table 3 show that long run slope parameters are quite robust and remain positive and statistically significant.

	Variable	Slope	p-value
FMOLS	WINF	2.8876 ^a	0.000
	WR	0.0693 ^b	0.014
	TAX	-0.0311 ^c	0.056
	TEXP	-0.0145 ^b	0.011
	TINV	0.0366 ^a	0.001
	TRDF	0.0123 ^a	0.008
	D1	0.0971	0.147
	D2	0.3636	0.000
DOLS	Variables	Slope	p-value
	WINF	3.7530 ^a	0.000
	WR	-0.0436 ^c	0.067
	TAX	0.0476 ^a	0.003
	TEXP	-0.0330 ^a	0.000
	TINV	0.0101	0.152
	TRDF	0.0172 ^a	0.000
	D1	-0.0812	0.063
D2	0.4309	0.000	

^a ^b and ^c shows 1%, 5% and 10% level of significance, respectively.

3.3 Causality Analysis

Direction	F-Stat.	Prob.	Remarks
WINF → GDP	8.0495	0.001	Bi-causality
GDP → WINF	3.8897	0.030	(Feedback Effect)
WR → GDP	0.7168	0.496	No-causality
GDP → WR	2.6447	0.086	(Neutrality)
TAX → GDP	12.125	0.000	Uni-causality
GDP → TAX	1.5475	0.227	(Leakage)
TEXP → GDP	3.6940	0.035	Uni-causality
GDP → TEXP	1.2410	0.302	(Counterproductive)
TINV → GDP	4.8824	0.014	Bi-causality
GDP → TINV	5.8916	0.006	(Feedback Effect)
TRDF → GDP	1.4047	0.259	No-causality
GDP → TRDF	2.3338	0.112	(Neutrality)

Source: Authors' estimates.

As per Granger causality results, both world inflation and total investment have feedback effect with GDP. Tax and total expenditure has uni-causal relationship towards GDP. Whereas trade deficit and worker remittances have no causal relationship with GDP.

4. CONCLUSION

Findings of this paper show that Total Investment is positive, trade deficit is negative and worker remittances is positive as the signs are according to theory and expectation. Tax to GDP is negative and significant as we know in the case of Pakistan Tax to GDP ratio has remained low in the economic history of Pakistan so due to low participation its sign is negative. Total Expenditure is positive and significant. From the beginning of the ,o after applying the econometric techniques we found its sign as positive and significant on the basis of above conclusion. On the basis of results, we

recommend that consideration should be given to investment, trade deficit and worker remittances, total expenditure should be controlled as if we will see the historical trend of the variable then we will find that as GDP is growing the expenditures are growing rapidly.

REFERENCES

- [1] Ahmad, K., & Wajid, S. What matters for economic growth in Pakistan: Fiscal Policy or its composition? *Asian Economic and Financial Review*, **3**(2): 196-215 (2013).
- [2] Ahmad, N., & Ali, S. The effects of Fiscal Policy on economic growth: empirical evidences based on time series data from Pakistan. *The Pakistan Development Review*, **49**(4): 497-512 (2010).
- [3] Amin, A. A. Cameroon's Fiscal Policy and economic growth. *African Economic Research Consortium*, **85**, 1-53. (1998). Retrieved from <http://idl-bnc.idrc.ca/dspace/bitstream/10625/22844/1/113324.pdf>
- [4] Barro, R. Government spending in a simple model of endogenous growth. *Journal of Political Economy*, **98**(5): 103-125. (1990). Retrieved form <http://www1.worldbank.org/publicsector/pe/pfma06/BarroEndogGrowthJPE88.pdf>
- [5] Brasonian, L. O., & Brasonian, I. The correlation between fiscal policy and economic growth. *Academy of Economic Studies*, 19-26 (2011). Retrieved from <http://www.store.ectap.ro/articole/317.pdf>
- [6] Faridi, Z. M. Contribution of Fiscal decentralization to economic growth: Evidence from Pakistan. *Pakistan Journal of Social Sciences*, **31**(1): 1-13 (2011).
- [7] IMF Working Paper Series. Retrieved from <https://www.imf.org/external/pubs/ft/wp/2006/wp0672.pdf>.
- [8] Iqbal, N., Din, M.U., & Ghani, E. Fiscal decentralization and economic growth: Role of democratic institutions. *Pakistan Institute of Development Economics PIDE Working Papers* 2013: **89**.
- [9] Johansen, S. Likelihood-based inference in cointegrated vector autoregressive models, Oxford, Oxford University Press. (1995).
- [10] Johansen, S. Statistical analysis of cointegration vectors. *Journal of Economic Dynamics and Control*, **12**(2): 231-254 (1998).
- [11] Johansen, S. The power function of the likelihood ratio test for cointegration. *Econometrics decision models: new methods of modeling and application*, Gruber J. (ed.) Springer Verlag 323-335 (1991).
- [12] Kakar, K. Z. Impact of Fiscal variables on economic development of Pakistan. *Romanian Journal of Fiscal Policy*, **2**(2): 1-10 (2011).
- [13] Kumar, S. M., & Botman, D. Fundamental determinants of the effects of Fiscal Policy. (2006).
- [14] Mahmood, H., & Khalid, S. Fiscal Policy for growth and employment generation in Pakistan. *Academic Research International*, **4**(6): (2013).
- [15] Mehmood, B. & Shahid, A. Aviation demand and economic growth in Czech Republic: Co-integration estimation and causality analysis. *Statistika*, **94**(1): 54-63 (2014).
- [16] Mehmood, B., & Kiani, K. An inquiry into nexus between demand for aviation and economic growth in Pakistan. *Academica*, **3**(10): 200-211 (2013).
- [17] Mehmood, B., & Raza, S. H. English or German or both recipes for developing countries: Econometric evidence from aggregated and disaggregated data. *Public Finance Quarterly*, **59**(3): 346-354 (2014).
- [18] Mehmood, B., Feliceo, A. & Shahid, A. What causes what? Aviation demand and economic growth in Romania: Cointegration estimation and causality analysis. *Romanian Economic Business Review*, **9**(1): 21-33 (2014).
- [19] Mehmood, B., Shahid, A. & Ilyas, S. Cointegration regression estimation and causality testing of aviation demand and economic growth in Philippines.

- International Journal of Economics and Empirical Research*, **3**(6): 271-279 (2015). [29]
- [20] Mehmood, B., Shahid, A., & Younas, Z. I. Aviation demand as covariate of economic growth in Bangladesh: Cointegration estimation and causality analysis. *International Journal of Economics and Empirical Research*, **2**(8): 301-307 (2014). [30]
- [21] Mehmood, B., Shahid, A., & Younas, Z. I. Interdependencies between aviation demand and economic growth in India: Cointegration equation estimation, *Economic Affairs*, **58**(4): 335-345 (2013). [31]
- [22] Ocran, K. M. Fiscal policy and economic growth in South Africa. A paper presented at the Centre for the Study of African Economies "Conference on Economic Development in Africa", St. Catherine's College, Oxford University. (2009). Retrieved from <http://www.fatih.edu.tr/~jesr/jesr.zaman.final%20for%20publ.pdf>. [32]
- [23] Pesaran, M. H., Shin, Y., & Smith, R. J. Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, **16**(3): 289-326 (2001). [33]
- [24] Phillips, C.B., & Hanson, E.B. Estimation and inference in models of cointegration: A Simulation Study. *Advances in Econometrics*, **8**(1): 225-248 (1990). [34]
- [25] Rother, C. P. Fiscal policy and inflation volatility. *European Central Bank Working Paper Series No. 317*. (2004). Retrieved from http://ssrn.com/abstract_id=515081. [35]
- [26] Saikkonen, P. Asymptotically efficient estimation of cointegration regressions, *Econometric Theory*, **7**: 1-21 (1991). [36]
- [27] Sailesh, J. K. (1999). Fiscal Policy, income distribution and growth. Asian Development Bank EDRC report series No. 67. Retrieved from <http://www.adb.org/sites/default/files/publication/28179/er067.pdf>
- [28] Shams, A, Parveen., & Ramzan, A. (2013). Fiscal determinants of inflation in Pakistan. *Interdisciplinary Journal of Contemporary Research in Business*, **5**(5): 241-248.
- Srinivasan, P. (2013). Causality between Public Expenditure and economic growth: The Indian Case. *International Journal of Economics and Management*, **7**(2) 335 - 347.
- Stock, J. H., & Watson, M. W. (1988). Testing for common trends. *Journal of the American Statistical Association*, **83**(404): 1097-1107.
- Stock, J. H., & Watson, M. W. (1993). A simple estimator of cointegrating vectors in higher order integrated systems, *Econometrica*, **61**, 783-820 (2013).
- Tulip, P. Fiscal policy and the inflation target. *Economic Research Department Reserve Bank of Australia Research Discussion Paper 2014-02*. (2014). Retrieved from <http://www.rba.gov.au/publications/rdp/2014/pdf/rdp2014-02.pdf>
- Wakeel, I., & Ullah, K. Impacts of budget deficit on output, inflation and balance of Trade: A Simultaneous Equation Model Approach. *J. Glob. & Science*, **1**(1): (2013). Retrieved from <http://www.globalcentre.org/upload/journal.pdf>.
- World Bank World Development Indicators. Washington, DC: The World Bank. (2015).
- Yasin, M. H. The debt crises of Pakistan and an optimal fiscal policy. *Pakistan Economic and Social Review*, **39**(2): 153-186. (2001).
- Zaidi, S. A. *Issues in Pakistan Economy*: (2nd ed.). Oxford University Press, Karachi: Pakistan. (2000).