

# **Fiscal Decentralization and Macroeconomic Stability: Theory and Evidence from Pakistan**

**By**

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**Abstract:** The research on the relationship between macroeconomic stability and fiscal decentralization has been rather inconclusive about the benefits of fiscal decentralization. The current paper is the first to investigate the effect of fiscal decentralization on macroeconomic stability by using Misery Index at country level especially for Pakistan. The evidence that has been presented reveals a significant positive impact of fiscal decentralization on macroeconomic stability of Pakistan, although the results are much weaker for expenditure decentralization. Effectiveness of expenditure decentralization in curtailing macroeconomic instability is depending upon the level of revenue decentralization. The current study clearly indicates that process of fiscal decentralization is beneficial for the economy of Pakistan. The present developments under taken by the government of Pakistan in term of 7<sup>th</sup> NFC award and 18<sup>th</sup> Constitutional Amendment will have clear implications for the Pakistan's long term economic prosperity and macroeconomic stability. However, outcome of these reforms crucially depends upon the will of the political government.

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# **Fiscal Decentralization and Macroeconomic Stability: Theory and Evidence from Pakistan**

## **1 Introduction**

Over the past two decades most developing and transitional economies have embarked upon fiscal decentralization. It is because, fiscal decentralization is considered as an effective policy instrument to foster economic growth (Martinez-Vazquez and McNab 2003). Fiscal decentralization is the process of delegation of fiscal responsibilities to the sub-national governments, involving devolution of powers to tax and spending along with arrangements for correcting the imbalances between resources and obligations (Malik, et al, 2006). Fiscal decentralization occurs through devolution of responsibilities for public spending and revenue collection from the central to local governments (Neyapti, 2010). Fiscal decentralization enhances the economic growth directly by increasing the efficiency of public expenditures<sup>2</sup> (Samuelson, 1954 and Oates, 1972 and 1993) and indirectly through enhancing economic efficiency, creating horizontal fiscal equality and by maintaining macroeconomic stability (Martinez-Vazquez and McNab 2006).

It is generally believed that fiscal decentralization positively influences the macroeconomic stability (Prud'homme, 1995; Fornasari, Webb and Zou, 2000 and Martinez-Vazquez and McNab 2006). However, the precise relationship between fiscal decentralization and macroeconomic stability is not known (Treisman, 2000; Rodden and Wibbels, 2002 and Martinez-Vazquez and McNab 2003). Recent literatures have endeavored to quantify the impact of fiscal decentralization on macroeconomic stability, but with contradictory outcomes. Some studies have found positive and significant impact of decentralization on macroeconomic stability (King and Ma, 2001; Neyapti, 2004 and Martinez-Vazquez and McNab, 2006) while others have found negative or even insignificant relationship between fiscal decentralization and macroeconomic stability through price stability (Feltenstein and Iwata, 2005; Shah, 2006 and Thornton, 2007).

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<sup>2</sup> Endogenous growth literature (Barro, 1990) emphasizes the role of public expenditure as an engine of economic growth and fiscal decentralization is considered as an effective tool to enhance the efficiency of public expenditures

Many have also argued that there exist no clear relationship between decentralization and the level of inflation (Treisman, 2000 and Rodden and Wibbels, 2002). In sum, the existing literature on the relationship between fiscal decentralization and macroeconomic stability does not provide any definitive conclusion on the direction or significance of the relationship. The question, whether decentralization significantly influences macroeconomic stability still remained unanswered.

Government of Pakistan, recently, has taken two major steps towards fiscal decentralization by signing 7<sup>th</sup> National Finance Commission (NFC) award between the Federal government and Provincial governments and by passing 18<sup>th</sup> Constitutional Amendment. 18<sup>th</sup> Constitutional Amendment has conferred substantial economic authority upon the provinces and 7<sup>th</sup> NFC award has allowed not only transfer of more funds but also wide range of responsibilities from the federation to the provinces. After these developments, now the provinces will have more autonomy in performing various functions like provision of health and education facilities, infrastructure development and maintenance of macroeconomic stability. One salient features of NFC award is that Federal government and Provincial governments should streamline their tax collection system to increase their revenues in order to achieve 15 percent tax to GDP ratio (GoP, 2010). These important developments would cause a fundamental shift in the division of powers between provinces and the center. These developments have far reaching implications for the country's long term economic development and macroeconomic stability.

On the other hand, Pakistan has been facing the problem of macroeconomic stability. Double digit inflation coupled with high unemployment is a major concern related to Pakistan' macroeconomic stability. High fiscal and current account deficit also creates macroeconomic instability. Under these circumstances, fiscal decentralization, under the Eighteenth Constitutional Amendments and Seventh National Finance Commission Award, will expected to provide effective mechanism for achieving long term macroeconomic stability in the coming years.

Keeping this in view, it becomes crucial to analyze the impact of fiscal decentralization on macroeconomic stability of Pakistan. The prime objective of this

study is to assess the impact of fiscal decentralization on macroeconomic stability of Pakistan. There are two main type of fiscal decentralization i.e. revenue decentralization and expenditure decentralization. More specifically, the study aims to examine the impact of revenue decentralization and expenditure decentralization, separately, on the macroeconomic stability of the country. Secondly, if government is intended to adopt simultaneously both type of decentralization, this study will also examine the simultaneous impact of both revenue and expenditure decentralization on macroeconomic stability.

The present study contributes in literature on several avenues. Firstly, the existing literature only used inflation as indicator of macroeconomic stability. However, one study suggests that Misery Index (sum of inflation rate and unemployment rate) is most suitable proxy for measuring macroeconomic stability (Martinez-Vazquez and McNab, 2006). This study uses Misery Index as proxy for macroeconomic stability. Second, there is no comprehensive study exists that analyzes the issue of fiscal decentralization and macroeconomic stability at country level. Taken this into account, we are investigating the relationship between fiscal decentralization and macroeconomic stability by conducting a country level study. Thirdly, present study simultaneously measures the impact of revenue and expenditure decentralization on macroeconomic stability. Fourthly, we use latest available data on the measures of fiscal decentralization. Finally, we also apply GMM estimation technique to tackle the possibility of endogeneity among the variables.

The structure of the paper is as follow. Section 2 presents the brief review of literature on fiscal decentralization and macroeconomic stability. Theoretical framework is presented in Section 3. Data and descriptive statistics are explained in section 4. Empirical findings are reported in Section 5 while conclusion and policy recommendation are in last section.

## 2 Review of Literature

In this section we review the empirical literature on fiscal decentralization and macroeconomic stability. A number of studies have shown that decentralization has positive impact on macroeconomic stability. King and Ma (2001) conducted a study, in a cross-sectional framework, to analyze the impact of revenue decentralization on macroeconomic stability for 49 countries during the period of 1973-1994. They found a negative relationship between macroeconomic instability, measured as average inflation rate, and revenue decentralization only for developed countries and insignificant for whole sample. Neyapti (2004) reinvestigate the relationship between revenue decentralization and inflation by using a panel data set for developed and developing countries. He found that revenue decentralization has negative impact on inflation if it accompanied by central bank independence and local accountability. So revenue decentralization leads to lower inflation i.e. more economic stability provided that monetary discipline exists and not necessarily otherwise. King and Ma (2001) and Neyapti (2004) result indicates that revenue decentralization has a significant negative impact on inflation provided the central bank legal independence. Neyapti (2010) investigate the macroeconomic effects of fiscal decentralization for a panel of 16 countries over 1980-1998. He indicated that expenditure and revenue decentralization reduce budget deficit which lead to stable environment. However, the effectiveness of fiscal decentralization in reducing deficit is enhanced by greater population. He also found that the benefits of fiscal decentralization through fiscal discipline increase when governance and local accountability is inadequate.

A number of studies have shown that fiscal decentralization has negative or insignificant impact on macroeconomic stability. Shah (2006) by using the cross section data for 40 countries for the period of 1995-2000 found that fiscal decentralization has a negative but insignificant impact on price inflation. He also concluded that the impact of fiscal decentralization on management of inflation and macroeconomic imbalances was found to be positive but insignificant. Thornton (2007) conducted a panel regression study of 19 OECD member countries over the period for 1980-2000. He found that when the measures of revenue decentralization is limited to the revenue over which sub-

national governments have full autonomy, its impact on inflation is not statistically significant.

Treisman (2000) analyzed the impact of decentralization on average inflation rates of the CPI in a panel of 87 countries for four five-year periods in the 1970s and 1980s. He found a clear divergence in the relationship between decentralization and inflation among developed and developing countries. Among OECD countries, decentralization linked with significantly lower average inflation rates in the 1970s and 1980s. But among non-OECD countries, more politically and fiscally decentralized states suffered from higher average inflation rates. Empirical analysis suggests that decentralization helps preserve central bank independence in OECD countries, while in non-OECD countries it increases pressures on the government to overspend and get the central bank to monetize the deficit.

Feltenstein and Iwata (2002) gave an empirical examination of the impact of fiscal and economic decentralization in China on the country's economic growth and inflation, using a vector autoregressive (VAR) model with latent variables. Their econometric investigation offers strong evidence that there is a connection between decentralization and macroeconomic performance in China. Economic decentralization appears to be positively related to growth in real output for the entire postwar period in China. Fiscal decentralization seems to have adverse implications for the rate of inflation, especially after the late 1970s. Decentralization would therefore seem to be good for growth and bad for price stability.

Martinez-Vazquez and McNab (2006) using panel data set for 52 developing and developed countries for the period 1972-1997, examined the direct and indirect relationship between fiscal decentralization and economic growth and macroeconomic stability. They found that decentralization may positively influence price stability in developed countries, though this impact is much less clear in developing and transitional countries. They also found some evidence suggesting that decentralization may directly and negatively affect economic growth in higher-income countries but that this effect is reduced through the indirect positive impact of decentralization on growth through macroeconomic stability.

Studies also highlight that there is no clear relationship appears to exist between decentralization and the level of inflation (Treisman 2000 and Rodden and Wibbels 2002). So the existing literature on the relationship between fiscal decentralization and macroeconomic stability does not provide any conclusive result. Taken this into account, there appears to be room for investigating the relationship between fiscal decentralization and macroeconomic stability by employing most suitable proxy of macroeconomic stability and conducting a country level study. This paper contributes to the literature in that respect.

### 3 Theoretical Framework

Literature on fiscal decentralization suggests that decentralization fosters the economic growth directly by enhancing the efficiency of public sector and indirectly by generating macroeconomic stability in the country. In this section, we develop a theoretical framework to analyze the indirect impact of fiscal decentralization on economic growth through macroeconomic stability.

There are various ways to define macroeconomic stability. Literatures, in the field of decentralization, mostly use price stability, measured by inflation, as proxy for macroeconomic stability (Treisman, 2000; King and Ma, 2001; Neyapti, 2004; Martinez-Vazquez and McNab, 2006; Shah, 2006 and Thornton, 2007). However, Martinez-Vazquez and McNab (2006) suggests that the most suitable proxy for measuring macroeconomic stability is the combination of inflation and unemployment. We define macroeconomic stability by using the concept of Misery Index (MI). Misery Index was invented by Arthur Okun and used to characterize the current economic condition. MI is computed by taking the sum of the unemployment rate and the inflation rate for a given period.

$$MI = UR + INF \dots\dots\dots(1)$$

Where *MI* is Misery Index, *UR* unemployment rate and *INF* is inflation rate of the economy. The main assumption in this index is that an increasing unemployment rate and relatively high inflation have a negative impact on economic growth. So an increasing

index means a worsening economic climate for the economy in question, and vice versa. In economic terms, a rise in inflation coupled with high unemployment leads to lower consumer expenditures and contributes to an economic slow-down.

Macroeconomic stability of the country is determined by various economic factors. We hypothesized that macroeconomic stability is determined by the level of fiscal decentralization.

$$MI = f(FD)\dots\dots\dots(2)$$

*FD* is fiscal decentralization. There are various arguments in the literature that supports the hypothesis that fiscal decentralization work through macroeconomic stability. Fiscal decentralization is used as policy option in developing and transitional economies due to its significant impact on growth through macroeconomic stability (Prud'homme, 1995; Fornasari, Webb, and Zou, 2000 and Martinez-Vazquez and McNab 2006). However, the theoretical arguments on the relationship between fiscal decentralization and macroeconomic stability do not provide any definitive conclusion on the direction or significance of relationship.

Theoretical literature argued that decentralization of spending increases economic efficiency since local governments have better information about local preferences, and hence it permits non-uniform provisions that better match with the preferences of citizens (Samuelson, 1954; Oates, 1972 and 1999). Decentralization is expected to boost accountability and transparency in service delivery (De Mello, 2000). In addition, if local accountability exists, tax-payers may also better cooperate with local governments (Wasylenko, 2001). These arguments, in turn, lead us to hypothesize that decentralization may lead to macroeconomic stability via increased public sector efficiency (Neyapti, 2010). It is also argued that decentralized fiscal system offer a greater potential for improved macroeconomic governance than centralized fiscal system and hence fiscal decentralization is associated with improved fiscal and economic performance (Shah, 2006). The theory of design of fiscal decentralization suggests a number of potential tradeoffs between efficiency and other objectives such as a more equal distribution of resources across regions or macroeconomic stability (Martinez-Vazquez and McNab 2006). The classical view of this issue contends that macroeconomic policy should solely

be the responsibility of the central government and not at all the responsibility of subnational governments, more recently, a number of authors have argued that devolving at least some measure of macroeconomic policy to subnational governments can promote, not hinder, macroeconomic stability (Gramlich, 1993; Shah, 1999 and Rodden and Wibbels, 2002).

On the negative side, some have argued that the apparent disregard of some subnational governments for budget constraints in decentralized systems suggests that fiscal decentralization *per se* aggravates macroeconomic instability or at least presents another obstacle to resolving chronic fiscal imbalance (Rodden, 2002 and Rodden, Eskeland and Litvack 2003). Where macroeconomic instability predated decentralization has made the solutions more complicated in general but not impossible (Dillinger, Perry and Webb 2000). However, the presence of a soft-budget constraint at the local level of government remains a threat to macroeconomic stability (Bahl 1999 and Stein 1999).

There are various ways to define fiscal decentralization. Decentralization is a process of “devolution of power and authority to local administrations”. Fiscal decentralization, the subject matter of this paper, can be defined as the devolution of policy responsibilities from central government towards provincial governments with regards to spending and revenue collection decisions. Based on this definition, we measured fiscal decentralization with respect to both revenue and expenditure assignments.

$$MI = f(FD_R, FD_E).....(3)$$

$FD_R$  and  $FD_E$  represents revenue decentralization and expenditure decentralization respectively. Excluding the necessary control variables may leads to the wrong conclusions that there is statistically significant relationship between decentralization and macroeconomic stability. To anticipate problems of bias from variables omitted in the model, we specify the control variables.

$$MI = f(FD_R, FD_E, Z).....(4)$$

$Z$  is the vector of control variables. Based on the literature, we hypothesized that macroeconomic stability is also determined by the rate of economic growth, the growth

of money supply, investment and openness to international trade. Neoclassical growth model uses investment as an important determinant and increase in investment promotes economic stability. International trade theory proposes to include openness of the economy in the model because through openness international community directly influences the macroeconomic conditions of the country. Money supply is important indicator for financial development. Based on this theoretical framework, we specify following regression model:

$$MI = \alpha + \beta(FD) + \delta(Z) + \varepsilon \dots \dots \dots (5)$$

$\varepsilon$  represents the error term.  $Z$  is the vector of control variables which consist upon investment, money supply and openness.

To capture the impact of fiscal decentralization i.e. revenue decentralization and expenditure decentralization separately and simultaneously on macroeconomic stability, we define three different type of model. In model 1, we assume that government is only intended to perform revenue decentralization. So we define following regression model.

$$MI = \alpha_1 + \alpha_2(M2) + \alpha_3(Inv) + \alpha_4(Open) + \alpha_5(FD_R) + \varepsilon \dots \dots \dots \mathbf{Model\ 1}$$

Model 1 suggests that macroeconomic stability is determined by revenue decentralization, the growth rate of money supply, investment and openness of the economy. In model 2, we assume that government is only intended to perform expenditure decentralization. So we define following regression model.

$$MI = \alpha_1 + \alpha_2(M2) + \alpha_3(Inv) + \alpha_4(Open) + \alpha_5(FD_E) + \varepsilon \dots \dots \dots \mathbf{Model\ 2}$$

Model 2 suggest that macroeconomic stability is determined by expenditure decentralization, the growth rate of money supply, investment and openness of the economy. In model 3, we assume that government performs revenue as well as expenditure decentralization simultaneously. So we define following regression model.

$$MI = \alpha_1 + \alpha_2(M2) + \alpha_3(Inv) + \alpha_4(Open) + \alpha_5(FD_R) + \alpha_6(FD_E) + \varepsilon \dots \dots \dots \mathbf{Model\ 3}$$

#### 4 Data and Descriptive Statistics

The present study has used various sources to obtain the required data. Data on government expenditures and revenues at federal and provincial level are taken from Fifty Year Economy of Pakistan and various annual reports published by State Bank of Pakistan. Data on other economic variables like GDP growth rate, inflation, unemployment, investment, taxes and saving are taken from Economic Survey of Pakistan (various editions). Data used in this study covers up to 32 years of observations ranging from FY-1979 to FY-2010.

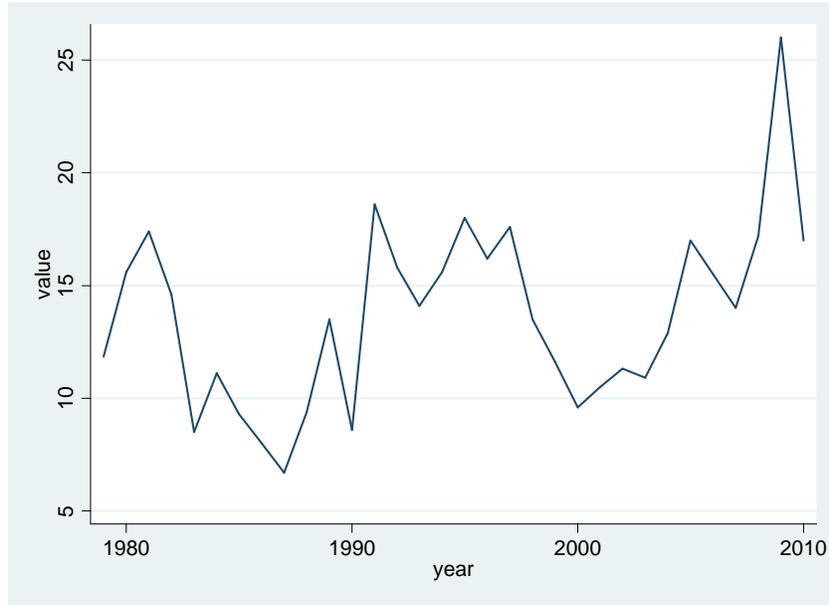
Fiscal decentralization is measured with respect to both revenue and expenditure assignments. Expenditure decentralization is measured as the ratio of sub-national government expenditures to the total government expenditures less the defense expenditures and payments of interest on debt. These expenditures are considered to be the main part of non-decentralized government spending. Revenue decentralization is measured as the ratio of sub-national government revenue to the total government revenue.

We construct Misery Index (*MI*) to capture the macroeconomic stability of the country. *MI* is computed by taking the sum of the unemployment rate and the inflation rate for a given period.

$$MI = UR + INF \dots\dots\dots(1)$$

Where *MI* is Misery Index, *UR* unemployment rate and *INF* is inflation rate of the economy. Inflation is measured as annual percent change of average consumer price index. Data for inflation are averages for the year and index is based on 2000=100. Pakistan's definition of unemployment is in consistent with the definitions of International Labour Organization; it is defined unemployment is comprises of all persons ten years of age and above who during the reference period were: without work that is, were not in paid-employment or self-employment; and currently available for both and those not currently available for some reasons. Based on these definitions, we construct a Misery Index for Pakistan (Figure 1).

Figure 1: Macroeconomic Stability Index (Misery Index)



Economic Survey of Pakistan only reported data on gross fixed capital formation. We used gross fixed capital formation as percent of GDP as indicator of investment. Openness of the economy is measured as share of export plus import in GDP. Money supply is measured as M2 as % of GDP.

Descriptive statistics of sample data shows that the average value of inflation is 8.6 and average unemployment rate in Pakistan is 5.1. Investment has average value 18.6 percent and openness of the economy has average value 30 percent. M2 as share of GDP has average value of 41 percent. Macroeconomic stability index has average value of 13.7. Decentralization variable shows that average value of revenue decentralization variable is 0.13 while expenditure decentralization variable has 0.51 (Table 1).

Table 1: Descriptive Statistics

Variables	N	Mean	SD	Min	Max
Inflation	32	8.61	3.96	3.10	20.80
Unemployment Rate	32	5.06	1.61	2.60	8.30
M2 as % of GDP	32	0.41	0.03	0.36	0.47
Investment as % of GDP	32	18.63	1.56	15.60	22.50
Openness	32	0.30	0.03	0.26	0.36
Macro-stability Index	32	13.67	4.05	6.70	26.00
Revenue Decentralization	32	0.13	0.05	0.08	0.28
Expenditure Decentralization	32	0.51	0.14	0.30	0.78

The stationarity of the series is confirmed by applying Augmented Dickey–Fuller (ADF) test. Table 2 gives the result of ADF for all series. M2 as % of GDP and Investment as % of GDP are stationary at level while Inflation, unemployment, openness, macroeconomic stability index, revenue decentralization and expenditure decentralization are non stationary at level and become stationary at first difference.

Table 2: Test of Stationarity

Variables	Level			First Difference		
	No Trend	With Trend	Result	No Trend	With Trend	Result
Inflation	-2.76	-2.73	NS	-6.30	-6.31	S
Unemployment Rate	-1.56	-2.05	NS	-5.72	-5.65	S
M2 as % of GDP	-3.25	-4.60	S			
Investment as % of GDP	-3.11	-3.55	S			
Openness	-2.43	-2.69	NS	-6.26	-6.15	S
Macro-stability Index	-2.92	-3.21	NS	-6.98	-6.96	S
Revenue Decentralization	-2.24	-2.91	NS	-4.06	-3.99	S
Expenditure Decentralization	-2.13	-1.86	NS	-6.15	-7.05	S

Note: 5% critical value is -2.87 for the case of no-trend, and -3.42 when a trend is included. AIC is used for lag selection. S stand for stationary series and NS stand for non-stationary series

All variables are expressed in logs. All variables are not going to the same order of integration, so we apply OLS methods with the difference of the variables based in the ADF test. The problem of autocorrelation is handled by using autoregressive and moving average methods of different order. In order to tackle the problem of endogeneity, we also apply GMM method of estimation.

## 5 Model Estimation

### 5.1 Revenue Decentralization and Macroeconomic Stability

First we estimate the Model 1 which suggests that macroeconomic stability is determined by revenue decentralization. We estimate following regression model by using OLS and GMM methods:

$$MI = \alpha_1 + \alpha_2(M2) + \alpha_3(Inv) + \alpha_4(Open) + \alpha_5(FD_R) + \varepsilon$$

The regression results are reported in Table 3. Results indicate that, if only revenue decentralization occurs, the relationship between revenue decentralization and

macroeconomic stability is negative and statistically significant<sup>3</sup>. The estimated coefficient for revenue decentralization is statistically significant at the 5 percent level. The results remain the same when we apply GMM method. So the estimated coefficient for revenue decentralization appears to be robust in the model. Thus, it appears that a more decentralized system of revenue assignments tend to cause more stable macroeconomic environment. Evidence suggests that revenue decentralization is favorable in achieving high economic growth through maintaining macroeconomic stability in Pakistan. By allowing provincial governments to mobilize their own revenues, decentralization ultimately leads to stable macro-environment. Openness has negative but significant impact on macroeconomic stability. Money supply and investment positively influence the macroeconomic stability, but their impact is insignificant.

Table 3: Model Estimation: Dependant variable (Macroeconomic Stability Index)

Variables	OLS	GMM
Constant	4.875096***	7.364254**
M2 as % of GDP	-0.924044	-0.034673
Investment as % of GDP	-0.309844	-0.625042
Openness	2.350339*	3.008572*
Revenue Decentralization	-0.301813**	-0.301615*
Diagnostic Tests		
R-Squared	0.570008	0.491192
DW	2.056168	2.220366
Jarque-Bera	0.76 (0.68)	1.49 (0.47)
Ramsey RESET Test	(1,26) 1.45 [0.2388]	
No of Observation	32	32

Note: \*, \*\*, and \*\*\* show the level of significant at 1%, 5% and 10% respectively. All variables are expressed in logs with different order of differences based on ADF test.

## 5.2 Expenditure Decentralization and Macroeconomic Stability

Similarly we estimate Model 2 to assess the impact of expenditures decentralization on macroeconomic stability. We estimate following regression model:

$$MI = \alpha_1 + \alpha_2(M2) + \alpha_3(Inv) + \alpha_4(Open) + \alpha_5(FD_E) + \varepsilon$$

The regression results are reported in Table 4. The estimated coefficient for expenditure decentralization is negative but statistically insignificant<sup>4</sup>. So decentralization of expenditures may not lead to macroeconomic stability in Pakistan.

<sup>3</sup> Martinez-Vazquez and McNab (2006) found similar results for developing countries.

<sup>4</sup> Martinez-Vazquez and McNab (2006) found similar results for developing countries

Expenditure decentralization per se does not create conditions that increase economic growth.

Literature highlights various theoretical explanations to justify the insignificant relationship between expenditure decentralization and macroeconomic stability. First, provincial governments may suffer from lack of economies of scale in the provision of public goods; particularly, information and coordination costs may be higher for provincial governments than for the central government. Secondly, if local vested interests are powerful, in the absence of local accountability, decentralization increases corruption and social fragmentation (Blanchard and Shleifer, 2000 and Bradhan and Mookherjee, 1998). Thirdly, decentralization may increase the competition and political tensions among local governments. Fourthly, lack of institutional and administrative capacity of local governments may prevent the benefits of decentralization from being realized. Fifthly, coordination problems across different tiers of government may hinder fiscal reforms and implementation of macroeconomic adjustment.

Table 4: Model Estimation: Dependant variable (Macroeconomic Stability Index)

	OLS	GMM
Constant	8.748713*	11.46040*
M2 as % of GDP	-0.876532	0.467926
Investment as % of GDP	-1.086400**	-1.212838
Openness	3.219703*	4.128537*
Expenditure Decentralization	-0.157205	-0.073185
R-Squared	0.529517	0.265165
DW	2.140339	2.037881
Diagnostic Tests		
Jarque-Bera	0.09 (0.95)	1.49 (0.47)
Ramsey RESET Test	(1,26) 0.40 [0.4076]	
No of Observation	32	32

Note: \*, \*\*, and \*\*\* show the level of significant at 1%, 5% and 10% respectively. All variables are expressed in logs with different order of differences based on ADF test.

### 5.3 Revenue and Expenditure Decentralization and Macroeconomic Stability

Finally, we simultaneously measure the impact of revenue decentralization and expenditure decentralization on macroeconomic stability.

$$MI = \alpha_1 + \alpha_2(M2) + \alpha_3(Inv) + \alpha_4(Open) + \alpha_5(FD_R) + \alpha_6(FD_E) + \varepsilon$$

The regression results are reported in Table 5. We find very interesting results. If government simultaneously adopted the decentralization process of revenue and expenditures, both become significant for achieving macroeconomic stability. Empirical findings indicate that the relationship between revenue decentralization and macroeconomic stability is negative and statistically significant at 1 percent of level. Even after including the expenditure decentralization variable, revenue decentralization variable remains significant which confirms the robustness of this variable. This implies that revenue decentralization is favorable for Pakistan in achieving macroeconomic stability in the long run. However, expenditure decentralization becomes significant in controlling the macroeconomic instability if it is coupled with revenue decentralization. So it can be infer that expenditure decentralization may also lead to macroeconomic stability in Pakistan.

Table 5: Model Estimation: Dependant variable (Macroeconomic Stability Index)

	OLS	GMM
Constant	4.614514***	7.074472*
M2 as % of GDP	-0.533320	0.616750
Investment as % of GDP	-0.449154	-1.033197
Openness	1.826961*	1.822103***
Revenue Decentralization	-0.392679*	-0.465823*
Expenditure Decentralization	-0.277645***	-0.440226**
R-Squared		
R-Squared	0.616302	0.518228
DW		
DW	2.346001	2.341064
Diagnostic Tests		
Jarque-Bera	0.66 (0.71)	0.71 (0.70)
Ramsey RESET Test	(1,25) 0.39 [0.3347]	
No of Observation	32	32

Note: \*, \*\*, and \*\*\* show the level of significant at 1%, 5% and 10% respectively. All variables are expressed in logs with different order of differences based on ADF test.

## 6 Conclusion

The research on the relationship between macroeconomic stability and fiscal decentralization has been rather inconclusive about the benefits of fiscal decentralization. The current paper is the first to investigate the effect of fiscal decentralization on macroeconomic stability by using Misery Index at country level especially for Pakistan.

The evidence that has been presented reveals a significant positive impact of fiscal decentralization on macroeconomic stability of Pakistan, although the results are much weaker for expenditure decentralization. Effectiveness of expenditure

decentralization in curtailing macroeconomic instability is depending upon the level of revenue decentralization. In Pakistan, revenue decentralization is more effective than expenditure decentralization.

The current study clearly indicates that process of fiscal decentralization is beneficial for the economy of Pakistan. Literature on macroeconomic stability and economic growth suggest that macroeconomic stability, measured as price stability, leads to more economic output in Pakistan (Iqbal and Nawaz, 2009). So to achieve long run economic development, the process of decentralization is helpful. The present developments under taken by the government of Pakistan in term of 7<sup>th</sup> NFC award and 18<sup>th</sup> Constitutional Amendment will have clear implications for the Pakistan's long term economic prosperity and macroeconomic stability. However, outcome of these reforms crucially depends upon the will of the political government.

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