

Impact of Governance and Social Development on Fiscal Deficit in Pakistan

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Abstract

This short empirical study is about to determine the implications of Governance and social development on Fiscal deficit of Pakistan by using time series data for the period of 1980 to 2014. The study is dynamic in nature with compare to previous literature on the determinants side of fiscal deficit the study incorporated education index and life expectancy as social development indicators and corruption index with Government stability for governance indicators. For empirical estimation the study firstly applies a unit root test to check order of integration then a Johansson test of Co-integration is applied. Study found that all the indicators used in the model are co-integrated of I(1) so as per rule for long run relationship VECM is used. The main findings of this empirical study are that, corruption and government stability are found significant measures for fiscal deficit and education index is also significantly contributor in fiscal consolidation of the Pakistan. Technically the study has sound contribution in the literature of fiscal deficit particularly in case of developing countries like Pakistan where social as well as governance indicators are shown poor situation and helpful for further research on the same subject.

Key words: Governance, Social Development, Fiscal Deficit

Introduction

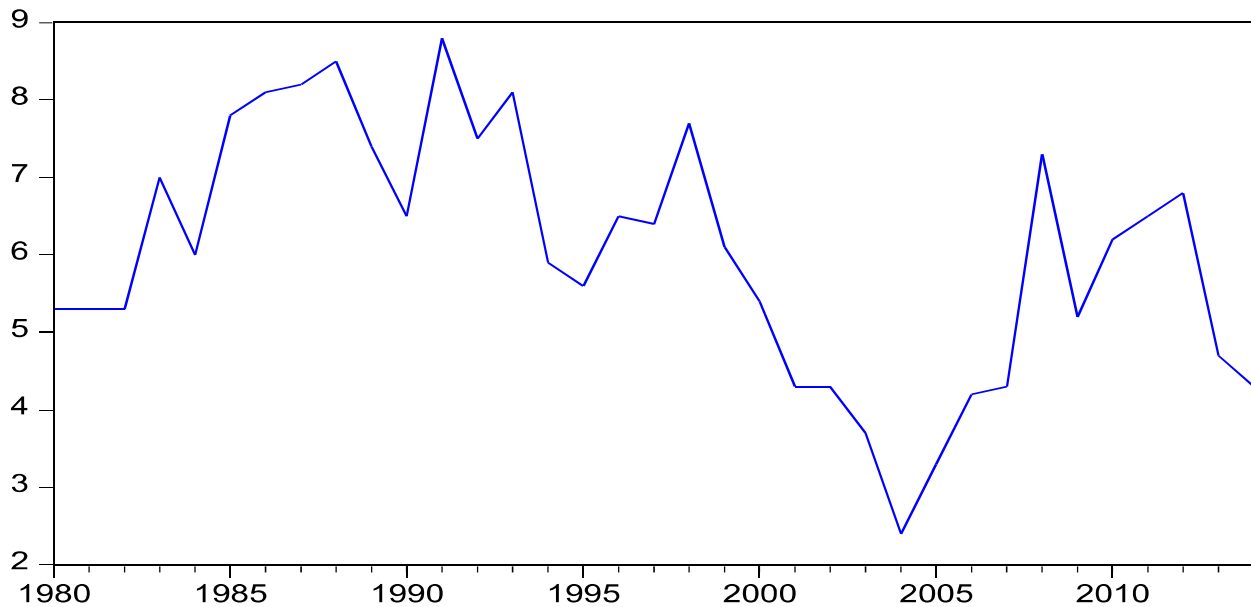
A sound fiscal position plays accompanying role in achieving macroeconomic stability, income redistribution, sustainable growth and poverty reduction. A prudent fiscal position can mobilize the domestic saving, increase the efficiency of allocated resources. On the other hand slipshod fiscal position creates many problems like high inflation, higher the interest rate and erode the confidence of private investors *etc.* For this reason, public spending by every government serves as an important tool in achieving their economic objective. Relative to fiscal positions composition of spending, how much they spend is likely to make the differences in achieving these objectives. The way to finance these spending is revenue collection, when revenues are less than expenditure, government has budget deficit and vice versa.

Balance budget is good; if the economies have budget deficit or surplus it does not means that such economies performing poor. The extent of budget deficit and its consequences has been most debated issue in recent years. An alarming situation face by many developing and developed economies is the higher budget imbalances to gross domestic product because it put the pressure on economy in shape of debt, interest payment, increase in future taxes *etc.* Servicing the public debt absorb a disproportionate share of public resources, put into a vulnerable debt traps and dampens the economic growth. Pakistan is one of them who face the chronic fiscal deficit; high inflation and major structural weakness have delayed economic growth.

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Figure No. 1 Trends in Fiscal Deficit (% of GDP) in Pakistan Since 2013



Source: Pakistan Economic Survey (2001-02; 2006-07; 2013-14)

This graph shows the trends in fiscal deficit over the period 1990-2013, fiscal deficit was highest in 1990-91 and lowest in 2003-04. However reduction in fiscal deficit results in rapid decline in expenditure, especially reduction in development expenditure rather than revenue efforts.¹ Reductions in fiscal deficit have remarkable effects on economy and social sector.

Lagging performance of social sector can not only explain by health indicators but also the other indicators play an important role for the social sector development such as education and unfortunately, country is also performing poor in this sector.

The objective of this study is to broadly examine the recent empirical literature to review the existing evidence about the social and institutional determinants of Fiscal Deficit. Following two main objectives will be addressed in this study.

1. To empirically examined the short and long run impact of Governance and Social development on Fiscal Deficit in Pakistan.
2. To propose policy implication based on empirical findings of this research for Pakistan

Literature Review

The purpose of this section is to highlight the existing literature on the implications of Fiscal deficit, dynamics of Fiscal deficit and some determinants of fiscal deficit. Mostly studies cover the one side of Fiscal Deficit and macroeconomic variables such as twin deficit, inflation, exchange rate, and interest rate etc. Guess & Koford (1984) investigated causal the relationship between budget deficit and inflation, GNP, and private investment, by using the granger causality test. For the period 1949 to 1981 in seventeen OECD countries the study used annual time series data and concluded that these variables do not change due to budget deficit. Moreover relationship between economic growth and government spending in 100 cross-sectional countries is examined by Landau (1983). This study showed the negative association between the growth rate of real per capita GDP and the share of government expenditure in GDP. Kormendi & Meguire (1985) concluded the nonexistence of cross –

¹ Pakistan Economic Survey 2012-13, Economic Survey Past issues

sectional association between the growth rates of government consumption spending and growth rate of real GDP on output in 47 countries over the period of 1950-77.

Ahmed & Miller (2000) used OLS, fixed-effect, and random-effect methods to examine the effects of disaggregated government expenditure on investment. This study differentiated from the other studies by introducing budget constraint; differentiate between tax- and debt financed expenditure. By using pooled time-series and cross-section data of 39 countries this study runs two sets of regression in which one use disaggregated expenditure items while other use the total government expenditure. The empirical findings of this study conclude different results; in developing countries investment is positively affected by openness variables while in developed countries results are reversed. Furthermore in developing countries crowding in investment are due to expenditure on transportation and communication while crowd out investment generally due to tax financed and different sources of debt financed government expenditures.

Some studies concluded the relationship between budget deficit and inflation such as (Dwyer, 1982; Darrat, 1985; Miller, 1985). Dwyer (1982) investigated the linkages between government budget deficit and macroeconomic variables (such as prices, spending interest rate and money stock) in U.S. This study utilized vector auto regression (VAR) model over the period of 1952-78 and revealed that debt have no effect on inflation, hence consistent with the hypothesis that predictable change in government debt have no perceived wealth effect. While there is no evidence that prices, spending, interest rates, or money stock increase due to increase in budget deficit.

An empirical investigation between deficit and inflation is conducted by Darrat (1985) during the post-1960 in U.S. OLS estimation results showed that federal deficit and monetary growth significantly affect inflation during the 1960 and 70s. Federal deficit have strong and more reliable impact on inflation than monetary growth.

Utilization of trivariate auto regressive process in U.S over the period of 1950-80 by Ahking & Miller (1985). In this analysis endogenous variables are deficits, money growth, and inflation, results showed the two way causal relationship between government deficit and inflation in 1950 and 1970s but not in 1960s. Another recent study by Darrat (2000) who investigated that over the period of 1957-1993 in Greece high budget deficit have an inflationary consequences. Empirical results of error correction model (ECM) revealed that deficit have positive and significant impact on inflation in Greece. A number of researchers investigated twin deficit aspect such as (Darrat, 1988; Zietz & Pemberton, 1990). Darrat (1988) investigated the twin deficit hypothesis by utilizing granger causality test over the period of 1960-1984 in U.S. Empirical findings partially support that a rising budget deficit in U.S increase the trade deficit in 1980s. This study also found the causality between budget deficit and trade deficit. On the other hand an open economy model of U.S economy is examined by Zietz and Pemberton (1990) over the period 1972:4-1987:2 multi equation, structural equation model includes the domestic absorption, domestic inflation rate, the real trade-weighted exchange rate, interest rates, exports, imports, and trend absorption. Through the effect of domestic absorption on imports budget policy has strong effect on net exports, effect through interest rate and exchange rate is less. This study also showed that budget deficit affect trade deficit through its impact on domestic absorption and income rather than through higher interest and exchange rates. Piersanti (2000) examined the relationship between budget deficit and current account deficit for 17 OECD countries over the period of 1970-97. By utilizing granger-sims causality technique this study measures the budget and current account deficit as percent of GDP. Main conclusion drawn from this study was that current account is associated with larger budget deficit during 1970-1997 in most industrial countries.

Above discussed literature is mostly about the relationship between Fiscal deficit macroeconomic indicators. There is only few studies which are focused to political and social determinants of fiscal deficit, the preset study is about the determinants of fiscal deficit by elaborating the governance side and social side of fiscal imbalance.

Theoretical Debate and Model Specification

Economies face high and persistent budget deficit when the ratio of deficit with respect to GDP increases over the time period especially in long run. It may start strongly harming the economy, *i.e.* increase in inflation, interest rate, low level of investment and productivity *etc.* To overcome this situation government have three options to reduce the deficit: printing money, borrowing and curtailing expenditure. Each tool has its own consequences *e.g.* when it use printing money then it adversely affects the economy through inflation, high interest rate and low investment level. On the other hand when government utilizes borrowing, this option is beneficial for short run but it has many worse consequences. Government agrees to borrow on the terms repayments which generally contain strict rules regulations. Hence in the next fiscal year government used its revenue on debt servicing which creates more expenditures and revenue gap as percentage of GDP this will reduce the further borrowing to finance deficit. Consequently, government should concern about their public spending plan and they have only one option to reduce deficit by reducing the expenditures (current expenditure), it does not mean that government should reduce their spending by all means. Government should focus on unproductive spending but mostly it curtailed development expenditure especially on education and health instead of slashing current unproductive expenditure (Sabir, 2001; Akram *et al.*, 2011). On the other hand significant public spending on education and health care programs raise the competence of people to access the education and health services that results in better social outcomes and improve human development.

Empirical Model

This section provides the empirical model to estimate the relationship between fiscal deficit and social sector development in Pakistan. For this some other control variables used in the model affect the social sector development as student-teacher ratio, income index, Government stability, corruption and number of physicians, previously Uppal (2011) and Javid *et al.* (2011) derived the model for political and social determinants of fiscal deficit in Pakistan present study follows Alesina & Rodrik (1995) and Alt and Lesson (2006) to develop following model with addition to previous studies in Pakistan.

$$\ln FD_t = \beta_1 + \beta_2 \ln EDU_t + \beta_3 \ln COR_t + \beta_4 \ln GOVS_t + \beta_5 \ln LE_t + \beta_6 \ln INC_t + \pi$$

Table No. 3 Descriptions of Variables

Variables	Definition	Data Sources
Educational index	Primary school pupil-teacher ratio is the number of pupils enrolled in primary school divided by the number of primary school teachers.	World Development Indicators(WDI)
Income index	Descent standard of living.	UNDP
Fiscal deficit percentage of GDP	Annual deficit in the government budget as a percentage of GDP	Economic Survey Of Pakistan(Various Issues)
Corruption	demand special payments and illegal payment	ICRG Database
Government stability	maximum score of four points and minimum of 0 points of risk rating	ICRG Database

With the above mentioned role of education and health, it uses as proxy of social sector development. Additionally, two most widely used indicator in literature for measuring education and health status also utilized in this study *i.e.* Education index and Life expectancy are used indicators in the study.

Existing literature provides the different measures of like enrollment rates or expenditures on education *etc.*, but this study used a more comprehensive measure of education that Education Index. This proxy for education was also used by Qasim *et al.*, (2011) and Afzal *et al.*, (2011-12)¹. Education index is calculated by the adult literacy index and gross enrolment index. Education index was developed by using 2000 UNDP methodology as:

$$\begin{aligned}\text{Adult literacy index} &= \text{ALI-min/ max -min} \\ &= \text{ALI- 0/ 100 -0}\end{aligned}$$

$$\begin{aligned}\text{Gross enrolment index} &= \text{GER-min/max -min} \\ &= \text{GER-0/ 100 -0}\end{aligned}$$

$$\text{Education index} = 2/3 * \text{ALI} + 1/3 * \text{GEI}$$

Government stability assesses the ability of government to stay in office and carry out its declared program. Government stability has three components *i.e.* government unity, popular support and legislative strength and sum of these components assign maximum score of four points and minimum of 0 points of risk rating. Very low risk is presented by score of 4 points while 0 points to very high risk. In order to empirical test this model, a panel of aggregate data on concern variables was collected and selection of sample duration depends on availability of data. By viewing different databases on concern variables data is available over the period of 1990-2011.

The most frequent measure of corruption (Weder, Alberto & Alesina .2002) by ICRG is used in this study because it is only measures that have annual data set of number of countries since 1982. Corruption is defined as high government officials are likely to demand special payments and illegal payments are in the form of bribes associated with exchange control, tax assessment, loans or policy protection. Corruption has the greater risk for foreign business that can lead to unrealistic, inefficient controls on the state economy, popular discount and encourage the development of black market. It also has major cause of breakdown in law and order, ineffective governance.

Data Sources and Methodology

For the empirical relationship between fiscal deficit and social sector development this study will use annual time series data for the period 1980-2014. After checking the stationary all the variables are integrated with the same order I (1), So econometric technique co integration is applied in this study. Data will be collected from FBR annual reports, WDI, international country risk guide, from hand book of statistics on Pakistan economy and various issues of Pakistan economic survey.

Results and Discussion

This section describes that what the estimated results and finding that can acquire after applying the specified estimation technique on the expected equation. In this chapter we will also analysis the results with respect to the theoretical consistency, empirical application and the concerning role of the findings in the economy of Pakistan.

¹ For more detail see Mohammad *et.al*(2010)

Table 4: Descriptive Statistics

Variables	Obs.	Mean	Std. Dev	Min	Max
Education index	35	.34	.081	.21	.45
Fiscal deficit % of GDP	35	6.06	1.57	2.4	8.8
Income index	35	.38	.03	.31	.42
Corruption	35	1.85	.40	1	3
Government stability	35	7.2333	2.071	2.16	10.83

Descriptive statistics are summarized in table 6.1. It shows that the mean value of education index is .34, ranging from .21 to .45. Level of fiscal deficit as % of GDP varies across the year, ranging from 2.4 to 8.8 and the mean value is 6.06, not only Pakistan other Asian countries also have the large fiscal deficit. The higher fiscal deficit has resulted from monotonous efforts made by government to finance the public needs. While mean value of income index stood at .38 and ranging from .31 to .42. Furthermore corruption and government stability ranges from 1 to 3, 2.1 to 10.83 and their mean values are 1.851 and 7.23 respectively. According to Transparency International in 2013, Pakistan scored 127 out of 175 on the Corruption Perception index. Before explaining the results of the study the most important task that every researcher can do in their research work is to check the existence of unit root problem in the model. By applying the Augmented Dickey Fuller test this job can be done effectively. Firstly we can explain the results of Augmented Dickey Fuller test in table

Table No. 5 Unit Root test of Augmented Dickey Fuller

Variables	At level		At difference	
	With intercept	Intercept and trend	With intercept	Intercept and trend
FD	2.26(0.18)	2.87(0.18)	7.76(0.000)***	7.76(0.000)***
EDUX	1.25(0.63)	2.09(0.53)	3.31(0.02)***	3.43(0.06)*
INCX	2.81(0.6)	1.84(0.66)	3.55(0.01)***	4.01(0.01)**
COR	2.55(0.11)	2.45(0.34)b	6.43(0.000)***	6.40(0.000)***
GOVS	1.96(0.29)	2.29(0.42)	3.19(0.02)**	3.15(0.11)*

*,**and*** denote significance of test statistic at 10 percent, 5 percent and 1 percent level of significance against the null hypothesis of unit root.

Table 5 shows the results of ADF test, which indicates that all the variables are non stationary at the level means that are not I(0). By taking the first difference, all variables are stationary. Thus the order of integration of variables included in the model is same. Now in this case the literatures propose to apply the co integration technique to estimate the relationship among the variables.

Table No. 6 Unrestricted Cointegration Rank Test (Trace)

Lags interval (in first differences): 1 to 1				
Included observations: 33 after adjustments				
Series: LNFD LNEDU LNCOR LNGOVS LNINC LNLE				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.819867	191.8179	125.6154	0.0000
At most 1 *	0.692713	135.2539	95.75366	0.0000
At most 2 *	0.615681	96.31485	69.81889	0.0001
At most 3 *	0.495149	64.75750	47.85613	0.0006
At most 4 *	0.446547	42.20226	29.79707	0.0012
At most 5 *	0.357652	22.68014	15.49471	0.0035

Trace test indicates 6 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

After checking the order of integration of the variables the study turned to apply Johansen approach for the analysis of long run association among the variables. In this table, the values of the trace-test examine the co integration null hypothesis against with alternate hypothesis. initially, with the no co integration or null hypothesis $r=0$, the values of trace test is 191.81 which is above 5% critical values 125.61 thus it reject the null hypothesis $r=0$ in the favor of alternate hypothesis $r \geq 1$. The Max value is 81.9 that is greater than 5% critical values hence rejected the null hypothesis against the alternate hypothesis. Johansen approach finds the 6 co-integrating relationship among the variables.

Table No. 7 Long Run Co-integration results (VECM)

Variable	Coefficient	St. error	T-ratio	P-value
LNEDU(-1)	-33.396***	2.700	-12.369	0.0001
LNCOR(-1)	1.583***	0.294	5.366	0.0023
LNGOVS(-1)	-0.720**	0.307	-2.345	0.034
LNINC(-1)	57.617	33.67	1.711	0.173
LNLE(-1)	-10.576	7.398	-1.429	0.587
C	210.381	177.345	5.980	0.0078

Note: ***, **, * are indicates the level of significance at 1%, 5%, and 10% respectively

Table 7 presents VECM results which indicates education and government stability are showing the desired results where increase in education index leads to decrease in fiscal deficit and same in the case in government stability index. Corruption leads to increase in fiscal deficit. Other measures like life expectancy and income index are shown insignificant results. The present study is similar to previous studies however the inclusion of government and education index shown the significant results.

Conclusion

The study was aimed to check the empirical investigate the impact of social and governance indicators on fiscal deficit in Pakistan on time series data from 1980 to 2014, study incorporated augmented dickey-fuller test of unit root and all the variables found integrated of order I(1) so the Johansson cointegration test is applied. There were 6 co-integrated equations were found and then VECM applied. Results show that corruption, government stability and education index found significantly affecting fiscal deficit in Pakistan. The study

is not the final solution for the subject, there is open way for further researchers to research on the subject to elaborate more dynamics of the study.

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