

Fiscal Policy Impact in Good and Bad Time of Real Business Cycle: A Case study of Pakistan

BY

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Introduction

- Fiscal policy has always been played significant role in stabilizing business cycle after **oil price shock in 1970's** expansionary fiscal policies desire results.
- Large literature show the impact of **monetary policy** on the stabilization of economy but fiscal policy has received less attention.
- Recent literature shows that discretionary fiscal policy been heavily used in recession to simulate aggregate demand in 2008 financial crisis which ultimately turn in to global recession and USA introduce the **fiscal stimulus package**.
- So, there had been a **revival of interests** in the fiscal policy on the major macro-economic variables.

Significance of study

- In the case of Pakistan there is work done regarding measuring the **dynamic effects of fiscal policy shocks** in Pakistan and few other scrutinized **fiscal consolidation** and economic growth.
- But, None estimated the fiscal policy effectiveness during the period of high and low economic activity by using the regime switching model.
- The study has also great significance for Pakistan in the sense we used **regime switching models** to check the impact of fiscal policy on economic growth.

Cont...

- The **advantage** of such an approach is that it **separates periods** of low growth from periods of high output growth allowing the probabilistic structure of the transition from Boom to Recession.
- One regime to the next be a function of fiscal variables. The model, therefore, measures the impact of fiscal policy for different situations of the economy.
- This paper is also significant in the sense that either **fiscal policy is good instrument in low economic activity** or high economic activity period.

Objectives of Study

This study is going to estimate the effectiveness of fiscal policy during the period of high and low economic activity.

Theoretical Understandings

- The central issues with fiscal policies are how a **fiscal expansion or a fiscal tightening acts on output.**
- Fiscal expansion are based on increases in government expenditures and/or tax reductions which increases the budget deficit
- Fiscal contractions involve cuts in expenditure and/or an increase of taxes which reduces budget deficits..
- However, fiscal expansions involve **crowding out effects** since they lead to higher interest rates, which reduces investment and thus reduces the output effect.

Literature Review

- In Literature four main identification approaches have been used to date explain the nature of the effects of fiscal policy
 - The **recursive approach** introduced by Sims (1980) and applied to study the effects of fiscal policy by Fatas and Mihov (2001).
 - The **structural VAR approach** proposed by Blanchard and Perotti (2002).
 - The **sign restrictions approach** developed by Uhlig (2005).
 - The **event study approach introduced** by Ramey and Shapiro (1998) to study the effects of large unexpected increases in government defense spending and also used by Edelberg et al. (1999).

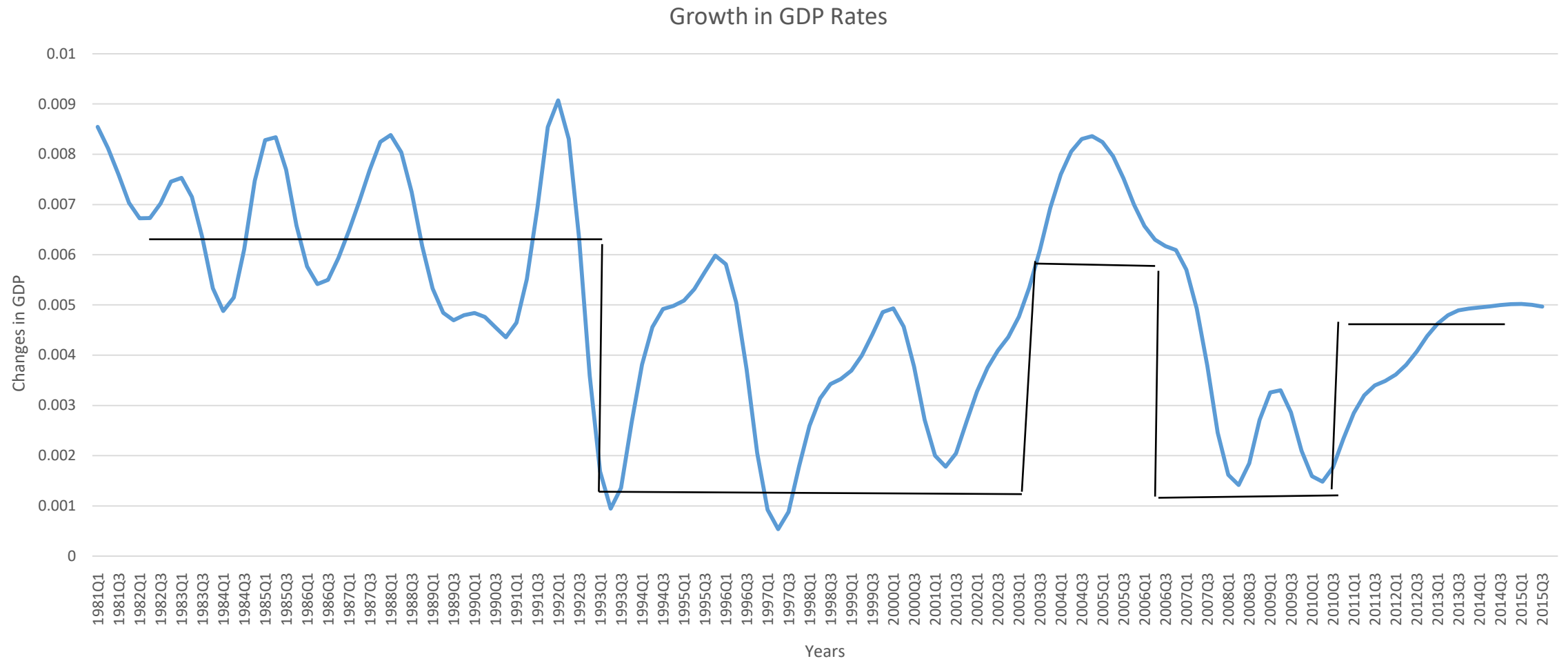
Data

- We use data of three variables for Pakistan government spending (G), government revenue (T) and GDP Growth rate (Y). The data is compiled from Pakistan Economic Survey and WDI.
- Moreover, because of the lack of quarterly data for the variables of the study, we have converted the annual data to the corresponding quarterly data using cubic spline interpolation method.
- The dataset covers the period from the first quarter of 1980 to the fourth quarter of 2014, providing 136 observations.

Variables Used In Study

Variable Name	Description	Source
Y_t	GDP Growth rate	WDI Data
g_t	Government Expenditure	Pakistan Economic Survey
z_t	Public Revenues	Pakistan Economic Survey

Boom and Recession Regimes with respect to Growth



Methodology

- Markov Regime switching vector autoregressive (MS-VAR) model is the most advanced and generalized version of VAR models, which captures the structural breaks and unexpected shocks by using the changes in the regimes.

$$\mathbf{y}_t = \mu(\mathbf{s}_t) + \sum_{i=1}^4 \gamma_i \mathbf{y}_{t-1} + \beta_1(\mathbf{s}_t) \mathbf{g}_{t-1} + \beta_2(\mathbf{s}_t) \mathbf{z}_{t-1} + \sigma(\mathbf{s}_t) \boldsymbol{\varepsilon}_t$$

- In the above equations I have dependent variable \mathbf{y}_t which is growth in GDP. While, I have Independent variables \mathbf{g}_t which is Government expenditures \mathbf{z}_t which represents the public revenues.

$$\mu(\mathbf{s}_t) = \sum_{i=1}^2 \mu^i \mathbf{1}\{\mathbf{s}_t = i\} \quad \sigma(\mathbf{s}_t) = \sum_{i=1}^2 \sigma^i \mathbf{1}\{\mathbf{s}_t = i\}$$

- Whereas, \mathbf{s}_t take into accounts changes in regimes in the model and $\mu(\mathbf{s}_t)$ and $\sigma(\mathbf{s}_t)$ shows the mean and variance of deviations in both regimes i.e. Boom and recession.

Cont..

- In all MS-VAR specifications, the unobservable regime s_t is governed by a first order Markov process, which is defined by the transition probabilities:

$$p_{ij} = Pr(s_t = j / s_{t-1} = i), \quad i, j \in S$$

- Where p_{ij} is the probability that event i is followed by event j and an element of the transition matrix and in each column sums to unity and all elements are non-negative.

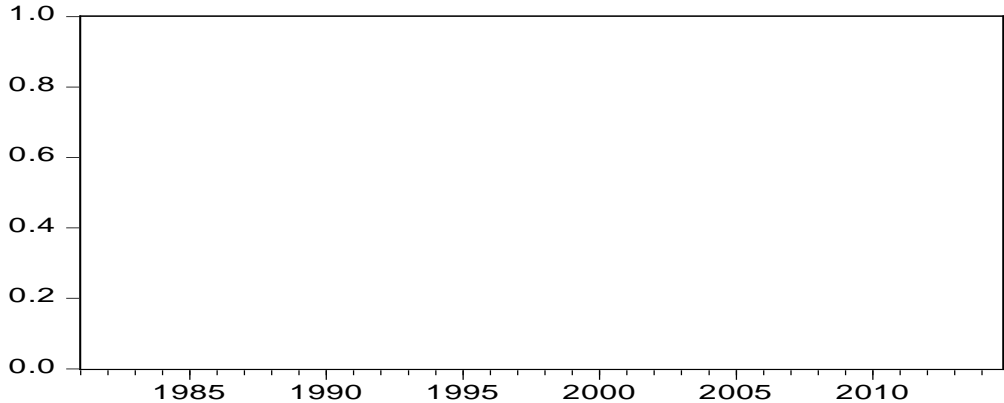
Estimation Results

Coefficients				
	Calculated value	Standard error	Z-statistics	
Regime 1 (recession)		Y (GDPG)		
c	0.015874***	0.001626	8.531204	
Log T (-1)	0.009351***	0.001596	5.859452	
Log G (-1)	0.011017***	0.001439	-7.657076	
Regime 2 (Boom)				
c	0.012542***	0.001569	7.994887	
Log T (-1)	0.013351***	0.003422	5.859452	
Log G (-1)	0.006017***	0.002934	-3.657076	
Standard errors				
Regime 1 (recession)			0.002439	
Regime 2 (Boom)			0.001934	
Transition Probabilities		Regime 1	Regime 2	
Regime 1 (recession)		0.888185	0.111815	
Regime 2 (Boom)		0.084613	0.915387	
Regime properties		Regime 1	Regime 2	
Ergodic Probabilities		41.37	58.63	
Duration		8.94337	11.81849	

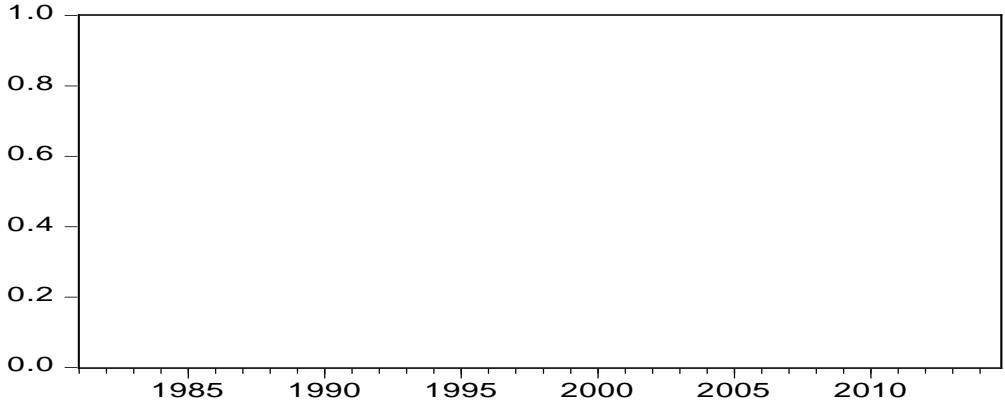
Transition Probabilities

Constant Markov Transition Probabilities

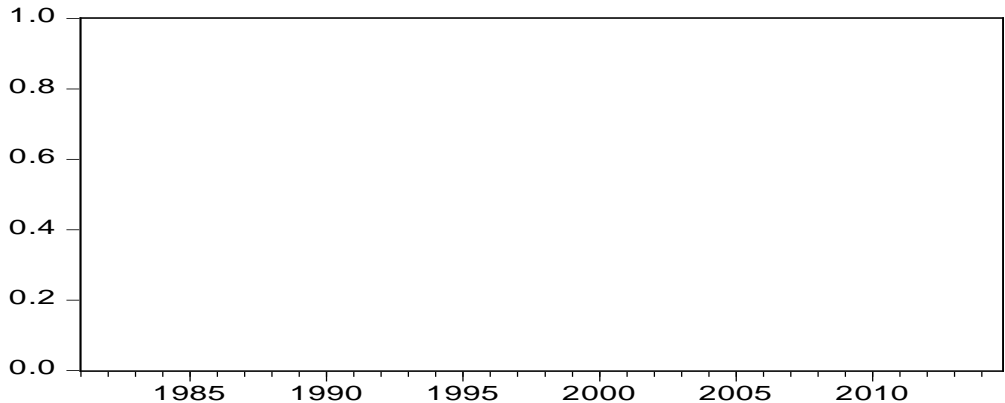
$$\Pr(S(t)=1 | S(t-1)=1)$$



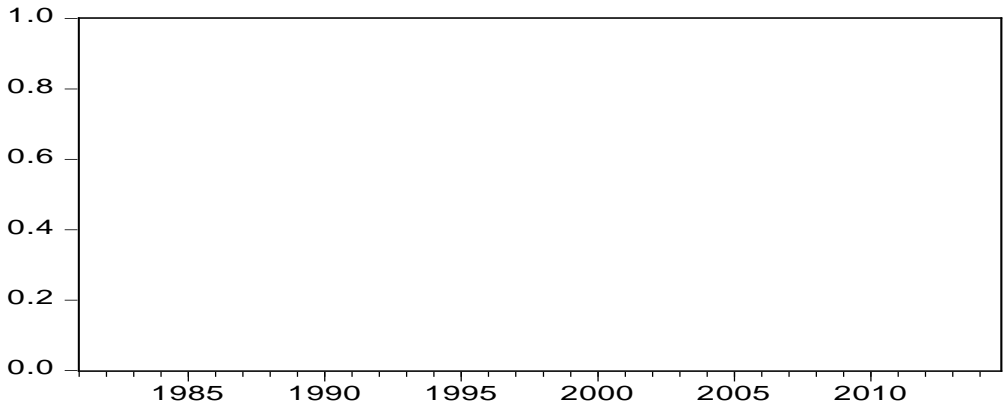
$$\Pr(S(t)=2 | S(t-1)=1)$$



$$\Pr(S(t)=1 | S(t-1)=2)$$

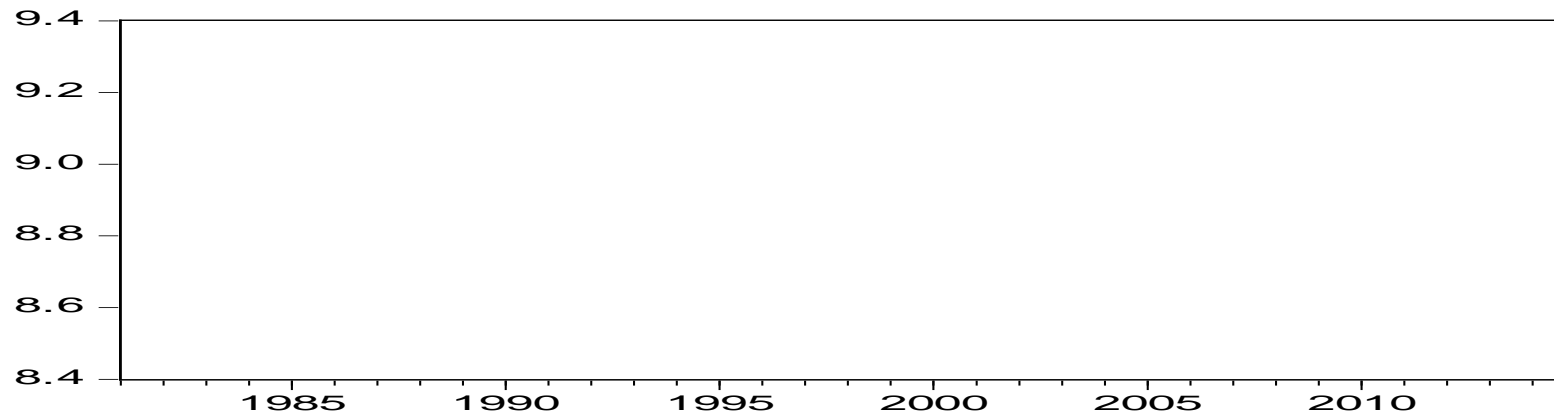


$$\Pr(S(t)=2 | S(t-1)=2)$$

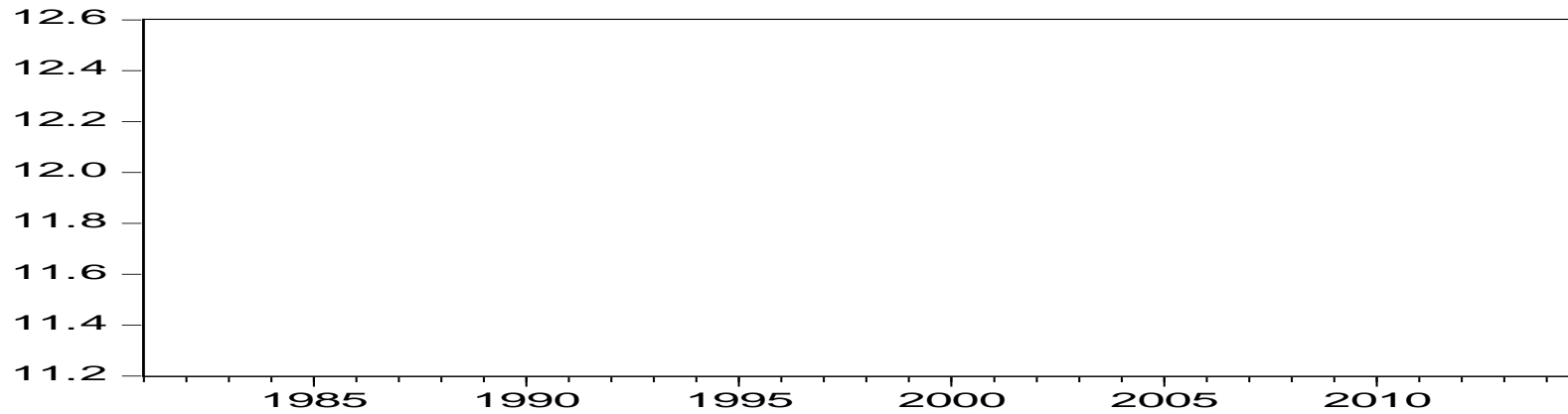


Duration of Regimes

Constant Markov Expected Durations
 $E(\text{Duration})$



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Conclusion and Policy Recommendations

- We find evidence of **asymmetry in the effects of fiscal policy across regimes**, defined by the state of the business cycle (two situations, boom and recession).
- Fiscal policy shocks have a **stronger impact in times of economic stress** than in times of expansion, which confirm the hypothesis of asymmetric effects.
- So a **deficit-spending policy** seems to be more efficient to stabilize the economy in the **short-run** rather than a tax-cut policy.
- It is thus straightforward to **recommend deficit-spending policy** action for government facing a recession phase.
- However, that these results must **not be seen as a long run policy** advice, since I did not take any debt issue into account.