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Pakistan, politics and political business cycles

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“Pakistan, Politics and Political Business Cycles”

by Irem Batool and Gernot Sieg, November 2009
Pakistan, Politics and Political Business Cycles

Irem Batool∗†
Gernot Sieg§ ∗

July 19, 2010

Abstract

This paper studies whether in Pakistan the dynamic behavior of unemployment, inflation, budget deficit and real GDP growth is systematically affected by the timing of elections. We cover the period from 1973-2009. Our results can be summarized as follows: 1. Unemployment tends to be lower in pre-election periods and tends to increase immediately after elections, perhaps as a result of politically motivated employment schemes. 2. Inflation tend to be lower in pre-election periods, perhaps as a result of pre-electoral price regulation. 3. We find election year increases in the governmental budget deficit, financed by heavy government borrowings from the central bank and banking sector. 4. Real GDP growth and real governmental investment growth declines during pre and post election terms.

Keywords: Opportunistic Political Business Cycle, Fiscal Policy, Macroeconomics, Elections, Asia, Pakistan

JEL Classification: D72, D78, H50, H61, E51

∗TU Braunschweig, Economics Department, Spielmannstr. 9, 38106 Braunschweig, Germany. † Monetary Policy Department, State Bank of Pakistan. § corresponding author: E-Mail: g.sieg@tu-bs.de, Tel. +49 531 391 2592
1 Introduction

Political business cycle theory formalizes the common perception that politicians use expansionary economic policies in a pre-election period to enhance their chances of re-election.\(^1\) Opportunistic politicians are primarily interested in retaining office. When they face an electorate that prefer high growth, low unemployment and low inflation politicians may use expansionary fiscal or monetary policies to create a short term economic boom before and during the election campaign. Naive voters are unable to understand the politician’s manipulation of the economy and its adverse after effects. On the contrary, they enjoy the boom and re-elect the politician. Because inexperienced voters are prone to this manipulation the common view is that political business cycles are more a phenomenon of less-developed than developed countries (Brender and Drazen 2005, ).

The present study investigates the existence of political business cycles in case of Pakistan during the period 1973-2009. During this period Pakistan has undergone seven parliamentarian election terms. Single-country studies of the political business cycle often suffer from a small number of elections. However, the political business cycle is a phenomenon that may or may not occur in a country and a multi country study is not able to answer the question if there have been political business cycles in a special country or not. To proof the existence of a political business cycle in Pakistan, which is the aim of this study, a single country study is inevitable.

A number of studies have analyzed politically motivated business cycles for both developed and developing countries. Generally, the empirical political business cycle literature can be divided into three main categories. The

first category attempts to locate political cycles in macroeconomic outcomes. These models are been focused, almost exclusively, on four macroeconomic indicators: growth, inflation, unemployment, and income (Alesina, Roubini, and Cohen, 1999; Andrikopoulos et al. 2004; Grier 2008; Hibbs 1977; Krause 2005; and Suzuki 1992). In the short run policy results on growth and unemployment may not be obvious enough to voters, so governments may try to stimulate those policy variables that have direct monetary benefits to voters like government transfers, tax cuts, subsidies, special employment schemes etc. (Hibbs 2000; and Batool and Sieg 2009). The second major category of Political Business Cycle research concentrates on these policy instruments instead of macroeconomic outcomes. The evidence for this type of a political business cycle is generally stronger than that for macroeconomic outcomes (Alesina et al. 1997; Coelho et al. 2006; Drazen 2000, p. 239; Cerda and Vergara 2008; Keech and Pak 1989 and Tufte 1978). The third major category of research focuses on a unique policy instrument: monetary policy (also known as the political monetary cycle). Various studies for many countries are found on central bank monetary policy and political business cycles (Abrams and Iossifov 2006; Beck 1987; Berger and Woitek 2001; Grier 1987, 1989; Havrilesky 1993; Maloney et al. 2003; Persson and Tabellini 2003; Williams 1990 and Woolley 1994). To cover all three categories this study focus on growth, unemployment, inflation and some fiscal and monetary policy indicators.

Despite plenty of empirical evidence found on political business cycles for both developed and developing countries, this area of research remains untouched in case of Pakistan. The present study fills the gap. The paper is organized as follows. Section 2 discusses model specification and research methodology. Section 3 provides empirical evidence using annual data from 1973 to 2009 for various macroeconomic variables. Section 4 gives a summary of our findings and a conclusion.
2 Model and Research Methodology

Turning to the empirical literature, politico-economic models have been tested with a time-series approach. The usual research strategy is to isolate a key macroeconomic variable and ascertain whether or not in election and pre-election years this variable behaves differently than in non-election years. The earlier procedures entailed simple comparisons of the average value of the actual unemployment and inflation rates in election and non-election years, or according to the party in power. Generalizing this approach, McCallum (1978) and most of those who followed, estimated uni-variate time series models and tested for shifts in the intercept parameter (Pack 1987; and Keil 1988). According to this procedure the impact of the political sector is viewed as an exogenous intervention in the economic process, producing a cyclical (Political Business Cycle) or temporary shift in the mean value of the time series. Accordingly, the test is for the significance of an appropriately defined dummy variable -the intervention variable- that is added to a uni-variate ARMA(ARIMA) representation of the series.

\[ X_t = c + \sum_{p=1}^{n} \theta_p X_{t-p} - p + \sum_{q=1}^{m} \Phi_q \delta_t - q + \sum D_i + \delta_t \]  \hspace{1cm} (1)

To illustrate, let \( X_t \) be a variable of interest and assume that \( X \) can only be positive and follows a stationary first-order autoregressive moving average process. Where \( \varphi_1, \ldots, \varphi_p \) are the parameters of autoregressive terms of the model, while \( \phi_1, \ldots, \phi_q \) are the parameters of moving average terms of the model, \( c \) is a constant, and \( \delta \) is the error term assumed to be independent identically-distributed random variables (i.i.d.) sampled from a normal distribution with zero mean: \( \delta_t \sim N(0, \sigma^2) \) where \( \sigma^2 \) is the variance. We begin with the construction of a benchmark Autoregressive Moving Average (ARMA) for unemployment and inflation i.e Phillips curve hypothesis and Autoregressive Integrated Moving Average (ARIMA) models for other fiscal and monetary policy indicators, as the fiscal and monetary variables
including GDP are integrated of order one. To test the impact of politics on macroeconomic variables we have defined the following three political dummy variables:

$ED_1 = 1$, if it is election year and 0 otherwise

$ED_2 = 1$, if it is election year or one year preceding to a election and 0 otherwise

$ED_3 = 1$, if it is one year after election and 0 otherwise

The positive and negative signs of these dummy variables will determine the positive and negative impact of elections on macroeconomic outcomes and aggregate demand driven by monetary and fiscal policy instruments. For example, if a government tries to increase growth and employment before an election and uses expansionary fiscal and monetary policies, then $ED_1$ or $ED_2$ or both should be positive in the estimated equations of growth, budget deficit, monetary aggregates and government budgetary borrowing. If the government adopts a contractionary policy shift after an election, then these instruments show the downward trend that can be measured by a negative sign of $ED_3$. It should however be noted that in case of inflation and unemployment, pre-electoral variables should denote decrease and should have negative signs, while the post-election variables should have a positive sign to reflect the impact of pre-election expansionary policies.

Quarterly or high frequency data is recommended to investigate the issue of political business cycle. But in case of Pakistan national accounts and unemployment data is available only in annual frequency. Therefore we have used the annual time series data from 1973-2009\textsuperscript{2} for the proposed variables.

\textsuperscript{2}Before 1971, the present Bangladesh was part of Pakistan called West Pakistan. Therefore, we have excluded the earlier time period from the analysis.
3 EMPIRICAL RESULTS


3 Empirical Results

First we test predictions of the classic opportunistic political cycle model by Nordhaus (1975). The model predicts political manipulation in unemployment and inflation. Analogical political behavior implies cycles in macroeconomic variables such as growth, money supply, fiscal deficit, and budgetary borrowing etc.

3.1 Unemployment, Inflation and Opportunistic Business Cycle

ARMA model results (see Table 1) show that $ED_2$ is significant and has a negative sign. During the election year and one year prior to the election year the unemployment rate was reduced by 19 percent in comparison to other years. The the political dummy variable $ED_3$ for the post-election year is positive but not statistically significant. This result may attribute to the switch from expansionary to contractionary policy when an incumbent party wins the election, and cancellation of old employment generation schemes if the opposition is elected into office. Both results fully support the political business cycle theories.

Inflation is another important key to understand the political business cycles. Election periods cause great sensitivity on the side of the government to keep quiet about increases of regulated prices by deferring them to the post-election period. Thus after each election it is common to hear oppositional parties accusing the returned party for exploiting the myopic expectations of voters to boost their probability of winning the election. However, if the in-
EMPIRICAL RESULTS

Table 1: Unemployment, Inflation and Political Business Cycles

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unemployment (U)</th>
<th>Inflation (ΔP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>1.1133***</td>
<td>0.0864***</td>
</tr>
<tr>
<td>Deterministic trend</td>
<td>0.0265***</td>
<td></td>
</tr>
<tr>
<td>AR(1)</td>
<td>0.9522***</td>
<td>0.6029***</td>
</tr>
<tr>
<td>AR(2)</td>
<td>-0.3255*</td>
<td></td>
</tr>
<tr>
<td>MA(1)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA(5)</td>
<td></td>
<td>-0.8984***</td>
</tr>
<tr>
<td>MA(7)</td>
<td></td>
<td>-0.9027***</td>
</tr>
<tr>
<td>MA(8)</td>
<td></td>
<td>-0.1911***</td>
</tr>
<tr>
<td>ED1</td>
<td></td>
<td>-0.0228***</td>
</tr>
<tr>
<td>ED2</td>
<td></td>
<td>-0.1911***</td>
</tr>
<tr>
<td>ED3</td>
<td>0.0207</td>
<td>0.0033</td>
</tr>
</tbody>
</table>

n: 35 \hspace{1cm} 35 \hspace{1cm} 35
R^2: 0.95 \hspace{1cm} 0.74 \hspace{1cm} 0.66
D.W stat: 1.97 \hspace{1cm} 1.88 \hspace{1cm} 1.97
S.EE: 0.10 \hspace{1cm} 0.102 \hspace{1cm} 0.026

***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% level of significance respectively. Unemployment rate has been taken in logarithmic form.

cumbent party looses the election despite deferring price increases, then the winning party would again accuse the former incumbent party for leaving a huge economic burden by not increasing the regulated prices. This has to be fulfilled by the new government who would immediately receive a negative point in its honeymoon period.

Estimated ARIMA model for inflation (see Table 1) shows $ED_1$ with a negative sign means during the pre-election year the inflation has been kept lower by 2.2 percentage points in comparison to other years.
3 **EMPIRICAL RESULTS**

Non realized price increases in regulated sectors are subsidized by the government through debt financing. Consequently, the budget deficit rises and creates an inflationary pressure and debt sustainability problem in the post-election period. The post election year dummy variable found to be insignificant, however if we estimate the ARIMA model and incorporate only the post election year dummy and ignore the pre-election effect then the post election dummy is found to be statistically significant (see Table 1 column 3).

Both unemployment and inflation results are consistent with the pre-election political manipulation as the politicians try to maximize their chance of re-election by increasing the employment conditions and controlling the inflation artificially during the election and prior to the election period. But the post election year dummy variables are found to be statistically insignificant but have correct signs, employing that post election effect is less pronounced. The evidence supports the argument by Ginsburgh and Michel (1983), pointing the fact that if there is government fall and resultant early election as in case of Pakistan in 1990, 1993 and 1997 before the legal term, the political business cycles is less pronounced.

The GDP growth estimated ARIMA model (see Table 2) does not provide any supporting evidence for the Nordhaus (1975) opportunistic business cycle theory as political variable $ED_1$ and $ED_3$ both estimated to be negative i.e. have the wrong sign. Miss-allocation of resources during and after the election period could be the reason. Although the results seems to be fine to some extent, there is concern regarding the stationarity of the variable series raised by Enders (2004). The basic underlying assumption of the ARMA model is the stationarity of the variable over time, however a simple ADF/DF test shows that inflation and GDP growth are stationary at level, while the unemployment is found to be integrated of order one which makes the unemployment ARMA model results suspicious. Therefore, the discussion remains inconclusive and there is a need to further exploration of the phenomena.
3 EMPIRICAL RESULTS

Table 2: Fiscal and Monetary Variables and Opportunistic Business Cycle

<table>
<thead>
<tr>
<th>Variables</th>
<th>$\Delta Y$</th>
<th>$\Delta I_g$</th>
<th>$F_{isb}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.0619***</td>
<td>0.0919***</td>
<td>1.6219***</td>
</tr>
<tr>
<td>AR(1)</td>
<td></td>
<td>-0.7198**</td>
<td></td>
</tr>
<tr>
<td>MA(2)</td>
<td>0.2968***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA(4)</td>
<td>0.1919**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA(5)</td>
<td>-0.8061***</td>
<td>-0.9544***</td>
<td></td>
</tr>
<tr>
<td>MA(6)</td>
<td></td>
<td>-0.8820***</td>
<td></td>
</tr>
<tr>
<td>MA(9)</td>
<td></td>
<td>-0.857***</td>
<td></td>
</tr>
<tr>
<td>ED$_1$</td>
<td></td>
<td>-0.1434***</td>
<td>0.1423***</td>
</tr>
<tr>
<td>ED$_2$</td>
<td>-0.014***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ED$_3$</td>
<td>-0.032***</td>
<td>-0.1351***</td>
<td></td>
</tr>
</tbody>
</table>

$n$ 36 36 36  
$R^2$ 0.50 0.68 0.65  
$^3$ D.W stat 2.05 1.61 2.22  
S.EE 0.015 0.07 0.17

***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% level of significance respectively.

3.2 Fiscal and Monetary Variables and Opportunistic Business Cycle

The original opportunistic business cycle model by Nordhaus (1975) focuses on political cycles in inflation, employment and growth which are induced by monetary policy. However, Rogoff’s (1990) model is grounded in the use of fiscal policy tools. More recent, Drazen (2000) has argued that PBC models based on monetary surprises are unconvincing, among other reasons, because of their implicit assumption that the incumbent party directly controls the
monetary policy.\footnote{See, however, Sieg (1997), for monetary cycles even if central banks are independent.} Instead Drazen (2000) builds on Rogoff (1990) to derive a model in which PBC arises from active fiscal policy interventions that are later accommodated by the monetary expansions. Various empirical studies being in line with that approach have been carried out on monetary and fiscal budget political cycles (Brender and Drazen 2008). Following Schuknecht (1996) we concentrate on fiscal deficit, government investment, monetary aggregate (M2) and government budgetary borrowing. We first apply the unit root test. The ADF results show that all variables are integrated of order one that requires 1st difference for the series to be stationary (see Table 4). In a second step we have estimated the parsimonious ARIMA model for some fiscal and monetary variables. The results are shown in Tables 2 and 3.

The ARIMA model result for real government investment states that $ED_1$ and $ED_3$ are both negative which implies that government investment has declined by 14 (13) percent during the election (post-election) year. In contrast, the pre-electoral variable $ED_1$ is positive in the budget deficit as percentage of GDP equation, which can quantify a 14 percent increase in the budget deficit during the election year. This may be attributed to the fact that during the election campaign the government uses expansionary policies and spends more on current expenditures like tax cuts, subsidies, price supports and election campaigns etc. and not on investment. These current expenditures help the government to realize their short term objective i.e. collect votes, but do not have any significant impact on macroeconomic growth.

Such fiscal deficits are financed by internal or external sources especially accommodated by the countries banks and create additional impact on monetary policy variables. In this regard we have expanded our analytical framework to the monetary sector by including $M2$, net government budgetary borrowing and budgetary borrowing from the banking sector.
### Table 3: Fiscal and Monetary Variables and Opportunistic Business Cycles

<table>
<thead>
<tr>
<th>Variables</th>
<th>$\Delta Gbbn$</th>
<th>$\Delta Gbs$</th>
<th>$\Delta M2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.1060***</td>
<td>0.1085***</td>
<td>0.1339***</td>
</tr>
<tr>
<td>AR(5)</td>
<td>-0.5937***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AR(10)</td>
<td>-0.4828***</td>
<td>-0.8654***</td>
<td></td>
</tr>
<tr>
<td>MA(1)</td>
<td>0.3088**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA(3)</td>
<td>0.3077**</td>
<td>0.8353***</td>
<td></td>
</tr>
<tr>
<td>MA(4)</td>
<td>0.8605***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA(5)</td>
<td></td>
<td>-0.987***</td>
<td></td>
</tr>
<tr>
<td>ED$_1$</td>
<td>0.1196***</td>
<td>0.1381***</td>
<td>0.0481***</td>
</tr>
<tr>
<td>ED$_3$</td>
<td></td>
<td>-0.077***</td>
<td>-0.0233**</td>
</tr>
</tbody>
</table>

**n** 26 26 35  
$R^2$ 0.62 0.59 0.59  
D.W stat 2.23 1.85 2.05  
S.EE 0.08 0.08 0.03

***, ** and * denote rejection of null hypothesis at 1%, 5% and 10% level of significance respectively.
The ARIMA model results show that $ED_1$ has the expected signs, in case of net government budgetary borrowing and borrowing from the banking sector, showing 11 and 13 percent increase during the election years (see Tables 2 and 3). Both effects demonstrate clear patterns of opportunistic politically motivated fiscal expansion accommodated by the monetary sector. These type of government borrowing can cause a sudden rise in money supply and induce inflationary pressures in the economy. Estimated ARIMA model results for $M_2$ confirm this monetary expansion as it registered a 4 percent rise during the same period, however this is less than the rise in the budgetary borrowing.\footnote{This may be due to the fact that Pakistan’s current M2 definition has two main components, Net Domestic Assets (NDA) and Net Foreign Assets (NFA). Therefore, it might be possible that the budgetary borrowing rise is offset by the contraction in the other component such as NFA, and not exactly depicted in the M2 expansion.} During the post-election year, $M_2$ growth registered a contraction by approximately the same percentage (2 percent), consistent to (7 percent) decline in the budgetary borrowing from the banking sector, representing a tight monetary stance taken to curtail the inflation in the post-election year.

4 Summary findings and Conclusion

Inexperienced voters are a well known breeding ground for opportunistic political business cycles. In this study we proof that Pakistan’s society suffers from such political motivated inefficient economic policies. We have used annual data for unemployment, inflation, growth and other macroeconomic indicators for the period 1973-2009. The paper has used simple intervention analysis in time series data to examine the fluctuations during the election and non election years. Results show that unemployment rate has been significantly reduced during the election and one year before the election year. Inflation shows similar patterns as during the election period it is kept down
by 2.2 percent. The reason could be that the ruling party keep the regulated prices artificially low before election and delays the cost push inflation by the post-election period. This is consistent with the recent surge in energy prices in Pakistan, where just after the election of 2008 the government cut all the subsides and raised energy prices that has been deliberately kept low up to the end of the election. However the post election manipulation is absent or we can say less pronounced in both unemployment and inflation case.

On the fiscal side we see election year increases in the budget deficit accommodated by net government budgetary borrowings, and borrowing from the banking sector resulting in monetary expansion and inflationary pressure on the economy. To summarize, our findings of substantial electorally motivated policy distortions without associated impacts on real GDP suggest that Pakistan’s society pays the cost of political business cycles but realizes none of the benefits.

References


Batool, Irem, and Gernot Sieg 2009. Bread and the attrition of Power: Economic events and German election results, Public Choice 141(1-2):151-


Appendix

Unit Root Test Results

Table 4: Unit Root Test Results

<table>
<thead>
<tr>
<th>Variable Series</th>
<th>DF/ADF Test Value</th>
<th>lag</th>
<th>Deterministic</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>$U$</td>
<td>-1.917812</td>
<td>0</td>
<td>c</td>
<td>I(1)</td>
</tr>
<tr>
<td>$\Delta P$</td>
<td>-3.606487**</td>
<td>0</td>
<td>c</td>
<td>Stationary</td>
</tr>
<tr>
<td>$\Delta Y$</td>
<td>-3.942443***</td>
<td>0</td>
<td>c</td>
<td>Stationary</td>
</tr>
<tr>
<td>$\Delta I_g$</td>
<td>-4.520618***</td>
<td>1</td>
<td>c</td>
<td>Stationary</td>
</tr>
<tr>
<td>$\Delta Gbbn$</td>
<td>-3.640938***</td>
<td>0</td>
<td>c</td>
<td>Stationary</td>
</tr>
<tr>
<td>$\Delta Gbbs$</td>
<td>-5.019487***</td>
<td>0</td>
<td>c</td>
<td>Stationary</td>
</tr>
<tr>
<td>$\Delta M2$</td>
<td>-3.456143**</td>
<td>5</td>
<td>c</td>
<td>Stationary</td>
</tr>
<tr>
<td>$Fisb$</td>
<td>-3.3672*</td>
<td>0</td>
<td>c,t</td>
<td>Stationary</td>
</tr>
</tbody>
</table>

Data Variables and Sources

Table 5: Election Dates

<table>
<thead>
<tr>
<th>Election</th>
<th>Date</th>
<th>Corresponding Fiscal Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legislative Elections 1988</td>
<td>November 16, 1988</td>
<td>1987-88</td>
</tr>
<tr>
<td>General Elections 1990</td>
<td>October 29, 1990</td>
<td>1989-90</td>
</tr>
<tr>
<td>General Elections 1993</td>
<td>October 6, 1993</td>
<td>1992-93</td>
</tr>
</tbody>
</table>
Table 6: Data Variables and Sources

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Unit</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>$U$</td>
<td>log(Unemployment Rate)</td>
<td>in percentage</td>
<td>Labor Force Survey</td>
</tr>
<tr>
<td>$P$</td>
<td>log(consumer price index)</td>
<td>Base at 1999-00</td>
<td>State Bank of Pakistan</td>
</tr>
<tr>
<td>$Y$</td>
<td>log(Real GDP)</td>
<td>Base at 1999-00 Base prices</td>
<td>State Bank of Pakistan</td>
</tr>
<tr>
<td>$I_g$</td>
<td>log(Real Government Investment)</td>
<td>Base at1999-00</td>
<td>State Bank of Pakistan</td>
</tr>
<tr>
<td>$G_{bbn}$</td>
<td>log(Net Government Budgetary Borrowing)</td>
<td>PKR in Millions</td>
<td>State Bank of Pakistan</td>
</tr>
<tr>
<td>$G_{bbs}$</td>
<td>log(Government Budgetary Borrowing from the Banking Sector)</td>
<td>PKR in Millions</td>
<td>State Bank of Pakistan</td>
</tr>
<tr>
<td>$M_2$</td>
<td>log(Broad Money Supply)</td>
<td>PKR in Millions</td>
<td>State Bank of Pakistan</td>
</tr>
<tr>
<td>$F_{isb}$</td>
<td>log(Fiscal Deficit as%age of GDP)</td>
<td>PKR in Millions</td>
<td>State Bank of Pakistan</td>
</tr>
</tbody>
</table>
01 „Crunch Time: A Policy to avoid the "Announcement Effect" when Terminating a Subsidy”
   by Marc Gürtler and Gernot Sieg, May 2008

02 „Eine ökonomische Analyse einer Ausweitung des Arbeitnehmer-Entsendegesetzes“
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