Political Instability and Inflation in Pakistan

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Abstract

This study investigates the effects of political instability on inflation in Pakistan. Applying the Generalized Method of Moments and using data from 1951-2007, we examine this link in two different models. The results of the 'monetary' model suggest that the effects of monetary determinants are rather marginal and that they depend upon the political environment of Pakistan. The 'nonmonetary' model's findings explicitly establish a positive association between measures of political instability and inflation. This is further confirmed on analyses based on interactive dummies that reveal political instability significantly leading to high (above average) inflation.

1. Introduction

In its sixty years of history, Pakistan has had a great deal of political instability ranging from political dismissals or assassinations, frequent cabinet changes, and coups. There could be little doubt then that this instability did not hamper Pakistan's policy formulation, implementation, or effectiveness such as attempts at macroeconomic stabilization. Political instability does not provide much room for the implementation or continuation of consistent or coherent policies. This greatly undermines the competence of a government and diminishes its resilience to accommodate shocks that eventually results in macroeconomic disequilibrium such as inflation.

The conventional view on political instability however, similar to weak-form Fiscal Theory of Price Level (FTPL) determination, is that it leads to high inflation due to governments' excessive reliance on seigneiorage. A logical indication of this mechanism, a high correlation between money and inflation, is indeed true for very high (hyper) inflation countries. But, this relationship might not hold for low or moderately high inflation countries like Pakistan. In such cases the predictions of strong-form FTPL, in which price level is determined irrespective of money growth, are more relevant. This is especially more pertinent when it is analyzed with some of the predictions of the theories of Political Economy of Macroeconomic Policy (PEMP) literature that actually contextualize the price level determination without money growth.

The empirical literature examining the inflation determinants in Pakistan does not consider political instability as a possible determinant in their models.[1] Out of about two dozen studies, more than half find inflation as a monetary phenomenon. These studies however do not take into account the problem of simultaneity, generally associated with a standard Ordinary Least Squares (OLS) method, thereby raising the possibility of inconsistent results.

Applying the Generalized Method of Moments (GMM) and using data from 1951-2007, we investigate the effects of political instability on inflation in Pakistan in two different models. Our findings of the first, 'monetary', model imply that the effects of monetary determinants are rather marginal and that this effect crucially depends upon the political environment of Pakistan. The results of the second, 'nonmonetary', model explicitly establish the measures of political

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[1] Even on an international level studies on this are few; most notably, Aisen and Veiga (2006), Cukeirman et al. (1992), Edwards and Tabellini (1991), and Paldam (1987). With disagreement in reasoning on as to how political instability leads to inflation and in some fine interpretation of results, this study follows Aisen and Veiga (2006).

instability as important determinants of inflation in Pakistan. Further analyses based on interactive dummies reveal that political instability leads to above average inflation, more than others such as oil price.

The paper is organized as follows. Section 2 provides the theoretical link between political instability and inflation with special emphasis on a country like Pakistan. Section 2 outlines the empirical strategy by describing the models and data. Section 3 presents and discusses the results of the estimated models. Concluding remarks follow in Section 4.

2. How Political Instability Leads to Inflation?

To show the link between political instability and inflation, we use a combination of the predictions of the *FTPL* determination and the *PEMP* literature. Following Carlstrom and Fuerst (1999 and 2000), the FTPL posits that price level and hence inflation is a result of the budgetary policies of the fiscal authorities. This is argued in two versions of *weak-form* FTPL and *strong-form* FTPL.[2] The weak version akin to the famous monetarists' dictum, "inflation is always and everywhere a monetary phenomenon," argues that inflation is produced by excessive money growth dictated by the fiscal authorities and not the central bank. Thus, the underlying assumption here is the dominance of fiscal authorities in money creation. Whereas, the incentive for money creation is the revenue generation by printing money; that is, through seignorage.

Skeptics however argue that seignorage in reality does not account for as much of an amount of revenue collection so as to validate the aforementioned fiscal dominance assumption. This critique paves the way for the possibility of the dual dominance of both the fiscal and monetary authorities and thus the strong-form FTPL. The strong-form argues that fiscal policy independently affects the price level and hence the inflation rate; independent of the changes in money growth and dependent on the changes in government debt or budget deficit.

To illustrate this point, let us assume the standard intertemporal fiscal budget balance of the type $D + S(m_g) = B_0 / P_0$. Where, D is the present value of the future budget surplus (if negative then deficit), $S(m_g)$ is the seignorage as the function of money growth (m_g), B_0 is the value of

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[2] See, also Christiano and Fitzgerald (2000) and Kocherlakota and Phelan (1999) for a detailed review of the FTPL.

government debt, and P_0 is the nominal price level. Now considering that there is constant money growth $(m_g = 1)$ then the above budget equation would yield $P_0 = B_0 / D$. This implies, in this partial equilibrium setup, that for any future increase in budget surplus prices must fall down and for any future decrease in budget surplus (that is, increase in deficit) prices must rise to restore balance in the fiscal budget. Similarly, increase in the value of government debt would also raise price level and vice versa.

What would cause the budget deficit and government debt to increase or persist that actually leads to higher inflation rate in this set up? Two predictions from PEMP literature are relevant in this context. The first is the concept of 'political instability and deficit bias' as modeled by Alesina and Tabellini (1990) and the other is known as the 'war of attrition' as modeled by Alesina and Drazen (1991).

The theory of 'political instability and deficit bias' argues that alternating governments are either uncertain of each others' preferences or they disagree over the composition of public spending that gives rise to excessively high budget deficits. Because it is in the interest of an incumbent policy maker to run high budget deficit so as to maximize the spending of its own preference and thereby limiting the spending of its successor's preference. This strategic interaction reflects adversely on society's intertemporal choices and results into suboptimal outcomes. Typically, the deficit bias is stronger the unstable is the political system or the greater is the likelihood of a government change.

Yet another channel of persistence or increase in deficit is the phenomenon of 'war of attrition' between conflicting political groups. A typical example to explain this is an unsustainable budget deficit. Even though it would be efficient to close down the deficit, a political agreement over this is often not found. This delay in fiscal stabilization may last until it becomes extremely costly for everybody. The reason in this delay has to do with asymmetric information among key political figures; that is, who bears the cost of stabilization?[3] Thus, the higher the number of political

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[3] A focused explanation of this phenomenon through a hypothetical example goes as follows. Consider a coalition government in office that comprises political parties A and B. The senior partner (party A) wishes to minimize a seemingly unsustainable budget deficit through the abandonment of generous pension-related expenditures. Party B, however, does not agree to this, as it is afraid to lose its substantial vote-bank that enjoys the privileges stemming from pension-related expenditures of the government. Thus, party A and party B are locked in a war of attrition and the delay in this stabilization may carry adverse economic consequences.

parties in a legislative council the higher the likelihood of conflict the harder to reach agreements and the more the persistence or increase in fiscal deficit.

While both the theories of 'war of attrition' and 'political instability and deficit bias' focus on budget deficit, the basic idea of these theories can nonetheless be applied to any other variable such as public investment or government debt. In the absence of any binding fiscal rule and given the aforementioned political economy predictions the public investments are bound to swell through increase in government debt thus leading to inflation.

More importantly, political instability undermines the effectiveness of a government in implementing consistent or coherent policies and weakens the state's hold on the management of economy. The bureaucracy, on the other hand, greatly benefits from this situation and remains unaccountable to the state organs. All this provides an accommodating framework for the promotion of corruption culture resulting in severe distortions. Apart from weakening the resilience of the economy in the case of exogenous shocks such as oil price; it may also result, for example due to hoarding, in endogenous supply shocks such as food price hikes.

Relevance to Pakistan

Previous studies linking political instability to inflation have however reasoned otherwise; closer to the weak-form FTPL. Most notably, Cukierman et al. (1992) and more recently Aisen and Veiga (2006) argue that economies with political instability and weak institutions do not have efficient tax system that increases their reliance on seigniorage. To meet the demand for public expenditures they therefore end up printing excessive money that eventually leads to inflation. We however argue that this line of reasoning might be true for very high (hyper) inflation countries but not for low or moderately high inflation countries.[4]

Our argument is based on two studies by Moroney (2002) and DeGrauwe and Polan (2005) that test the one-on-one relationship between money and inflation in multi-country investigations. The former study separates countries into 'high-money-growth and high-inflation' and 'low-money-growth and low-inflation' categories. The first category is characterized by money growth exceeding real GDP growth by at least 15 percent and for the second category exceeding by less

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[4] Aisen and Veiga (2006) in their empirical analysis define high inflation as a rate equal to or greater than 50 percent.

Figure 1. CPI Inflation and M2 Growth, 1951-2007
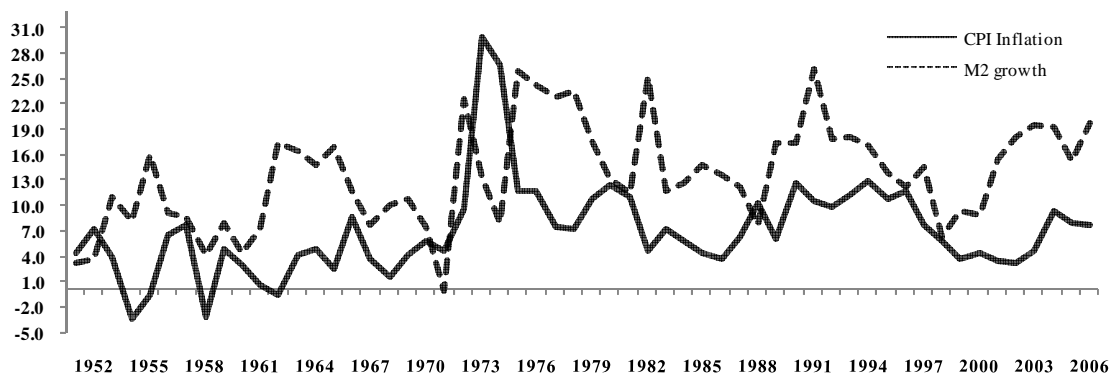
Source: *State Bank of Pakistan*

than 6 percent. He finds that one-on-one relationship is strongly supported in the first category and does not carry the same support in the second category. Similarly, the latter study confirms this result by separating countries into four categories characterized by annual average money (M1 and M2) growth rates of less than 15, 20, 30, and 100 percents. The one-on-one relationship holds in the last two categories; the coefficients for less than 20 percent category are 0.79 and 0.88 for M1 and M2; and for the first category the coefficients are 0.22 (M1) and 0.25 (M2).[5]

In Pakistan average annual inflation and money growth (M2 growth) remained 6.99 percent and 13.64 percent during 1951-2007. M2 growth to real GDP growth over the same time has remained at 3.04 percent. By Moroney and De Grauwe and Polan standards, Pakistan can be categorized into 'low-money-growth and low-inflation' countries. Also note that the correlation coefficient, as reflected in Figure 1, between CPI inflation and M2 growth during 1951-2007 has remained 20.1 percent. Therefore, the seigniorage factor as argued in the weak-form FTPL cannot be applied to a country like Pakistan; the combination of the predictions of the strong-form FTPL determination and PEMP literature are more relevant.

3. The Empirical Strategy and Data

Without claiming to model inflation on some new lines, we propose two different estimable equations. Furthermore, we use GMM estimation technique to tackle the limitations, such as simultaneity, of a standard OLS method.[6] In the first, monetary model, we estimate inflation on a

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[5] This argument is reproduced from Omer and Saqib (2008).
[6] See, for detailed discussion on GMM, Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998); see, also Wooldridge (2001) on the applications of GMM estimation.

host of explanatory variables stemming from the results of the empirical studies on Pakistan. Generally, as given in Appendix A, these studies have overwhelmingly termed inflation experience in Pakistan as a monetary phenomenon. Therefore, based on these predictions our monetary model takes the following form:

$$\pi_t = \alpha_0 \pi_{t-1} + \beta_i M_t + \varepsilon_t \qquad (1)$$

π_t is inflation rate, π_{t-1} is one period lagged rate of inflation as a proxy to inflation inertia. β_i's are the parameters showing incremental impact of explanatory variables of vector M_t. Whereas, vector M_t includes the most probable monetary determinants such as money supply, credit to private sector, or fiscal balance. ε_t represents the error term.

Note however that OLS estimates of Equation (1) would yield inconsistent estimates as there could be a problem of simultaneity.[7] To tackle this we apply the system-GMM methodology, wherein taking political instability as strong instrument(s). If the resulting estimates turn out to be significant as per the standard diagnostics then this result explicitly implies one important point: without political instability a monetary model as Equation (1) does not provide an adequate explanation of inflation. Furthermore, a result of this kind also paves the way for nonmonetary determinants of inflation model.

This approach attempts to model inflation by focusing exclusively on the nonmonetary or 'deeper' determinants of inflation. The motivation for this approach can be understood by considering the case of strong-form FTPL described above. In effect, government's motivation, capacity, or effectiveness vis-à-vis management of the economy is essentially the deeper determinants of inflation.[8] Thus, applying the GMM methodology the nonmonetary determinants of inflation model in general can be given as follows:

$$\pi_t = \alpha_0 \pi_{t-1} + \beta_1 W_t + \beta_2 PI_t + \varepsilon_t \qquad (2)$$

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[7] For example, Omer and Saqib (2008) argue that money (M2) is endogenous in Pakistan.

[8] As an example, Cottarelli et al. (1998) argue that while inflation could be a monetary phenomenon it is more interesting to know why governments allow monetary expansion in the first place that actually cause inflation. See, also Aisen and Veiga (2006) and Hammermann (2007). The former explains the world wide diversity in inflation experiences by also incorporating political instability and the latter focuses on the case of Romania.

W_t is strictly exogenous covariate vector of variables including a set of nonmonetary determinants, PI_t is a vector of political instability measures, and ε_t is the error term. We estimate Equation (2) as a baseline model and estimate it again with a set of interactive variables to capture the determinants of high (above average) inflation in Pakistan.

The Data

We use annual time series data for the years 1951 to 2007 that broadly covers the economic and political environment of Pakistan. Unless mentioned otherwise, data source is the *State Bank of Pakistan* and the *Federal Bureau of Statistics* of Pakistan. Our dependant variable is **Inflation** as the yearly growth rate of Consumer Price Index. To account for the historical impact of inflation, inflation inertia, as one of the explanatory variables we use one period lagged inflation, **(Inflation)$_{t-1}$**. For our monetary model of Equation (1), we use three variables: **M2** (yearly growth rate of the broad money supply); **Credit** (yearly growth rate of credit to the private sector); and **Fiscal balance** (yearly growth rate of budget deficit).

The estimation of nonmonetary determinants model includes two types of variables. The first type accounts for a government's capacity to control inflation: **Agriculture output** (percent of agriculture output to GDP) and **Trade share** (sum of trade volume to GDP; proxy for degree of openness). The second type accounts for government's performance and exogenous shocks: **GDP per capita** (yearly growth rate of real GDP per capita) and **Oil price** (yearly growth rate of U.K. Brent; dollars per barrel; *International Financial Statistics* of the International Monetary Fund).

For data on political instability, we use three different variables that indicate the political environment of Pakistan. First, we use Polity IV dataset of the *Polity IV Project, Center for Global Policy, George Mason University* and call it as **Polity**. In accordance with its lexicon meaning Polity does represent "a particular form or a system of government", its generators define it on the bases of regime legitimacy. Broadly, three norms concerning executive are identified: recruitment, constraints, and political competition. They are then given scale weights under Democratic and Autocratic regimes' characteristics. Interaction of these two then yields Polity that ranges from -10 (purely Autocratic) to +10 (purely Democratic). Increase in Polity then signifies a more democratic polity and decrease for a more autocratic one.

Table 1. Descriptive Statistics of Political Instability Variables for Select Countries

	U.S.A.[a/]	UK[a/]	Singapore[a/]	India[a/]	Pakistan[b/]	Brazil[a/]
Polity						
Mean	10	10	-1.10	8.57	**1.31**	1.39
Median	10	10	-2	9	**1**	5
Maximum	10	10	7	9	**8**	8
Minimum	10	10	-2	7	**-7**	-9
Std. Dev.	0	0	2.73	0.57	**6.07**	6.54
Government Crises						
Mean	0.04	0.26	0	0.47	**0.60**	0.46
Median	0	0	0	0	**0**	0
Maximum	1	3	0	2	**3**	3
Minimum	0	0	0	0	**0**	0
Std. Dev.	0.20	0.63	0	0.65	**0.85**	0.81
Cabinet Changes						
Mean	0.24	0.38	0.06	0.52	**0.68**	0.44
Median	0	0	0	1	**1**	0
Maximum	1	1	1	1	**4**	2
Minimum	0	0	0	0	**0**	0
Std. Dev.	0.43	0.49	0.24	0.50	**0.79**	0.54

[a/] 1951-2002; [b/] 1951-2007

The second variable for political instability is the **Government crises** of the *Cross National Time Series Data Archive*. It accounts for the number of situations in a given year that threaten to undermine a current regime. Our third variable, **Cabinet changes**, is also from the *Cross National Time Series Data Archive*. It represents the number of changes in and of government. Specifically, it gives the number of times in a year a chief executive and/or 50 percent of cabinet is replaced with new minister(s). Increase in both the Government crises and Cabinet changes indicate increase in political instability.

Significance of Political Instability Variables to Pakistan

With reference to Pakistan's experience Polity actually never reaches to any of its extreme values of either +10 or -10. Table 1 gives the descriptive statistics of Polity for some select countries. As evident, for most politically stable and democratic countries, the mean, median, maximum, and minimum values are all +10 with 0 standard deviations. But, for Pakistan and Brazil this is not the case; it is suffice to assume a high degree of political regime switching as the standard deviations for both these countries stands at very high values of 6.07 and 6.54. Similarly, Pakistan records high values in both the Government crises and Cabinet changes. Followed only by Brazil and India, the standard deviation and mean values for Pakistan are at 0.85 and 0.60 for Government crises and 0.79 and 0.68 for Cabinet changes.

This degree of political instability and uncertainty as in the aforementioned variables for Pakistan is greatly reflected in the frequent changes in the heads of state and prime ministers. As presented

Table 2. Polity and the Number of Government Crises and Cabinet Changes

	Polity	Government Crises	Cabinet Changes
1951-1957	4.1	10	5
1958-1972	-1.6	9	5
1973-1977	2.5	1	2
1978-1988	-5.3	0	9
1989-1999	7.2	10	12
2000-2007	-4.2	12	3

in Appendix B, in its sixty years history Pakistan has had a fairly large number of executive changes with forty-one heads of state and prime ministers; notably, there have been twenty-five prime ministers to this date. Apart from this, there are two important points to note in the table. First, a large majority of the Pakistani executives had rather short stints in the office.

Second, the tenures of many did not end as a result of some routine change, such as elections; for a majority, the exit has been unceremonious such as dismissals.

A noteworthy aspect of political instability in Pakistan is that Government crises and Cabinet changes are associated more with democratic regimes than the autocratic ones. As presented in Table 2, the Polity index with positive values, signifying the regimes with more democratic characteristics, shows more instability than the Polity with negative values.

Although Pakistan does not have a history of runaway inflation, it has experienced some episodes of high inflation rates. In fifty-seven years from 1951 to 2007, the inflation remained in double-digit in fourteen years. Taking the sample average of 6.99 percent as a benchmark of high inflation then it was in twenty-six years that inflation was recorded more than this average. All those years coincide with positive Polity; that is with Government crises and Cabinet changes.

Analyzing therefore Polity with monthly CPI variability reveals a positive relationship. As shown in Figure 2, the trend line of the scatter plot between Polity and monthly CPI variability is upward sloping. This signifies that the more the democratic a regime in Pakistan, the higher the variability in CPI. In other words, Government crises and Cabinet changes are associated with an upward CPI variability.[9]

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[9] CPI variability is computed as the monthly CPI changes above average-CPI during each year. Due to noise in the resultant series, we smoothed it using the H-P filter method; this gives a relatively clear picture of the underlying trend.

Figure 2. Polity and Monthly CPI Variability, 1958-2007
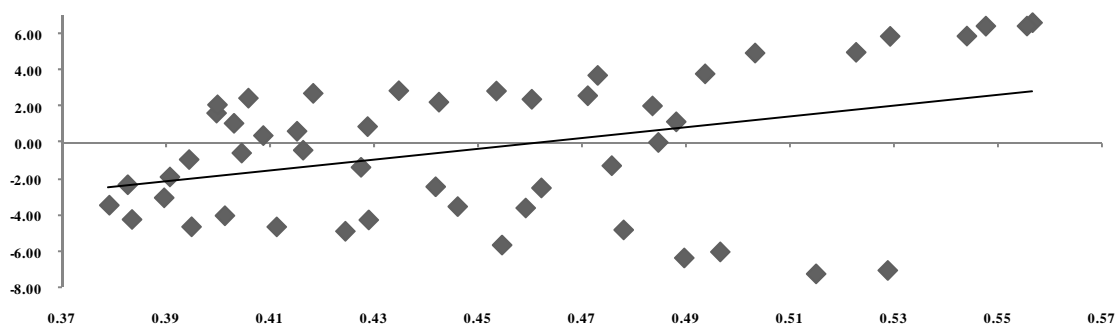
4. The Results

Estimation results for the monetary model as outlined in Section 3 are given in Table 3. Standard diagnostics such as J-statistics and the standard errors of all the coefficients highlight that technically it is an acceptable regression. Note that as Credit is a part of M2 there could be a possibility of multicollinearity in the estimate. We however justify the absence of multicollinearity on three grounds. First, both Credit and M2 are taken as the yearly growth rates that have a higher probability of not exhibiting a uniform trend. Second, the correlation coefficient between the same variables is low at 35 percent only. Above all, the aforementioned standard diagnostics do not indicate the presence of multicollinearity.

Note however that here we have treated Government crises and Cabinet changes as instruments;[10] since we assume that like Polity both these indicators are exogenous. For example, Cabinet changes, as highlighted in Appendix B, have hardly taken place as a result of some economic bottlenecks such as price hike. Similarly, if we examine Government crises index (not reported here) for periods that immediately follow high inflationary episodes, such as the early 1970s, we mostly find the index with zero values.

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[10] As both these variables can be affected by inflation.

Table 3. Monetary Model

	coefficient	std. error
(Inflation)$_{t-1}$	0.616	0.028
M2	0.072	0.025
Credit	0.027	0.005
Fiscal balance	0.055	0.016
J-statistic	0.252	

Notes: System-GMM TIME series estimation for specified model. Sample period: 1951–07. As mentioned in the model description we use political environment (polity, government crises, and cabinet changes) as the external determinants of inflation (instrument variables). For lagged inflation, their lagged values were used as instruments. 10% significance level at which the null hypothesis is not rejected. Hansen tests never reject the validity of the over-identifying restrictions.

Thus the estimates of our monetary model verify that political environment is the exogenous determinant of inflation. Monetary variables (M2, Credit, and Fiscal balance) nonetheless show a positive and significant relationship with inflation as envisaged in the a priori empirical model. The impact of these variables however is very small as compared to those argued by several empirical studies on Pakistan (as presented in Appendix A).

In particular, if the sample average inflation is 6.99 percent then one percent increase in M2, Credit, and Fiscal balance would raise inflation rate by 0.50, 0.16, and 0.38 percentage points to 7.49, 7.17, and 7.37 percents respectively. By far the most pronounced result in this estimate is of the inflation inertia: a percent increase in lagged inflation would raise sample average inflation rate of 6.99 percent by 4.30 percentage point to 11.29 percent.

The superiority of this result over previous studies on Pakistan is further established on two grounds: none of the previous studies have addressed the simultaneity problem and none of them have used as large a sample as the one used in the current study. Together with this and the marginal impact of monetary variables' findings imply that in the long run inflation might not be a monetary phenomenon; even the marginal effects of monetary variables crucially depend upon the political environment of Pakistan. This result further paves the way to find out the nonmonetary or deeper determinants of inflation in Pakistan.

The results of our second model of nonmonetary determinants of inflation as in Section 3 are presented in Table 4. The technical conditions in both specifications of this model, as reflected in the standard diagnostics, are acceptable. Including lagged inflation, the lagged values of other

determinants are used as instruments. Similar to our estimation results in Table 3; all the explanatory variables are statistically significant.

The results of Specification I confirm the first-order impact of nonmonetary determinants on inflation. As can be seen, relatively the political environment variables carry more sizeable impact than that of the economic variables. Among the economic variables the most striking result is of the Oil price and of the Trade share. Contrary to the popular perception of oil price shocks aggravating inflation, the coefficient in our estimate is rather marginal at 2.4 percent only. Similarly, the conventional wisdom that more openness of trade leads to lesser inflation does not hold true for Pakistan. The coefficient of Trade share is with positive sign and with a considerable impact of about 20.7 percent.

Table 4. Nonmonetary Determinants Model

	I		II	
	coefficient	std. error	coefficient	std. error
(Inflation)$_{t-1}$	0.298	0.047	0.135	0.044
Polity	0.192	0.031		
Polity*(inflation>average inflation)			0.040	0.004
Government crises	0.250	0.138		
Government crises*(inflation>average inflation)			0.715	0.095
Cabinet changes	0.411	0.162		
Cabinet changes*(inflation>average inflation)			0.051	0.017
Oil price	0.024	0.007		
Oil price*(inflation>average inflation)			0.001	0.000
GDP per capita	-0.262	0.059	-0.365	0.058
Agriculture output	-0.015	0.008	0.020	0.011
Trade share	0.207	0.018	0.191	0.021
J-statistic	*0.254*		*0.265*	

Note 1: System-GMM TIME series estimation for specified model. Sample period: 1951–07; As done for lagged inflation, their lagged values and the lagged values of other determinants were used as instruments. 10% significance level at which the null hypothesis is not rejected. Hansen tests never reject the validity of the over-identifying restrictions.
Note 2: Average inflation (1950-2007) = 6.99 percent.

The impact of GDP per capita in reducing inflation is rather pronounced at -26.2 percent; whereas, the effects of Agriculture output in reducing inflation is rather small at -1.5 percent. Another noteworthy result of this estimate is the coefficient of the lagged inflation that actually

reduces in size to 29.8 percent from 61.6 percent of the estimate as in Table 3. This signifies the reduction in the explanatory power of lagged inflation due to the inclusion of other variables, such as those of political environment.

As for the effects of political instability are concerned, they confirm their sizably increasing effects on inflation. With every increase in Government crises and an additional change in Cabinet, inflation increases by 25 and 41.1 percents. Clearly, Cabinet changes have by far the largest contribution towards inflation acceleration in this set up. Perhaps, the most intriguing result is the positive sign associated with the Polity scale; that is, the more the Pakistan moves towards the democratic form of government the more inflation increases.

This is in contrast to what a conventional understanding would argue; since a democratic form of government ensures economic freedom and a systematic way of governance. While we agree with this, we nonetheless argue that this might not hold for a country like Pakistan that exhibits a unique characteristic in this respect. In its sixty years history, the maximum number of Government crises and Cabinet changes has taken place during the democratic regimes of 1951-1958, 1985-1999, and 2003-2007 (Table 2). This is also evident in Appendix B: during these periods there have been twenty-one Prime Ministers out of a total of twenty-five. Indeed, with this degree of instability under democratic regimes, a positive association of Polity with inflation should not be a surprising result.

What Leads to High Inflation in Pakistan?

We now turn to analyze the individual contributions of various determinants towards high inflation. We define above sample average inflation rate as 'high' inflation in Pakistan, which is 6.99 percent during 1951-2007. We discard monetary growth as a potential cause of high inflation in Pakistan because of our results in Table 1; since the acceptance of M2 growth as a determinant of inflation is a possibility because of political environment.

The political environment variables are interacted with dummy variables accounting for inflation above the aforementioned sample average; that is, the same inflation rate for the years when it was above 6.99 percent, zero otherwise. The results are presented in Specification II of Table 3. All the interactive and non-interactive variables are statistically significant with consistent signs.

Only Agriculture output changes its sign in this Specification; but, its coefficient remains marginal. This however is not the case with GDP per capita that apart from retaining its negative sign increases in size. Trade share remains nearly the same with its positive sign and size of the coefficient. Another noteworthy change in II from I is the reduction in the coefficient of lagged inflation from 0.298 percent to 0.135 percent.

The interactive political environment variables while retaining their respective signs change in their effects. In particular, Polity and Cabinet changes reduce to 0.040 and 0.051 from 0.192 and 0.411 percent respectively; whereas, Government crises increase to a sizeable 0.715 from 0.250 in Specification I. Interestingly, the increase in Oil price variable remains negligible at 0.001. Therefore, by far the most distinct result is of Government crises and not of Oil price. Specifically, when inflation is above average an additional Government crises increase it by 0.715. Thus, political instability as in Government crises has the most insightful effect on inflation in situations of high (above average) inflation.

5. Concluding Remarks

Although our finding of a positive association between political instability and inflation are in line with that of Aisen and Veiga (2006), we differ with them in reasoning and in some fine interpretation of results. We argue that a combination of the predictions of strong-form FTPL and theories of PEMP are more relevant in justifying a link between political instability and inflation in a low or moderately high inflation country like Pakistan. This explicitly comes out in the monetary model estimates that suggest a rather marginal impact of monetary determinants on inflation, and that too due to the use of political environment as instrument variables. It also implies that inflation might not be a monetary phenomenon in Pakistan. Because of the obvious association of polity with higher number of Government crises and cabinet changes, the democratic regimes are positively associated with inflation in Pakistan. This result particularly highlights the limitations of cross-country regressions that may hide a fine characteristic of an individual country.[11]

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[11] As Aisen and Veiga (2006) in their cross-country regression confirm an almost-universal consensus of a negative association between Polity and inflation.

Moreover, the contribution of our results lies in the fact that no previous study on Pakistan has attempted to model inflation determinants within a political instability framework while addressing the simultaneity problem as well. This contribution is all the more significant for a country that over the years has shown a great deal of political unrest and at the same time has never been a very high (hyper) inflation country. Another noteworthy result stems from the analysis of interactive dummies that suggest Government crises and not Oil price as more significant in explaining high (above average) inflation in Pakistan.

While the costs of inflation are rather well-known, controlling inflation in a country like Pakistan is essential in attaining macroeconomic stabilization to eventually address its ultimate objective of eliminating poverty. At the same time, low and stable inflation is a crucial societal insurance for the marginal segments of Pakistan. Policy makers should, as suggested by Aisen and Veiga (2006), therefore recognize the importance of a stable political environment for the implementation of consistent and coherent policies. Our results imply that unless political reforms aimed at mitigating Government crises and Cabinet changes are not undertaken, inflation stabilization efforts by the technocrats would fail to yield long term price stability.

Appendix A. Select Literature on Pakistan's Inflation Determinants

Study	Sample	Variables	Findings
Omer and Saqib (2008)	1975-2006	Dependant: *CPI inflation*. Independent: *M2, real GDP growth*	M2 does not hold in one-on-one relationship with CPI inflation
Qayyum (2006)	1960-2005 (quarterly)	Dependent: *CPI inflation*. Independent: money, *GDP growth, income velocity of money*	Money is highly significant
Agha and Khan (2006)	1973-2003	*CPI inflation*, *fiscal deficit*	Both variables are cointegrated
Chaudhry and Choudhary (2006)	1972-2004	Dependent: *GDP deflator*. Independent: *M2, real GDP, import price*	M2 is insignificant
Akbari and Rankaduwa (2006)	1982-2004	Dependent: *CPI, WPI*. Independent: *exchange rate, foreign price, M2, large scale manufacturing index*	M2 is inelastic
Khan and Schimmelpfennig (2006)	1998-2005 (monthly)	Dependent: *CPI inflation*. Independent: *M2, interest rate, private sector credit, large scale manufacturing index, nominal effective exchange rate, wheat support price*	M2 is significant
Kemal (2006)	1975-2003	*CPI inflation, M2, GDP*	All variables are cointegrated
Abbas and Husain (2006)	1960-2004	*GDP deflator, GNP, M2*	Long run relationship between GDP deflator and M2
Bokil and Schimmelpfennig (2005)	1975-2004 (annual & quarterly)	Dependent: *CPI inflation*. Independent: *M2, GDP, large scale manufacturing index*	M2 is highly significant
Khan and Schimmelpfennig (2005)	1998-2005 (annual & monthly)	Dependent: *CPI inflation*. Independent: *M2, interest rate, private sector credit, GDP, large scale manufacturing index, wheat support price*	M2 is significant
Hyder and Shah (2004)	1988-2003 (monthly)	*CPI inflation, WPI inflation, nominal exchange rate, M2, large scale manufacturing index, oil price*	Little exchange rate pass through to CPI Inflation
Choudhri and Khan (2002)	1982-2001	Dependant: *CPI* and *WPI*. Independent: *nominal exchange rate* and *foreign price index*	No exchange rate pass through to CPI
Price and Nasim (1999)	1974-1994	Dependant: *CPI* and *exchange rate*. Independent: *M2, world price, GDP, forex reserves*	PPP and money demand are identified through cointegration
Ahmad and Ali (1999)	1982-1996 (quarterly)	Dependent: *CPI, exchange rate*. Independent: *M2, GDP, import price, world price, forex reserves, exchange rate*	M2 is significant
Shamsuddin and Holmes (1997)	1972-1994 (quarterly)	*CPI, broad money, real output*	No cointegrating relationship
Nasim (1997)	1974-1994	Dependent: *GDP deflator, CPI inflation*. Independent: *M2, foreign price, GDP, interest rate*	M2 is highly significant
Khan and Qasim (1996)	1972-1995	Dependant: CPI inflation, *food inflation, non-food inflation*. Independent: *agriculture output, real GDP, wheat support price, utility price, import price index, interest rate, money supply*	Money supply, real GDP, import price, agriculture output, wheat support price, utility price are all significant
Chaudhary and Ahmad (1996)	1972-1992	Dependant: *CPI inflation*. Independent: *M2, GDP growth, share of service sector, public debt, import price*	M2 and other are significant
Hasan et al. (1995)	1973-1994	Dependant: *Price index of food, manufacturing, and raw material*. Independent: *supply shock, money supply, procurement price, external price, expectations*	Money supply insignificant for food and weakly significant for manufacturing and raw material

Appendix A (*Cont.*)

Study	Sample	Variables	Findings
Dhakal and Kandil (1993)	1970-1987 (quarterly)	Dependant: *CPI inflation*. Independent: M1, industrial production, interest rate, foreign interest rate, import price	M1 is insignificant
Ahmad and Ram (1991)	1960-1988	Dependant: *WPI, CPI, GNP deflator*. Independent: *real GNP growth, growth rate of unit value of imports, growth in M1/M2, lagged inflation*	Real GNP growth, growth rate of unit value of imports, nominal money growth, lagged inflation are significant
Hossain (1990)	1961-1988	Dependant: *inflation*. Independent: *output, money, government debt*	Money is highly significant

Appendix B. Heads of State and Prime Ministers of Pakistan, 1947 to date

Governor Generals		
Tenure	**Incumbent**	**End of Tenure**
Aug 14, 1947 to Sep 11, 1948	Quaid-e-Azam Mohammed Ali Jinnah (Father of the Nation)	Expired in office
Sep 14, 1948 to Oct 19, 1951	Khawaja Nazimuddin	Became Prime Minister; replaced by Malik Ghulam Mohammad
Oct 19, 1951 to Aug 07, 1955	Malik Ghulam Mohammed	Forced to resign by Iskandar Mirza
Aug 07, 1955 to Mar 23, 1956	Major General Iskandar Mirza	Became President.

Presidents		
Tenure	**Incumbent**	**End of Tenure**
Mar 23, 1956 to Oct 27, 1958	Major General Iskandar Mirza	Overthrown by General Mohammad Ayub Khan
Oct 27, 1958 to Mar 25, 1969	Field Marshal Mohammad Ayub Khan	Resigned following widespread protests
Mar 25, 1969 to Dec 20, 1971	General Agha Mohammad Yahya khan	Stepped down following the East Pakistan debacle
Dec 20, 1971 to Aug 14, 1973	Zulfikar Ali Bhutto	Became Prime Minister after promulgation of the 1973 constitution
Aug 14, 1973 to Sep 16, 1978	Chaudhry Fazal Illahi	Retired after completing his term
Sep 16, 1978 to Aug 17, 1988	General Muhammad Zia-ul-Haq	Perished in an air crash
Aug 17, 1988 to Jul 18, 1993	Ghulam Ishaq Khan	Resigned under pressure after unsuccessfully dissolving the Nawaz Sharif government under Article 58(2)/(b)
Jul 18, 1993 to Nov 14, 1993	Wasim Sajjad	Vacated office following Farooq Leghari's election as president
Nov 14, 1993 to Dec 2, 1997	Sardar Farooq Ahmad Khan Leghari	Forced to resign by Nawaz Sharif
Dec 2, 1997 to Jan 1, 1998	Wasim Sajjad	Caretaker term ended
Jan 1, 1998 to Jun 20, 2001	Justice (Ret.) Rafique Tarrar	Forced to resign through executive decree
Jun 20, 2001 to Aug 18, 2008	General Parvez Musharraf	Relinquished office of Chief Executive which he held from October 14, 1999 to June 20, 2001, to assume office of President
Aug 18, 2008 to Sep 9 2008	Muhammad Mian Soomro	Acting President
Sep 9 2008 to date	Asif Ali Zardri	Incumbent.

Appendix B (*Cont.*)

Tenure	Incumbent	End of Tenure
Prime Ministers		
Aug 15, 1947 to Oct 16, 1951	Khan Liaqat Ali Khan	Assassinated
Oct 17, 1951 to Apr 17, 1953	Khawaja Nazimuddin	Dismissed by Ghulam Mohammad
Apr 17, 1953 to Aug 11, 1955	Mohammad Ali Bogra	Dismissed by Iskandar Mirza
Aug 11, 1955 to Sep 12, 1956	Chaudhry Mohammad Ali	Resigned after losing majority
Sep 12, 1956 to Oct 18, 1957	Hussain Shaheed Suharwardy	Forced to resign by Iskandar Mirza
Oct 18, 1957 to Dec 16, 1957	I.I. Chundrigar	Removed after the republican party withdrew its support
Dec 16, 1957 to Oct 07, 1958	Malik Feroze khan Noon	Removed following the imposition of Martial law
Dec 07, 1971 to Dec 20, 1971	Nurul Amin	Removed after the fall of Dhaka
Aug 14, 1973 to July 05, 1977	Zulfikar Ali Bhutto	Removed following the imposition of Martial Law
Mar 23, 1985 to May 29, 1988	Muhammad Khan Junejo	Dismissed under article 58(2)/(b)
Dec 02, 1988 to Aug 06, 1990	Benazir Bhutto	Dismissed under article 58(2)/(b)
Aug 6, 1990 to Nov 6, 1990	Ghulam Mustafa Khan Jatoi	Caretaker capacity replaced when the Muslim League dominated IJI swept the polls
Nov 6, 1990 to Apr 18, 1993	Mian Mohammad Nawaz Sharif	Dismissed under article 58(2)/(b)
Apr 18, 1993 to May 26, 1993	Balakh Sher Mazari	Ceased to be caretaker Prime Minister following Supreme Court verdict
May 26, 1993 to July 8, 1993	Mian Mohammad Nawaz Sharif	Stepped down under pressure after earlier unsuccessful dismissal under article 58(2)/(b)
July 8, 1993 to Oct 19, 1993	Moin Qureshi	Caretaker
Oct 19, 1993 to Nov 5, 1996	Benazir Bhutto	Dismissed under article 58(2)/(b)
Nov 5, 1996 to Feb 17, 1997	Malik Miraj Khalid	Caretaker
Feb 17, 1997 to Oct 12, 1999	Mian Mohammad Nawaz Sharif	Exiled after Oct 12, 1999 military takeover
Oct 12, 1999 to Nov 23, 2002	General Pervez Musharaf	Relinquished office of chief executive
Nov 23, 2002 to Jun 26, 2004	Mir Zafarullah Khan Jamali	Asked to relinquish the post
Jun 30, 2004 to Aug 26, 2004	Chuadhary Shujaat Hussain	Caretaker
Aug 28, 2004 to Nov 15, 2007	Shaukat Aziz	End of tenure for next general elections
Nov 16, 2007 to Mar 24, 2008	Muhammad Mian Soomro	Caretaker
Mar 25, 2008 to date	Syed Yousuf Raza Gilani	Incumbent.

References

Abbas, K. and F. Husain (2006). "Money, Income, and Prices in Pakistan: A Bi-variate and Tri-variate Causality." *South Asia Economic Journal*, 7: 55-65.

Agha, A. I. and M. S. Khan (2006). "An Empirical Analysis of Fiscal Imbalances and Inflation in Pakistan." *SBP Research Bulletin*, 2: 343-362.

Ahmad, E. and S. A. Ali (1999). "Exchange Rate and Inflation Dynamics." *Pakistan Development Review*, 38: 235-251.

Ahmad, E. and H. Ram (1991). "Foreign Price Shocks and Inflation in Pakistan: A Monetarist Approach.," *Pakistan Economic and Social Review*, 29: 1–20.

Aisen, A. and F. Veiga (2006). "Does Political Instability Lead to Higher Inflation? A Panel Data Analysis." *Journal of Money, Credit, and Banking*, 38: 1379-1389.

Akbari, A. and W. Rankaduwa (2006). "Inflation Targeting in a Small Emerging Market Economy: The Case of Pakistan." *SBP Research Bulletin*, 2: 169-190.

Alesina, A. and A. Drazen (1991). "Why are Stabilizations Delayed?" *American Economic Review*, 81: 1170-1188.

Alesian, A. and G. Tabellini (1990). "Voting on the Budget Deficit." *American Economic Review*, 80: 37-49.

Arellano, M. and O. Bover (1995). "Another Look at the Instrumental Variable Estimation of Error-Component Models." *Journal of Econometrics*, 68: 29–51.

Arellano, M. and S. Bond (1991). "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations." *Review of Economic Studies*, 58: 277–297.

Blundell, R. and S. Bond (1998). "Initial Conditions and Moment Restrictions in Dynamic Panel Data Models." *Journal of Econometrics*, 87: 115–143.

Bokil, M. and A. Schimmelpfennig (2005). *Three Attempts at Inflation Forecasting in Pakistan*. IMF Working Paper No. WP/05/105. Washington, D.C.: IMF.

Carlstrom, C. and T. Fuerst (2000). "The Fiscal Theory of the Price Level." FRBC *Economic Review*, 36, 1.

Carlstrom, C. and T. Fuerst (1999). *Money Growth and Inflation: Does Fiscal Policy Matter?* FRBC Economic Commentary. [http://www.clev.frb.org/research]

Christiano, L. and T. Fitzgerald (2000). "Understanding the Fiscal Theory of the Price Level." FRBC *Economic Review*, 36, 2.

Chaudhry, M. A., and M. A. S. Choudhary (2006). "Why the State Bank of Pakistan should not Adopt Inflation Targeting." *SBP Research Bulletin*, 2: 195-209.

Chaudhary, M. A. and N. Ahmad (1996). "Sources and Impacts of Inflation in Pakistan," *Pakistan Economic and Social Review*, 34: 21–39.

Choudhri, E. U. and M. S. Khan (2002). "The Exchange Rate and Consumer Prices in Pakistan: Is Rupee Devalution Inflationary?" *Pakistan Development Review*, 41: 107–20.

Cottarelli, C., M. Griffiths, and R. Moghadam (1998). *The Nonmonetary Determinants of Inflation: A Panel Data Study*. IMF Working Paper No. WP/98/23. Washington, D.C.: IMF.

Cukeirman, A, S. Edwards, and G. Tabellini (1992). "Seigniorage and Political Instability." *American Economic Review*, 82: 537-555.

De Grauwe, P. and M. Polan (2005). "Is Inflation Always and Everywhere a Monetary Phenomenon." *Scandinavian Journal of Economics*, 107: 239-259.

Dhakal, D. and M. Kandil (1993). "The Inflationary Experience of Six Developing Countries in Asia: An Investigation of Underlying Determinants," *Applied Economics*, 25: 413–25.

Edwards, S. and G. Tabellini (1991). "Explaining Fiscal Policy and Inflation in Developing Countries." *Journal of International Money and Finance*, 10: S16-S48.

Hammermann, F. (2007). *Nonmonetary Determinants of Inflation in Romania: A Decomposition*. Kiel Working Paper No. 1322. Kiel: Kiel Institute for World Economics.

Hasan, M. A., A. H. Khan, H. A. Pasha, and M. A. Rasheed (1995). "What Explains the Current High Rate of Inflation in Pakistan?" *Pakistan Development Review*, 34: 927-943.

Hossain, A. (1990). "The Monetarist versus the Neo-Keynesian Views on the Acceleration of Inflation: Some Evidence from South Asian Countries (with Special Emphasis on Pakistan)." *Pakistan Development Review*, 29: 19-32.

Hyder, Z. and S. Shah (2004). *Exchange Rate Pass-Through to Domestic Prices in Pakistan*. SBP Working Paper No. 5. Karachi: SBP.

Kemal, A. (2006). "Is Inflation in Pakistan a Monetary phenomenon?" *Pakistan Development Review*, 45: 213–220.

Khan, M. and A. Schimmelpfennig (2006). "Inflation in Pakistan." *Pakistan Development Review*, 45: 185-202.

Khan, M. and A. Schimmelpfennig (2005). "Inflation in Pakistan: Money or Wheat?" *SBP Research Bulletin*, 2: 213-234.

Khan, A. H. and M. A. Qasim (1996). "Inflation in Pakistan Revisited." *Pakistan Development Review*, 35: 747-759.

Kocherlakota, N. and C. Phelan (1999). "Explaining the Fiscal Theory of the Price Level." FRBM *Quarterly Review*, 23: 14-23.

Moroney, J. R. (2002). "Money Growth, Output Growth, and Inflation: Estimation of a Modern Quantity Theory." *Southern Economic Journal*, 69: 398-413.

Nasim, A. (1997). *Determinants of Inflation in Pakistan*. Karachi: State Bank of Pakistan.

Omer, M. and O. F. Saqib (2008). *Monetary Targeting in Pakistan: A Skeptical Note*. SBP Working Paper No. 25. Karachi: SBP.

Paldam, M. (1987). "Inflation and Political Instability in Eight Latin American Countries." *Public Choice*, 52: 143-168.

Price, S. and A. Nasim (1999). "Modelling Inflation and the Demand for Money in Pakistan; Cointegration and the Causal Structure." *Economic Modelling*, 16: 87-103.

Qayyum, A. (2006). "Money, Inflation and Growth in Pakistan." *Pakistan Development Review*, 45: 203–212.

Shamsuddin, A. F. M. and R. A. Holmes (1997). "Cointegration Test of the Monetary Theory of Inflation and Forecasting Accuracy of the Univariate and Vector ARMA Models of Inflation." *Journal of Economic Studies*, 24: 294-306.

Wooldridge, J. M. (2001). "Applications of Generalized Method of Moments Estimation." *Journal of Economic Perspectives*, 15: 87-100.