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Economic Growth, Inflation, and Monetary Policy in Pakistan: Preliminary Empirical Estimates

AHMED M. KHALID

I. INTRODUCTION

The recent increase in financial market volatility and the increased surge within developing world to become part of the global market have posed several challenges for policy-makers in the emerging markets to decide on a policy regime—monetary or exchange rate—that suits their needs and could also provide stability to the financial system. In view of the macroeconomic characteristics of these emerging economies, the choice of an appropriate policy becomes important to achieve certain targets such as sizeable domestic and foreign investment, reduced reliance on external borrowings, fiscal discipline, etc. These would require both price and exchange rate stability and country's ability to deal with external shocks to maintain and achieve sustainable economic growth. Pakistan is no different and until recently had a history of macroeconomic imbalances with extremely high foreign (as well as domestic) debt, high budget and current account deficits, extremely low international reserves, high inflation, high nominal interest rates and low economic growth. The average economic growth over 40 years is around 4 percent. The main focus of any policy has been to achieve a sustainable growth pattern. However, due to a number of macroeconomic imbalances such as high budget deficits, extremely high indebtedness, low savings and investment rates, lack of fiscal discipline, undeveloped financial markets, unstable exchange rates along with high population growth and huge defence expenditure made this task almost impossible. Some of these macroeconomic imbalances contributed to episodes of high inflation and unemployment that the country experienced during most of the period since independence.

Some important steps to reform the economy were initiated in early 1990s and further efforts were made in early 2000. One of the main focuses of the later reforms was to achieve price stability through monetary policy. Highlights of these reforms

Ahmed M. Khalid is based at Bond University, Gold Coast, Qld., Australia.

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were providing autonomy to its central bank (State Bank of Pakistan; SBP), privatisation of commercial banks, establishing a domestic bond market and launching Pakistan bonds in the international market and maintaining high foreign exchange reserves. Autonomy to the SBP was needed to enable the central bank for the design and implementation of an independent monetary policy. This is an essential to achieve sustainable growth through price stability, among other measures. As a result of these measures, the SBP has been able to bring inflation down to single digits at a time when the economy has performed strongly. However, high domestic and international debt and consistently high budget deficits remain central issues in Pakistan's monetary policy. The current surge in fuel prices has further aggravated the problem. Given that the SBP is enjoying a relatively more autonomous environment and the country has been able to achieve remarkable growth performance since 2003, this is probably the best time to decide on the future choice of a policy regime to pursue and achieve long-term and sustainable economic growth.

Recently, some emerging economies decided to switch to an inflation targeting regime. The successful experience of these emerging economies may help to draw important lessons for Pakistan.[1] Any policy shift towards inflation targeting will, however, require an identification of a causal relationship between inflation and other important macroeconomic variables. This will also need a correct specification of inflation model for Pakistan for forecasting purposes. The focus of this paper, therefore, is to empirically analyse the above two objectives. The paper is organised in the following manner. The introduction is followed by a discussion on inflation targeting in the context of some emerging economies. An empirical model for inflation is specified and estimated in Section III. Finally, some conclusions are drawn in Section IV.

II. PRICE STABILITY AND INFLATION TARGETING: EMERGING ECONOMIES, EXPERIENCE

The debate on the effectiveness of monetary policy places significant importance of the information mechanism in the economy. An efficient information mechanism leads to price stability which is important instrument to achieve a sustainable economic growth. It is for this very reason that many emerging economies with a history of high and volatile inflation considered inflation targeting as a choice of monetary policy. Inflation Targeting (IT) can be defined as a monetary policy strategy with an explicit objective of achieving and maintaining price stability. This objective is achieved through an easily understandable

[1]New Zealand was the first country to adopt an inflation-targeting regime in 1990. Since then, many countries have joined the club including both industrialised countries (such as Australia, Sweden, Switzerland, and the United Kingdom) and emerging economies (such as Brazil, Chile, Columbia, Czech Republic, Iceland, Israel, Mexico, Peru, the Philippines, Poland and South Africa).

Table 1

Pakistan—Basic Macroeconomic Indicators (1960-2005)

	1961–70	1971–80	1981–90	1991–95	1996–2000	2000	2001	2002	2003	2004	2005
National Accounts											
GDP Growth (%)	3.35	4.81	6.19	4.85	3.07	4.26	2.72	4.41	5.1	6.4	8.4
Per Capita GDP (US$)	138.86	180.18	327.06	404.85	438.82	426.64	380.54	439.00	455	470	491
Financial Indicators (%)											
GDS/GDP	–	13.81	13.83	14.81	13.29	14.40	14.60	13.60	17.6	16.4	13.7
GFCF/GDP	15.37	15.38	16.96	18.07	15.41	14.37	14.29	12.33	16.9	17.3	16.8
Inflation (per Annum)	3.51	12.42	6.98	11.20	7.30	4.37	3.15	3.29	3.1	4.6	9.3
M2/GDP	36.14	41.76	41.25	43.39	46.63	46.92	48.30	51.74	56.40	–	–
M3/GDP	40.26	46.78	49.62	50.38	49.69	50.19	50.85	55.54	–	–	–
DC/GDP)	38.44	45.49	51.18	52.70	50.63	49.57	45.47	42.34	42.69		
Fiscal Balance/GDP	–5.17	–7.41	–6.74	–7.67	–6.91	–5.47	–4.71	–4.62	–3.7	–3.0	–.30
Domestic Borrowing/GDP	1.84	3.42	5.29	5.60	4.89	4.56	2.51	3.35	2.32	–	–
Foreign Borrowing/GDP	3.34	3.74	1.45	2.06	2.03	0.91	2.20	1.27	1.18	–	–
Debt/Exports	403.90	606.09	509.28	–	–	550.66	–	–	–	–	–
Debt/GDP	33.91	61.96	64.15	–	–	90.00	–	–	–	–	–
Foreign Reserves/Imports	21.27	17.98	11.52	14.24	10.56	14.23	34.05	71.86	–	–	–

Source: Ariff and Khalid (2005).

Notes: M2 = Currency + quasi money; M3 = M2 + Other Deposits; GDS: Gross domestic saving; GFCF = Gross fixed capital formation; DC: Domestic credit.

numerical target value of inflation. This requires a country's central bank to have some flexibility in choosing monetary policy instruments most appropriate to achieve the target (inflation target). Price stability does not strictly mean a 'constant price level or zero inflation' but a stable price level that helps to achieve a target inflation with some tolerance band over a specified time horizon. Inflation targeting is a forward-looking policy regime which relies strongly on rational expectations of monetary policy transmission. The way IT is implemented in emerging economies suggests the central banks in inflation targeting countries enjoyed some discretionary power to make adjustment in monetary instruments as and when needed.

Since the early 1990s, many emerging economies switched to inflation targeting as their monetary policy regime. These countries had different economic environments and hence decided to follow a policy suitable to a specific economic environment. We can split these countries into three groups.[2] First, countries with relatively strong financial market fundamentals, a stable macroeconomic environment and independent central bank moved to inflation targeting with flexible exchange rates with specific inflation targets to be achieved over a specified period. The second group of countries did not have the same environment and switched to inflation targeting with tolerance bands. The third group of countries had difficulty in maintaining a specific target due to a less credible central bank and adopted a policy of 'inflation targeting lite'.[3]

New Zealand was the first country to adopt an inflation targeting regime. Since then many emerging economies in Asia, Latin America and Europe have switched to inflation targeting as their monetary policy objective.[4] For instance, the Latin American region experienced the highest inflation in the world in the 1980s. At regional level, inflation averaged 145 percent annually. As such price stability became the most important argument of the monetary policy. Chile (1990), Peru (1994) and Mexico (1999) used a gradual approach to adopt an inflation targeting regime while Brazil (1999) used a big-bang approach to do the same. Among these countries, Chile followed a 'gradual convergence towards full-fledged inflation targeting (1990-99) when the Central Bank of Chile adopted a legal, operation and goal independence. The Bank of Chile also pursued an exchange rate target from 1984-1999. The Central Bank of Chile used the period 1990-99 to provide price stability and announced inflation targets (or a range) on an annual basis before it decided to move to full-fledged inflation targeting and set an indefinite target range

[2]Some of the Latin American countries moved to inflation targeting along with dollarisation, thus completely giving up their monetary policy and national currencies. This could be considered as the fourth group. There is also another small group that may adopt inflation targeting along with currency boards.

[3]ITL is a transitional regime until the country is ready to move to a full-fledged IT regime.

[4]The experience of some of these countries is summarised in Table 1.

of 2-4 percent in 2001.[5] Mexico used a somewhat similar approach (1995-2001) but started with a monetary growth target in 1995 and at the same time used this monetary growth target to bring down inflation from 52 percent in 1995 to 16 percent in 1997. Eventually, the Central Bank of Mexico moved towards a gradual transition to full-fledged inflation targeting in 1998. Contrary to the example of Chile and Mexico, the Central bank of Brazil used a Big-bang approach (1999-2001) to move to a full-fledged inflation targeting regime in July 1999, with a 2 percent tolerance band.

Among the Central European transitional economies, Czech Republic and Poland are the only two countries which have adopted an IT regime. The Czech Republic adopted an IT regime in January 1998 after abandoning the currency peg in May 1997. The Czech central bank adopted a strict version of IT with a strong commitment to price stability. The Polish IT regime was introduced at time when Poland was experiencing relatively high inflation. The Polish central bank decided to target CPI inflation after moving to a fully floating exchange rate regime.

Columbia presents an example of inflation targeting with small-scale foreign exchange intervention. Although Columbia implemented several elements of IT starting as early as 1992, the full-fledged IT regime was only implemented in 1999Q3. In this way, Columbia experimented with inflation targeting with exchange rate bands. The absence of pre-conditions and macroeconomic mismanagement lead to the deepest and longest recession in this country. Columbia experienced 22 percent peso depreciation between January 1998 and December 1999, just about the time that Columbia adopted inflation targeting. The central bank lost about 18 percent of its international reserves during the same period in an effort to defend the peso. As evident from Table 2, the country was also going through severe recession with economic growth at –4.2 percent at the time of adoption to IT. Eventually, Columbia switched to a floating regime and a full-fledged IT regime in late 1999. As regards to exchange rate policy, the Central Bank of Columbia followed a ruled-based foreign exchange market intervention to reduce volatility in international reserves. However, due to certain internal and external factors which led to a sharp depreciation of the peso, the Central Bank of Columbia engaged in large foreign exchange market intervention in 2003 and again in 2004.[6]

In view of the above discussion and the successful experience of emerging economies in controlling inflation through a policy of inflation targeting, it would be interesting to see if Pakistan should pursue the same policy to achieve a sustainable growth target. Khalid (2006) provides a comparison of Pakistan's current state of the economy with other emerging economies (stated above) and argues that

[5]de Gregorio, Tokman and Valdes (2005) discuss in detail the Chilean experience of inflation targeting with flexible exchange rate regime.

[6]See Vargas (2005) for a detailed discussion on Columbian experience of exchange rate policy and inflation targeting.

Table 2

Macroeconomic Performance of Emerging Market ITters at the Time of Adoption to Inflation Targeting

Countries	IT Adoption Date	Real GDP Growth (%)— (One Year before Adoption)	Fiscal Balance (% of GDP)— (in the Year of Adoption)	Seigniorage (1992-95)
Chile	1999Q3	–0.98	–	1.53
Peru	2002Q1	0.2	–	–
Mexico	2002Q1	6.64	–	0.69
Brazil	1999Q2	0.79	–6.89	7.46
Columbia	1999Q3	–4.2	–	1.97
Czech Republic	1998Q1	–0.76	–1.63	–
Poland	1999Q1	4.84	–4.98	2.23
Hungary	2001Q3	5.19	–	4.12
Israel	1997Q2	4.51	–	0.53
South Africa	2000Q1	2.12	–2.65	0.37
South Korea	1998Q2	5.01	–	1.12
Thailand	2000Q2	4.43	–2.24	1.39
The Philippines	2002Q1	3.4	–	1.39

Sources: Kuttner (2004), Amato and Gerlach (2002), Khalid (2006).

Pakistan's economy is in a much better shape that some of the Latin American or Central European countries at the time of adoption of an IT regime. Given this, one can assert that this is probably a good time to assess the feasibility of inflation targeting in Pakistan. However, any policy shift towards IT would require the State Bank of Pakistan to fully understand the path and mechanism under which inflation is determined in Pakistan. This is needed to achieve two purposes. First, the policy makers need to have a clear understanding of the movement of policy variables that may influence prices. Any movement in these variables would signal the direction and magnitude of movement in prices level and would require certain policy measures to keep prices stable. Second, factors that determine inflation would be needed to develop inflation forecasting model for a credible monetary policy. Both of these require some empirical estimation. These questions are discussed in the nest section.

III. INFLATION MODEL FOR PAKISTAN: SOME PRELIMINARY ESTIMATES

There are two main issues to be investigated here. First, what are the leading indicators of inflation in Pakistan? These leading indicators would help policy

makers to predict future path of inflation and to devise policies to restrict inflation within a target band. Granger causality tests are performed to identify leading indicators of inflation in Pakistan. Second, what are the determinants of inflation in Pakistan? A well-specified inflation equation can be used as a forecasting model for inflation which is an important part of IT policy. The estimation of inflation equation is performed using a general-to-specific method.

For determining leading indicators of inflation for Pakistan, we modify Debelle and Lim (1998) to estimate a bivariate VAR suitable for Pakistan's economic environment. The model estimated is of the following form.

$$\Delta CPI_t = \alpha(L)\Delta CPI_{t-1} + \beta(L)\,\Delta Y_{t-1} + e_t$$

$$\Delta Y_t = \alpha(L)\Delta Y_{t-1} + \beta(L)\,\Delta CPI_{t-1} + u_t \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

Where;

CPI = price index

Y = set of indicators

Output gap (*YGap*); budget deficit-GDP ratio (*DefGDP*); US inflation (*USINF*); seigniorage (*DM*1*GDP*); log of domestic credit (*LDC*); the share price index (*SP*); the Call Money Rate (*CMR*); real GDP (*RGDP*); openness (*TTGDP*); exchange rate depreciation against Us dollar (Δ*ER*); money depth (*M*2*GDP*); and domestic borrowing (*DBOR*).

It is important to determine the order of integration before estimating a VAR or identifying any causal relationship among this set of variables. Standard Augmented Dickey-Fuller (ADF) method is used to determine the order of integration. Results of unit root tests are reported in Table 3. These results suggest

Table 3

Unit Root Tests Result

Variable	ADF(Levels)	ADF(First Difference)
ΔCPI_{t-1}	–3.429210**	–5.748879*
USINF	–3.003700**	–6.570895*
RGDP	–.0266240	–3.500059*
YGap	0.575690	–5.417021*
DefGDP	–3.849298*	
ΔM1GDP	–5.37479*	
LDC	2.725933	–4.817433*
SP	–0.749881	–4.082395*
CMRate	–2.146065	–7.323656*
ER	2.842852	–3.673984*
M1GDP	–4.326640*	–
M2GDP	–2.502640	–5.926836*
DBOR	0.064564	–12.40113*
TTGDP	–1.815292	–4.200009*

Note: *, ** and *** Indicate the rejection of null at 10 percent, 5 percent and 1 percent respectively.

that *CPI*, *USINF*, *Def*/*GDP*, Δ*M*1*GDP*, *M*1/*GDP* are stationary in levels. However, real GDP (*RGDP*), output gap (*Ygap*), domestic credit (*LDC*), stock price index (*SP*), *CMRate*, exchange rate (*ER*), *M*2/GDP, domestic borrowing (*DBOR*) and openness (*TT/GDP*) are stationary in first difference; I(1). We, therefore, use these variables in first-difference in the VAR model.

We perform two different types of Granger causality tests to identify a causal relationship and its directions. First we, use pair-wise Granger causality tests to focus on each indicator and its causal relationship with inflation. In this way, we isolate feedback through other variables. We allow up to four lags. The results are reported in Table 4. The data suggests that US inflation (USINF), seigniorage (ΔM1GDP) and openness (TTGDP) do cause inflation. The results, however, suggest that inflation causes changes in the budget deficits (DefGDP), domestic

Table 4

Granger Causality Test Results for Leading Indicators of Inflation

Null Hypothesis	Lags	*F*-Statistic	Probability
YGap does not Granger Cause ΔCPI	1	3.71008***	0.0616
ΔCPI does not Granger Cause YGap		47.9989*	0.0000
DefGDP does not Granger Cause ΔCPI	1	1.5518	0.2205
ΔCPI does not Granger Cause DefGDP		5.1110**	0.0296
USINF does not Granger Cause ΔCPI	3	2.9171**	0.0192
ΔCPI does not Granger Cause USINF		0.4597	0.7123
ΔM1GDP does not Granger Cause ΔCPI	1	5.5545**	0.0237
ΔCPI does not Granger Cause ΔM1GDP		0.4424	0.5099
ΔLDC does not Granger Cause ΔCPI	3	0.8989	0.4525
ΔCPI does not Granger Cause ΔLDC		3.1107**	0.0399
ΔSP does not Granger Cause ΔCPI	4	0.4742	0.7543
ΔCPI does not Granger Cause ΔSP		0.4861	0.7458
ΔCMRate does not Granger Cause ΔCPI	1	0.1918	0.6640
ΔCPI does not Granger Cause ΔCMRate		6.8033**	0.0129
ΔRGDP does not Granger Cause ΔCPI	4	0.3955	0.8102
ΔCPI does not Granger Cause ΔRGDP		0.4297	0.7860
ΔER does not Granger Cause ΔCPI	2	1.1035	0.3429
ΔCPI does not Granger Cause ΔER		0.3123	0.7338
ΔM2GDP does not Granger Cause ΔCPI	1	1.7768	0.1905
ΔCPI does not Granger Cause ΔM2GDP		4.0744**	0.0506
ΔDBOR does not Granger Cause ΔCPI	4	0.0548	0.9941
ΔCPI does not Granger Cause ΔDBOR		0.2315	0.9184
ΔTTGDP does not Granger Cause ΔCPI	2	23.003*	0.0000
ΔCPI does not Granger Cause ΔTTGDP		2.5963	0.1154

Note: *, **, *** Denotes rejection of Granger non-causality in mean at 10 percent, 5 percent and 1 percent levels of significant.

credit (LDC), domestic interest rates (CMRate) and financial depth (M2/GDP). We also found evidence of a bi-directional causality between outputgap (YGap) and Inflation. These results indicate that inflation in Pakistan is not influenced by indigenous factors only. Due to influence of US dollar in domestic currency valuation, US inflation does affect domestic prices. The inflationary pressure through the use of seigniorage is not surprising and is consistent with theoretical prediction. Openness causes inflation due to negative trade balance and captures the effect of rising import prices. It is a bit surprising to see a reverse causality between inflation and budget deficits. However, one possible reason could be the factors such as; the high level of external debt, debt servicing and sizeable defence expenditure as well as higher price level puts pressure on budget deficits. Higher inflation means a lower real cost of borrowing and thus may lead to increased demand for credit. Higher inflation also puts upward pressure on domestic interest rates. Bi-directional causality between inflation and output gap shows central bank's effort to exert monetary pressure to achieve a higher growth which they may not achieve due to higher and increasing inflation (consistent with historical trends in Pakistan till 2002). This may also suggest some indication of higher sacrifice ratio.

Next, we use a VAR as specified in Equation (1) to identify the leading indictors allowing some feedback effects as well. The results are reported in Table 5. These results indicate that output gap(YGDP) gap and share price index (SP) have a high degree of predictive content on inflation. Narrow money also has some predictive content. However, both narrow money and share prices cause inflation

Table 5

Leading Indicators of Inflation (VAR Estimation)

	Causality from CPI to Other Variables			Causality from Other Variables to CPI	
	F-stat	Lags		*F*-stat	Lags
GDP	3.11	1	GDP	5.6*	1
CMRate	0.06	1	CMRate	0.000	1
DC	27.04*	1	DC	1.17	1
ER	10.4*	1	ER	0.38	1
G.Bond	4.85**	1	G.Bond	0.57	1
M1	1.51	3	M1	4.38**	3
M2	0.76	1	M2	0.09	1
M4	0.004	1	M4	0.10	1
SP	2.38	3	SP	18.2*	3

Note: *, **, *** Denotes rejection of Granger non-causality in mean at 10 percent, 5 percent and 1 percent levels of significant.

with a lag of three years. On a reverse causality, inflation causes changes in domestic credit, exchange rates and government bond yields. One has to look at these results with caution. As quarterly data on GDP is not available in Pakistan, in this preliminary analysis we estimate the model using annual data. In order to analyse the predictive performance of an inflation forecasting model, one has to use quarterly data.[7] The results, however, highlight an important point. As it is evident from Table 5 that exchange rate is influenced by changes in CPI, a monetary policy objective of price stability would help to stabilise exchange rates as well as making central bank intervention in currency markets a less likely event.

Finally, we estimate an equation for inflation. Again we modify Debelle and Lim (1998) to specify an equation for inflation of the following form.

$$\Delta CPI_t = \beta_0 + \beta_1 \Delta CPI_{t-i} + \beta_2 YGap_{t-i} + \beta_3 \Delta ER_{t-i} + \beta_4 USINF_{t-1} + \beta_5 DefGDP_{t-i} + \beta_6 \Delta M1GDP_{t-i} + \beta_7 M2GDP_{t-i} + \beta_8 CMRate_{t-i} + e_t \quad \ldots \quad (2)$$

Where;

ΔCPI: inflation rate
$YGap$: output gap
ΔER: exchange rate depreciation
$USINF$: US inflation rate (based on CPI)
$DefGDP$: budget deficit to GDP ratio
$\Delta M1GDP$: change in M1 to GDP ratio (measure of seigniorage)
$M2GDP$: M2 to GDP ratio (measure of financial depth)
$CMRate$: call money rate (proxy for interest rate).

We estimate two different specifications of Equation (2). The results are reported in Table 6. Column 2 of Table 6 reports the results of Model 1 (first specification). These results indicate that first lag of inflation have positive and statistically significant influence on current inflation and thus may help to predict inflation. A positive estimate for the parameter of Output Gap suggests the use of expansionary monetary policy to expand the economy could lead to higher inflation. A negative and statistically significant coefficient for ΔER could be result of a reduced trade gap through higher exports (through exchange rate depreciation) and hence resulting in lower inflation. The results also indicate strong evidence of imported inflation in Pakistan as USINF is positive and statistically significant. Consistent with theoretical predictions, higher deficits lead to inflationary pressure. The results suggest that increases in public sector spending which result in higher budget deficits could also be a source of higher inflation in Pakistan. Further, financing these budget deficits through seigniorage leads to monetary expansion and

[7]We plan to use some statistical methods to form a series of quarterly GDP and replicate this analysis. This stresses the need for more frequent statistical reporting especially on important macroeconomic variables such as GDP.

Table 6

Inflation Forecasting Equation: Dependent Variable: ΔCPI_t

Variable	Model 1	Model 2
Constant	–0.5209*	–0.4026*
	(–6.0234)	(–4.8345)
ΔCPI_{t-1}	0.4714*	0.7093*
	(3.5564)	(6.4157)
$YGap_{t-3}$	0.2578**	0.1335
	(2.2603)	(1.1654)
$YGap_{t-4}$	0.2060***	0.2287***
	(1.8187)	(1.8296)
ΔER_{t-2}	–0.0149*	–0.0142*
	(–4.4032)	(–3.7841)
$USINF_{t-1}$	0.0118*	0.0114*
	(4.4021)	(3.8684)
$USINF_{t-2}$	–0.0149*	–0.0167*
	(–4.2730)	(–4.4266)
$USINF_{t-3}$	0.0056**	0.0078*
	(2.2281)	(2.9917)
$DefGDP_{t-1}$	0.0103*	0.0094*
	(4.2287)	(3.5356)
$\Delta M1GDP_{t-2}$	0.0054***	
	(1.9933)	
$\Delta M1GDP_{t-3}$	0.0074**	
	(2.6402)	
$M2GDP_{t-1}$	0.0085*	0.0083*
	(6.6090)	(5.9690)
$M2GDP_{t-4}$	0.0075*	0.0048*
	(4.4726)	(3.1743)
$CMRate_{t-1}$	–0.0169*	
	(–4.7672)	
$CMRate_{t-4}$		–0.0126*
		(–3.5697)
Adj-R^2	**0.8275**	**0.7887**
D-h	**–3.0947**	**–1.5970**
***F*-Statistics**	**14.6532**	**13.5553**

Note: *, **, and *** Denote the significance level at 1 percent, 5 percent, and 10 percent respectively.

thus to higher inflation. We also found the financial depth (M2/GDP) leads to higher inflation. This result is consistent with the experience of many emerging economies at the early stage of liberalisation. Increase in nominal short-term interest rate serves as an announcement effect of the future monetary policy and thus could lead to lower inflationary expectation. Model 2 (second specification) excludes the seigniorage from the equation. The results are reported in Column 3 of Table 6. These results, in general, are consistent with the results of Model 1. This could be due to the fact that Model 2 still has M2/GDP in the equation and effect of M1 is imbedded in M2.

IV. CONCLUSIONS

Like many central banks in the emerging markets, the State Bank of Pakistan is also under pressure to discuss and design a policy that could provide a stable and sustainable economic growth as well as address the necessary conditions to be part of the global economy. The main issue to be resolved is what type of monetary policy should be pursued to achieve certain goals over a medium to long-term. Inflation targeting has been experimented in some emerging economies in Latin America and East Asia. However, a switch towards inflation targeting as part of the monetary policy is subject to certain pre-requisites including an understanding of the determinants of inflation and a reasonable forecasting mechanism. This is the main objective of this paper.

Pakistan has made significant progress in implementing economic and institutional reforms since 2000. Some of these developments have been well recognised. Pakistan achieved the most rapid privatisation of the banking system during this period. The State Bank of Pakistan has been identified as the most efficient central bank in emerging economies in 2004. Inflation was been brought to single digits and economic growth reached a record high level during 2004. Although debt is still a major issue to be resolved, a sizeable foreign reserve has reduced the risk of default. Given these characteristics of the economy, it is probably the time to seriously consider an appropriate choice of monetary policy for the central bank. Inflation targeting is one of such alternative.

The paper focuses on inflation targeting (IT) as a choice of monetary policy and to achieve economic stability. The paper provides a detailed illustration of the experience of some emerging economies that opted inflation targeting with a comparison to Pakistan's current economic performance. The examples of the Latin American and some Central European countries suggest the feasibility of inflation targeting in emerging economies even if these countries had complicated political and economic environments and did not satisfy all the pre-conditions suggested in the literature.[8] These examples also

[8]See Khalid (2006).

suggest that inflation targeting benefited these countries in providing price and macroeconomic stability. However, this success requires measures to ensure central bank transparency and committed policies to develop strong fiscal, financial and monetary institutions.

Any decision to adopt inflation targeting requires a good theoretical model and some empirical estimates to understand the pricing mechanism in Pakistan. This paper attempts to develop and estimate a model for Pakistan and provides estimate for leading indicators of inflations as well estimating the determinants of inflation for Pakistan. Our results suggest that imported inflation, seigniorage and openness cause inflation in Pakistan. The results also indicate that imported inflation, deficit-GDP ratio, seigniorage, money depth, exchange rate depreciation and domestic credit may be important determinants of inflation in Pakistan. A mechanism to predict the movements of these variables would help the State Bank of Pakistan to curtail inflation within its target bands. This preliminary analysis could be used as a step forward to develop a more comprehensive model and econometric methodology to address these issues in further details. It would be ideal to use, at least, quarterly data for inflation forecasts. It is also important to decide which definition of inflation is appropriate for Pakistan's case. An analysis of policy alternatives would help to understand which policy suits the best for Pakistan's economic environment. These are possible extension being pursued in a separate paper. Nevertheless, this paper serves to initiate the discussion on this important issue and attempts to answer some important empirical questions in the context of Pakistan economy.

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