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Choice of Monetary Policy Regime: Should SBP Adopt Inflation Targeting

Moinuddin

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For all other correspondence:

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Choice of Monetary Policy Regime: Should SBP Adopt Inflation Targeting?

Moinuddin
Senior Joint Director
State Bank of Pakistan
Moinuddin@sbp.org.pk

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Contact Information

Economic Analysis Department
State Bank of Pakistan
I. I. Chundrigar Road,
Karachi-74000
Phone: (+92) 21 245 3812
Fax: (+92) 21 921 1488

Abstract

Monetary aggregate targeting is principally based on a stable and predictable relationship between inflation and monetary aggregate(s). However, structural changes both in the economy as well as in the financial sector, financial innovation and increasing application of technology have significantly weakened the relationship between inflation and money. The major finding of this paper is that money demand function is unstable in Pakistan, therefore monetary aggregate targeting is not suitable. Consequently, inflation targeting (IT) may be an option for the central bank since IT is becoming popular in both developed and emerging economies due to its superior qualities of easy to understand target, flexibility, transparency and being more amenable to accountability. However, some pre-requisites such as fiscal prudence, independence of central bank, legislative support, availability of an appropriate measure of inflation and improvement in technical skills of the staff are required before the adoption of IT. In the meantime, IT Lite is a viable option for the State Bank of Pakistan (SBP).

JEL Classification: E3, E31, E32, E52

Keywords: Inflation Targeting, Money Demand Function, Monetary Policy Regime.

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I. Introduction

Presently, SBP is pursuing monetary aggregate targeting. This approach implicitly assumes that money demand function is stable and a predictable relationship exists between monetary aggregates and inflation. In most economies, however, it has been observed that this relationship weakened and resulted in instability in the money demand function during the past couple of decades. The weak relationship between monetary aggregates and inflation therefore made it impossible to target monetary aggregates [Maravic and Palic (2005)]. As the probability of missing the final target (inflation) by achieving a specific intermediate target (monetary aggregate) significantly increased. In such a scenario, central bank has no other option but to abandon monetary aggregate targeting. It was beautifully described in the words of Bouey (1983), former Governor, Bank of Canada “*we did not abandon M1, M1 abandoned us*”.

Similarly, massive structural changes in Pakistan’s financial sector raise the concern whether stable relationship between monetary aggregates and inflation exists or not. Sassanpour and Moinuddin (1993) rejected any structural shift in money demand function as a result of introducing Islamic banking during the mid-1980s. Likewise, Khan, Arby and Lodhi (2000) also concluded that money demand function is stable. However, their sample sizes (1974-1992 and 1972-1999 respectively) were unable to fully capture the impact of the financial reforms of the 1990s. In particular, the impact of liberalization of interest rates implemented in 1996 was difficult to capture by the customary inference methods (usually Chow break-point test).

In fact, financial reforms of the 1990s were implemented due to the consequences of the use of direct instruments of monetary policy such as regulated interest rates, directed credit and dominance of the public sector financial institutions.¹ Implementation of financial reforms thus brought significant changes in the Pakistan’s financial sector and precisely raises the question on the existence of a stable money demand function and continuation of monetary aggregate targeting regime. In case of departure from the

¹ A detailed description of financial reforms is provided by SBP (2002).

existing monetary policy regime, State Bank of Pakistan (SBP) would have possibilities of using exchange rate, inflation or nominal income as the choice of nominal anchor.

In this background, this paper is an attempt to answer two questions (1) after addition of significant number of observations of post reform data, does money demand function still exhibit a stable relationship between monetary aggregate and inflation? and (2) if answer is negative, then is inflation targeting (IT) suitable given the specific circumstances in Pakistan?

The following section provides review of literature. Section III reports estimation results of money demand function. Section IV reports the possible policy options. A brief introduction of IT is covered in Section V. An evaluation of pre-conditions for IT in the background of Pakistan is presented in Section VI. The final section contains conclusion and policy recommendations.

II. Review of Literature

The importance of a stable money demand function in formulation of macroeconomic policies (especially monetary policy) cannot be undermined. However, significant structural changes in the economy, financial innovation² and continued improvement in technology could disturb a stable and predictable relationship between money and prices. A considerable work has been done in search of a stable money demand function for different countries. For example, Judd and Scadding (1982) argued that financial innovation which allowed public to economize on its holdings of transaction balances is the most likely cause of instability in money demand function since 1973. In fact, a rapid advancement in technology reduced the transaction cost as well as facilitated high degree of financial innovation, both of these factors made it difficult to capture the representative demand for money in money demand function. Then it could be argued that someday a stable money demand function could be estimated, if the financial industry and transaction costs settle down or if someone devises a way to adequately model the transaction costs [Duprey (1980)].

² Judd and Scadding (1982) explained various channels of financial innovation, which bring instability in money demand function.

However, it is difficult to estimate a stable money demand function due to introduction of innovative financial products, alteration in the preferences of holding of financial instruments by households and businesses and rapid advancement in technology available to financial sector. Therefore, while many countries abandoned monetary aggregate targeting in absence of a stable money demand function, exchange rate targeting also turned out to be unsuccessful in various countries due to speculative attacks and subsequent financial crises particularly during 1990s. In search of a nominal anchor for the monetary policy, New Zealand adopted full fledged inflation targeting (IT) in 1990. Since then IT is probably the fastest growing branch of central banking literature. Almost everyday, new research is added to this field covering both academic as well as operational aspects of IT.

However, in contrast to general belief the first ever implementation of an idea similar to IT (price stability) was successfully adopted in Sweden during the 1930s. Berg and Jonung (1998) explained the mechanism of Swedish experience as well as highlighted the similarities and difference of price level targeting of 1930s in Sweden and inflation stabilization under IT during the 1990s.

The implementation of IT and experiences of New Zealand and other countries caused to initiate a tremendous amount of literature on IT in the second half of the 1990s to date. Undoubtedly, the most comprehensive addition to the subject during this period was made by Bernanke, Laubach, Mishkin and Posen (1999). Their book not only illustrates background, economic environment at the time of IT adoption and experiences of each country, it also explains IT framework.

The flow of more interesting work on IT significantly increased after adoption of IT by some emerging economies, particularly in East Asia. Importantly, many authors clarify that those pre-conditions that were initially considered a must for a country to embark upon IT are not necessary [Masson, Savastano and Sharma, (1997); Brash (2002)]. However, it is concluded that the adoption of IT is linked with the legal and administrative arrangements; these changes often resulted in increased independence of the central banks, particularly in terms of instrument setting [Bernanke and Mishkin,

(1997)]. In sharp contrast, some authors concluded that due to absence of a number of pre-conditions for IT (central bank independence, fiscal dominance, technical skill etc.), most of the developing countries are not in a position to adopt IT regime [Masson, *et al*, (1997)].

Literature on IT since 2000 was more focused on the evaluation of the performance of IT regimes. Most studies admitted that the limited experience of IT, and the fact that IT regimes did not face any severe shock so far to show their better resilience, do not permit to establish concrete conclusion [(Zaidi, (2005); Ball and Sheridan, (2003); Bernanke and Mishkin, (1997)]. It is interesting to note that all ITers are significantly different in terms of operational characteristics, level of transparency and impact of monetary policy [Hebbel and Tapia, (2002)]. However, most of the studies found that inflation targeting has a significant impact on economic performance [for example, Gürkaynak, Levin and Swanson, (2006); IMF, (2005), and Nicholas *et al*, (2005)]. Even researchers who disagree with the superior performance of ITers, almost all of them accept that IT is a better regime. For example, Roger and Stone (2005) mentioned that inflation targets were missed about 40 percent of the time, but no country has dropped IT due to (1) flexibility of the framework (2) high standard of transparency and accountability and (3) lack of realistic alternatives. Similarly, Willard (2006) concluded that though the effect of IT on inflation is small and insignificant, existence of IT during the 1990s caused to create global awareness towards the cost of inflation and thus played a role in reducing inflation during the past decade. In the same line, Ball and Sheridan (2003) also proved that IT did not improve the economic performance of ITers compared with the non-ITers, but they were of the view that their results do not provide any argument against IT. They also recommended IT on the basis of (1) political reasons that policymaking under IT is more open and the role of central bank becomes more consistent with the principles of democratic society; and (2) IT may improve performance in the future because ITers may handle big supply shocks and political pressures for inflation better than the “just do it”³ approach of monetary policy.

³This is well described in one of his speeches by King, Mervyn, (2004), “*The Institutions of Monetary Policy*”, available at: <http://www.bankofengland.co.uk/publications/speeches/2004/speech208.pdf>.

A considerable literature on the prospects of Pakistan to adopt IT is also available; findings of the studies were mixed. For example, while weak exchange rate pass-through favors Pakistan for adoption of IT, significance of imported inflation, relatively low impact of monetary policy on inflation, strong likelihood of considerable loss of output and negative growth at the initial phase of IT made a strong case against adoption of IT [Akbari and Rankaduwa, (2005)]. Similarly, in sharp contrast to other studies,⁴ Chaudhry and Choudhary (2005) argued that SBP should not adopt inflation targeting because major cause of inflation in Pakistan is the rise in import prices while effect of monetary policy on inflation is negligible and statistically insignificant.

In sharp contrast to these, some researchers found that this is probably the best time for Pakistan to adopt IT, given the improved macroeconomic fundamentals and recent trend of low inflation [Khalid (2005)]. Moreover, Zaidi (2005) and Khalid (2005) both proposed that flexible or inflation targeting lite (ITL) is a better option for Pakistan.

III. Money Demand Function

A number of studies have been conducted with respect to demand for money function in Pakistan, from simple regression [e.g. Mangla, (1979)], to complex divisia monetary aggregates [Tariq and Mathew, (1997)] and error correction models at disaggregated levels [Khan *et al.*, (2000)]. Despite significantly different techniques, a variety of hypotheses and varying objectives, all of these studies are based on the conventional proposition that demand for real balances is a function of a scale variable and an opportunity cost variable. While scale variable is used to proxy the transaction demand for money, opportunity cost variable captures the speculative and precautionary demand motives for holding money. To maintain the true spirit and to avoid overshadowing this basic proposition, a simple money demand function has been estimated with cointegration technique to avoid spurious regression as well as to estimate an error correction model to explore short-run dynamics of this relationship.

⁴ For example, Hyder and Shah (2004) and Akbari and Rankaduwa, 2005.

To confirm a long-run co-integrated relationship between real money balances, we chose broad money (M2), real GDP for scale variable and call money rate for opportunity cost variable.⁵ Nominal

Variable	Level	1st difference
Real M2	0.53	-4.84
Real GDP	-0.47	-3.36
Real interest rate	-2.18	-3.71

(*) Critical value at 5% level of significance is -2.95.

money balances were deflated by using CPI to obtain the time series of real money balances. Moreover, log of real GDP as well as real money balances were used while real interest rates (nominal interest rates adjusted with inflation) were used in level form. It may be noted that real call money rate was used which is short run borrowing rate in inter-bank market and equivalent to Federal Funds Rate in USA. Data is obtained from various issues of Economic Survey and SBP Annual Reports. All estimations were done by using EViews version 3.1. All of these variables were found to be I(1) (**Table 1**).

The following equation was estimated:

$$m_t = \alpha_0 + \alpha_1 y_t + \alpha_2 r_t + \varepsilon_t \dots \dots \dots \text{(Eq-1)}$$

Where m = real money balances; y = real GDP and r = real interest rates (inflation adjusted call money rate), ε = error term, and subscript t refers to time.

Estimated results are reported in **Table 2**:

Variable	Eq-1 Sample 1974-2006		Eq-1(a) Sample 1974-1990		Eq-1(b) Sample 1991-2006	
	Coefficient	t-stat	Coefficient	t-stat	Coefficient	t-stat
Constant	-4.59	-11.6	-3.48	-3.7	-7.9	-9.1
Real GDP	1.25	46.4	1.17	17.9	1.5	25.5
Call money rate	0.0008	0.3	0.005	1.7	-0.01	-3.7
<i>Adj. R²</i>	0.99		0.97		0.98	
Durbin Watson	0.82		1.46		1.34	
F-Statistics	1253.8		232.9		328.6	
Stability Test:						
CUSUM	Stable		Stable		Stable	
CUSUM Square	Unstable		Unstable		Stable	
Chow Break-point test	Unstable (1991)		Unstable (1981)		Unstable (2002)	

⁵ M2 is the key monetary policy variable for formulation, conduct and monitoring purposes. Call money rate has an advantage that is probably the best proxy for the cost of funds in money market. Finally, real GDP is the broadest (and most acceptable) representation of the scale variable.

The error term of estimated equation is found to be stationary [I(0)], which implies that these variables are co-integrated. In other words, a significant long-run relationship exists between these variables during 1974-2006. While, Equation-1 for the full sample could pass only cumulative Sum (CUSUM) test for stability (**Figure 1**), it failed to clear cumulative sum square (CUSUM Square) and Chow break-point tests, the latter test suggests structural break in 1991 (**Table 3**). This is an important finding in contrast with the earlier studies on the subject and suggests that financial reforms significantly contributed in structural changes in money demand function, when government started borrowing on market-based interest rate through auction of government securities, residents were allowed to open foreign currency deposits as well as at least one state owned bank was privatized and new private banks were issued licenses for business. Increasing use of technology (ATM, debit cards, credit cards etc) further augmented these structural changes through altering the cash preferences of the firms and households.

In this background, the same equation for the sub-sample periods (i.e.1974-1990 and 1991-2006) is estimated again. Interestingly, equation for the 1974-1990 period passed the CUSUM test, but exhibited structural break with CUSUM squares and Chow break-point test at 1981. Similarly, equation for the sub-sample 1991-2006 passed both CUSUM and CUSUM Square tests, but failed to pass Chow break-point test (**Figure 3**). It reveals that estimated money demand function is unstable throughout the sample period due to fundamental and rapid structural changes in the financial system.

Table 3: Results of Chow Break-point Test					
Cointegration equation					
Sample Period	Break	F-Statistics	Probability	Log Likelihood Ratio	Probability
1974 - 2006	1991	5.8	0.00	16.3	0.00
1974 - 1990	1981	2.2	0.14	8.1	0.04
1993 - 2005	2002	2.5	0.12	8.8	0.03

However, Chow break-point test has been criticized due to its sensitivity to the presence of even moderate heteroscedasticity [Darrat (1986)] as well as this test does not identify the sources of instability (or structural change). Therefore, some alternative test is necessary to confirm the above findings and to identify the sources of instability in

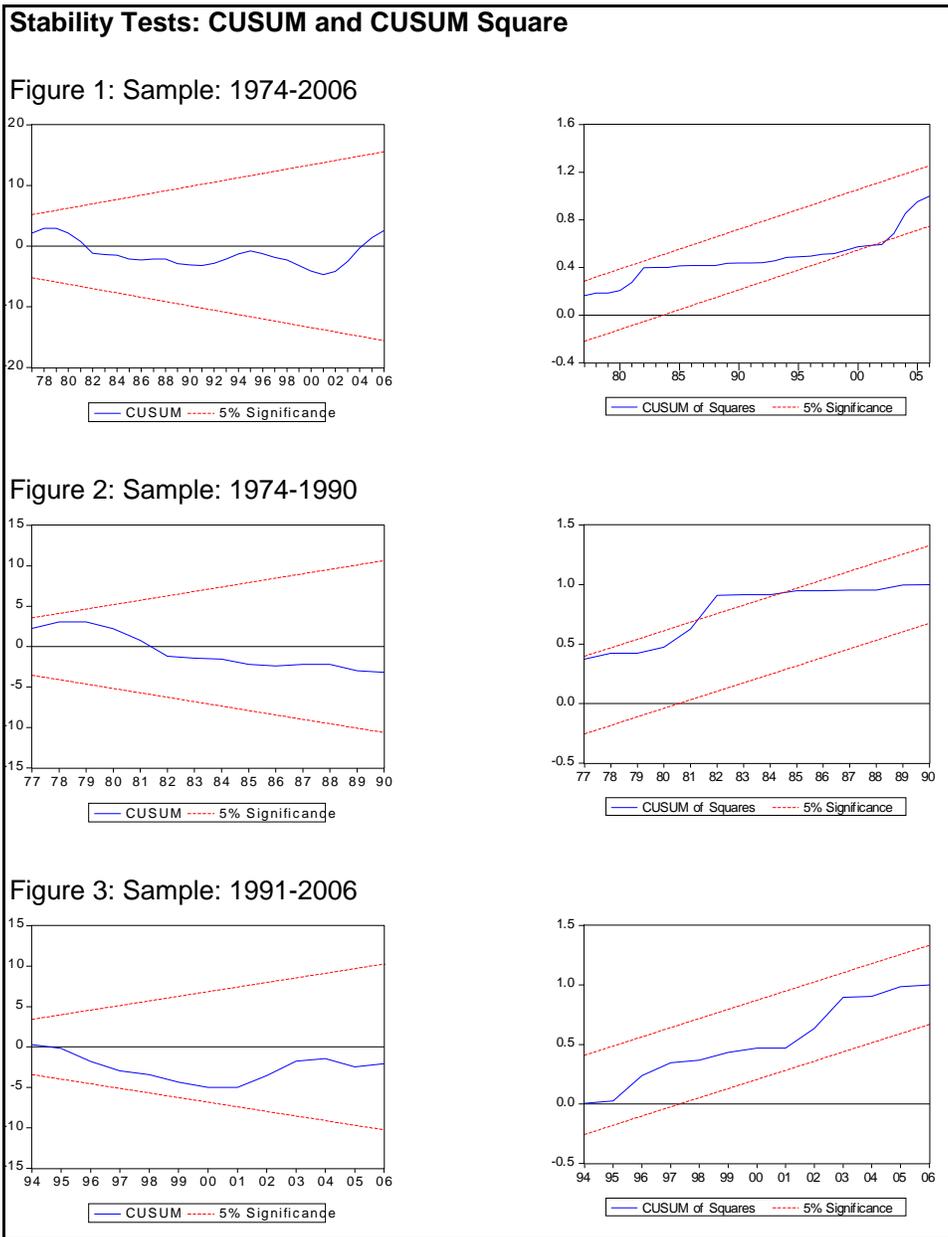
demand for money function for Pakistan in the sample period. Gujrati (1970) suggested the use of dummy variables to find out whether the source of structural break(s) is due to intercept or due to slope variables. In this background, Equation-1 was re-estimated with the introduction of an intercept dummy (D91) for 1991, and two multiplicative slope dummy variables for real GDP and real interest rate. The dummy variable for 1991 was introduced because of most of the fundamental changes in the financial architecture of Pakistan and agenda of financial reforms were introduced during this period. The following equation was estimated:

$$\begin{aligned}
 \text{Real } \log(M2) = & -3.48 + -4.43 (D91) + 1.17 (\log \text{ real GDP}) + 0.30 (\log \text{ of} \\
 t\text{-stat:} & \quad (-4.4) \quad (-3.2) \quad (21.0) \quad (3.2) \\
 & \text{real GDP * D91)} + 0.005 (\text{real interest rate}) - 0.02 (\text{real interest rate * D91}) \\
 t\text{-stat:} & \quad (2.0) \quad (-3.4) \\
 \text{Adj.R}^2 = & 0.99 \quad \text{Durbin-Watson} = 1.44 \quad \text{F-Statistics} = 744.1
 \end{aligned}$$

The estimated equation reveals that both intercept and slope dummy variables are significant and suggests that instability in the money demand function is caused by the changing relationship with both scale variable as well as opportunity cost variables.

While structural shift in intercept appears to be a function of gradual and steady monetization in the economy,⁶ the instability in slope dummies is attributed to a number of factors. In particular, monetary policy and structure of the financial sector in Pakistan witnessed fundamental changes during the last 32 years. The first significant policy change was the nationalization of private commercial banks with the creation of National Credit Consultative Council (NCCC) and Pakistan Banking Council (PBC) in 1974. NCCC was granted the authority to set credit ceilings and mandatory credit targets at sectoral level for each bank. Moreover, under directed credit controls, interest rates were also determined by the central bank. In early 1980s, Pak rupee was de-linked with the US dollar and came under managed float, subsequently a continued devaluation in the

⁶ It is also evident from M2 to GDP ratio, which rose from an average 31.1 percent during FY74-FY90 to 38.4 percent during FY91-FY06.



value of Pak rupee increased the attractiveness of foreign currency holdings for the residents. The financial sector saw another major structural change in the mid 1980s with the introduction of Islamic banking, which resulted in introduction of profit & loss sharing saving accounts and mushroom growth of leasing and modaraba companies under non-Bank Financial Institutions. These NBFIs introduced different (new) saving instruments of different maturities. However, directed credit and regulated interest rates

resulted in financial repression. The banking system accumulated huge non-performing loans, reflecting both moral hazard as well as political influence over commercial banks. Since the controlled interest rates were not reflecting the true cost of the funds, misallocation of the scarce financial resources was an obvious outcome, which was further augmented due to inherited inefficiency in state owned commercial businesses.

In this background, to revamp and revitalize the financial sector, the first phase of the comprehensive financial reforms was implemented in the early 1990s. As a result, State Bank of Pakistan (SBP) abandoned the use of direct instruments of monetary policy, public sector commercial banks were privatized, and interest rate ceilings were removed. In the second phase of the reforms since 1999, greater focus is on the regulatory strengthening, implementation of Basel II, improved governance, and institution building. Moreover, ample liquidity and stiff competition in the banking sector during post 9/11 period resulted in a rapid growth in consumer financing, which offers both new opportunities for the banks as well as risks, as this new market segment is yet to be tested for an adverse shock. The enabling environment for the financial sector provided support to the financial innovation. Not only growth in the credit to private sector was unprecedented, a visible change in the credit cycle was also evident. All these indicators also point out that further structural change is underway in the financial sector.

Stepping back to money demand function, the following error correction equation was also estimated to investigate further.

$$\Delta m_t = \alpha_1 \Delta y_{t-1} + \alpha_2 \Delta r_{t-1} + \alpha_3 \varepsilon_{t-1} + e_t \dots\dots\dots(\mathbf{Eq-2})$$

$$\Delta m_t = 1.25 \Delta y_{t-1} + 0.002 \Delta r_{t-1} - 0.27 \varepsilon_{t-1}$$

$$t\text{-stat: } (6.6) \quad (0.6) \quad (-1.6)$$

$$\text{Adj.R}^2 = -0.23 \quad \text{Durbin-Watson} = 1.66$$

Importantly, short-term relationship between real money balances, real GDP and real interest rates is insignificant. Estimated error correction equation (Eq-2) reveals that only scale variable has a significant impact on real money balances, while the impact of real interest rate and error correction term both are not different from zero. This implies

that an insignificant relationship should not be used for planning and targeting purposes. This is important because monetary targeting is generally done for short term, usually for one-year. Not surprisingly, the monetary targets in recent past (estimated on the basis of unstable money demand function) were missed with big margins (**Table 4**).

	percent			
	M2 growth		CPI	
	Target	Actual	Target	Actual
FY00	9.4	10.6	6.0	3.6
FY01	10.3	9.0	4.5	4.4
FY02	9.5	15.4	5.0	3.5
FY03*	16.0	18.0	4.0	3.1
FY04	11.0	17.6	3.9	4.6
FY05*	14.5	19.0	5.0	9.3
FY06	12.8	15.2	8.0	7.9

(*) Targets were revised upward during the mid-year review by NCCC.
Source: Various Annual Reports, SBP.

Moreover, actual inflation also significantly exceeded with the targeted inflation, which seems to suggest that monetary aggregate targeting is largely unable to produce optimal results. It is pertinent here to mention that following the successful completion of Poverty Reduction and Growth Facility (PRGF) program with IMF, SBP adopted an easy monetary policy and broadened the scope of monetary policy by incorporating important indicator variables other than broad money [Husain (2005)]. In view of the above, it clearly appears that SBP has to abandon its present monetary regime and adopt some other suitable monetary policy framework.

IV. Available options for SBP

In case, SBP abandons monetary aggregate targeting, the alternative monetary policy regimes available to SBP are (1) exchange rate targeting, (2) nominal income targeting, (3) interest rate targeting, and (4) inflation targeting.

Exchange rate targeting is a popular choice of a number of open emerging economies. However, the possibility of favoring exchange rate targeting for Pakistan is thin because (a) trade-to-GDP ratio is low (about 32% in FY06) (**Table 5**), and (b) the exchange rate pass-through effect on domestic inflation in Pakistan is quite weak [Hyder and Shah, (2004)]. In fact this regime is advantageous for the countries with a higher trade-to-GDP ratio [Stone and Bundia, (2004)].⁷ Moreover, the weak exchange rate pass-through itself

⁷ According to Economic Freedom Index 2006, Pakistan's score for trade openness is 4.5, which puts Pakistan at 126th number out of total of 162 countries. This report is available at <http://www.heritage.org/research/features/index/>.

provides support to an inflation targeting regime [Akbari and Rankaduwa, (2005)] instead of opting exchange rate as a nominal anchor.

In case of nominal income targeting, most of the scholars argue that this is not a viable solution since the target has both the components output and inflation, which makes inflation target flexible [Debelle, (2000)]. Moreover, since monetary policy actions are transmitted to output and inflation with different lag structures, achieving nominal income target becomes complex as well as the credibility of monetary actions remains vulnerable. Not only communicating the nominal income target to the public is less transparent and difficult, accountability is also vague because of the possibility that if inflation exceeds sharply, the impact of this would be partially offset by a lower output growth.

As far as interest rate targeting is concerned it assumes output and price stability in the economy. However, attempts to stabilize the interest rates may result in larger volatility in output and inflation, since any shift in the goods market equilibrium (IS curve) would bring larger changes in the equilibrium level of output because of horizontal LM curve at a given interest rate [Meenai, (2001)]. Indeed, a greater volatility in key macroeconomic variables is not desirable. In addition, as a result of demand shock under constant interest rate targeting, demand for money will increase and the central bank's efforts to avoid revision in interest rate target would further stimulate the economy (Meyer 1998). Moreover, Leitemo (2000) suggested that the performance of interest rate targeting is generally weaker when compared with macroeconomic outcome under a constructed optimal discretionary policy regime.

Table 5: Trade Openness in Exchange Rate Targeting Countries

2003		
	Export/GDP ratio	Import/GDP Ratio
Botswana	41.77	32.86
Costa Rica	46.78	48.56
Denmark	42.74	36.55
Honduras	36.72	54.11
Malaysia	113.37	92.5
Uruguay	25.57	23.19
Pakistan*	13.37	14.65

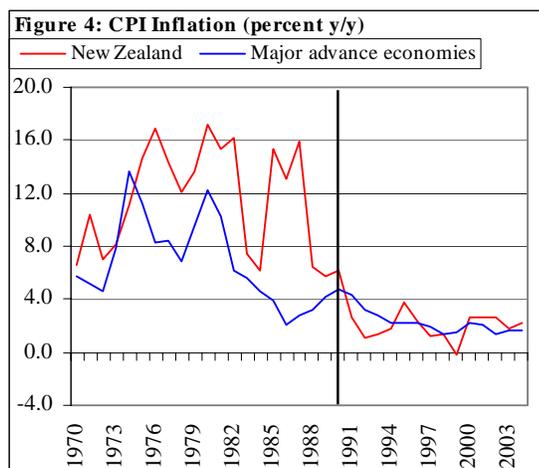
Sources: (1) Stone and Bhundia, (2004) for the classification of the countries.
 (2) World Bank Database: www.devdata.worldbank.org
 (*): Source: SBP: the corresponding figures for FY06 are 12.8% and 19.2% respectively.

Leitemo (2000) also referred interest rate targeting as an intuitive way to inflation targeting. Therefore, a direct approach towards inflation targeting seems more appropriate. In this backdrop, IT regime appears to be the best choice for SBP at the moment. A brief introduction and evaluation of inflation targeting is presented in the following section.

V. Inflation Targeting: An Introduction

Inflation targeting (IT) is a monetary policy framework that suggests a narrower focus of the central bank on price stability with enhanced transparency and accountability. Bernanke and Mishkin (1997) define IT as “*approach which is characterized by the announcement of official target ranges for the inflation rate at one or more horizons, and by explicit acknowledgment that low and stable inflation is the overriding goal of monetary policy*”. Thus under IT, the official commitment to achieve a low inflation solves the problem of dynamic inconsistency that produces higher average inflation [Ball & Sheridan (2003)]. This policy framework is in sharp contrast to environment in developing countries like Pakistan, where monetary policy is muddling among conflicting objectives with relatively weaker commitment to low inflation. In this background, an overview of evolution of IT would be instructive.

Initially, New Zealand adopted formal inflation targeting (IT) in 1990 following the failure of monetary policy to contain inflation which was higher than the average inflation of the major developed economies with higher variance (**Figure 4**). Particularly, the failure of monetary aggregate targeting in New Zealand and many other countries emerged due to unstable relationship between the intermediate target (monetary aggregate) and the final target (inflation) [Dodge (2005)].



The relationship between monetary aggregates and inflation started weakening mainly due to financial innovation in the mid-1980s [Gregorio (2004)].

The success of New Zealand's experience and major characteristics of IT (flexibility, transparency and accountability) encouraged other



countries also to adopt this policy framework. During 1991-95 period, nine other countries adopted IT regime.⁸ Interestingly, most of the founder members of IT club were high-income developed countries with historically low inflation rates.

In particular, the achievement of containing inflation in Chile (**Figure 5**) under flexible IT regime encouraged some other middle-income countries to adopt inflation targeting in the subsequent years. In turn, Korea, Poland, Mexico, Brazil, Columbia, Thailand, Brazil, Hungary and recently the Philippines adopted inflation targeting.

The important point to note here is that the increasing popularity of IT is not necessarily due to the success stories of IT countries in achieving inflation targets, as some studies concluded that inflation targets are missed about 40 percent of time with significant margins [Roger and Stone (2005)]. Further, a comparison of 7 OECD countries that adopted IT in the early 1990s to 13 that did not, revealed that there is no evidence that inflation targeting improves performance [Ball & Sheridan (2003)]. In fact, inflation targeting is earning popularity on the basis of its positive attributes (e.g., openness, transparency, accountability, increased credibility etc), and importantly non-availability of better alternatives. IT is an equally attractive policy option for both developed and developing countries. However, IT is more complicated to operate in emerging markets (particularly more open emerging markets) due to relatively high pass through effect,

⁸ These include Chile, Canada, Israel, UK, Sweden, Finland, Peru, Australia, and Spain.

difficulties in forecasting inflation, liability dollarization and credibility problem [Eichengreen (2002)].

VI. Pre-requisites for IT

Customarily explicit inflation targeting requires some pre-conditions. In the following section, a brief evaluation of some of these pre-requisites in the case of Pakistan is presented.

First, the central bank should have at least instrument independence that it can choose the appropriate operational instrument as per the situation. In the case of fiscal dominance, central bank's credibility would be at high risk. Indeed, central bank's independence would also entail corresponding accountability. Second, availability of an appropriate measure of inflation is needed that can be used as a policy variable. The practice of different central banks varies; some central banks target headline inflation, while others prefer to target core inflation.⁹ Third, monetary policy transmission mechanism should be well understood. Fourth, central bank should convey its target publicly with increased transparency regarding its policy actions as well as reasonable explanations if target missed or revised. Finally, financial stability, market based exchange rate system and sound macroeconomic fundamentals are some other important elements which help in successful implementation of IT. This section aims to evaluate in terms of these pre-requisites whether SBP is in a position to adopt IT or not. Following is a brief evaluation of these pre-requisites for IT in the case of Pakistan.

Institutional Set-up

Since the central bank is responsible to achieve inflation target, a considerable degree of independence is required in formulation and conduct of monetary policy. This degree of independence is nonetheless associated with the accountability of the institution. In practice, degree of independence of the central bank varies from country to country. In Pakistan, State Bank of Pakistan is an autonomous institution and enjoying a comfortable

⁹ Core or underlying inflation measure is computed by exclusion method, trim method or by using some other statistical method(s). The primary reason to compute core inflation is to identify the permanent component and exclusion of the transitory shocks from headline inflation.

independent status.¹⁰ There could be arguments on the degree of independence, however, as far as the selection of operational instruments, setting monetary targets and related monetary policy issues are concerned, SBP is largely free from the political influence. However, allocation of the annual target for the government's budgetary borrowing from the banking system is being done in the Fiscal and Monetary Policies Coordination Board prior to the announcement of the federal budget and generally government does not breach these targets. Moreover, government's borrowing from SBP directly contributes to reserve money growth thus making it highly inflationary in nature. The government's access to financing from the central bank makes conduct of monetary policy very challenging in two ways. (1) It reduces the central bank's ability to control liquidity, and (2) It also hurts the credibility of the central bank's commitment to contain inflation within a desired range. These are the reasons that government borrowings from the central bank is not in practice in ITers, rather it was restricted through legislative amendment as it has been done in Turkey (TCMB 2001).

On the other hand, inflation target is initially set by the Planning Commission,¹¹ which is also discussed in the Fiscal and Monetary Policies Coordination Board for consultation with the both, Ministry of Finance and the SBP. Thereafter, National Economic Council, the supreme policy-making body in economic sphere, approves this inflation target with overall Annual Development Plan [Ahmed and Amjad (1984)]. In practice, inflation targets in countries with IT are generally set by either Ministry of Finance or Parliament. However, central bank's consensus is usually obtained in most of these countries as well. In fact, a greater role of the SBP in setting up inflation target would be desirable under IT regime.¹²

¹⁰ This is also acknowledged in IMF's Report on the Observance of Standards and Codes (ROSC), November 2000, available at <http://www.imf.org/external/np/rosc/pak/fiscal.htm>.

¹¹ Vide the Government of Pakistan Notification No. Cord(I)-8/84/58-I, dated the 22nd October 1958, the President was pleased to re-designate the National Planning Board as the Planning Commission. Cabinet Division's Resolution No. Cord(I)-8/29/59-III dated 3rd June, 1959 defined its objectives including preparation of Annual Plan, which including others, reports targets for inflation and growth.

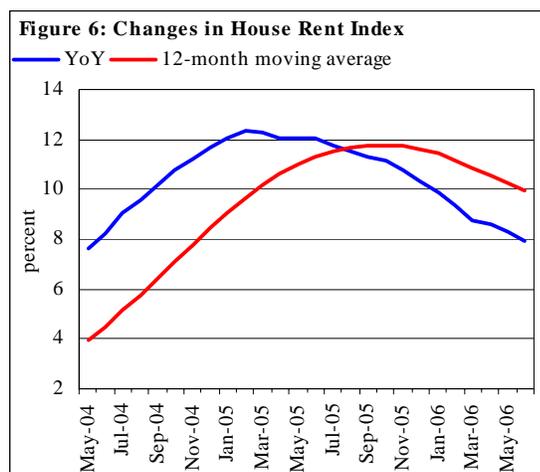
¹² This assertion is based on the central bank's capability to produce a reliable model-based inflation forecast.

At present, the main responsibility of SBP is described at the preamble of SBP Act 1956 as “to regulate the monetary and credit system of Pakistan and to foster its growth in the best national interest with a view to securing monetary stability and fuller utilization of the country’s productive resources”. This implies that SBP is responsible to achieve the dual objectives of (1) fostering economic growth, and (2) maintaining monetary stability (or price stability) in the economy. The objectives of growth and monetary stability could often be conflicting. Therefore, central bank is required to strike a balance between these objectives. However, the multiplicity of objectives may also create a difference of opinion between the government and the central bank about which objective should dominate the monetary policy actions. In this backdrop, an amendment in SBP Act to have an overriding monetary policy objective of low inflation would enhance the credibility of central bank as inflation fighter.

An appropriate measure of inflation

Consumer Price Index (CPI) probably fulfills all the requirements to qualify as a benchmark to measure inflation in Pakistan. With a comprehensive coverage of 374 items under 10 commodity groups and reported for 5 different income groups, based on monthly survey of 71 markets in 35 major urban centers, CPI is reported on monthly basis. Though SPI is reported on weekly basis, its coverage is limited to 53 items only. Similarly, while in terms of coverage GDP deflator is the most comprehensive measure of inflation, it is available only on annual basis.

However, as in the case of other low-income countries, weight of food component in Pakistan’s CPI basket is about 40 percent, which is generally less responsive to monetary policy and largely subject to exogenous supply shocks. More importantly, computation methodology of house



rent index (HRI) is not survey based. HRI, with dominating weight of 23.43 percent in CPI basket, is computed on the basis of a 24 month moving geometric average of the building material sub-index of Wholesale Price Index (WPI) and construction related wages [SBP (2004)]. Since HRI is a 24-month geometric mean, the changes in HRI on year-on-year or 12-month moving average basis generate a smooth upward or downward trend (**Figure 6**). Therefore, the impact of policy shocks gets muted in HRI and similar to food group, HRI becomes less responsive to policy changes.

Importantly, compilation of non-food non-energy based core inflation excludes about 49 percent of the CPI. Further, prices of various other items are largely influenced due to changes in international prices (such as construction material – part of HRI). In addition, the role of administered prices (particularly in determination of transport fares) cannot be ruled out. A comparison of CPI basket of selected countries reveals (**Table-6**) that food group's weight in Pakistan is though higher than the UK and New Zealand, it is significantly lower than the other developing countries. However, weight of housing is the highest in Pakistan, this coupled with methodological issues mentioned above suggests that the computation methodology of house rent index is probably the most important element for improving the price statistics in Pakistan.

In this background, it seems that CPI could potentially serve as a representative indicator for inflation. However, a survey-based HRI, rationalization of its weight according to the latest Income-Expenditure Survey and enhanced coverage of both manufactured items and cities are some necessary requirements to make CPI a truly representative indicator of inflation in Pakistan.

Table 6: Consumer Price Index Basket: Weights of Different Groups
Percent

Country	Pakistan	New Zealand June quarter	UK 2006	Philippines 2000	India ¹ 2001	Bangladesh 1995-96
Base year →	2000-01		2006	2000	2001	1995-96
Food, beverages & tobacco	40.34	24.58	14.60	50.03	60.15	58.84
Non-food	59.66	75.42	85.40	49.97	39.85	41.16
Clothing & footwear	6.10	4.75	6.50	3.00	8.54	6.85 ²
Housing (rent, repair, utilities etc.)	23.43	20.02	10.80	16.80	8.67	16.87
Household contents & services	3.29	5.49	7.30			2.67
Transport & communication	7.32	20.50	18.00			4.17
Fuel & light	7.29			6.95	6.28	
Recreation, education, culture	4.28	12.29	16.40			4.13
Health	2.07	5.23	2.40			2.84
Restaurant & hotel			13.40			
Services	5.88			15.89		
Miscellaneous		7.13	10.60	7.33	16.36	3.63

(¹) CPI for industrial workers, the WPI serves as headline inflation in India.
(²) Including fuel & light.

Resources Required

Although a sophisticated macro-econometric model is not a necessary condition for IT, it is nonetheless important from operational and communication point of view. A monthly or quarterly model-based forecast can provide sound arguments regarding pro-active monetary policy. Moreover, publication of model-based forecasts establishes credibility about the working and policy formulation process in the central bank.

SBP has invested heavily to develop its human resources during the last few years. As a result, SBP staff is capable to develop econometric models. It is also evident from regular publication of SBP forecast of major macroeconomic variables in annual and quarterly reports. Similarly, biannual publication of Monetary Policy Statement (MPS) is an attempt to announce its policy stance which also improves SBP communication with the general public, financial markets and media. Recently, SBP also initiated the publication of “Inflation Monitor” on monthly basis, describing price statistics in detail.

In case of adoption of IT, SBP has to further improve communication to create more transparency through (1) publication of minutes of the Monetary Policy Committee

(MPC), and (2) improve the status of present publication “Inflation Monitor” into an “Inflation Report”, at least on quarterly basis.

Some Constraints

Non-availability of national income data on quarterly basis is probably the major drawback in constraining a meaningful analysis and effective monitoring of key macroeconomic variables. Also, the delay in availability of statistics on *large-scale manufacturing, trade and agriculture*, and frequent revisions in data released by the Statistical Division reduces the usefulness of the available information. It is quite difficult to improve the policy making process without improvement in the quality and timeliness of the statistics. It should also be kept in mind that key policy decisions on the basis of poor quality of limited available information may easily go in wrong direction. Indeed, this situation poses threat for SBP’s credibility that inflation target could be missed due to inadequate or incorrect information. The fact that the impact of monetary policy action appears with time lags through different transmission channels, the issue of timeliness and accuracy of information becomes more important.

Understanding Monetary Policy Transmission Mechanism

Indeed understanding of transmission mechanism is important for the conduct and implementation of monetary policy to achieve specific inflation target (range) as the primary responsibility. There are several issues on the right channel and magnitude of monetary policy transmission mechanism in many developing and developed countries. Little empirical research has been done on this subject in Pakistan. Ahmed *et al* (2005) did some pioneering work on monetary policy transmission mechanism. However, their estimates are based on historical time series and probably do not represent the present scenario due to a rapid structural transformation in the economy during the last 15 years, particularly in the financial sector. However, adoption of IT even without comprehensive knowledge of transmission mechanism is not too dangerous, for example, when Reserve Bank of New Zealand adopted IT, it had no clear understanding about the transmission mechanism and their macro-econometric model was inadequate [Brash (2002)]. This suggests that IT could be adopted even without a complete and clear understanding of transmission mechanism.

VII. Conclusion

The above discussion reveals some interesting conclusions:

- (1) The most important finding of this paper is that monetary aggregate targeting is no more appropriate for Pakistan because of an unstable money demand function. This is also reflected in recent years' performance when actual monetary expansion surpassed the targets (or revised targets) with wide margins.
- (2) Though CPI basket in Pakistan seems adequate to depict trends in headline inflation, it could be improved further by (a) incorporating survey-based HRI, and (b) revisiting the weights as per contemporaneous income-expenditure trend. An improvement in price statistics would facilitate SBP to get better forecast and assess policy impact on inflation, which is necessary to ensure the credibility of monetary policy.
- (3) Availability of quarterly national income accounts data, quality and timeliness of data on key macroeconomic variables appear as major constraints in effective policy making process in Pakistan and,
- (4) A change in legal/legislative framework is required to enable SBP to focus on a single objective of price stability rather than dual mandate of supporting growth and price stability.

In the mean time, SBP could adopt "Inflation Targeting Lite" as this practice remains popular amongst emerging market economies after the success of Chile, Peru and Turkey. The IT Lite is also recommended for Pakistan by Zaidi (2005), and Khalid (2005). In addition, as with many other ITers, SBP may also keep a relatively wide range of inflation target (e.g., 1 percent above and 1 percent below the mid-point target) for a medium term horizon during its initial period of practicing IT.

References

- Ahmed, Noor; Hastam Shah; Asif Idrees Agha and Yasir Ali Mubarik, (2005), “*Transmission Mechanism of Monetary Policy in Pakistan*” Working Paper No. 9, State Bank of Pakistan, July.
- Ahmed, Viqar and Rashid Amjad, (1984), *The Management of Pakistan’s Economy 1947-82*, Oxford University Press, Karachi.
- Akbari, Ather H., and Wimal Rankaduwa, (2005), “*Determinants of Inflation and Feasibility of Inflation targeting in Small Emerging Market Economy: The Case of Pakistan*”, Presented at the SBP Conference on Monetary-cum-Exchange Rate: What Works Best for the Emerging Market Economies?, November.
- Apergis, Nicholas; Stephen M. Miller; Alexandros Panethimitakis, and Athanasios VamvakidisI (2005), “*Inflation Targeting and Output Growth: Empirical Evidence for the European Union*”, Working Paper No. 89, International Monetary Fund.
- Benigno, Pierpaolo, Michael Woodford, (2006), “*Optimal Inflation Targeting Under Alternative Fiscal Regimes*”, NBER Working Paper No. 12158, April.
- Berg, Claes and Lars Jonung, (1998), “*Pioneering Price Level targeting: The Swedish Experience 1931-1937*”, Seminar Paper No. 642, Institute of International Economic Studies, Stockholm University, June.
- Bernanke, Ben S., (2003), “*A Perspective on Inflation Targeting*”, Remarks at the Annual Washington Policy Conference of the National Association of Business Economists, Washington, D.C. March.
- Bernanke, Ben S. and Frederic S. Mishkin (1997) “*Inflation Targeting: A new Framework for Monetary Policy*”, Journal of Economic Perspective, Vol. 11, No.2, Spring.
- Bernanke, Ben S.; Thomas Laubach; Frederic S. Mishkin, and Adam S. Posen, (1999), *Inflation Targeting: Lessons from the International Experience*, Princeton University Press, New Jersey.
- Bouey, Gerald, (1983), House of Commons Standing Committee on Finance, Trade and Economic Affairs, *Minutes of Proceedings and Evidence*, No. 134, March.
- Brash, Donald T., (2002), “*Inflation targeting 14 years on*”, Speech delivered at the American Economics Association conference, Atlanta, January
- Chaudhry, M. Aslam and Munir A. S. Choudhary, (2005), “*Why the State Bank of Pakistan Should not Adopt Inflation Targeting*”, Presented at the SBP Conference on Monetary-cum-Exchange Rate: What Works Best for the Emerging Market Economies?, November.
- Darrat, Ali F. (1986), “*Monetization and Stability of Money Demand in Developing Countries: The Latin America Case*”, Savings and Development Vol. 10, No.1
- Debelle, Guy, (2000), “*The Viability of Inflation Targeting for Emerging Market Economies*”, presented at the conference on ‘Financial Markets and Policies in East Asia’, held at the Asia Pacific School of Economics and Management, Australian National University, 4–5 September 2000.

- Dodge, David, (2005), "70 Years of Central Banking in Canada", Remarks at Canadian Economics Association, Hamilton, May.
- Duprey, James N., (1980), "*The Search for a Stable Money Demand Equation*", Quarterly Review, Federal Reserve Bank of Minneapolis, Vol. 4, No. 3, Summer.
- Government of Pakistan, (various issues), Pakistan Economic Survey, Ministry of Finance, Islamabad.
- Gregorio, José De (2004), "*Rapid Growth Of Monetary Aggregates and Inflation: The International Evidence*", Working Papers No. 256, Central Bank of Chile, April
- Gujrati, Damodar, (1970), "*Use of Dummy Variables in Testing for Equality between Sets of Coefficients in Two Linear Regressions: A Note*", The American Statistician, Vol. 24, No.1, February.
- Gürkaynak, Refet S., Andrew T. Levin and Eric T. Swanson, (2006), "*Does Inflation Targeting Anchor Long-Run Inflation Expectations? Evidence from Long-Term Bond Yields in the U.S., U.K., and Sweden*", Working Paper 9, Federal Reserve Bank of San Francisco, March.
- Hebbel, Klaus Schmidt- and Matías Tapia (2002), "*Monetary Policy Implementation and Results In Twenty Inflation-Targeting Countries*", Working Papers No 166, Central Bank of Chile.
- Husain, Dr. Ishrat, (2005), Keynote Address in the SBP Conference on Monetary-cum-Exchange Rate: What Works Best for the Emerging Market Economies?, November.
- Hyder, Zulfiqar, and Sardar Shah, (2004), "*Exchange Rate Pass Through to Domestic Prices in Pakistan*", Working Paper No. 5, June.
- International Monetary Fund (2005), World Economic Outlook: Building Institutions, September.
- Judd, John P. and John L. Scadding (1982), "*The Search for a Stable Money Demand Function: A Survey of the Post-1973 Literature*", Journal of Economic Literature, Vol. 20, NO. 3, September
- Khan, M. Aslam, Farooq Arby, Amin Lodhi, (2000), "*Disaggregated Approach for Modeling Demand for Money in Pakistan*", Pakistan Journal of Applied Economics, Vol. XVI, Nos. 1 & 2.
- Leitemo , Kai, (2000), "Targeting Inflation by Constant-Interest-Rate Forecasts", The Central Bank of Norway, January; <http://www.norges-bank.no/publikasjoner/arbeidsnotater/pdf/arb-1999-13.pdf>
- Mangla, I. U., (1979), "*An Annual Money Demand Function for Pakistan*", Pakistan Development Review, Vol. XVIII, No.1.
- Masson, Paul R., Miguel A. Savastano, and Sunil Sharma, (1997), "*The Scope for Inflation Targeting in Developing Countries*", Working Paper No. WP/97/130, International Monetary Fund.
- Maravic, Jelena and Mirjana Palic, (2005), Econometric Analysis of Money Demand in Serbia, National Bank of Serbia, April.
- Meenai, S. A., (2001), Money and Banking in Pakistan, Revised & Expanded ed. by Javed A. Ansari, Oxford University Press, Karachi.
- Meyer, Laurence H., (1998), "The Strategy of Monetary Policy", The Alan R. Holmes Lecture, Middlebury College, Vermont, March.

- Sassanpour, Cyrus and Moinuddin, (1993), "*Experiments with Money Demand Functions for Pakistan*", SBP Bulletin, State Bank of Pakistan, July.
- Sims, Christopher A., (2005), "*Limits to Inflation Targeting*" in B.S. Bernanke and M. Woodford, eds., The Inflation Targeting Debate, Chicago University.
- State Bank of Pakistan, (various issues), Annual Report, Karachi.
- State Bank of Pakistan, (2002), Pakistan Financial Sector Assessment 1990-2000.
- State Bank of Pakistan, (2004), The State of Pakistan's Economy: First Quarterly Report for 2003-04.
- Stone, Mark R., and Ashok J. Bhundia, (2004), "*A New Taxonomy of Monetary Regimes*", Working Paper No. WP/04/191, International Monetary Fund.
- Tariq, S. M., and Kent Matthews, (1997), "*The Demand for Simple Sum and Divisia Monetary Aggregates for Pakistan: A Cointegration Approach*", Pakistan Development Review, Vol. 36, No. 3.
- TCMB (Central Bank of Turkey), (2005), The Law on the Central Bank of the Republic of Turkey, Ankara.
- Willard, Luke B. (2006), "*Does Inflation Targeting Matter? A Reassessment*", CEPS Working Paper No. 120, Princeton University, February
- Ziadi, Iqbal M., (2005), "*Exchange Rate Flexibility and the Monetary Policy Framework in Pakistan*", Presented at the SBP Conference on Monetary-cum-Exchange Rate: What Works Best for the Emerging Market Economies?, November.