Does Pakistan Need To Adopt Inflation Targeting? Some Questions

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In this paper I consider the broader implications for Pakistan of a shift from the current monetary regime into inflation targeting (IT). To this purpose, I discuss the theoretical foundations of the standard IT model and argue that although most likely Pakistan meets the basic technical requirements to implement some version of it, the State Bank of Pakistan should take into consideration a number of issues before it makes a final decision whether to shift to IT or not. For example, I show that there is no overwhelming empirical evidence that short-term interest rates are inversely related to inflation. Finally, I argue that there are other options available to Pakistan's central bank such as to target full employment subject to an inflation constraint.

> *"Monetary policy cannot be formulated and implemented in isolation of government policies no matter how independent a central bank is whether of an advanced or a developing country"*

> Dr. Ishrat Husain, governor of the State Bank of Pakistan, 1999-2005

1. Introduction

In a 2007 speech to the Federation of Pakistan Chambers of Commerce & Industry, the then governor SBP Shamshad Akhtar (2007) indicated that the "SBP will be launching preparatory work on inflation targeting". Inflation targeting (hereafter IT) involves the central bank's public announcement of inflation targets,

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coupled with a credible and accountable commitment on the part of government policy authorities to the achievement of these targets. Many economists see in this monetary policy strategy a representation of the policy models used by many central banks. Under inflation targeting, maintaining price stability at the lowest possible rate of inflation becomes central banks' primary (and in most cases only) mandate. What is considered low inflation is left to the interpretation of the monetary authority, given the conditions in the country. Usually this is interpreted to be a rate of inflation that does not affect households and businesses every day's decisions (Alan Greenspan's definition).[1]

What is the rationale for IT? First, it is the belief that price stability is a pre-condition for sustained growth and employment (i.e., economies grow as a direct result of sound monetary policies directed at lowering the inflation rate), and that "high" inflation damages the economy in the long run. In this context, price stability is thought to deliver better allocation of resources and improved planning for the private sector and hence real gains for the economy. The idea is to anchor price expectations so as to allow better monetary policy in the medium-term. Second, the SBP currently pursues monetary aggregate targeting. This assumes that the money demand function is stable and that there exists a predictable relationship between monetary aggregates and inflation. However, empirical work indicates that the money demand function is unstable (Moinuddin, 2007) for the particular case of Pakistan), which seems to make inflation targeting a possible choice of monetary regime. Third, some authors claim that inflation targeting countries have experienced low and stable inflation rates, with no apparent sacrifice in growth.

Scholars and experts in the SBP have started debating the pros and cons for Pakistan to shift from the current regime into IT. Moinuddin (2007) has argued and shown empirically that as Pakistan's money demand function, i.e., demand for real balances as a function of real GDP, and real interest rates is unstable, monetary aggregate targeting is not feasible and, consequently, IT may be an option for the SBP. Likewise, Akbari and Rankaduwa (2006) have estimated a price model (as a function of the exchange rate, foreign prices, money supply and GDP) and concluded that, overall, monetary policy exerts a weak impact on domestic prices. However, this effect has increased since 1999. This, in the view of the authors, is the result of the new monetary environment in the country (financial reforms introduced during the 1990s, e.g., greater liberalization of foreign exchange rates). Given this, these authors also conclude that "…the choice

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[1] In the US, a rate of 0-3% would satisfy this definition. But for Feldstein (1997), price stability means a long-run inflation of zero.

of an inflation targeting monetary policy can be discussed" (Akbari and Rankaduwa, 2006, p.186). Khalid (2006), after reviewing the experiences of other developing countries with IT, also argues that Pakistan's monetary authority could consider IT as a monetary regime. Khan and Schimmelpfening (2006) likewise recommend IT, with a target of 5%. On the other hand, Chaudhry and Choudhary (2006) argue that the SBP should not adopt IT, as the main determinant of inflation in the country is the growth rate of import prices.

The purpose of this paper is to contribute to this intellectual debate by raising a number of questions. The literature indicates that IT has a number of advantages. Among them are that it provides a nominal anchor for policy (i.e., to stabilize inflation and price expectations). Second, that it is easy to understand, flexible, transparent and amenable to accountability. Third, central banks gain credibility. Fourth, since New Zealand adopted it in 1990, it has helped create global awareness of the costs of inflation. Finally, it is claimed that the countries that have adopted it have performed better (Bernanke et al., 1999). These, however, are not sufficient conditions for Pakistan to adopt IT as a monetary regime. The key questions in this debate are, first, whether Pakistan is ready for it, as there are a number of requirements to be met for this regime to be a sensible option as a monetary regime; and second, whether the SBP has considered the full implications of shifting to IT, in particular how this monetary regime will contribute to other objectives of the country such as growth, employment creation and poverty reduction. Although in theory IT does not preclude central banks from pursuing other goals (e.g., output stabilization), Mishkin (2002, p.361) provides a definition of IT that makes it clear what the primary concern is: "…an institutional commitment to price stability as the primary goal of monetary policy, to which other goals are subordinated." Thus, shifting to IT, despite its possible advantages, entails not only a full understanding of the theoretical basis underlying IT but also of the unavoidable trade-offs involved. Thus, the question, in the final analysis, is: *is IT worthwhile?*

The rest of the paper is structured as follows. Section 2 provides a brief summary of the quantity theory of money and monetarism, as Pakistan is sill practicing monetary targeting. Section 3 offers a summary of the theoretical underpinnings of IT. Section 4 asks if Pakistan satisfies the basic conditions to implement IT. Section 5 inquires about the importance for a country like Pakistan not to disregard other development objectives. Section 6 provides a discussion of cost-push inflation. Section 7 offers an empirical investigation of the relationship between inflation and interest rates. Section 8 concludes.

2. The Quantity Theory of Money and Monetarism

During the 1950s and 1960s, monetarism made a comeback after the Keynesian revolution and reinstated the quantity theory of money approach that prevailed before 1930s (and which goes back to David Hume). In this model, changes in the money stock are regarded as the predominant factor explaining changes in money or nominal income. The model is based on the equation of exchange $MV = PY$ and assumes constant velocity of money (V) and output (Y). The former's constancy is the result of assuming that the institutional factors that determine the frequency of the transactions carried out by agents is likely to change slowly over time. On the other hand, Y is predetermined at its full employment value. With V and Y constant, P depends on M and, therefore $\Delta M = \Delta P$. From the policy perspective, a monetary expansion leads, in the long-run, to an increase in the price level, nominal wages and the nominal interest rate; but all the real values remain unaffected. That is money is neutral.

Although the traditional quantity of theory refers to a relationship between money supply and the price level, Friedman (1956) restated it as a theory of the demand for money (M^d) in terms of his theory of permanent income. He postulated that the demand for real money (M^d/P) can be specified as $\dfrac{M^d}{P} = f(Y^p, r, \dot{P}^e, u)$,

where Y^p represents permanent income, r is the return on financial assets, $\dot{P}^e$ is the expected rate of inflation and u represents the individual's tastes and differences. Friedman argued that the demand for money is a *stable function* of these variables. If indeed this is the case, then velocity will also be stable, changing in a predictable manner as a result of changes in the variables that determine it. What are some of the key implications of this theory? (a) Changes in prices or nominal income are the result of changes in the nominal supply of money; (b) the lag between changes in the money stock and changes in money income is long and variable. Attempts to use discretionary monetary policy to fine-tune the economy could turn out to be destabilizing; and (c) therefore, the money supply should be allowed to grow at a fixed rate in line with the underlying trend growth rate of output to ensure long-term price stability.

What does the empirical evidence say about the quantity theory? Although the belief in a stable demand for money function was supported by the empirical evidence until the early 1970s, later studies for a large number of countries have found that the function is unstable.

During the period in which monetarism dominated central banking, it was clear that the focus on price stability often led to high volatility in real and nominal interest rates. During this time, central banks set the money supply or its rate of expansion (usually at a constant rate), letting the market determine the interest rate. However, it became clear that the velocity of money was unstable and difficult to predict. The constant rate of increase in the money supply led to high interest rates and economic volatility. At that point the money supply rule lost favor. Today, monetary authorities more often set interest rate targets, engaging in open market operations to allow the expansion of the money supply to whatever it needs to be to generate the desired interest rate.

Pakistan, however, still pursues monetary targeting. As stated in the SBP Act 1956, the main responsibility of the central bank is 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."

Before the SBP gained operational and administrative independence in 1994, Pakistan's monetary and exchange regimes evolved from fixed peg up to the early 1980s, and then to managed float until 2000. The SBP started targeting monetary aggregates in early 1990s and more attention was paid to the management of short term interest rates. During this period, inflation was the ultimate target, broad money the intermediate target, and base money the operational target. Since 2005 focus has shifted to base money rather than its subcomponents. Husain (2005) argues that during the last few years, the SBP has broadened the scope of monetary policy by incorporating the yield curve and the SBP now practices indicative monetary planning rather than strict credit rationing.

What does the recent empirical evidence say about the determinants of inflation in Pakistan? Using annual data for 1972-2004, Chaudhry and Choudhary (2006) show that the most important determinant of inflation in Pakistan is the growth rate of import prices. In the long-run, a one percent increase in the prices of imported goods leads to a 0.867% increase in the average price level of Pakistan. The effect of monetary policy (money supply) on inflation is negligible. The authors conclude that their work undermines "the monetarist and new classical proposition that, in the long-run, inflation is only a monetary phenomenon" (Chaudhry and Choudhary, 2006, pp.201-202). Moreover, money growth rate is not an important determinant of inflation in the short run either.

Akbari and Rankaduwa (2006) used quarterly data for 1982-2004 and also found out a weak impact of monetary policy on domestic prices and a significant impact

of import prices. These authors also found out an insignificant exchange rate pass-through effect.

However, using monthly data for 1998-2005, Khan and Schimmelpfennig (2006) argue that monetary factors have played a dominant role in recent times, affecting inflation with a lag of about one year. They find a significant long-run relationship between the CPI and private sector credit. Wheat support prices also affect inflation, but only in the short-run. Finally, the interest rate variable (proxied by the T-bill rate) and the nominal effective exchange enter the inflation equation with the wrong sign and the authors drop them. The authors conclude, somewhat surprisingly, that the overarching objective of the SBP should be price stability and that the appropriate inflation target for Pakistan should be 5% (Khan and Schimmelpfennig, 2006, p.229).

These results indicate that use of data at different frequencies can lead to different conclusions and, therefore, caution must be exercised.

3. What are the Theoretical Underpinnings of Inflation Targeting?

Today, monetary authorities in many countries do not target monetary aggregates (i.e., growth of the money supply). For a long time, economists believed that changes in central-bank-controlled money supply contained key information about future price movements. However, shocks to the demand for money and an unstable transmission mechanism imply that a stable growth of the monetary aggregates can lead to unstable behavior in prices. For this reason, today, policy makers in many countries are engaged in aggregate demand fine tuning through interest rate management. The objective, though, is the same: to anchor price expectations. Since 2001, this has been referred to as the "new consensus" (Meyer, 2001). During the last four decades, the objective of central banks has been price stability. What changed in recent times is the choice of intermediate targets, from the growth of money to the central-bank-controlled interest rate. What is the mechanism underlying demand fine tuning? The objective is to influence the output gap (the difference between actual and potential GDP), regarded as the thermometer for inflation. On the one hand, changes in the components of aggregate demand determine growth in current GDP. On the other hand, technology, human capital, population and other real factors determine the growth of potential GDP. When current output approaches potential, inflation pressures are generated (and the opposite when aggregate demand is below potential output). Monetary authorities use the short-term nominal interest rate to bring the growth of current and potential outputs in line.

Proponents of inflation targeting argue that this regime provides central banks with an anchor that helps control inflation and thus helps the private sector. Some economists argue that switching to inflation targeting may improve growth and output performance. If markets believe that inflation is likely to be within a narrow band, there can be large changes in unemployment before inflationary expectations are set off. Inflation targeting would then improve the trade-off faced by policy makers. Evidence of this, however, remains limited. It is also argued that inflation targeting increases the accountability of central banks.

Implementation of inflation targeting in many countries around the globe (about 25 countries plus a large number considering it) has discredited (old) monetarism. Today, many economists argue that the quantity theory of money is irrelevant for monetary policy. Moreover, proponents of inflation targeting believe that monetary aggregates are the result rather than the cause of price and output growth. Overall, these central bankers pay little attention to the money supply in making policy.

IT can be implemented in different ways. Some countries specify a single point target; others set a range; and, finally, others establish a ceiling. Likewise, some central banks use "strict" inflation targeting, where the central bank is only concerned with achieving the inflation target; while others use "flexible" inflation targeting, where the central bank is also concerned with the stability of output and/or the real exchange rate. This latter regime is consistent with establishing an inflation range, and it is what some countries implemented when they switched to inflation targeting. Khalid (2006, p.149) argued that countries that had difficulties maintaining a specific target due to a less credible central bank adopted a policy of "inflation targeting lite" before moving to a full-fledged IT regime.

The key tenets that underlie inflation targeting are as follows:

1) Targeting inflation is preferred to targeting the money supply due to the instability of the money demand function, but money can impact the economy in the short-run.

2) Institutional commitment to price stability, transparency and accountability.

3) A production function determines potential output, i.e., the supply conditions determine the capacity of the economy. Long-run growth is given by the sum of the growth rate of the labor force plus the rate of technical progress. Under these conditions, a vertical long-run Phillips curve characterizes long-run potential output, consistent with the NAIRU, i.e., there is no long-run trade-off between inflation and unemployment, or between inflation and capacity utilization. This implies that (long-run) equilibrium is supply-determined, and

aggregate demand is irrelevant for determining the equilibrium values of real variables. But changes in aggregate demand determine short-run deviations from potential output.

4) Monetary policy is neutral in the long-run, i.e., it does not affect real variables, only the nominal ones (inflation). An increase in money growth will have no long-run impact on the unemployment rate. It will only result in increased inflation. This is akin the quantity theory of money. The inflation rate falls when unemployment is above the NAIRU and increases when it is below it.

5) Inflation is, exclusively, a demand-pull phenomenon. As indicated above, the objective of the central bank is to fine tune (through the use of interest rates) the level of current output with respect to potential output.

6) The money supply is endogenous (unlike in the quantity theory of money) although the new consensus does not have a theory of the endogeneity of money.

7) The central bank sets the exogenous nominal rate of interest (tough it targets the real rate). The central bank chooses to allow money to become endogenous by fixing the interest rate so that money adapts to the demand for it. The interest rate is the intermediate target, while the inflation rate is the ultimate objective of monetary policy.

8) The interest rate policy rule of inflation targeting is a Taylor's rule: the short-term nominal interest rate is set equal to the equilibrium real interest rate plus the average expected inflation rate. Then this is adjusted for the difference between current and the target inflation rate and for the output gap.

9) The upward-sloping LM curve (which is based on an exogenous stock of money controlled by the central bank) is "rejected." When the money supply is endogenous and there is an interest rate policy rule, the LM curve makes no sense.

10) Absence of other nominal anchors (e.g., exchange rates). Moreover, the central bank must have only one policy goal, as multiple targets would endanger the success of monetary policy.[2]

11) Expectations of possible inflation will affect output and employment through the adjustment in central bank nominal interest rates.

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[2] Although in practice other objectives such as high growth, low unemployment and stable exchange rates may be mentioned, in practice low inflation is believed to be the mechanism that leads to the others.

12) Here is a "natural rate of interest" (determined by productivity and savings) consistent with full employment, i.e., the natural rate of employment.

Algebraically, a simple version of this model can be written as follows (Meyer 2001):

$$Y = \alpha_0 + Y^* - \alpha (r - r^*) + \varepsilon_1 \tag{1}$$

$$\pi = \pi^* + \beta(Y - Y^*) + \varepsilon_2 \tag{2}$$

$$r = r^* + \gamma_0(\pi - \pi^*) + \gamma_1(Y - Y^*) \tag{3}$$

Where Y denotes output, r is the nominal interest rate, π is inflation and the symbol * refers to target or long-run variables (or 'natural' in the case of interest rate; Y^* is the full-employment NAIRU level of output);[3] ε_1 and ε_2 are random shocks. The model contains three equations and three unknowns, namely, output, inflation and the interest rate.

Equation (1) is the IS curve. Interest rate deviations from the target explain the output gap. If the central bank sets the interest rate below the natural rate (r^*), firms will find it profitable to borrow from the banking system to finance their investment plans. Thus output will grow and the output gap will decrease.

Equation (2) is a price equation or Phillips curve (aggregate supply) embodying the "natural rate" hypothesis. The output gap explains the inflation gap. In this model there is no cost-push (e.g., inflation associated with conflict over the functional distribution of income, or with imported inflation. But how do changes in output translate into higher prices, especially given that the model makes no direct reference to monetary aggregates and that money is endogenous (Gnos and Rochon, 2007)? In this model, inflation is caused by the output gap and the latter is caused by interest rate policies (see equation (1)). The mechanism through which changes in interest rates affect output is the balance sheet channel: changes in interest rates affect the net worth (balance sheet) of firms, as changes in the latter affect the firm's investment and production decisions and its capacity to obtain credit. High interest rates affect negatively those with outstanding debt as their payments increase. Also, a rise in interest rates will lower asset prices and the

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[3] The literature interprets r^* as the rate that is consistent with 'neutral' monetary policy. This means that if the real funds rate is equal to the natural rate, then monetary policy will be consistent with both the inflation and output and output targets.

collateral of firms. Thus, in this model, the transmission from interest rates to the output gap and from the latter to higher prices occurs through the credit market, which means that inflation can result if money increases faster than output. This means that money still plays a causal role in determining prices and inflation rates via the banking system.

Where does the endogeneity of money come from in this model? This is an important question for although money is endogenous, this model does not have a theory of the endogeneity of money. A real interest rate r below the natural rate r^* will encourage forms to borrow to finance production. Banks will respond by increasing the supply of credit. But as the economy expands, inflation starts increasing. This increase will continue until the central bank increases the interest rate so that r approaches r^* at that point, actual output (Y) will approach potential (Y^*). Money is endogenous in the sense that it is created as a result of the banking system reacting to the production needs of the real sector (banks supply the demand for credit resulting from the needs of firms to finance production, that is, credit fuels output). The behavior of the central bank affects that of commercial banks by determining the rate at which they lend; and thus, interest rates affect the amount of money lent.

Finally, equation (3) is Taylor's rule. It does not contain a random error because it is assumed that monetary policy operates without random errors. It is also assumed that $\gamma_0 > 0$ for stability of the equilibrium. If actual output gets close to the potential or if inflation rises above target, the central bank will increase nominal interest rates (and indirectly real interest rates). Taylor's rule makes no reference to monetary aggregates. However, although the model bypasses money, the central bank determines the inflation rate. Nevertheless, although the instability of the demand for money makes the control of the money supply difficult in practice, in IT models there is an implicit recognition that the central bank can have some control over the supply of high-powered money. The question is that, given the instability of the demand for money, it is more effective to target the interest rate. By using the interest rate as the policy instrument, the central bank relinquishes control over the quantity of money in circulation, which passively adjusts to changes in money demand. The growth of the nominal stock of money will vary with changes in the rate of inflation.

How is inflation targeted? This occurs through equation (1), where interest rates, determined by the operating policy rule in equation (3), affect aggregate demand, and via equation (2), changes in the rate of inflation depend on aggregate demand.

To see how the model works, consider, for example, an increase in government expenditures. This would shift the IS curve to the right, thus leading to an increase in actual output (Y). But according to equation (2), this will lead to an increase in inflation so that $(\pi - \pi^*)$ will increase. The central bank will then increase interest rates, depressing the economy and bringing Y closer to Y^* (i.e., monetary policy is neutral in the long-run). The increase in interest rates will also bring π closer to π^*. Therefore, this implies that the monetary authorities can set any inflation target they desire without having any effect on the real equilibrium of the economy, i.e., the equilibrium level of real output is unaffected by a shock; only the equilibrium level of inflation changes. This also implies that, given the independence of the real economy from the inflation target, IT becomes an autonomous policy objective. The stability of the system is guaranteed by the countercyclical role of the central bank in setting interest rates.

There are a few aspects of this model worth stressing: (i) There is an implicit recognition that interest rates and prices move in opposite directions, unlike for Keynes (1930), for whom prices and interest rates may move together; (ii) this model does not have an LM curve. Indeed, a "monetary policy" (MP) curve replaces the traditional LM curve (however, the analysis is very similar in spirit to that of the traditional upward-sloping LM curve.). In a complete model, the MP curve is upward-slopping in the (Y, r, π) space, reflecting the fact that interest rates increase with both inflation and a growing output; (iii) unlike with an upward-sloping LM curve, where an increase in fiscal policy leads, in the short run, to both an increase in output and in interest rates (determined by the market), in this framework the increase in output leads to an increase in inflation; then the central bank reacts by raising the interest rate (an administrative decision) so as to eliminate inflation and in this process interest rates are increased so as to meet a new inflation target; and (iv) in this model, if the monetary authorities set policy according to equation (3), then the inflation target is part of an aggregate equilibrium toward which the economy will return if it is shocked.[4]

Today, IT is the monetary regime in four Asian countries: Korea, Indonesia, Thailand and the Philippines. Table 1 provides basic information comparing the performance of these economies before and after the adoption of IT. It is worth noting that the period before the introduction of the IT regime is marked by the Asian financial crisis.

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[4] This can be seen by studying the dynamic properties of the system (1)-(3). These indicate that the system is stable.

Table 1. Key Indicators of Countries in Developing Asia that follow Inflation Targeting and of Pakistan

Country	Year it was introduced	GDP		Unemployment		Trade Balance (% of GDP)		Reserve (Mill. USD)		Inflation Rate (CPI based 2000=100)		Real Exchange Rate Appreciation/ Depreciation		Real Interest Rate	
		Before	After	Before	After	Before	After	Before	After	Before	After	Before	After	Before	After
Thailand	2000	0.6	5.1	3.0	2.2	2.2	1.0	32,661	66,985	4.3	2.7	8.8	-0.8	8.6	3.6
Korea	1998	4.5	5.7	3.2	4.0	0.5	2.9	52,041	238,957	5.5	2.8	9.7	-4.5	4.6	5.5
Philippines	2002	3.0	5.4	10.8	9.7	-1.2	-7.4	16,365	22,967	6.0	5.8	8.7	-2.8	4.7	4.4
Indonesia	2005	4.7	5.5	9.6	10.4	12.0	10.9	34,579	42,893	9.3	13.1	-2.9	-13.9	6.3	2.1
Pakistan		7.0		7.6		-5.1		12,816		6.3		-3.0		-0.2	

Sources: Asian Development Bank Key Indicators 2007, downloaded 11 September 2007; World Economic Outlook April 2007 database, downloaded 11 September 2007; World Bank. World Development Indicators online, downloaded 12 September 2007; and inflation targeting information available: http://www.bot.or.th (Thailand), http://www.bok.or.kr (Korea), http://www.bi.go.id (Indonesia), and http://www.bsp.gov.ph (Philippines).
Note: Figures for the following countries cover the period:

Thailand = Before (1996-2000); After (2001-2006)
Korea= Before (1994-1998); After (1999-2006)
Philippines= Before (1998-2003); After (2004-2006)
Indonesia= Before (2001-2005); After (2006)
Pakistan= GDP, Trade balance (% of GDP), inflation, and real exchange rate appreciation/depreciation (2003-2007);
Unemployment and reserves (2003-2006); real interest rate (2004-2006)
Reserves include the following: gold (national valuation), foreign exchange, reserve position in the fund, and SDRs.
Real exchange rate appreciation was computed using $RER = e\ (P*/P)$ where e is the nominal exchange rate, P* the CPI of
United States (foreign price level) and P is the CPI of the country using 2000 as the base year.

Table 2. Target Inflation Rate

Country	At time of adoption	Latest
Thailand*	0-3.5	0-3.5
Korea	9±1	3±0.5 (2007–09)
Philippines	4.5–5.5	4±1 (2008)
Indonesia	6±1	5±1 (2007)

* The Monetary Policy Committee (MPC) uses core inflation (excluding raw food and energy) as its policy target with the range of 0-3.5 per cent (quarterly average). In the event that the target is missed, the MPC is required to explain the reasons thereof to the public.

4. Conditions to be satisfied for IT to be an Adequate Monetary Policy: Is Pakistan Ready for IT?

Besides the obvious precondition for successful IT as a monetary regime that the central bank should be independent, the literature identifies a series of additional preconditions for full fledged IT (Mishkin and Schmidt-Hebbel, 2002, Bernanke et al., 1999): (a) absence of other nominal anchors (e.g., exchange rate or nominal GDP); (b) an institutional commitment to price stability; (c) absence of fiscal dominance; (d) policy (instrument) independence; and (e) policy transparency and accountability. In practice, though, most central banks do not adhere strictly to all these conditions.

Moinuddin (2007) has analyzed the suitability of an IT regime for Pakistan based on the above criteria, and has concluded that the basic conditions are satisfied, and that the SBP should adopt what he labels "Inflation Targeting Lite", following the experiences of Chile, Peru and Turkey and recommends that the SBP "keep a relatively wide range of inflation target (e.g., 1 percent below the mid-point target) for a medium term horizon during its initial period of practicing IT" (Moinuddin, 2007, p.23). He argues that: (a) the SBP is an autonomous institution that enjoys comfortable independence and is free from political influence; (b) the consumer price index (CPI) fulfills the requirements to qualify as a benchmark to measure inflation in Pakistan. Nevertheless, the house rent index (with a weight of 23.43% in the CPI basket) is not survey based and its measurement clearly needs to be improved; (c) although a sophisticated macro-econometric model is not a necessary condition for IT, it is an important tool for operational communication that also enhances credibility; (d) the non-availability of national income data on a quarterly basis is a major drawback in terms of meaningful analysis and effective monitoring of key macroeconomic variables; and (e) adoption of IT requires a good understanding of the monetary policy transmission mechanisms (Arestis and

Sawyer, 2006), even though, he argues, it is possible to adopt this monetary regime without having such comprehensive knowledge.

Akbari and Rankaduwa (2006) also evaluate whether Pakistan fulfills the major requirements to establish an IT regime. Since early 1990s the SBP has undergone reforms that have improved the financial health of commercial banks. On the SBP's independence, they argue that this has to be evaluated in terms of economic and political independence. The former refers to the restrictions on the SBP's ability to finance the government's budget deficits and the role it plays in banking supervision. Overall, the authors argue that the SBP has increased its independence in recent years. The resolve of the government to reduce the budget deficit has contributed to this greater economic independence.[5] On the issue of political independence, Akbari and Rankaduwa argue that while the SBP appears to be politically independent in terms of how its governors are appointed and removed; however, the SBP has not been independent in terms of its monetary policy record. Finally, these authors argue that monetary policy in Pakistan is transparent and that the exchange rate is reasonably flexible, although the SBP intervenes in the foreign exchange market to avoid large fluctuations in the value of the rupee, which may be viewed "as a violation of a major requirement for an inflation targeting regime" (Akbari and Rankaduwa, 2006, p.180).

The conclusion is that there seems to be a certain degree of consensus that, broadly speaking, Pakistan fulfills the minimum set of overall technical requirements to implement IT as its monetary regime. This conclusion, however, is not a straightforward one. Monetary policy is not just a series of technical decisions. The decisions of the central bank have redistributive consequences and therefore are inherently political.

5. Inflation Targeting, Full Employment and Development

If the discussion in the previous sections were all that the SBP should consider to make a decision, probably this should be in the positive. However, I believe there are many other factors that the SBP ought to take into account in order to make a full assessment about whether IT is the appropriate monetary policy regime for the country.

IT policies reduce the flexibility of a central bank in pursuing other macroeconomic goals. It is perhaps somewhat ironical that as the problems of unemployment, underemployment and poverty in developing Asia are being

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[5] Some may argue that this is not true given the state of the economy in 2007 and 2008.

acknowledged (Felipe and Hasan, 2006), employment creation has dropped off the agenda of most central banks. Felipe and Hasan (2006) estimate that there are about 500 million people unemployed and, in particular, underemployed, in developing Asia (most of them are concentrated in China and India). In Pakistan, the employment-to-population ratio fell from about 55.8% in 1973 to 47.8% in 2002 (Felipe, 2007). These figures put a big question mark on the achievement of the Millennium Development Goals. At the same time, Pakistan is not undergoing the level and depth of structural transformation (in particular the development of a robust manufacturing sector and diversification and upgrading of exports) needed as precondition for high and sustain growth (Felipe, 2007). Under these conditions, it is an imperative to ask if price stability should be *the most important* objective of the SBP. Is inflation a more serious problem than unemployment and underemployment in Pakistan today? Increases in interest rates (i.e., contractionary monetary policies) used in order to secure investor confidence and international creditworthiness may have negative implications for (domestic) investment. One is thus forced to ask why, despite the at best mixed evidence of the success of inflation targeting in its promotion of growth (and certainly employment creation), and even in reducing inflation, the SBP is considering adopting IT. Between WWII and the early 1970s, governments and central banks around the world were committed (in different forms and degrees) to this goal. To this purpose, they manipulated their spending levels (fiscal policy) and could adjust interest rates and the availability of credit (monetary policy) to maintain a level of aggregate demand close to full employment. In the 1970s, the failure of the OECD economies to contain inflation led to the downfall of full employment as an objective, as governments became convinced that low unemployment and low inflation were incompatible. As a consequence, intellectual support for these policies vanished and, today, pursuing development objectives has been dropped off the policy agenda of central banks in most developing countries. Although many central banks that pursue IT claim to also be concerned with other objectives, the reality is that they do not have quantified policy objectives other than the inflation target.

In section 2, I summarized the mandate of the SBP as that of regulating 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*. Moinuddin (2007) interprets this statement as implying that the SBP's responsibility is to achieve the dual mandates of fostering economic growth and maintaining prices stability. He further argues that since these two objectives could conflict the SBP has to strike a balance. He therefore notes that "an amendment in the SBP Act to have an overriding monetary policy objective of low inflation would enhance the credibility of the central bank as

inflation fighter" (Moinuddin 2007). There are two issues worth mentioning in this statement. First, that the reference to the "fuller utilization of the country's productive resources" is not interpreted in terms of achieving full employment; and second, Moinuddin's clear call for restricting the SBP's mandate. This contrasts with Hussain's (2005) view, quoted at the beginning of the paper, who implicitly calls for a more balanced approach. While inflation stability is important, central banks in developing countries cannot ignore development objectives (e.g., employment creation).

Moreover, there exist some structural differences between emerging market countries and industrial countries that affect how IT should be implemented (Roger and Stone 2005, p.32): (a) emerging markets have less developed financial systems; (b) emerging markets experience higher exchange rate pass-through; and (c) emerging markets have more vulnerability to real shocks. This implies that inflation targets should be specified taking into account a country's circumstances.

These considerations imply that there are some questions about the suitability and feasibility of IT for Pakistan that must be considered. These are the following:

1) The evidence of the superiority of IT (for example, Bernanke et al., 1999) is, at best, partial. Its proponents argue that economies that have adopted this framework perform better. Often researchers refer to a decline in the volatility of inflation. However, the stability of asset prices, including exchange rates and stock prices, is not considered. Likewise, it is very difficult to disentangle the possible benefits of an IT regime from other effects (Ball and Sheridan, 2003, Rogoff, 2006). Ball and Sheridan (2003) point out that while it is true that inflation targeters have reduced inflation more than non-targaters the reason is that inflation in the former was higher at the time of adoption. They conclude that there is no evidence that inflation targeting improves performance.

2) The effect of monetary policy on inflation is small and insignificant (Arestis and Sawyer, 2006). At best, there is only weak evidence that inflation targeting contributed to the reduction in inflation experienced in developed countries in the 1990s. It may be possible though that inflation targeting induced awareness of the costs of inflation and this helped reduce it (Willar, 2006).

3) The possibility that the economy may face a deficient aggregate demand is not contemplated. The supply side of the economy is what determines output.

4) It is claimed that the IT framework leads to greater accountability on the part of the central bank. However, it is not clear that this is necessarily true. After

all, the inflation target is decided by the central bank itself.[6] Moreover, often, it is not clear what the targeted rate of inflation should be. Even saying that inflation should be "as low as possible" is not a theoretically justified statement. Roger and Stone (2005) argue that what explains the resilience of the inflation targeting regime despite its frequent and large misses is that "the combination of legal and government support of the inflation target (goal dependence), the delegation of the operation of policy in support of the target (instrument independence), and accountability and transparency seem to have established a framework that allows the various "good" reasons for missing targets to be presented in a way that does not seriously undermine policy credibility, while providing adequate incentives for the central bank to seek to minimize "bad" reasons for missing targets." While this is an important point, they continue: "Another way to answer this question is to note the lack of alternative regimes" (Roger and Stone, 2005). Two points are important here. First, a central bank could be equally accountable and transparent if it targeted, for example, employment. Second, Willar (2006) concludes that perhaps any regime that focuses on keeping inflation low may be effective in achieving this goal.

5) In practice, inflation targets are missed very often, about 40% of the time, for prolonged periods, and by wide margins. Emerging market countries seem to be more vulnerable to large misses than industrial countries (Roger and Stone, 2005). Nevertheless, countries continue to practice it.

6) In Pakistan, food accounts for 40% of the weight in the CPI. This source of inflation is not considered by IT models, which assume that inflation is caused by excess demand. IT, therefore, cannot solve cost-push inflation.

7) The SBP does not have a good model to forecast inflation. Overestimating inflation may lead to higher interest rates than necessary. This is even more so when inflation is mostly the result of cost-push. See the summary of the evidence in section 2.

8) The IT models assume that monetary policy affects actual output only in the short run with actual output moving to the NAIRU in the long-run. However, many economists believe that monetary policy is not neutral and that the conduct of monetary policy may have effects on output in both the short and long run (Stiglitz et al., 2006).

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[6] This is probably not true strictly speaking. Most likely the inflation target is decided in conjunction with the government. This does not change the main point that inflation is the main target of economic policy, probably decided by a group of economists who, philosophically, agree on the main issues.

9) When the central bank manipulates interest rates to adjust current output relative to potential output, its actions affect both actual and potential output. What does this mean? If potential output is not independent of actual demand, an increase in interest rates may have a long lasting (if not permanent) impact on the economy (by, for example, affecting investment). Moreover, changes in aggregate demand affect equilibrium real interest rate so that an increase in the latter results in a rise in the long-run real rate of interest.

10) The IT model needs an estimate of potential output. However, calculating it is extremely complicated. As noted in section 3, long-run growth is given by the sum of the growth rate of the labor force plus the rate of technical progress. However, if the concept of natural growth rate has any intrinsic value, it has to be determined by the path taken by the actual growth rate.

11) What is the natural real interest rate? As in the case of potential output, policies derived from the IT model depend on this rate. How can it be identified? In theory, this is the rate that brings together investment and savings; but in practice it is unobservable. A problem then emerges. This is that if the central bank incorrectly estimates r^*, then the stability properties of the model will be jeopardized.[7]

12) Risks of inflation targeting: (a) monetary authorities may be forced to increase interest rates when inflation increases, even though there is a wide perception that price increases are one-off, not an inflationary episode; (b) the proper adjustment to disturbances to the economy associated with higher aggregate demand is not an increase in interest rates. Inflation targeting may be highly inefficient.

13) Inflation targeting models make scant, if any, reference to fiscal policy. This is due to the belief that this policy is ineffective (if not inflationary) for the purposes of achieving the goals of economic policy, i.e., price stabilization. The conduct of monetary policy should not be constrained by fiscal deficits due to an inefficient taxation system. This requires that fiscal deficits be reduced by using revenue-based measures rather than relying on the central bank for domestic borrowing. Indeed, it is insisted that the central bank should be independent so as to avoid the monetization of deficits (and thus artificially increasing demand). Monetary policy is, under this view, the only tool to meet inflation targeting. Many other economists argue, however, that fiscal policy can be an effective tool of economic policy (Stiglitz et al., 2006, Setterfield,

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[7] Setterfield (2007) also argues that stability problems may arise if α_1 in equation (1) is too small, i.e., if aggregate expenditures are interest-inelastic.

2007). Setterfield (2007) shows that fiscal policy can be a powerful instrument of stabilization policy, in a model that incorporates active fiscal policy (where the policy variable is the public sector borrowing requirement) and passive monetary policy (i.e., the interest rate is not the main instrument for stabilization policy).

Setterfield (2006) has studied the properties of a model that varies from the IT model above in three respects. First, it introduces a non-NAIRU Phillips curve. Second, there is no reference to a supply-determined equilibrium or natural level of output. Third, the price equation reflects the willingness and ability of workers to bid up the growth of nominal wages. Furth, there is no Taylor rule. In this model, the policy authorities manipulate aggregate demand conditions in the pursuit of an aggregate output target (rather than inflation target). Finally, the model acknowledges the conflicting basis of the inflation process as a result of the claims of workers and firms over nominal income. Algebraically,

$$Y = \alpha_0 + Y^T - \alpha_1 (r - r^*) + \varepsilon_1 \tag{4}$$

$$\pi = \varphi \pi_{-1} + \alpha Y + \theta Z \tag{5}$$

$$\Delta r = \lambda (Y - Y^T) \tag{6}$$

$$\Delta Z = -\mu (\pi - \pi^T) \tag{7}$$

where $0 < \varphi < 1$, Z is a vector of institutional variables that captures the ability of workers to bid up the growth of nominal wages; equation (6) is not a Taylor rule in that there is no reference to a natural level of output (Y^*) and there is no inflation target; and equation (7) describes the policy of inflation target by acknowledging the conflicting claims of inflation. The main difference between the model represented by equations (1)-(3) and that in equations (4)-(7) is that in the latter the real equilibrium configuration of the economy involves a target level of output (and employment) that is a creation of the authorities. Here, policy making recognizes the importance of aggregate demand conditions for real economic activity and the conflicting claims that give rise to the inflation process.

14) Roger and Stone attribute the success of IT not only to the flexibility, transparency and accountability that it introduces, but also to the lack of realistic alternatives. Indeed, IT is presented as the *only* viable and reasonable monetary framework. This, however, is not true and not all economists agree (e.g., see Stiglitz et al., 2006). One option for central banks is not to focus

exclusively on fighting inflation. They could, for example, consider setting an employment target subject to an inflation constraint. Also, central banks in developing Asia may consider a multi-objective function, e.g., having exports, inflation and investment as ultimate targets, and focus on a competitive and stable exchange rate and real interest rates as intermediate variables.[8] As Berg et al. (2006, pp. 62-63) indicate, there are different ways of implementing this proposed policy (employment target subject to an inflation constraint), which should be country-specific. For example, if the central bank believes that a competitive exchange rate is needed to increase employment, then it must be willing to control the money supply through the use of credit allocation mechanisms (e.g., interest rate ceilings, quantitative credit controls). The central bank could also specify quotas (in terms of credit allocation) for employment generation purposes that financial institutions would have to achieve by, for example, allocating credit to specific programs (e.g., employment in SMEs). Stiglitz et al. (2006, p.61) also advocate this type of measures and argue that implementing them in developing counties should be more effective than in developed countries given that the financial sector is less developed. A third alternative is to establish lower reserve requirements on loans for activities that generate employment. Another option is to lend to a development bank that specializes in loans for employment-generating activities. These different options are not inconsistent with setting an inflation target (indeed, an explicit commitment to inflation control will serve as a coordinator of expectations and more likely will lead to a more stable inflation scenario), and could be complemented with other policies that stimulate demand.

A key problem with the perception that the IT framework is the only viable one is that the model embeds a natural rate of unemployment (or NAIRU) view of the labor market (i.e., if the latter is left to its own devices, the market will deliver full employment; and any attempt to reduce unemployment below the NAIRU will result in inflation). This view of the labor market does not have empirical support (Journal of Economic Perspectives, 1997).

15) What is the role of the exchange rate under an IT regime? As part of the overall IT model, it is argued that countries should implement a floating exchange rate system in the context of free mobility of capital. There are three views on this issue. The first one is that central banks should not interfere with the level of the exchange rate: attending to IT and reacting to the exchange

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[8] Some central banks in the region already follow a monetary policy that considers several objectives, e.g., India. See Jha (2006).

rate are mutually exclusive (Fischer, 2001). A second view is that, while maintaining the IT framework and objective, the exchange rate could also be a legitimate policy objective alongside inflation. This can be done by expanding the Taylor rule to include the nominal exchange rate depreciation. The evidence, however, indicates that the effect of exchange rate depreciation on interest rates is insignificant (Schmidt-Hebbel and Werner, 2002). Finally, the third view is that it is very important for developing countries to maintain a stable and competitive real exchange rate because it impacts employment (Frenkel and Ros, 2006).

16) Little is known about the costs of IT on potential output, employment, poverty, and income distribution. Akbari and Rankaduwa (2006) estimate an output-inflation trade-off model and find out that: "…a one percent decline in inflation rate caused by a permanent reduction in monetary growth rate would result in a cumulative output (GDP) decline of 0.87 percent below its potential level […] if monetary policy were to target the inflation rate of 3.4 percent, the resulting cumulative decline in output below its potential level (trend) would be about 5.1 percent" (Akbari and Rankaduwa, 2006, p.185).[9]

What are the effects of IT on income distribution? In a recent paper, Rochon and Rossi (2006) that there appears to be a decline in the wage share in those countries that have adopted IT. It is sensible to think that increases in interest rates will redistribute income toward rentiers and away from households. This, obviously, affects the distribution of income between wages and profits. For decades, Keynesian writers have argued that there is a direct relationship between inflation, the distribution of income and the central bank. Rochon and Rossi (2004, Table 4) gather data on income distribution (wage share) for a number of inflation targeters (developed countries) and conclude that "the distribution of income has worsened for wage earners after the adoption of inflation targeting" (Rochon and Rossi, 2006, p.632).

Shiller (1997) reports welfare losses resulting from the impact of inflation on the demand for money that are associated with a 10 percent rate of inflation in the order or 0.3-0.45 percent of national income. Certainly inflation may pose some problems for the private sector, but does the magnitude of this welfare loss justify the current degree of concern with inflation? In econometric work on Pakistan, Akbari and Rankaduwa (2006) estimate an output-inflation trade-off model and find out that: "…a one percent decline in inflation rate caused by a permanent

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[9] This is similar to the so-called "sacrifice ratio", defined as the cumulative increase in the yearly rate of unemployment that is due to the disinflation effort divided by the total decrease in the rate of inflation. See Bernanke et al. (1999).

reduction in monetary growth rate would result in a cumulative output (GDP) decline of 0.87 percent below its potential level […] if monetary policy were to target the inflation rate of 3.4 percent, the resulting cumulative decline in output below its potential level (trend) would be about 5.1 percent" (Akbari and Rankaduwa, 2006, p.185).

17) What inflation-targeting regime should Pakistan choose a point target or a range?

18) Chaudhry and Chouhdary (2006, p.207) argue that "Pakistan's economy is operating at a very horizontal portion of the supply curve." This conclusion corroborates Kriesler and Lavoie's (2007) argument that for a large range of capacity utilization prices do not increase; and Eisner's (1995) empirical work for the US.

19) What is the empirical evidence on the relationship between inflation and growth? Contrary to what many may believe, higher inflation is not associated with lower growth. Bruno (1995) found that inflation and growth are positively related up to 5 percent inflation, and then diminishing returns to inflation set in. They are negatively related once inflation rises above 30 percent. Barro (1997) found that these two variables are unrelated when inflation is below 20-30 percent. These results have been corroborated recently Pollin and Zhu (2006), who found that higher inflation is associated with moderate gains in GDP growth up to an inflation threshold of about 15-18 percent.[10] This does not mean that inflation in every Asian country running at 20 percent, for example, will not be a problem. This means: (a) that "…given the uncharacteristically unified view among economists and policy analysts that countries with high inflation rates should adopt policies that lower inflation in order to promote economic prosperity, the inability to find simple cross-country regressions supporting this contention is both surprising and troubling" (Levine and Zervos, 1993). Overall, there is no scientific evidence to suggest that a necessary condition for faster growth is that inflation should be as low as possible; and that (b) probably many countries can afford slightly higher inflation rates, possibly permitting higher growth and employment, without derailing the economy.

What is truly damaging for an economy is unpredictable, unexpected and volatile inflation. This affects creditors and holders of nominal financial instruments such as bonds and loans. It is difficult, therefore, not to be concerned with the likely

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[10] However, Khan and Senhadji (2001) had estimated the threshold after which inflation hurts growth at 1-3% for the developed countries and at about 7-11% for the developing countries.

sacrifices being made by many developing countries across Asia in terms of output loses (and, consequently, employment) as a result of trying to maintain very low inflation rates. This is even more obvious when it is not clear that moderate inflation around the world is the result of central banks' policies and not the result of increased competition that derives from globalization.[11]

Summing up, before a final decision is made, the SBP should consider all these factors and provide clear answers to the questions posed here. Surely Pakistan has to abandon monetary targeting, but perhaps IT is not the way to go, given some fundamental features of the Pakistani economy.

6. Cost-Push Inflation, Income Distribution and Inflation Targeting

In the speech mentioned at the beginning of this paper, the SBP's former governor Shamshad Akhtar also mentioned that "despite all contests and debates, inflation is primarily a monetary phenomenon." Many economists today argue that inflation is a demand-led phenomenon, ultimately the consequence of excessive growth in the money supply. The argument is that there is excess demand in the market for goods as well as an excess demand in the market for labor, due to scarcity. The cause of this is the excess of the growth rate of the money supply over the growth rate of real output, i.e., there is excess supply of money, and people will try to get rid of it. Given that the economy's capacity to supply goods has not changed, a greater demand will cause prices to increase.[12]

While there may be a connection between increases in money supply and inflation, an appropriate theory must explain why the money supply would increase over the growth rate of real output and lead to inflation. Without this explanation, it is difficult to justify why an excess supply of money would drive forward the inflationary process, i.e., there is no exogenous flow of money that fuels inflation. Put in different words: the supply of money only responds to the demand for money; if the money stock grows, it must be for reasons that logically precede this growth. Moreover, such theory must take into account the fact that it is firms that increase prices. Therefore, there must be a connection or transition mechanism

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[11] See Rogoff (2006). He addresses the "China is exporting deflation" theory and argues that competitive Chinese exports only affect relative prices: cheap Chinese goods simply imply that other goods must become more expensive. But the argument is true from a different point of view: cheap Chinese exports represent terms of trade gains, and a favorable terms-of-trade shock will allow inflation to drift below target, although this is only a temporary effect. But if growth faults, Rogoff argues, a crash in China would resemble an oil shock.

[12] De Grauwe and Polan (2005) show that the standard relationships embedded in the quantity theory of money are hard to identify in countries with inflation of less than 10%.

between the fact that the money supply has increased and firms' decisions to increase prices.

In the standard IT model, cost-push inflation is ignored because it is assumed that supply shocks are transitory, or that they cancel out, i.e., on average are zero and do not affect the rate of inflation. However, as discussed before, the empirical evidence that inflation in Pakistan is a monetary phenomenon is lacking. Moreover, in Pakistan's current context (i.e., 2007 and 2008), the main source of inflation is increases is the prices of food and fuel (Asian Development Bank, 2008, p.171).

What causes firms to increase prices? In my view, inflationary pressures arise, ultimately, whenever the recipients of money income (wages, profits, rents) seek to increase their own share of real income at the expense of others. That is, inflation is a symptom of social conflict. This struggle for income distribution is never neutral, as it always affects relative prices. Inflation is not the result of an objective scarcity. Rather, it arises from conflicting views about the proper distribution of income.

Two such causes for why firms would increase prices are wage inflation and increases in markups (Weintraub, 1958). Wage inflation will have an impact on inflation when the increase in nominal wages is above that of labor productivity. Increases in nominal wages can lead to inflation before full employment or full capacity is reached. Markup or profit inflation is associated with an increase in profit margins, often as a result of market power due to monopolistic/oligopolistic situations, rather pervasive in developing countries. [13] These are the two essential components of the bargaining process between firms and workers. On the one hand, workers try to get an increasing share of the product through wage increases above labor productivity (i.e., the wage setting process). Certainly, the scarcity of labor can trigger wage increases, but this tends to be more a sectoral issue rather than a generalized one. In most developing countries there are millions of people unemployed/underemployed.

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[13] This can be best seen in the context of a price model based on a mark up on unit labor costs: $\hat{P} = \hat{\mu} + (\hat{w}_n - \hat{q})$, where $\hat{P}$ denotes the growth rate of the overall price level, $\hat{\mu}$ is the growth rate of the mark up, and $(\hat{w}_n - \hat{q})$ is the differential between the growth rates of the nominal wage rate and labor productivity. In the long-run one would not expect the mark up to increase forever (this would imply that the share of profits in total output would approach one). Therefore, the proximate determinant of inflation is the differential between the growth rates of nominal wages and labor productivity.

On the other hand, firms try to appropriate a higher share of overall product by increasing their mark ups (i.e., price setting process). It is important to see that profit inflation need not be the result of excess demand, at last the way this is understood in a monetarist explanation. Indeed, firms may decide at one point to increase their mark up in an attempt to adjust the standard rate of return to the historically observed rate of profit, which may have been high due to high growth. Certainly profit inflation is caused by high demand, but not necessarily by excess demand since utilization rates may be below unity. Also, firms may decide to increase markups as a result of higher interest costs; or as a result of changes in the perception of competitive pressures from abroad. Again, this is not caused by excess demand.

This means that oligopolistic pricing can set off an inflationary cycle independent of the monetary policy. In general, and this is the key, the monetary authorities *validate* this process through the monetary expansion. This is why the money supply increases. In this case, monetary policy to curb inflation by, for example, increasing interest rates, is not only ineffective but may also have perverse effects if increases in interest rates raise the cost of capital, which, as noted above, would justify an increase in prices thereafter (i.e., interest rates and prices can move together) (Keynes, 1930).

Can the effects of wage and profit inflation be tamed? This is difficult because often the real wage target of workers and the profit margin that firms seek usually are in conflict. Nevertheless, the conflict may be addressed in two ways. The first one is to develop mechanisms for cooperation between workers and firms, the way they exist in countries like Sweden, with a view to preventing an institutional power struggle for higher incomes.[14] The key is restraint on both sides. Both parties can walk to the negotiating table with a clear understanding of what is at stake, namely, that the income distribution struggle leads to temporary winners, but to a no-win game in the aggregate; and, therefore, work together.[15] This way, it is possible to minimize, if not neutralize, the effects of profit and wage inflation.[16]

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[14] Japan provides also an example. Workers in many sectors are not expected to oppose innovation, even of the labor-saving type. See Landes (1998), last section of chapter 27, entitled "They can have any color they want": The American and Japanese automobile industries."

[15] This, of course, is not so simple. As far back as 1776, no other than Adam Smith, in *The Wealth of Nations*, indicated that the property relations developed under capitalism gave the manufacturing class a decisive advantage in the conflict over wage rates: "It is not, however, difficult, to foresee which of the two parties must, upon all ordinary occasions, have the advantage in the dispute, and force the other into a compliance with their terms. The masters, being fewer in number, can combine much more easily; and the law, besides, authorizes, or at least does not prohibit their combinations, while it prohibits those of the workmen. We have no acts of parliament against combining the price

Davidson (2006) has advocated the implementation of policies that constrain changes in the gross profit margins (markups) and in nominal wages relative to labor productivity. What is the rationale? Davidson argues that: "As long as government guarantees that it will pursue a full employment policy, then each self-interested worker, union, and business entrepreneur has little fear that their demand for higher prices and money income will result in lost sales and unemployment […] As long as the government accepts the responsibility for creating sufficient aggregate effective demand to maintain the economy close to full employment, there was no market incentive to stop this recurring struggle over the distribution of income" (Davidson, 2006, pp. 699-700). In other words, a policy of full employment that is not backed by an incomes policy will potentially eliminate unemployment, but will generate (incomes) inflation.

What role do central banks play in this argument? As noted above, the monetary authorities validate the claims of firms and workers through the monetary expansion. Therefore, inflationary income demands (i.e., firms' claims via increases in markups and workers' claims through nominal wage increases above labor productivity growth) surface *if and when* central banks decide to finance them. Today, some central banks avoid inflationary wage and profit demands by not financing these claims. How is this done? By preventing that the demand-determined actual level of output gets too close to the supply-determined level of potential output (i.e., by ensuring a lack of effective demand). This is achieved by targeting inflation through the manipulation of short-term interest rates. The result is the preclusion of full employment, i.e., a policy of stability at the cost of growth. Therefore, inflation targeting, and in general the pursuit of restrictive monetary policies, is largely inconsistent with the pursuit of inclusive growth. Often aiming at inflation targets requires, in particular in developing countries, fiscal discipline. It is argued that the conduct of monetary policy should not be constrained by fiscal deficits due to an inefficient tax system or to an underdeveloped secondary market for domestic bonds. This requires that fiscal deficits be reduced by using revenue-based measures rather than relying on the central bank for domestic borrowing.

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of work; but many against combining to raise it. In all such disputes the masters can hold out much longer. A landlord, a farmer, a master manufacturer, or merchant, though they did not employ a single workman, could generally live a year or two upon the stocks which they have already acquired. Many workmen could not subsist a week, few could subsist a month, and scarce any a year without employment" (Smith 1776, p.94). The situation in many developing countries today is well depicted by this unequal power relation.

[16] The key is the increase in labor productivity. The higher it is, the more willing will workers be to accept nominal wage increases below it, thus making $(\hat{w}_n - \hat{q})$ negative.

Davidson has advocated a "deliberately announced incomes policy" (Davidson, 2006, p.700), that is, a policy that constrains workers and firms from demanding increases in nominal wages that exceed labor productivity. Davidson (2006, p.702) advocates the use of an incomes policy based on penalizing the largest domestic firms in the economy when they agree to wage rate increases in excess of some national productivity improvement standard. This policy has to be permanent and it has to be only a penalty for those firms that infringe the system and not a reward for those that comply with it.

A different but related proposal is that of Vickrey (1992). He proposed to establish a market in rights to raise prices (and obligations to lower them). Each firm is given a certain number of warrants to gross markups, based on past performance. These allow firms to raise prices. The initial allocation of the warrants ensures a predictable rate of inflation and adjustments in warrants issued in subsequent periods result from changes in investment and hiring in the previous period. If a firm wishes to increase its price above what is allowed, it has to buy the rights from another firm (these transactions are conducted freely) that is seeking and willing to lower its price by a similar amount. This system ensures a stable overall price level. If a firm fails to abide by the system (i.e., if a firm's gross markup exceeds its warrants) it will have to pay a penalty.

The moral of this discussion is, first, that direct anti-inflationary policies that do not rely on forfeiting output and employment have been thought of. What is lacking is political will to implement them; and second, and related, is the fact that perhaps slightly higher inflation rates may be an acceptable side effect of substantially higher domestic spending, higher employment, and higher growth rates.

7. Inflation and Interest Rates: An Empirical Investigation

A prerequisite for the SBP to pursue IT is that there should exist a stable and significant relationship between the measure of inflation to be controlled and short-term interest rates. The main purpose of the analysis in this section is to shed light on whether or not there is a significant relationship between inflation and interest rates. To this purpose, I have performed a series of bivariate Granger-causality tests between two different measures of inflation and three different interest rates. Moinuddin (2007) has argued that the CPI fulfills the requirements to qualify as a benchmark to measure inflation in Pakistan. I also added the wholesale price index (WPI). In the IT model, short-term interest rates and inflation are inversely related, although as noted in section 3, Keynes (1930) argued that these variables may be positively related. It is worth noting in this

context that the inflation models of Chaudhry and Choudhary (2006) and Akbari and Rankaduwa (2006) do not include the interest rate. Moinuddin (2007) included the call money rate in his money demand equation, but was statistically insignificant. On the other hand, Khan and Schimmelpfennig (2006) did include the 6-month T-bill rate, but since it had a positive sign in the equations estimated (contradicting these authors' theoretical priors that increases in interest rate reduce money demand and thus inflation), they decided to drop it from the final regression. The measures of inflation used are shown in Figures 1 and 2 and variables used in the analysis are described in Table 3.

Regressions were estimated as a transformation of an autoregressive distributed lag (ARDL) model. The equations were specified in error correction form (Bårdsen, 1989), with annual, quarterly and monthly data. The equation estimated is:

$$\Delta inf_t = c + \sum_{i=1}^{10} \propto_i \Delta inf_{t-i} + \sum_{j=0}^{10} \beta_i \Delta x_{t-j} + \lambda_1 inf_{t-1} + \lambda_2 x_{t-1} + \varepsilon_t \qquad (8)$$

Where *inf* denotes the logarithm of the measure of inflation used, and *x* denotes the logarithm of the variable that potentially Granger-causes inflation. ε is the random error. Therefore, Δ of the corresponding variable denotes the growth rate. It is expected that $-1 < \lambda_1 < 0$ for dynamic stability. I use two potential measures of inflation: consumer price index (CPI) and wholesale price index (WPI); and three interest rates: central bank policy rate, call money rate and the 6-month Treasury bill rate. Equation (8) can be rewritten in error correction form as:

$$\Delta inf_t = c + \sum_{i=1}^{10} \propto_i \Delta inf_{t-i} + \sum_{j=0}^{10} \beta_i \Delta x_{t-j} + \lambda_1 [inf_{t-1} + \theta x_{t-1}] + \varepsilon_t \qquad (9)$$
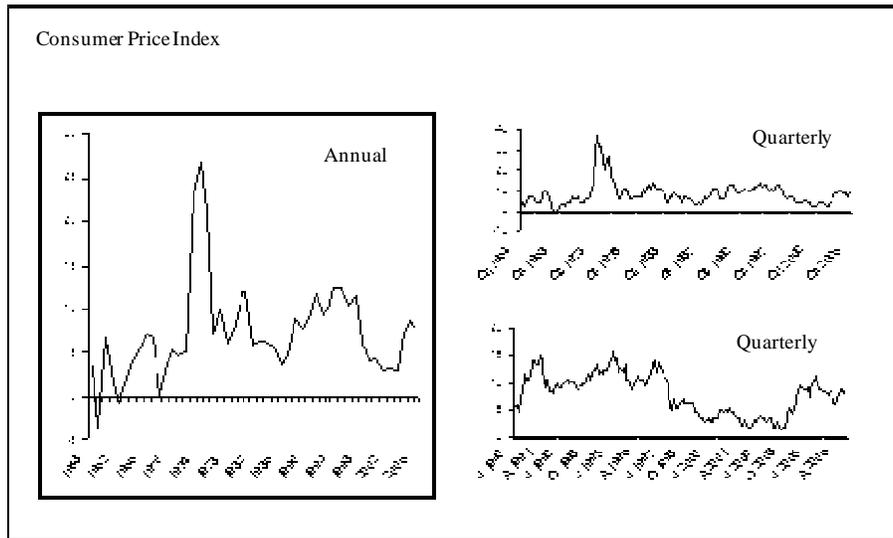
Figure 1. Consumer Price Inflation

Consumer Price Index

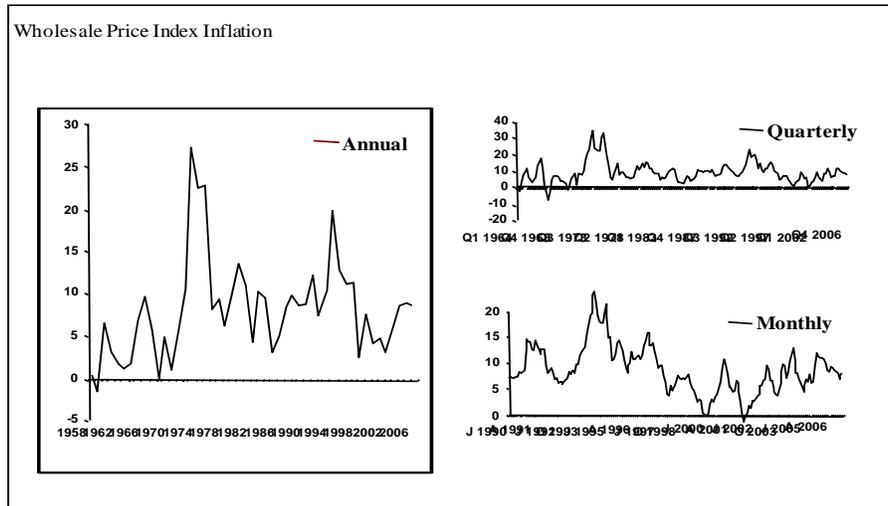**Figure 2. Wholesale Price Index**

Wholesale Price Index Inflation

Table 3. Description of the Variables

	Source			Description	Frequency/Period Covered	Based Year	Unit
Consumer price index	International (IFS) online	Financial	Statistics	CPI:12 major cities all inc.	- Annual/1951 to 2006 - Quarterly/ 1957q1 to 2006q4 - Monthly/Jan.1957 to Dec.2006	2000	index number
Wholesale price index	International (IFS) online	Financial	Statistics	Index numbers of wholesale prices including food, raw material, fuel, lighting, lubricants, and manufactures.	- Annual/1957 to 2006 - Quarterly/ 1961q3 to 2006q4 - Monthly/Jul.1961 to Dec.2006 - Quarterly/ 1960q3 to 2006q4 - Monthly/Jul.1960 to Dec.2006	2000	index number
Discount rate (end period)	International (IFS) online	Financial	Statistics	Discount Rate/Bank Rate (line 60) is the rate at which the central banks lend or discount eligible paper for deposit money banks, typically shown on an end-of-period basis. The State Bank of Pakistan rate on its repurchase facility. † Prior to January 1994, rate at which the State Bank of Pakistan made advances to scheduled banks against acceptable securities. Beginning in 1994, data refer to the State Bank of Pakistan discount rate for its three-day repo facility.	- Annual/1951 to 2006 - Quarterly/ 1957q1 to 2006q4 - Monthly/Jan.1957 to Dec.2006		percent per annum
Call money rate	International (IFS) online	Financial	Statistics	Call money rate or money market rate is the rate on short-term lending between financial institutions. Monthly average of daily minimum and maximum call-money rates.	- Annual/1951 to 2006 - Quarterly/ 1951q1 to 2006q4 - Monthly/Jan.1964 to Dec.2006	2000	percent per annum
6-month treasury bill rate	International (IFS) online	Financial	Statistics	Treasury bill rate is the rate at which short-term securities are issued or traded in the market. Weighted average yield on six-month treasury securities.	- Annual/1992 to 2006 (no available data for 1998 and 1999) - Quarterly/ 1991qq1 to 2006q4 (no available data for Q4 1999' and Q2 and Q3 1999 - Monthly/Mar.1991 to Dec.2006 (no available data for October 1998 and May to July 1999)	2000	percent per annum

Where β_0 is the short-run elasticity, $\theta = (\lambda_2 / \lambda_1)$ is the long-run elasticity, and $[cpi_{t-1} + \theta x_{t-1}]$ is the error correction term. Two causality tests are performed: (i) $H_0 : \beta_1 = \beta_2 = ... = \beta_{10} = 0$; and (ii) $\lambda_1 = 0$. The first is the standard F-test for the null hypothesis that past values of Δx does not contribute to predicting Δinf_t more accurately than by using only past values of Δinf, other information being identical. The second test takes into account the fact that the traditional concept of Granger-causality assumes that the variables are not cointegrated. If they were, any causal inference would be invalid, as the model would be misspecified. In an error correction model, one or more terms on the right-hand side must be Granger-caused by the lagged error correction term, which is itself a function of the lagged elements on the right-hand side. In this case, the error correction model allows for the finding that the one variable Granger-causes the other one, as long as the error correction term carries a significant coefficient, even if the coefficients of the differed terms, i.e., β_i, are not jointly significant (Granger, 1988). I follow the approach in Pesaran et al. (2001), which can be applied regardless of whether the variables are I(0) or I(1). Moreover, it provides robust results in small sample sizes and estimates of the long-run coefficients are super consistent in small sample sizes. This is an F-test for the variables in lagged levels in equation (8), that is, $H_0 : \lambda_1 = \lambda_2 = 0$, i.e., there is no statistically significant long-run relationship. The computed test is then compared with the range provided by Pesaran et al. (2001). With one regressor and for a 95% confidence level, the range for the critical F-test is 4.94-5.73 (Table C1.iii in Pesaran et al., 2001, unrestricted intercept and no trend). The lower bound corresponds to the lower critical value when the variables are I(0); while the upper bound refers to the upper value obtained when the variables are I(1). If the calculated F-test lies within the bounds, the test is inconclusive; if it is smaller than the critical lower bound (i.e., <4.94), the null hypothesis that there is no long-run relationship cannot be rejected; and if it is higher than the critical upper bound (i.e., >5.73), the null hypothesis is rejected. It is also important to ensure that the error correction term has the proper magnitude and sign (i.e., $-1 < \lambda_1 < 0$), and that the long run elasticity θ is negative, which is what one would expect if indeed increases in interest rates cause lower inflation.

Results of both tests are shown in Tables 4 (with annual data), 5 (with quarterly data) and 6 (with monthly data). The upper part of the Tables provide the values of the β_i coefficients (and the significance level, with the symbol * or **); while the lower part shows the Granger-causality tests of the differed terms, i.e.,

$H_0 : \beta_1 = \beta_2 = ... = \beta_{10} = 0$, and of the null hypothesis that there is no long-run relationship, i.e., $H_0 : \lambda_1 = \lambda_2 = 0$; as well as the long run elasticity (θ); each with the corresponding degree of significance (denoted Prob.). The most significant results are as follows:

1) Annual data. None of the three interest rates does Granger-cause CPI or WPI in the short-run. The only case where there might be long-run causality is from the 6-month Treasury bill to the wholesale price index (WPI). The test statistic (F (2, 3) =4.32) is just below the critical value, but both error correction term and long-run elasticity have the right sign.
2) Quarterly data. The 6-month Treasury Bill Granger-causes the WPI in the short-run. With regards to long-run Granger-causality, the 6-month treasury bill appears to Granger-cause the CPI.
3) Monthly data. Central bank policy rate and 6-month Treasury bill appear to Granger-cause both the CPI and WPI in the short-run. In the long-run, only the 6-month treasury bill may Granger-cause the WPI.

Summing up, there is no evidence of causality running from interest rates into the two price indices when annual data is used. With quarterly data, the 6-month Treasure bill Granger-causes the WPI in the short-run, and the CPI in the long-run. And with monthly data, there is evidence of short-run causality from both the central bank policy rate and the 6-month Treasury bill to both the WPI and the CPI; and of long-run causality from the 6-month Treasury bill to the WPI. To validate these findings, the central bank should use a full-fledged econometric model that tracks how interest rates relate to inflation. It may well be, nevertheless, that the relationship between interest rates and inflation is very complex and then this simple analysis does not capture it. In any case, the SBP must provide evidence of the relationship between the measure of inflation to be controlled and short-term interest rates to make a credible case for IT.

Table 5. Granger-Causality Tests for Inflation. Annual Data

Lags	CPI			WPI		
	Central Bank policy rate	Call money rate	6-mos. Treasury bill rate	Central Bank policy rate	Call money rate	6-mos. Treasury bill rate
	1951-2006	1951-2006	1992-2006	1951-2006	1951-2006	1992-2006
β_i coefficients						
0	0.122	* 0.091	0.022	0.011	-0.022	-0.008
1	-0.029	-0.124	-0.002	0.066	-0.031	0.044
2	-0.138	-0.069		-0.005	-0.055	
3	-0.061	-0.064		-0.147	-0.067	
4	0.020	** -0.150		0.130	0.002	
5	-0.089	* -0.190		-0.133	-0.121	
6	-0.048	-0.076		0.008	0.048	
7	0.082	-0.007		0.049	-0.062	
8	-0.079	0.013		-0.177	-0.035	
9	0.009	0.031		0.103	0.026	
10	-0.087	0.043		-0.246	-0.021	
$H_0 : \beta_i = 0$	$F_{(10,16)} =$ 0.660	$F_{(10,16)} =$ 0.890	$F_{(1, 3)} =$ 0.020	$F_{(10,15)} =$ 0.540	$F_{(10, 15)} =$ 0.970	$F_{(1, 3)} =$ 1.530
for *i=1...10*	Prob.= 0.745	Prob.= 0.563	Prob.= 0.900	Prob.= 0.834	Prob.= 0.502	Prob.= 0.305
Error Correction Term: λ_1	-0.023 Prob.= 0.453	-0.013 Prob.= **0.089	-0.054 Prob.= 0.142	-0.002 Prob.= 0.387	-0.012 Prob.= 0.405	-0.197 Prob.= * 0.027
Long run elasticity: θ	2.336 Prob.= 0.308	10.848 Prob.= 0.191	-0.103 Prob.= 0.785	-21.657 Prob.= 0.978	3.804 Prob.= 0.668	-0.294 Prob.= 0.164
$H_0 : \lambda_1 = \lambda_2 = 0$	$F_{(2,16)} =$ 0.280	$F_{(2,16)} =$ 1.530	$F_{(2, 3)} =$ 1.250	$F_{(2, 15)} =$ 0.370	$F_{(2, 15)} =$ 0.340	$F_{(2, 3)} =$ 4.320

* Significant at the 5% confidence level
**Significant at the 10% confidence level

Table 6. Granger-Causality Tests for Inflation. Quarterly Data

Lags	CPI			WPI		
	Central Bank policy rate 1951q1-2006q4	Call money rate 1951q1-2006q4	6-mos. Treasury bill rate 1991q2-2006q4	Central Bank policy rate 1951q1-2006q4	Call money rate 1951q1-2006q4	6-mos. Treasury bill rate 1991q2-2006q4
β_i coefficients						
0	* 0.060	0.004	* 0.033	* 0.098	0.001	0.010
1	-0.044	-0.009	-0.013	-0.035	-0.014	0.054
2	-0.019	0.005	0.020	** -0.069	0.002	-0.029
3	* 0.047	-0.002	-0.034	0.049	-0.005	-0.035
4	0.002	-0.007	0.047	0.041	0.019	0.022
5	0.000	-0.003	-0.008	0.014	-0.009	0.083
6	-0.014	0.005	0.014	** -0.073	-0.002	-0.051
7	-0.014	-0.001	-0.010	0.029	-0.002	0.011
8	0.004	-0.003	-0.007	-0.030	-0.002	-0.025
9	0.012	0.001	0.025	0.036	-0.003	0.059
10	-0.018	-0.003	-0.020	-0.013	-0.008	-0.050
$H_0 : \beta_i = 0$	F(10, 162) = 1.38	F(10, 162) = 0.56	F(10, 7) = 2.57	F(10, 144) = 1.47	F(10, 144) = 0.69	F(10, 7) = 3.68
for *i=1…10*	Prob.= 0.194	Prob.= 0.847	Prob.= 0.111	Prob.= 0.155	Prob.= 0.730	Prob.= * 0.049
Error Correction Term: λ_1	-0.002 Prob.= 0.251	-0.001 Prob.= 0.499	-0.110 Prob.= * 0.005	-0.001 Prob.= 0.569	-0.002 Prob.= 0.288	-0.168 Prob.= **0.051
Long run elasticity: θ	3.907 Prob.= 0.181	2.816 Prob.= 0.643	-0.135 Prob.= 0.416	6.094 Prob.= 0.727	-0.386 Prob.= 0.920	-0.268 Prob.= * 0.008
$H_0 : \lambda_1 = \lambda_2 = ($	F(2, 162) = 0.66	F(2, 162) = 0.23	F(2, 7) = 6.43	F(2, 144) = 0.16	F(2, 144) = 0.56	F(2, 7) = 2.310

* Significant at the 5% confidence level
**Significant at the 10% confidence level

Table 7. Granger-Causality Tests for Inflation. Monthly Data

Lags	CPI Central Bank policy rate	Call money rate	6-mos. Treasury bill rate	WPI Central Bank policy rate	Call money rate	6-mos. Treasury bill rate
	Jan1964-Dec2006	Jan1964-Dec2006	Mar1991-Dec2006	Jan1964-Dec2006	Jan1964-Dec2006	Mar1991-Dec2006
β_i coefficients						
0	* 0.021	0.001	* 0.014	* 0.034	0.000	0.012
1	-0.005	0.001	-0.008	0.026	0.001	-0.006
2	-0.006	-0.002	-0.001	* -0.052	-0.003	0.012
3	0.002	-0.002	-0.011	** 0.035	-0.001	** -0.026
4	-0.011	0.002	** 0.017	-0.028	0.002	0.015
5	* -0.026	0.000	-0.016	-0.017	0.002	0.007
6	* 0.041	0.002	0.012	0.005	0.001	0.005
7	0.004	0.000	0.000	0.022	-0.001	-0.015
8	-0.011	-0.002	-0.013	-0.017	-0.001	* -0.036
9	-0.001	-0.001	-0.001	0.012	-0.002	** 0.024
10	0.011	0.001	0.010	0.012	** 0.004	0.015
$H_0 : \beta_i = 0$	$F(10, 470) =$ 2.15	$F(10, 470) =$ 0.76	$F(10, 112) =$ 1.79	$F(10, 470) =$ 2.21	$F(10, 470) =$ 0.75	$F(10, 112) =$ 3.48
for *i=1...10*	Prob.= * 0.020	Prob.= 0.664	Prob.= **0.070	Prob.= * 0.016	Prob.= 0.672	Prob.= * 0.001
Error Correction Term: λ_1	0.000 Prob.= 0.772	0.000 Prob.= 0.324	-0.006 Prob.= 0.134	0.000 Prob.= 0.577	0.000 Prob.= 0.501	-0.014 Prob.= * 0.005
Long run elasticity: θ	2.764 Prob.= 0.686	-2.002 Prob.= 0.656	-0.358 Prob.= 0.203	21.564 Prob.= 0.950	-0.866 Prob.= 0.859	-0.248 Prob.= 0.110
$H_0 : \lambda_1 = \lambda_2 =$	$F(2, 470) =$ 0.04	$F(2, 470) =$ 0.49	$F(2, 112) =$ 1.13	$F(2, 470) =$ 0.16	$F(2, 470) =$ 0.23	$F(2, 112) =$ 4.150

* Significant at the 5% confidence level
**Significant at the 10% confidence level

8. Conclusions: IT May not be Worthwhile

This paper has asked whether Pakistan's central bank has considered the full implications on its economy of shifting from the current monetary regime into inflation targeting. To this purpose, I have: (a) discussed the theoretical foundations of the standard inflation targeting (IT) model; (b) argued that although most likely Pakistan meets the basic technical requirements to implement some version of IT, the SBP should take into consideration a number of issues before it makes a final decision whether to shift to IT or not; and (c) shown that there is no overwhelming empirical evidence that short-term interest rates are inversely related to inflation.

While monetary targeting is not viable any longer in Pakistan due to the lack of constancy of the money demand function, what is not entirely clear is that inflation targeting is the optimal monetary regime, given the country's structural features, namely, a developing economy with substantial unemployment and underemployment. One interesting aspect of the IT model is that the (real) economy is considered neutral with respect to monetary disturbances. Then the obvious question is why should inflation be targeted, and why should the elimination of inflation be a key objective of monetary policy? If inflation is truly a distortionary force, then it cannot be true that the real economy is not influenced by monetary disturbances.

A number of issues have been raised. First, the theoretical model underlying IT assumes that inflation is exclusively a demand-pull phenomenon. However, the empirical evidence available shows that inflation in Pakistan is largely driven by the growth rate of import prices. Wheat support prices also seem to be a determinate of inflation, in which case the authorities in the Ministry of Agriculture would have to look into the issue. It is not a problem of monetary policy. The impact of monetary policy on prices depends on the type of data used in the analysis. The IT model also assumes a vertical long-run Phillips curve that characterizes long-run potential output, consistent with the NAIRU. However, it is difficult to understand the meaning of a trade-off between inflation and unemployment when, in Pakistan, underemployment in the agricultural and urban informal sectors coexist with the formal economy but without a clear boundary. At the empirical level, researchers have failed to estimate the NAIRU properly in the US. And moreover, empirical evidence shows that changes in capacity utilization need only be inflationary at levels of capacity, near full utilization. Before this, inflation will not increase. It is only then (high levels of capacity utilization) that there might be a trade-off between inflation and unemployment.

Second, should the SBP use interest rate (policies) narrowly and almost exclusively with the objective of containing inflation? Should it, perhaps, consider multiple objectives and variable such as the exchange rate, unemployment, growth or productivity? What about fiscal policy? I consider crucial to: (a) complement the conventional inflation targeting framework with discretionary and fiscal policy; (b) consider the long-run effects of changes in interest rates; and (c) coordinate monetary and fiscal policies.

Third, it has been advocated that the SBP should implement "Inflation Targeting Lite" (Moinuddin, 2007). The alternative proposal that I have put forward is to target full employment subject to an inflation constraint. There is no theoretical reason why a central bank should not consider this broader mandate.

Fourth and final, a prerequisite for the SBP to pursue IT is that there should exist a stable and significant relationship between the measure of inflation to be controlled and short-term interest rates. The empirical analysis in the paper casts doubt on it. Unless this relationship is clearly established, use of short-term interest rates to tame inflation may be useless. Moreover, higher interest rates may contribute to higher inflation through the cost side.

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Comments

In its strictest version, inflation targeting refers to a regime where the monetary authorities are exclusively responsible for keeping inflation within pre-announced thresholds. The author first reviews the existing literature on the determinants of inflation in Pakistan, carries out a comparative analysis of the performance of countries which adopted inflation targeting and then empirically investigates whether a stable relationship exists between short-term interest rates and inflation which the Pakistani central bank can exploit by adopting inflation targeting.

Depending on data frequency and focus on the causes of inflation till 2007 is far from settled. On the one hand, Chaudhry and Choudhary (2006) and Akbari and Rankaduwa (2006) using low frequency data find inflation in Pakistan to be largely imported, on the other hand, Khan and Schimmelpfennig (2006) using high frequency data show that a delayed but significant impact of monetary variables affect the path of inflation. Because these studies consider different time spans and frequencies, the author rightfully points out the difficulty of drawing an authoritative conclusion on the sources of inflation.

An overall glance at the volatilities in Table 1 of year-on-year inflation for similar time periods and countries shows that, with the exception of Korea, in the case Pakistan prices have been relatively more stable. This begs the question why is inflation targeting being considered as a policy alternative. An interesting aspect of the countries considered in the study is the timing of adoption of inflation targeting. Indeed, the adoption occurred after the 1997 Asian Financial Crisis.

In this light, one may draw parallels with the recent inflationary experience of Pakistan. The year-on-year CPI inflation exceeded 25% in 2008 with inflation volatilities exceeded those that prevailed during the pre-inflation target adoption

Table 1. A Cross-Country Comparison of Volatilities of Inflation

Country	Adoption Year	Pre-Adoption Period/Time Span	Standard Deviation of Monthly Year on year inflation
Korea	1998	1994-1998	1.45
Thailand	2000	1996-2000	3.06
Philippines	2002	1998-2003	3.43
Indonesia	2005	2001-2005	3.36
Pakistan	NA	2003-2007	2.43
Pakistan	NA	2008-May 2009	4.67*

Source: IFS other than
* Data from Federal Bureau of Statistics.

of the economies considered in the study (see Table 1). Perhaps, 2009 (post crisis) may be a good time to ponder upon whether using an inflation target may credibly break the inflation cycle.

A general rule for inflation targeting to be successful is for the monetary policy to be independent of fiscal policy. The Pakistan experience of 2008 shows that this condition only holds in periods when the economy is performing well, which is also the time, when inflation is not so problematic. This independence is compromised when state coffers run low, as happened during 2008, and the necessity to monetize fiscal expenditure arises. Furthermore, the 2008 experience shows that in the context of an emerging economy, where there is no appetite for an independent monetary policy overridingly due to structurally poor tax policies, coordination of fiscal and monetary policy may be a far superior option to control inflation instead of inflation targeting.

Finally, the paper raises many important issues before one could contemplate on the policy of inflation targeting. First, the channels and the strength with which monetary policy affects firms and households in Pakistan remain opaque. For example, the use of stock market, mortgages and holding of bank account is weak in the general population. Second the sheer size of the informal economy estimated to exceed 45% of GDP and where the lion share of labor force works implies that the use of a Taylor rule (Equation 3) to ultimately control inflation is misleading. How this Taylor changes when informal channels are introduced is yet to be uncovered.

To conclude my brief commentary, I generally agree with the author that far more research needs to be done before one could consider Inflation Targeting as the only policy objective for the State Bank of Pakistan. Further, this is an economy where until recently double-digit inflation had not been so much of an issue. Furthermore, the underlying microeconomic behavior of households and firms alike with respect to policy changes are not known sufficiently well for one put faith on a model that assumes away many key features of an emerging market such as Pakistan.

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Comments

Inflation Targeting (IT) has become a fashionable framework for monetary policy in many countries [Alamsyah et al (2001)]. So is the research on the topic. The author has chosen 'Does Pakistan Need to Adopt Inflation Targeting: Some Questions' at the time when ongoing global financial crisis has brought IT under real test. The author has raised the question 'whether Pakistan meets the basic technical requirements to implement some version of IT.' The author concludes that 'although most likely Pakistan meets the basic technical requirements to implement some version of IT.' However, author has not recommended to follow IT rather proposed to target full employment subject to an inflation constraint. The author has attempted to cover a very interesting topic pertaining to the monetary policy regime that surely needs research particularly in the context of emerging economies like Pakistan.

My comments on the paper are as follows:

1) The text book material can be excluded from the paper. In most of the sections 3 the author has reproduced from the work of Meyer (2001). The author should have listed only the main elements of IT: price stability – a principal, if not only goal of monetary policy; numeral target or sequence of targets – to make goal of price stability operational; time horizon to reach the inflation target; and evaluation – an approach for ongoing review of target pursuing [Truman (2005)].

2) It has some contradictions (like 'lack of empirical evidence on inflation and short term interest rate' and then concluding 'Pakistan meets the basic technical requirements to implement some version of IT,' and then surprisingly suggesting Pakistan 'not to follow IT'). Very interestingly the author has proposed to adopt full employment targeting (constrained by inflation target) without looking into whether Pakistan 'meets the technical requirements' for the proposed policy regime.

3) At times the text does not communicate the intended meanings, like, 'Many economists see in this monetary policy strategy a *representation of the policy models* used by many central banks.' Under heading 3 the author states, 'this implies that the monetary authorities can set any inflation target they desire without this having any effect on the real equilibrium of the economy.' If this 'luxury' is available to central bankers, this also needs clarification.

4) The author states that under IT central banks maintain price stability at the lowest possible rate of inflation. No reference has been given about the study

which proposes the 'lowest' possible rate of inflation to target. Some, if not most of the countries know the level of inflation lowering inflation below which may hurt their economies and thus despite possibility to target a further lower inflation rates, central banks have chosen to target positive inflation rates.

5) Heading of section 2 does not reflect on Pakistan whereas more than 2/3 of the section reviews determinants of inflation in Pakistan.

6) The author has referred to one study that concludes instability of broad money demand function in Pakistan. This area of the paper deserved empirical literature review and further estimation of the money demand function by the author himself rather than taking Moinuddin (2007) evidence as the only available one.

7) The author has given some review on the determinants of inflation in Pakistan which is biased towards focus on supply side determinants.

8) While discussing the tenets that underlie inflation targeting author stresses in the point (10) that the central bank *must* have only one policy goal. My reservation is to the use of strong word 'must.' As a matter of fact there is a debate on the single vs multiple objective of monetary policy. Hoskins (1993) terms absence of a single, clear, measurable, and attainable objective of monetary policy as shortcoming. However, White (2006) argues that the benefits of single objective of price stability are overstated.

9) The author has given table 1 to provide the basic information comparing the performance of four Asian countries. I do not understand the relationship of this table with the title of the paper. And if any, why only four Asian? Why not all of those emerging market economies that have opted for IT.

10) Section 4 starts with, 'Besides the *obvious* preconditions….literature identifies a series of *additional* preconditions for full fledge IT….,' No such line between obvious and additional has been defined before this section. Things are repeating in the paper.

11) Under the heading of conditions to be fulfilled for IT to be an adequate policy: Is Pakistan ready, the author writes only one para on this and that too is ended with, 'most central banks do not adhere strictly to all these conditions.' I do not understand what author wants to emphasize with this end of the para. In the next paragraphs he has not himself analyzed whether Pakistan satisfies or

not the conditions rather gives review of (only) two papers by other authors. The paper is concluded in very weak manner by saying that 'Pakistan fulfills the minimum set of overall technical requirements to implement IT' with drawing line (and giving no reason for that line) between minimum and otherwise technical requirements for IT.

12) In section 5, the author has tried to give impression that there is consensus in the empirical literature to adopt IT in case of Pakistan. I think he has missed the paper by Choudhary and Choudhary (2006) in this section though mentioned otherwise in the paper.

13) Discussing the suitability of IT for Pakistan on page 15 he has not mentioned anything about Pakistan in at least first five points where only some sort of review (of others work) is presented (without any attempt to link things to Pakistan). Similar is the case with point (8) through (15). Similarly in the last point (19) while discussing the inflation growth nexus, the author again ignored the Pakistani evidence like that of Mubarik (2005).

14) In point (7) on page 16, the author has claimed that Pakistan does not have a 'good' model to forecast inflation. He has not mentioned the source of his claim. Such statements should be avoided without strong evidence. Furthermore summary of the evidence in section 2 is not concluding that inflation in Pakistan is mostly the result of cost push.

15) Whole section 6 on 'cost push inflation, income distribution, and inflation targeting' has been written without mention of Pakistan except two contrasting views: one borrowing from Dr. Shamshad's speech that 'inflation is primarily a monetary phenomenon' and the other based on *short period* observation that 'in Pakistan's current context the main source of inflation is increase in the prices of food and fuel'. How author can ignore such vital proof as is produced in the following graph which shows as any deviation from a target broad money growth (money surprise) has resulted in deviation from target inflation rate (inflation surprise) next year (the period shown below covers the regime of last three SBP Governors: Dr. M. Yaqoob, Dr. Ishrat Husain, and Dr. Shamshad Akhtar). The correlation coefficient between the two is 0.68.

Inflation Surprise and Money Surprise
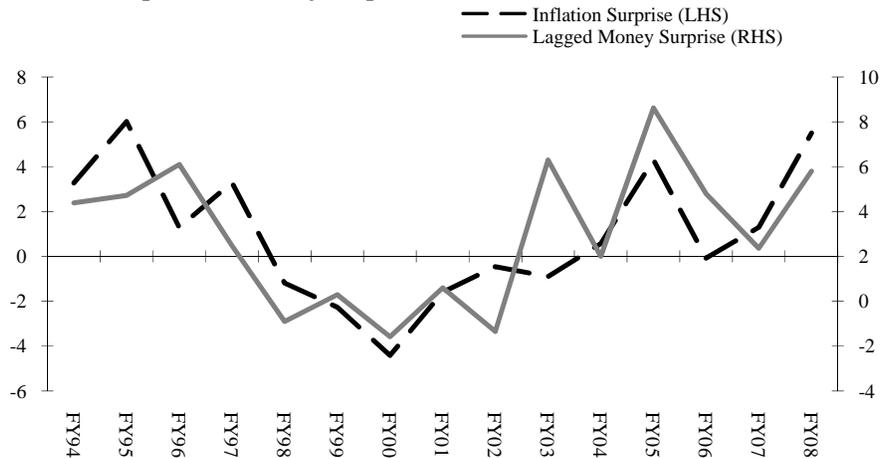
16) In section 2, the author has tried to (wrongly) conclude (not from his own study on inflation, but from others' work that inflation in Pakistan is mostly cost push inflation. So he thinks inflation is determined by factors other than money supply. But he tries to establish the link between interest rate and inflation he ignores all those factors as determinant of inflation and run series of bivariate regressions to see Granger (non) causality. Rather than doing his research work accurately author requires SBP to 'must provide evidence of the relationship between the measure of inflation to be controlled and the short term inertest rate to make a credible case of IT'.

17) The conclusion section is even more confusing. The title of the paper is all about pre-opting things like whether Pakistan qualifies to opt for IT. The first sentence of the conclusion claims that paper has asked the SBP about implications (which relates to post opting IT) of the shifting to IT. Author has tried to conclude as if he has done the research like that on the 'lack of constancy of money demand function'. He should have mentioned that it is based on Moinuddin (2007) rather than confusing the reader that author is concluding his research.

18) Author concludes 'the impact of monetary policy on prices depends on the type of data used in the analysis.' He should be accurate in stating where he is writing about inflation or about prices. Furthermore, he should clearly mention the frequency (rather than type) of the data series may have some role in

affecting the results (the aggregation problem in time series analysis) and he should have explained the issues of the aggregation problem to affect the results.

In the last, I would like to say that the author has missed the core issues to be considered before going to any change in monetary policy regime by a developing country like Pakistan. These include: concerns with reference to IMF programs which countries have to enter at the time of need. Imposition of IMF conditionality can add to other 'goal(s)' for central bank of a country who is in IMF program. An example can be ceiling on NDA. When in order to meet the required ceiling on NDA central bank may 'require' increasing the interest rate without inflation targeting policy purpose and thus will increase interest rate volatility. Similarly, nothing has been discussed regarding the more acute trade off emerging market economies face as compared to the developed one – higher output and inflation volatility – as has been documented by Fraga, Goldfajn and Minella (2005). Furthermore, issues related to the inflation measure have been ignored like rebasing the price index, introducing the new goods etc. In case of Pakistan we still do not have mobile phone in the list of goods used to measure the consumer price index! The author has altogether ignored the issues related to the informal sector in Pakistan economy which deserves attention.

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