© *The Pakistan Development Review*
61:1 (2022) pp. 1-27
DOI: 10.30541/v61i1pp.1-28

Inflation Targeting Skepticism: Myth or Reality? A Way Forward for Pakistan

ZAFAR HAYAT and SAHER MASOOD

This paper makes twofold contributions. First, it critically reviews empirical literature along the key dimensions of inflation targeting (IT)—skepticism/critique to ascertain whether such skepticism is a myth or reality. Second, it critically reviews the so-called preconditions and operational prerequisites of IT and evaluates Pakistan's existing state to draw lessons on whether Pakistan is in a position to adopt IT successfully. Contrary to the skeptic's views, the review indicates that by and large the benefits of IT are promising not only in terms of macroeconomic performance—as measured by inflation, output, interest rate, exchange rate and their variants—but it also allows flexibility to effectively deal with real, financial as well as external sector shocks. The current state of preconditions and operational prerequisites in Pakistan seems adequate, which better positions the State Bank of Pakistan (SBP) to adopt IT. Statutory prioritisation of price stability, consistent inflation targets, and strict accountability mechanisms as well as aggressive disinflation need to be improved for successful implementation of IT.

JEL Classifications: E31, E52, E58.
Keywords: Inflation Targeting Skepticism, Performance, Preconditions and Operational Prerequisites if Inflation Targeting, Pakistan.

1. INTRODUCTION

Since adopting inflation targeting (IT) as a monetary policy framework by New Zealand in 1990, the multifaceted critique put forth by the skeptics has overwhelmed it. The main concern about IT essentially emanated from the theoretical postulation that under IT a central bank gives more weight to inflation stabilisation, which in turn increases output variability (Rogoff, 1985; Herrendorf, 1998). Later, Truman (2003) broadly classified the views of skeptics under three major categories. First, the belief that IT is too hard; second, the opinion that IT is too soft, and third—rather extreme—is the view that IT would not work. IT has been perceived by skeptics to be a monetary policy set up that 'only focuses on inflation objective', thereby unnecessarily increasing the variability of growth (Friedman and Kuttner, 1996; Blanchard, 2003). A relatively less popular but contrasting view is that IT is too soft (Genberg, 2002; Kumhof, 2002), especially when compared to exchange rate regimes. The idea is that, in a limited sense,

Zafar Hayat <zafarhayat78@gmail.com> is Senior Economist, IMF ResRep Office, Islamabad. Saher Masood <smasood@imf.org> is Economic Analyst, IMF ResRep Office, Islamabad.

Author's Note: The paper primarily builds on the Principal Author's PhD work. The authors are grateful to the supervisors, colleagues, and anonymous referees for their useful comments. The views expressed in this paper are solely that of the authors and may not be associated with any individual or an organisation in anyway.

under IT, discretion allowed to central banks in the form of target ranges for inflation weakens the strength of the target as an anchor of inflation expectations. The viewpoint that IT would not work was primarily based on the argument that it is too demanding, and due to the absence of technical and institutional preconditions, this strategy may not be implemented successfully. This dimension of the IT-skepticism pertains mainly to developing countries, particularly, in terms of lacking expertise and inadequate status of the preconditions of IT (Masson, et al. 1997; Calvo and Mishkin, 2003), which may affect credibility, thereby leading to poor macroeconomic outcomes.

Epstein and Yeldan (2010) believed that inflation should be controlled but did not agree with the prescription of inflation in the 2 percent to 4 percent band. They advocated broadening the responsibilities of central banks by including real variables, such as investment allocation or real exchange rate that directly impact poverty, employment, and economic growth. Chowdhury and Islam (2011) remained skeptical that being an important component of IMF's macroeconomic policy advice, IT has proven to be a hindrance in achieving the millennium development goals, particularly in terms of poverty reduction. They believe that too much focus on price stability may cause output volatility and hence lower economic growth, especially in the developing economies, which are prone to supply shocks.

Negligence in the financial sector is yet another area where skepticism prevailed. Blanchard, et al. (2010) argued that the scope for monetary policy to respond to shocks at lower inflation is limited. Aydin and Volkan (2011) made a similar point that under a conventional IT-framework, monetary policy does not respond to shocks of financial nature unless its effects become visible in inflation and output and that, in general, such a framework does not respond to shocks preemptively (see also Frappa and Mesonnier, 2010; Woodford, 2012; Baxa, et al. 2013 for similar arguments).

In line with the prevailing skepticism regarding IT, numerous Pakistan-specific studies, such as Chaudhry and Choudhry (2006), Akbari and Rankaduwa (2006), Felipe (2009), and Naqvi and Rizvi (2010), also opposed its adoption. By and large, these authors based their argument against the adoption of IT on two significant points. First, they are skeptical that the strategy may hurt economic growth, and second, the preconditions for IT in Pakistan are not in place and, therefore, should not be adopted.

Amid all this multidimensional skepticism around IT, not only an increasing number of countries have adopted IT, but its popularity has grown over time. The SBP also envisions its adoption by 2020 (SBP Strategic Plan 2016–2020). With this background, if the highlighted skepticism is more of a myth than reality, only then the SBP's decision to adopt IT could be justified. However, if the skepticism is more of a reality, then the decision of the SBP to adopt IT may not be a prudent move. The focus of this paper thus is to critically review the empirical evidence to assess whether the highlighted skepticism—along its key dimensions—is a myth or reality to seek lessons and a way forward for the future course of the thus far failed monetary policy set up in Pakistan (Hayat, et al. 2016; Hayat, et al. 2017).[1]

[1]It is important to acknowledge that adoption of IT by Pakistan has been proposed by several studies including Khalid (2006); Zaidi (2006); Moinuddin (2009); Saleem (2010) and Zaidi and Zaidi (2011). They, however, founded their arguments in favour of IT either on the basis of 'instability of money demand function' which potentially renders continuation of monetary targeting less favourable, or that 'IT has performed well in emerging market countries', and therefore it is appropriate for Pakistan to move towards IT.

The review of the critical mass of literature in terms of empirical evidence shows that the prevailing skepticism around IT is more of a myth than reality. By and large, the IT countries (both developed and developing) have performed credibly well not only in terms of performance of the key macroeconomic indicators i.e., inflation, output, interest rate, exchange rate, and their variants, but also in terms of the ability to deal with external shocks as big as the financial crisis. Further, the existing state of the preconditions and the operational prerequisites in Pakistan seems adequate, and therefore the SBP is likely to have attained ground for successful adoption and implementation of IT. Nevertheless, it will have to work out inflation targets consistent with price stability while prioritising the latter to help build credibility and institutional accountability mechanisms with the concerned ministry to ensure its adoption in letter and spirit.

The remainder of the paper is structured as follows. Section 2 discusses the evolution of IT from a theoretical perspective as a remedy for inflation bias and highlights the scope of alternative monetary policy strategies in containing inflation bias. Section 3 brings forth the findings of the empirical literature regarding the actual performance of inflation targeters (ITers) along the lines highlighted by the skeptics. Section 4 assesses the essence of the so-called IT preconditions in general and their existing state in the case of Pakistan in particular. Section 5 highlights and evaluates Pakistan's case for IT in terms of the key operational prerequisites. Finally, Section 6 concludes the paper.

2. IT IN THEORY AND PRACTICE AND THE SCOPE OF ALTERNATE MONETARY POLICY STRATEGIES IN COMBATING INFLATION BIAS

The theoretical foundations of the time-inconsistency problem put forth by Kydland and Prescott (1977) and Barro and Gordon (1983) attracted considerable research (see Gartner (1994) and Gartner (2000) for surveys). The essence of the theory is the well-known outcome of inflation bias, which results from the conduct of monetary policy in a discretionary manner—especially when it tries to attain a higher than the potential growth rate of the economy. Since inflation bias is not desirable, many studies in this context focused on ways of conducting monetary policy, particularly institutional arrangements that may help mitigate inflation bias by constraining discretion.

Broadly, four solutions to the problem have been suggested in the literature; punishment equilibria, incentive contracts, reputation, and delegation. The latter gained relatively more popularity after the influential work of Rogoff (1985), who suggested delegation of the conduct of monetary authority to a central banker who is independent and gives more importance to the inflation objective vis-à-vis the output objective. In subsequent research, the delegation of the monetary authority to an independent central banker is emphasised largely under two main arrangements. The first, is the implementation of the performance contracts, and the second, is the implementation of inflation targets. Person and Tabellini (1993) and Walsh (1995) modeled performance contracts with the presumption that central banks have both instruments as well as goal independence. Under the arrangement of instrument independence, the central bank can choose its policy without government interference, and under the arrangement of goal independence, the central bank can also choose the policy goal (Beetsma and Jensen, 1998).

Later, Svensson (1995) examined the IT regime's performance in addressing the inflation bias problem. The study interpreted IT as the delegation of authority to a policy maker with three main responsibilities: an explicit inflation target, implicit output target, and an implicit weight on output stabilisation. In addition, while following Rogoff's terminology, the study showed that an inflation target can achieve the second-best equilibrium. He, therefore, suggested 'delegation' of the monetary authority to a policy maker with a low inflation target and a relatively higher consideration for inflation stabilisation. Technically, the band of the inflation target should be relatively narrow as the width of the band represents an implicit consideration for output stabilisation. Thus, the broader the band width of the inflation target, the more would be the scope for inflation bias. Similarly, Herrendorf (1998) concluded that IT under instrument independence mitigates the inflation bias. Although, it does not entirely eliminate the phenomenon because the government still has the discretion to revise the target, implying that the central bank does not have goal independence.

With this discussion about the evolution of IT as an outcome of the endeavor against inflation bias, the attention is now turned to briefly discuss alternative strategies to IT and their relative standing in offering a solution to the problem of inflation bias. In practice, central banks use various monetary policy strategies to achieve the goal of price stability. These strategies include exchange rate pegging, monetary targeting, 'just do it', and IT (Mishkin, 1997).[2] Although all these strategies have their own advantages and disadvantages, the focus of the current study is to circumscribe the implications of these strategies for inflation bias and output stabilisation.

The strategy of exchange rate pegging, for example, does not allow discretion to pursue an expansionary monetary policy to reap the gains from the output, hence limiting the scope for the creation of inflation bias. On the other hand, monetary targeting possesses a considerable scope to create inflation bias. Bernanke and Mishkin (1992) are of the view that central banks have hardly been able to adhere to strict rules for monetary expansion. To meet the short-term objectives, such as real output growth and exchange rate stabilisation, the central banks using the monetary targeting strategy to control inflation often deviate from their targets.[3] Similarly, the 'just do it' monetary policy strategy, although forward-looking, offers monetary policy makers an untamed discretion to deal with unforeseen economic shocks. This discretion may potentially create inflation bias. IT, however, is a framework best described as 'constrained discretion' (Bernanke, et al. 1999; Svensson, 2009). An explicit inflation target makes a central bank accountable for its policy actions and, simultaneously, allows flexibilityfor the policy maker to deal with supply shocks. For example, the band of the inflation target provides flexibility for monetary policy makers to adjust to supply shocks. Another source of flexibility with IT central bank is its accountability in terms of core inflation, which is an indicator of inflation adjusted for supply shocks.

Both IT and 'just do it' strategies of monetary policy are prone to create inflation bias via political pressures. The former, however is relatively immune in the sense of

[2]Just do it monetary policy strategy refers to the conduct of monetary policy in a pre-emptive manner without having an explicit nominal anchor. Moreover, there is no unique definition of IT, however, refer to Leiderman and Svensson (1995) and Bernanke, et al. (1999) for some related discussion on the framework.

[3]See Mishkin and Posen (1997) and Clarida and Gertler (1997). Also see Omar and Saqib (2009) for related evidence in case of Pakistan.

being accountable and hence cannot use its discretion to systematically raise the level of output. Moreover, transparency is another distinguishing feature that places IT above the 'just do it' strategy (Mishkin, 1997). McCallum (1996) concluded that IT is generally attractive as compared to other discretionary modes of monetary policy strategies and is likely to yield superior results in the long run. IT derives its superiority from the fact that other discretionary modes of monetary policy lead to inflation bias that results from the pressures on the central bank emanating from the pursuit of short-term gains.

Thus, from the discussion above, it may be inferred that although IT is not a panacea for the inflation bias problem, it seems the best available framework among the alternatives to cure it. The framework confines discretion only to the short-run (to deal with shocks) and enhances long-term commitment to the inflation objective, and therefore helps mitigate the inflation bias problem of a discretionary monetary policy strategy.

3. SKEPTICISM OF AND EMPIRICAL EVIDENCE ON THE MACROECONOMIC PERFORMANCE OF IT

As mentioned earlier, skeptics have broadly questioned IT based on the possibility of macroeconomic nonperformance, inattention to financial sector developments, and inadequacy of preconditions before its adoption. This section critically reviews the empirical evidence to determine whether IT led to improved macroeconomic outcomes, and to what extent the notion of the neglect of the financial sector is founded to support the conclusion of nonperformance and adoption of IT.

3.1. Inflation: Average, Volatility, Persistence, and Expectations

Although the theoretical foundations envisage an improvement in terms of inflation due to the adoption of IT, Ball and Sheridan (2003)—perhaps the pioneering empirical study that is critical of the performance of IT—found evidence, which to the contrary suggested that IT did not seem to have improved the inflation performance. They argued that since the non-targeters exhibited improved inflation performance over the same time, the better performance may not be attributed to the adoption of IT but to factors other than targeting. In their view, since the ITers had higher inflation rates before adopting IT, their results may mark an exaggerated outcome. Ball and Sheridan put this notion in the words, "Just as short people on average have children who are taller than they are, countries with unusually high and unstable inflation tend to see these problems diminish, regardless of whether they adopt inflation targeting. Once we control for this effect, the apparent benefits of targeting disappear" p. 3.

An important criterion to judge the performance of IT strategy, thus, could be its performance in terms of inflation, as price stability is the overriding objective of monetary policy under IT. Being fully aware of the importance of price stability, not only developed but also developing countries (being persuaded by the framework's effective performance and the higher rates of inflation in these countries) adopted IT (Mishkin and Schmidt-Hebbel, 2007; Walsh, 2009) and still others are planning on it.[4] Given the

[4]Roger and Stone (2005) noted that despite frequent target misses no country has left IT strategy due to its flexibility, lack of realistic alternatives and high standards of transparency and accountability.

findings of Ball and Sheridan (2003) for nonperformance of the IT in terms of inflation, it is expedient to survey whether this notion is supported by empirical evidence as per the findings of other studies as well? For an extensive assessment in terms of this crucial indicator, various dimensions, including average inflation, inflation persistence, inflation variability, and inflation expectations, are considered.[5]

3.1.1. *Average Inflation*

While assessing IT, Corbo, et al. (2001) attempted to answer the question of ITers success in reducing inflation rates and found that, on average, they tend to have met the targets for inflation. The study reported that the average deviation from its target in the case of ITers was 12 basis points. Ammer and Freeman (1995), Haldane (1995), Mishkin and Posen (1997), Kuttner and Posen (1999), Bernanke, et al. (1999), Cecchetti and Ehrmann (1999), and Neumann and Von (2002) are some of the other studies with similar findings of a considerable reduction in inflation after the adoption of IT. Petursson (2005), however, documented that the deviation from the target approach is too narrow a perspective for the assessment of IT, and therefore used average inflation both before and after adoption of IT for a sample containing 21 ITers and 6 non-targeting industrial countries. The findings of the study revealed that inflation was successfully reduced in the last five years prior to the adoption of IT from over 30 percent to 4.5 percent in the ITers. In contrast, in non-targeting industrial countries, the inflation was subdued from 5 percent to 2.5 percent. Several other studies (Vega and Winkelried, 2005; Batini and Laxton, 2006), while including developing countries in their samples, found IT to be successful in lowering inflation not only in developed but also in developing economies. Vega and Winkelried (2005) controlled for the level of inflation prior to the adoption and found that adoption of IT decreased average levels of inflation both in developed and developing countries, particularly with a strong effect on the latter.

Concalves and Salles (2008) and Lin and Ye (2009) addressed the self-selection problem highlighted by Ball and Sheridan (2003)—through the technique of propensity score matching—in the context of emerging market economies with extended data sets and found robust evidence contrary to that of Ball and Sheridan. As per their results, emerging and developing countries significantly reduced average inflation rates due to the adoption of IT. While extending the analysis to a set of 180 countries, Mendonca and Souza (2012) found supporting evidence for the reduction in inflation by ITers. They concluded that IT is an ideal framework for developing economies.

3.1.2. *Inflation Volatility*

Since the critique of Ball and Sheridan (2003) involved the dimension of inflation volatility, evidence of the inflation performance of the IT regime has also been sought in terms of the inflation variability. On this point, Levin, et al. (2004) found that the overall inflation variance in both the ITers and non-ITers is roughly similar. They, however further argued that shocks to inflation in the IT countries under the sample period have been larger compared to the non-IT countries, which is indicative of the relatively better performance of ITers. Petursson (2005) also found that inflation variability (using

[5] See Fuhrer (2009) for definition and measurement of inflation persistence.

standard deviations) has reduced after the adoption of IT by the ITers. Addressing the mean reversion notion of Ball and Sheridan (2003) for a set of 36 emerging market economies, Conclaves, and Salles (2008) found that the adoption of IT significantly reduced inflation volatility. Similarly, Lin and Ye (2009), while exploring if IT makes a difference in developing countries, found that 13 developing countries which adopted the strategy successfully lowered not only their inflation but also inflation variability (see also Mendonca and Souza, 2012 for supporting evidence from a larger sample) .

3.1.3. *Inflation Persistence*

Inflation persistence is yet another dimension of inflation in the empirical literature through which the performance of IT has been assessed. For instance, Siklos (1999) found a significant reduction in inflation persistence after adopting IT for a subset of countries, including New Zealand, Canada, Spain, Finland, the United Kingdom, and Sweden. Several other studies have also reached similar conclusions, such as Kuttner and Posen (1999), King (2002), Levin, et al. (2004), and Petursson (2005).

3.1.4. *Inflation Expectations*

Lastly, inflation expectations are an important dimension in assessing the inflation performance of the IT strategy. Johnson (2002) analysed the expected inflation behaviour change for a set of 11 countries. The panel included five IT countries (New Zealand, Australia, Canada, Sweden, and United Kingdom) and six non-targeting industrial countries (Germany, Netherland, France, Italy, United States, and Japan). The study concluded with strong evidence of a large reduction in expected inflation after announcing the inflation targets.[6] Similarly, Gavin (2003) concluded that IT central banks by announcing their objectives effectively are able to anchor expectations. This, in turn, makes it easier for them to achieve the objective of price stability. Levin, et al. (2004) also reached similar conclusions that IT has played an important role in anchoring long-run inflation expectations.

Demir and Yigit (2008), while investigating whether the announcement of inflation targets has been instrumental in building credibility and shaping inflation expectations, found supporting evidence (see also Libich, 2008). Gurkaynak, et al. (2010), while examining the cases of U.K, U.S and Sweden found that in the case of the former (an IT country), long-run inflation expectations are far better anchored than the latter where the volatility of expectations is higher. Johnson (2003) investigated the effect of inflation targets on the level of expected inflation. His results indicate that, after the announcement of targets, predicted forecasts are less than actual forecasts in Australia, Canada, New Zealand, and Sweden. It provides enough evidence that targets reduced the level of expected inflation. Recently Capistran and Ramos-Francia (2010) in order to explore whether IT affects the dispersion of inflation expectations found that the dispersion is smaller in targeting regimes. They further found that the dispersion in

[6]It is however pertinent to mention that the previous literature including Laidler and Robson (1993); Bowen (1995) and Bernanke, et al. (1999) did not find satisfactory evidence of the impact of inflation targets on inflation expectations. The apparent reasons for the lack of such evidence are the limitations in terms of the short time period of IT and only analysing the unconditional impact of inflation targets on expected inflation (Johnson, 2003).

inflation expectations in developing countries is smaller and more significant than in advanced countries.

3.2. Output, Output Variability, and Pro-poor Growth

Like other monetary policy strategies, IT has also been subject to criticism, especially concerning output stabilisation. IT is sometimes perceived as 'inflation only' targeting perhaps with no flexibility or consideration for output and employment. Bryant (1996) and Rivlin (2002), for example, view IT as the choice of a trade-off between inflation and output (Philips curve) and inflation variability and output variability (Taylor curve). However, since a few studies have argued that IT allows reasonable flexibility with the central banker to deal with the output shocks, Debelle (1999) therefore deems this kind of criticism misplaced. He argued that the framework is sufficiently flexible while deriving its flexibility from the targeting bands and policy horizons. In practice, short-run inflation variability is allowed to a certain degree, leaving some room for output variability at low levels to maintain medium-term price stability. Debelle (1999), while exploring wether IT pays adequate attention to output stabilisation, concluded that even in the case of strict IT, output considerations are important due to their crucial role in determining future inflation.

As far as the empirical evidence is concerned, Cecchetti and Eahrman (2000) found results suggesting that both IT and non-IT countries increased their revealed aversion to inflation variability and therefore suffered increases in their output volatility. Ball and Sheridan (2003) and Gambetti and Pappa (2009) explored whether IT made a difference along the dimension of output and output volatility and output and inflation volatility but could not find supporting evidence for improvement. However, Brito and Bystedt (2010) came up with partially contrasting results from Concalves and Salles (2008). They re-evaluated the performance of 36 developing countries and concluded that although the IT countries have lowered their inflation rates but when the inflation-output trade-off is accounted for, there is no significant indication of improvement.

Arestis, et al. (2008) found evidence that adopting IT helped improve the trade-off between the output gap and inflation variability, which in their view, might have occurred due to a relatively higher degree of monetary policy transparency and flexibility in the institutional framework. Truman (2003) and Hu (2003a, 2003b) found that IT has resulted in a significant positive relationship with growth and a significant negative relationship with inflation. Levin, et al. (2004) documented that IT has improved the trade-off between inflation and output volatility in the IT countries. Corbo, et al. (2001), Neuman and Von (2002), and Petursson (2005), among others, have also come up with similar conclusions. Apergis et al. (2005) concluded that forward-looking rules help ensure greater macroeconomic stability.

Concalves and Salles (2008) explored whether IT matters for developing countries while addressing the issues with Ball and Sheridans (2003) methodology. The overall number of countries analysed was 36, out of which 13 countries were those that had already adopted IT. It was found that IT countries witnessed significant decreases in inflation and output variability as compared to the rest with alternative monetary policy regimes. Roger (2010) also reached a similar conclusion in his research.

Mollick, et al. (2011) found that IT has led to improved output growth both in developed and developing countries during marked globalisation years from 1986–2004. They noted that since IT ensures economic growth along with price stability, it is more pro-poor. For example, Kakwani and Son (2008) argued that growth associated with low levels of inflation is pro-poor because this type of growth benefits the poor proportionately more than the non-poor and that a higher level of inflation is related to anti-poor growth.[7] Attention has been drawn in Hayat (2016) towards this crucial point that since a bigger chunk of Pakistan's populace is either living below the poverty line or is close to it, price stability may be beneficial, as on one hand, inflation would be low, and on the other hand sustainable economic growth can be achieved. Consistent with the aforementioned, Hayat (2018) found that in the case of Pakistan, inflation exceeding the 5 percent level is detrimental to real growth, and inflation ranging between 1 percent to 3 percent is significantly growth enhancing. He argued that the existing discretionary monetary policy strategy had induced significant losses to the Pakistani society because historically, in almost 68 percent of the 50 years' time from 1961 to 2010, actual inflation has exceeded the threshold level of 5 percent, thereby causing twofold losses to the society i.e., in terms of high inflation and lower growth than otherwise was achievable.

3.3. Interest Rate Volatility

Interest rates are the primary policy instruments central banks use in monetary policy (Sellon and Weiner, 1996). Several studies have used interest rates to assess the performance of IT strategy. Ball and Sheridan (2003) did not find any significant evidence in terms of reduction of interest rate variability that can be advocated to IT. Nevertheless, Kahn and Parrish (1998) observed that short-term nominal interest rates are lower and less volatile in the post-adoption period compared to the pre-adoption period in IT countries. For the real interest rates, they observed that IT countries had witnessed an increase in the real interest rates reflecting tight monetary policy. A similar finding was reached by Neumann and Hagen (2002) that, on average, the short-term interest rates and volatility have fallen in the IT economies after its adoption. While comparing the variability in short-term interest rates before and after the adoption of IT, Petursson (2005) also found a general decrease in variability after the adoption of IT, a result consistent with the earlier findings of Kahn and Parrish (1998) and Neumann and Hagen (2002).

3.4. Exchange Rate Pass-through and Variability

Vulnerability in exchange rate shocks is one of the concerns— especially from a developing country's perspective—because an increase in imported prices, when passed on to domestic prices, may affect the performance of the IT in terms of achieving its

[7]Recently, Nuguer and Powel (2020) concluded on similar lines that a higher inflation implies high, interest and unemployment rates. Consequently, the poor relying on wage incomes tend to have more debt than savings and are more likely to losing jobs as inflation and interest rates rise. This study also demonstrated that not only low inflation is associated with a reduction in poverty, but a growing middle class i.e., negatively correlated with inequality. For instance, their model suggests that increasing inflation by 1 percent increases the percentage of low-income households by around 7 percent and reduces the percentage of high-income households by around 1 percent.

inflation targets. Much, however depends on whether the adoption of IT increases or decreases the exchange rate pass-through. To explore the effect of IT adoption on exchange rate pass-through, Coulibaly and Kempf (2010) found that not only the contribution of exchange rate shock to price fluctuations in emerging targeters is, more important than the non-targeters, but in the former case the pass-through had declined after the adoption of IT.[8] This finding is consistent with Taylor (2000), who argued that exchange rate pass-through is lower in a low inflation environment because firms expect a deviation from inflation to be less persistent and therefore pass on less of an exchange rate-induced increase in the price of imported inputs to its selling prices. A step further, evidence of a considerable decline in exchange rate pass-through in Indonesia and Thailand at domestic level to the prices of tradable and non-tradable goods was also found by Siregar and Goo (2010)—except in the case of tradable goods for Indonesia.

In terms of the variability of the exchange rate, Petursson (2005) found results consistent with the theoretical arguments that price stability at lower levels is positively related to exchange rate stability. He concluded that IT had decreased exchange rate volatility on average, specifically in countries with a floating exchange rate regime before they adopted IT. It was argued that the increased volatility in the exchange rate in some IT countries is due to the fact that prior to IT those countries practiced a fixed exchange rate regime.

Lin (2010) extended the analysis of Lin and Ye (2009) to see the effects of IT on exchange rate volatility and international reserves while using the propensity score matching methods. He found significantly different impacts on developing and advanced countries. The developing countries showed significant improvements in nominal/real exchange rates and international reserves stability, while such significant improvements were lacking in the latter.

3.5. Response to Financial Sector Developments

As indicated in the introduction, one skepticism about IT is that it is too narrowly focused on price stability to the extent that financial sector developments are ignored (Frappa and Mesonnier, 2010; Woodford, 2012).[9] Several economists even went to strong conclusions about the health of the IT in dealing with the financial sector crisis. For example, the crisis has 'unveiled the fallacy' of IT (Grauwe and Vansteenkiste, 2007); the IT 'has failed' (Leijonhufvud (2008)) and that the IT 'can increase the likelihood of financial crisis' (Giavazzi and Giovannini, 2010). Woodford (2012) nevertheless argued that these charges on IT are not directly relevant to the central claims put forth by the proponents of IT. In his view, the main thesis against IT could be justified only on one aspect of the IT doctrine (which, for some reasons, developed in the previous two decades) that an IT central bank need not pay attention to financial developments except to the extent that they tend to affect the inflation outlook. In part, it was therefore concluded that an IT central bank should take into account the possibility of intermittent disruptions as experienced during the crisis. To this end, Frappa and Mesonnier (2010) found supporting evidence; however, they stressed further exploration of the matter.

[8]A similar result was also reached by Mishkin and Schmidt-Hebbel (2007) but their sample did not include emerging inflation no-targeters as control group (Coulibaly and Kempf, 2010).

[9]See also Woodford (2012).

Amidst this critique, there exist opposing views and empirical evidence, which may not be overlooked. For example, Svenson (2009) argued that conditions that led to the crisis are associated mainly with supervisory and regulatory failures rather than monetary policy failures. He concluded IT as the best monetary policy framework among the alternatives in the wake of a financial crisis. Dale (2009) argued that the characteristics of IT in the form of low stable inflation and transparency have proven helpful in combating the crisis and stresses the need to consider asset prices while conducting monetary policy as it may hinder the achievement of an inflation target. Filho (2010) concluded that IT has suitably dealt with the crisis. On average, IT countries have effectively managed the crisis; particularly, they were able to reduce nominal policy rates more than the non-targeting countries. They also found some evidence that IT countries not only performed well on the unemployment front but showed relatively higher industrial production and output growth rates. Recently, Andersen, et al. (2014) attempted to explore if IT conferred benefits in terms of economic growth to the adopting countries during the financial crisis and found that IT countries performed well vis-à-vis countries with other monetary regimes.

In a most recent attempt, Fouejieu (2017)—a study that is more directly related to the mainstream skepticism put forth by Woodford (2012)—investigated whether the emerging market ITers are financially more vulnerable than the non-targeters and are the former less responsive to developments in financial sector than the latter. In contrast to the Woodford's view, his results based on empirical evidence indicate that the ITers are more responsive to financial risks than the non-targeters.

4. IT PRECONDITIONS AND THEIR EXISTING STATE IN THE CASE OF PAKISTAN

In principle, any monetary policy strategy, whether monetary targeting, exchange rate pegging, 'just do it' or IT, requires certain preconditions to be in place for its successful implementation and effective performance (Mishkin, 2000). For IT, these preconditions have been evolved and identified with the increasing experience of the framework over time. Several authors nevertheless seem to have built their arguments for and against the adoption of IT framework based on such preconditions; particularly in the context of emerging market economies. The more these preconditions exist, the more successful would be the implementation of the IT framework, and thereby the more would be the chances of favourable outcomes. Although this assertion is implicitly assumed in the literature on preconditions yet Amato and Gerlach (2002) found that the IT has successfully been implemented without preconditions being in place.

This section critically reviews what these preconditions are, what their existing state is—with particular reference to their efficacy in Pakistan— and is it necessary for all these preconditions or some of them to be fully in place right before the adoption of IT.

4.1. Central Bank's Independence

Central bank's independence—although equally desirable and important for implementing other monetary policy strategies (Amato and Gerlach, 2002)—is considered one of the preconditions for the successful implementation of IT framework.

Central bank independence can better be understood as 'goal independence' and 'instrument independence'. The former implies that the central bank has the authority to set the goal itself rather than the government or any other entity. Instrument independence, on the other hand, implies that the central bank can choose an appropriate instrument or set of instruments for the achievement of its goal(s).

It is the instrument independence rather than goal independence, which is desirable for the appropriate conduct of monetary policy (Blinder, 1998; Masson, et al. 1997 Amato and Gerlach, 2002). In the case of Pakistan, the SBP enjoys complete instrument independence. Whereas, in terms of the goal independence, the SBP—as required by the statutes—has to consider the government's inflation and growth targets while formulating monetary policy. In a recent study, Hayat (2017) noted that in the case of Pakistan, the way the government's annual inflation and growth targets are set, they do not provide a fundamental framework for achieving price stability.Rather if the SBP would try to achieve the ad-hoc and inconsistent inflation and growth targets of the government, the policy would instead lead to price instability. He further argued that since monetary policy may not be directed or adjusted contemporaneously to achieve explicit growth targets in the same year they are set, statutory amendments in line with the best monetary policy practices across the globe, therefore may help the SBP to successfully implement the IT to yield desirable outcomes.

Another dimension of the central bank's independence is the government's involvement in the monetary policy decision-making process, which normally takes place through the presence of government official(s) on the Board or designated monetary policy committee. Encouragingly, through a recent amendment in the SBP Act 1956, the direct involvement of government via its member on the monetary policy committee has been eliminated (Hayat, 2017), which therefore builds a certain degree of confidence in terms of central bank's independence on statutory front.

4.2. Central Banks' Accountability

Carare, et al. (2002) argued that the central bank's accountability for achieving the prime objective (target) of price stability is another precondition that can help in the successful implementation of IT. This is an essential feature as on the one hand, it keeps the policy maker focused on the target for inflation—which is presumed to be set in a way that leads to and ensures medium to long-term price stability—and on the other hand, it provides insulation against political pressures. Further, it is argued that accountability in the IT framework is ensured through increased transparency and communication with the public—a dimension which is much likely to be under the control of the central bank itself, and as long as willingness is there, improvements are possible—therefore, it should neither be a source of concern nor should it act as an impediment in the way of adoption of IT.

As far as Pakistan's specific case is concerned, proper accountability mechanisms will have to be put in place. Since currently the SBP Act does not stipulate any accountability mechanism for the SBP in case of non-achievement of inflation goal, Hayat (2017) noted that necessary statutory amendments to the SBP Act 1956 (that are currently missing) in line with the best monetary policy practices are required to ensure accountability of the SBP.

4.3. Price Stability as the Superseding Objective of Monetary Policy

Under an IT framework, price stability is the overriding objective of monetary policy (Mishkin, 2004). Clear inflation targets, either in the form of a point or a range, are set and the monetary policy is expected to be geared to achieve those targets. This, however, may not necessarily mean that price stability is the only objective. The experience with the ITers shows that they pursue other macroeconomic objectives if the achievement of such objectives remains consistent with the inflation target (Debelle, 1998). In the case of a conflict with other objectives, more weight is given to price stability. In summary, there remains a clear institutional commitment to price stability rather than other nominal anchors (Mishkin and Schmidt-Hebbel, 2001; Jonas and Mishkin, 2003).

Hayat (2017) noted that the SBP tends to define and achieve price stability in terms of the government's assigned inflation targets, which essentially is a flawed and misleading practice because the government-assigned inflation targets are too high and erratic to be able to lead to price stability in any form. While recognising the acute price instability problem, he advocated the need to define price stability and suggested clear-cut price stability consistent numerical inflation targets band—preferably between 1 percent to 3 percent. It is further argued that since the SBP has dual objectives of inflation and real growth and targets a higher than natural rate of the economy, it would tend to produce higher (price stability inconsistent) inflation rates unless discretion is granted to the SBP is constrained. Therefore, constraining discretion by making price stability as the overriding objective of monetary policy in Pakistan remains one of the major impediments, which will have to be worked on;otherwise, adoption of IT by the SBP may not yield any desirable outcomes.

4.4. Forecasting Inflation

The ability to forecast inflation has been identified as another prerequisite for successful implementation of IT (Debelle, 1998; Carare, et al. 2002; Jonas and Mishkin, 2003; Batini and Laxton, 2006). The IT monetary policy regime is forward-looking by nature and therefore, inflation forecasts are needed for a central bank to be able to act preemptively to counter inflation before it begins to rise (Debelle, 1998). Central banks' capabilities to forecast inflation accurately depends mainly on the level of development of ITers at the time of adoption. However in general, the ITers tends to improve their forecasting capacities. Therefore, central banks may rely on simple models in the initial stages of IT adoption and simultaneously devote resources to its development (Batini and Laxton, 2006). Countries like Brazil, Czech Republic, and Israel used simple three or four equation models for the purpose of forecasting (Carare, et al. 2002). On the other hand, developed countries like New Zealand and Canada used more sophisticated models for forecasting (Drew and Hunt, 1998).

Batini and Laxton (2006), however found that most ITers had little or no forecasting capability at the time of adoption of IT. In practice, the central banks along with other qualitative, relevant information and judgment, adopt a certain monetary policy stance supported by the forecasts of inflation (Carare, et al. 2002). Similarly, Debelle (1998) argued that complete reliance on a model-based forecast of inflation is not the practice even in industrial countries, instead, the decisions regarding the monetary

policy stance are taken on the basis of other information and judgment supported by forecasts. Therefore, such models can be developed over time and should not be treated as a hindrance in the way of adopting IT frameworks by developing countries.

Many studies have highlighted and developed models to forecast inflation for Pakistan. For example, Bokil and Schimmelpfennig (2005) gave a leading indicator model (LIM), (ii) ARIMA, and (iii) a VAR model to forecast inflation in Pakistan. Haider and Hanif (2009) attempted to forecast inflation using artificial neural networks (ANN). Riaz (2012) evaluated the forecast efficiency of food price inflation and consumer price index by using the rationality criterion of forecasts. Hanif and Malik (2015) appraised the forecast performance of different multivariate models against univariate models across Pakistan's low, moderate and high inflation regimes. Hussain and Hayat (2016) showed that the incorporation of inflation expectations improved the forecast performance of univariate models at the SBP.

Recently, the forecasting and policy analysis system (FPAS) has endogenously been developed and implemented by the SBP for internal use. Although the inflation forecasts are currently presented in the SBP's quarterly and annual reports, regular reporting of the medium and long-term forecasts—as is practiced by ITers—remains the need of the hour. From all this discussion, it may be inferred that the SBP has made sufficient advancement in forecasting inflation that may conveniently fulfill the needs of IT to start with.

4.5. Healthy Financial System

The literature related to preconditions of IT suggests that financial system should be sufficiently sound to allow effective transmission mechanisms of monetary policy instruments (Jonas and Mishkin, 2003). Financial stability relieves central bankers from the concerns of health of financial sector as it may be in conflict with inflation targets (Carare, et al. 2002).

In the case of Pakistan, Sophastienphong and Kulathunga (2008) observed that banking sector reforms implemented by the SBP have resulted in notable improvements in the soundness indicators of the financial sector and that Pakistan leads the region in performance and efficiency as well as corporate governance. As per the Financial Stability Review (FSR), issued by the SBP in 2015, the financial system of Pakistan was in a sound and stable state by the end of 2015. The report stated that the asset base of the overall financial sector in Pakistan has increased at a decent pace, and the financial depth has improved. More recently, the financial stress testing exercises of the SBP indicates that the country's financial system is resilient enough to sustain the adverse impact of the Covid-19 international crisis. Thus, the current state of the financial soundness of Pakistan seems good enough to support the adoption of IT.

4.6. Can IT be Adopted if All or Some Preconditions are not Met?

At times the preconditions are misperceived to be the set of conditions that are necessary for adoption of IT (Lucotte, 2012). If this were the case, New Zealand being the first ITer must have had at least a theoretical model before the adoption of IT at least with the so-called preconditions as the set of necessary assumptions for the IT model (to work) before its implementation. Thus, it is surprising to note that although widely

quoted as preconditions, no study, to the best of author's knowledge, seems to have laid down the minimum acceptable yardsticks that must be in place before the adoption of IT. For example, how was the financial sector's health measured—what indicators were used—and how was the minimum level of such indicators determined by the ITers before the adoption of IT? On this point, Lucotte (2012) noted that the experience of emerging countries shows that non-fulfillment of the preconditions is not an impediment to the adoption and success of this monetary policy framework.

Debelle (1998) does not regard it compulsory for all the prerequisites to be in place at the same time in the case of developing countries. Batini and Laxton (2006), to assess the role of preconditions in adopting IT, conducted a survey of 21 IT and 10 non-targeting central banks in emerging markets. They found that although the industrial ITers as compared to emerging market ITers were better in some dimensions, all the preconditions were not in place before adopting IT in any of these countries. They also found that no precondition significantly explained the improvement in macroeconomic performance after adopting IT. In addition to the aforementioned, Svensson (1997), Bernanke, et al. (1999), and Mishkin (1999) believe that the adoption of IT will lead to better macroeconomic outcomes because the initial credibility in these countries is low. Hence, the scope for improvement is greater.

In a recent study, Alpanda and Honig (2014) argued that IT may not only promote some of the preconditions but may be more successful when these conditions are lacking because there is ample room for improvement and preconditions therefore, as such should not stand in the way of adopting IT. This generalisation may work very well for Pakistan. For example, the SBP may achieve price stability if it focuses on inflation i.e. it will not only have to build its capacity to forecast inflation as accurately as possible but will act against it preemptively before the inflation begins to rise. This, in turn, will help effectively anchor inflation expectations if supplemented by appropriate communication policies and forward guidance.

Masson, et al. (1997), while assessing the scope for IT in developing countries, concluded that developing countries can choose IT provided *two* prerequisites are satisfied. The first, is the central bank's independence in terms of fiscal dominance, and the second is the absence of any other nominal anchor rather than inflation, such as exchange rate and output-stabilisation. It was argued that developing countries are plagued either with (i) the issue of fiscal dominance—i.e., seigniorage is an important source of financing— or (ii) low inflation does not tend to be the overriding objective of monetary policy. Although there does not seem to exist a compelling case for Masson et al. (1997)'s arguments, even if it is presumed that these two preconditions are necessary, the question remains whether Pakistan can still adopt IT?

As far as fiscal dominance is concerned, the current institutional set up of the SBP board indicates that there is no direct role of finance secretary in monetary policy decision making process as the monetary policy committee is now independent in its decisions. It is also important to note that empirical evidence for Pakistan indicates that fiscal dominance—as measured by seigniorage and government outstanding debt—is an irrelevant and fragile source of inflation bias in the long run (Hayat, et al. 2017). As far as the argument of the absence of any other nominal anchors—such as exchange rate and output stabilisation—is concerned, the latter, in the case of Pakistan, has been found to be the most relevant and relatively robust source of inflation bias. By and large, this

problem—of inducing excess inflation to stimulate real growth—however, can be overcome through self-restraint by the SBP in terms of using the monetary policy for output stimulation at the expense of higher inflation rates as has also been suggested by Hayat, et al. (2016), and Hayat, et al. (2019).

5. OPERATIONAL PREREQUISITES AND THEIR STATE FOR EFFECTIVE IMPLEMENTATION OF IT IN PAKISTAN

In addition to the preconditions, three other prerequisites of operational nature have been identified that may help in the effective implementation of IT. This section is advocated to bring forth these prerequisites from the literature and assess the current state of the preparedness of the SBP for adopting IT along these lines.

5.1. The Choice of an Appropriate Price Measure

To start with, one of the most important requirements under IT is the choice of an appropriate price index that can be used to determine the target rate for inflation, which can be conveniently communicated and may be well understood by the public. This is the nominal anchor, which is used to anchor the expectations of the public and economic agents. This essentially works as a tool for the central bank to develop its credibility by putting its endless efforts to achieve it.

The consumer price index (CPI) is the most popular and widely used index by IT countries (Haldane, 1995; Debelle, 1998; Schaechter, et al. 2000). As CPI overstates the inflation due to substitution bias, an alternative measure is the GDP deflator which has a wide coverage; however, it is not used by the ITers because it is not readily available and is subject to frequent revisions (Debelle, 1998; Schaechter, et al. 2000). Most of the ITers use either CPI or some variant of CPI commonly referred to as ‘core inflation’ or ‘underlying inflation’. There is no unique definition of core inflation. Various authors, however, have defined it in the context of their studies. For example, Eckstein (1981) defined it as ‘the trend increase in the cost of the factors of production’, Blinder (1997) defined it as a ‘persistence part of aggregate inflation’, Bryan and Cecchetti (1994) defined it as a measure that is most correlated with money growth and Bryan, et al. (1997) predicted it as a measure, which is more correlated with a smoothed trend inflation rate. Quah and Vahey (1995) gave its definition in terms of inflation having no long-run impact on output, which they estimated through a VAR system. Cogley (2002) defines core inflation as a response to changes in mean inflation, and Smith (2004) described it as the best forecaster of inflation.

The use of core inflation as a target allows central banks some flexibility to deal with supply shocks. It is also qualified with certain exemptions or escape clauses that allow some flexibility to the central bank (Haldane, 1995). The purpose of using core inflation is that the CPI is sensitive to supply-side shocks. A movement in CPI may result fromsupply-side factors on which the central bank has no control (Haldane, 1995; Debelle, 1998; Amato and Gerlach, 2002). Core inflation measures may also be used as an operational guide by the monetary authorities for analytical and forecasting purposes for the achievement of the target. One of the purposes of the use of the core inflation measures is to guide and keep the monetary policy focused in an appropriate direction (Cutler, 2001).

The use of core inflation thus helps fix the responsibility of the central bank for the price movements over which it has control. Moreover, these measures direct and help the monetary policy makers focus on the demand-driven price movements. Researchers have developed and devised various techniques for the computation and evaluation of core inflation measures. Broadly, core inflation measures are computed through the exclusion approach, limited influence estimators (trimmed mean and median), and the model-based techniques.[10] The most widely used approach for the computation of core inflation is the exclusion approach (Wynne, 1999), practiced since the 1970s (Vega and Wynne, 2001). Silver (2007) argued that countries often use exclusion-based methods when they first instigate inflation targets because they are timely, easy to understand, and transparent in that the user can replicate the measure.

The SBP has been reporting core inflation indicators since 2000s. Tahir (2006) constructed alternative core inflation measures for Pakistan using exclusion and trim-based measures and found that the latter is a better indicator. Similarly, Lodhi (2007) constructed nine alternative core inflation measures and evaluated them against an absolute criterion given by Marques, et al. (2000). Recently, Riazuddin, et al. (2013) obtained a new measure of core inflation through a new method by permanently excluding relatively volatile commodities from CPI basket in Pakistan. The Pakistan Bureau of Statistics now publishes indicators of core inflation even with a bifurcation as core rural and core urban on a monthly basis. Thus, given that not only sufficient and frequent data is available on CPI in Pakistan and that several indicators of core inflation have already been developed, which are regularly reported by the SBP, the issue remains trivial—i.e., it's just about making a choice between the headline and core inflation measures as a nominal anchor.

5.2. Specification of the Inflation Target (Point or Band)

Another operational prerequisite under an IT framework is the specification of an appropriate inflation target, which generally is specified either in the form of a point or a band using a headline or a certain measure of core inflation.[11] Practice varies across IT countries; for example, Australia, Brazil, Chile, Finland, Sweden and U.K. have point targets, whereas most ITers, including Canada, the Czech Republic, Israel, and New Zealand, have bands for inflation targets (Haldane, 2000). The choice between a point and a band inflation target essentially involves a trade-off between a stronger commitment to the inflation target and a certain level of necessary flexibility with the monetary policy makers (Debelle, 1998). A wider band allows greater flexibility, but at the same time, it allows more volatility in observed inflation, which in turn has adverse consequences both for future inflation (see e.g. Wilson, 2006 and Hossain, 2014) and central bank's credibility as the very idea of a strong commitment to the inflation objective is undermined. A wider band may also potentially induce lethargic behaviour

[10]The concept of limited influence estimators (trimmed mean and median) was first proposed by Bryan and Pike (1991) and Bryan and Cechetti, (1994). Subsequently, the methods have been used in various studies and practically numerous central banks estimate such measures for their use. Whereas, Quah and Vahey (1995) brought a new multivariate approach to the core inflation measurement while bringing in some economic theory to distinguish between core and non-core inflation.

[11]There is a slight distinction between a point IT and band IT frameworks. In the former the centre of the target band is explicitly mentioned (Dennis, 1997).

on the part of the central bank as being vigilant and proactive in terms of inflation stabilisation.

There are advantages and disadvantages of both the point and band targets. Haldane (2000), while discussing the reasons why U.K. chose a point inflation target, highlighted three main relative advantages. First, it provides a clear point of referral for the monetary policy makers, thereby keeping them focused, and at the same time, it encourages transparency. Second, it helps anchor inflation expectations of the private sector agents and third is that it enables the conduct of monetary policy in a symmetric way, particularly, when the inflation is on its long-term target. A point target, however, has the disadvantage of increasing the variability in output and has the potential to induce instrument instability of monetary policy (Debelle, 1998). For example, in case of instrument instability, the economy experiences excessive swings in the monetary policy instruments when central banks try to hit the inflation target. Moreover, point targets have been observed to be missed more often, which in turn may create the problem of credibility and reputation if not properly and effectively communicated and explained to the public.

Dennis (1997) noted that although theoretically, the point and band target/s are distinguished, it does not provide a basis for the choice of an appropriate bandwidth. On the other hand, empirical literature tries to address the problem of optimal bandwidth using the criterion that 95 percent of the inflation observations should fall within the target range (see Debelle and Stevens, 1995; Fillion and Tetlow, 1993; and Turner, 1996). Dennis, therefore, argued that the bands produced by these studies are appropriate for the central bank's accountability purposes but are less suited to reflect on the economic costs of inflation.

In the case of Pakistan, although few studies, e.g., Mubarik (2005), Hussain (2005), and Iqbal and Nawaz (2010) have empirically computed threshold inflation rates at 9 percent, 5 percent, and 4 percent–6 percent, respectively, the rates may not be used as inflation targets by the SBP because by definition a threshold inflation rate is a rate of inflation beyond which the inflation starts affecting the real growth negatively, which may not be desirable when viewed from the society's perspective (Hayat, et al. 2017, and Hayat, et al. 2018). A step further, they also investigated if all the historically observed inflation rates below the threshold level are equally beneficial to the society in the context of Pakistan. Consistent with the theory and practice of the notion of price stability, their empirical results indicated that inflation within the range of 1 percent–3 percent is beneficial to society in two ways. First, in this range, the inflation is already low enough to be desired by society as compared to any other higher inflation rates. Second, inflation in this range is desirable because it significantly enhances the real growth as compared to any other historically observed inflation rate (s) in Pakistan. Since inflation rates in the 1 percent–3 percent band closely conform to the very definition of price stability, these rates therefore, may form the basis of an appropriate choice for inflation targets. For example, a point of 2 percent or a band of 1 percent to 3 percent may be considered. This may not only allow achieving a low average inflation and low volatility in inflation but also a stable growth in real economic activity. Technically, the stabilisation of inflation in 1 percent–3 percent range also implies that the policy rates would eventually settle at low levels, and there will be no unnecessary pressures on the exchange rate, which will help

stabilise the external sector. The low and stable interest rate environment would also allow dealing with the unsustainably high accumulated debts, thereby creating space for healthy expenditures in the budget. The price stability in turn would also help promote saving, investment, and growth and will help provide a reasonable cushion to maneuver macroeconomic policies to deal with inundated shocks and crisis.

5.3. Costs of Disinflation

One of the widely discussed operational issues in the literature related to IT is the cost associated with disinflation (King, 1996; Mishkin and Schmidt-Hebbel, 2001). This is particularly applicable in countries where inflation rates are reasonably high (in double digits, for instance) before the adoption of IT. King (1996) argued that the costs of disinflation increase more than proportionately with the increasing speed of disinflation—if the countries have long experienced high inflation rates—because it takes time for the private sector to adjust expectations. Similarly, Mishkin and Schmidt-Hebbel (2001) argued that due to the imperfect credibility of central banks on the back of past higher inflation rates, the inflation inertia is more enormous. This makes a quicker disinflation potentially more costly. Sargent (1986), on the other hand, preferred a sharp decrease in inflation since expectations adjust quickly.

Practical experiences may vary from country to country regarding the speed of bringing down inflation to their desired levels. Canada, for example, attempted to bring down inflation from around 6 percent to a band of 1 percent–3 percent in four years, and New Zealand, on the other hand, aimed to bring down inflation into the band of 0 percent–2 percent rather quickly (King, 1996). Emerging market economies dealt with the disinflation problem by phasing IT gradually from informal to formal with an increasing success in lowering inflation (Mishkin and Savastano, 2000; Mishkin, 2000b; Mishkin and Schmidt-Hebbel, 2001). Although there is no consensus in the literature over a particular speed of disinflation to be optimal, two approaches are often cited: gradualism (Taylor, 1983) and the cold turkey approach (Sargent, 1986). The former view devotes a gradual approach to the disinflation so that wages and prices adjust smoothly to tight monetary policy due to the presence of inertia. The latter prefers a relatively quicker disinflation because inflation expectations adjust sharply, and it is supported by empirical studies, which found lower sacrifice ratios such as Ball (1993) and Zhang (2001).

Deciding on the appropriate speed of disinflation for Pakistan nevertheless is a non-issue for several reasons. First, currently, the inflation is already at higher levels beyond the threshold (5 percent level), which is inimical for growth; therefore the sooner the inflation is brought down to benign levels, the better (Hayat, et al. 2018). Secondly, since there is an inverse relationship between inflation (bias) and real growth (see Hayat, et al. 2018), technically, a relatively quicker disinflation would imply lower inflation bias and higher growth gains. Lastly, if the disinflation is done through a well-informed communication strategy, this would, along the way, not only help the SBP to build its credibility but will also help ease off the political/interest groups' pressures.

6. CONCLUSION

The synthesis of the literature highlights that in the set of monetary policy strategies being practiced; IT is an appropriate available strategy, which helps mitigate

the problem of inflation bias along with enough flexibility to deal with shocks. Although there remained some skepticism and uncertainty regarding IT in the sense that IT is rigid and may affect growth and other macroeconomic indicators adversely, however, no study to the best of author's knowledge has been able to produce substantive evidence to this effect. In contrast, the evidence indicates that IT has performed satisfactorily well in both developed and developing countries. By and large, it has improved the effectiveness of the monetary policy, which is evident from the improved macroeconomic indicators compared to other monetary policy regimes. The skepticism, therefore, seems to be a myth rather than reality. The literature, however, has identified some preconditions, which arguably are important but not strictly necessary for the successful implementation of the IT monetary policy framework before its adoption. Nevertheless, the so-called preconditions as well as IT-related operational prerequisites in the case of Pakistan seem a non-problem, as to a considerable extent, they are already in place while further improvements can be made along the way after adoption. Setting up inflation targets consistent with price stability, chalking out appropriate accountability mechanisms for non-achievement of inflation targets, and dealing with inflation preemptively are some of the main areas that need the attention of the concerned authorities in Pakistan.

REFERENCES

Akbari, A. H., & Rankaduwa, W. (2006). Inflation targeting in small emerging market economy: The case of Pakistan. *SBP Research Bulletin, 2*, 169–190.

Alpanda, Sami and Honig, Adam (2014). The impact of central bank independence on the performance of inflation targeting regimes, *Journal of International Money and Finance, 44*, issue C, p. 118–135.

Ammer, John & Freeman, Richard T. (1995). Inflation targeting in the 1990s: The experiences of New Zealand, Canada, and the United Kingdom. *Journal of Economics and Business, 47*(2), 165–192.

Amato, J. D., & Gerlach, S. (2002). Inflation targeting in emerging market and transition economies: lessons after a decade. *European Economic Review, 46*, 781–790.

Andersen, Thomas Barnebeck & Malchow-Møller, Nikolaj & Nordvig, Jens (2014). Inflation-Targeting, Flexible exchange rates and macroeconomic performance since the great recession. (CEPS Working Document No. 394).

Apergis, N., Miller, S. M., Panethemitakis, A., & Vamvikidis, A. (2005). Inflation targeting and output growth: Empirical evidence for the European Union. (IMF Working Paper No. WP 05/89).

Arestis, P., & Sawyer, M. (2008). New consensus macroeconomics and inflation targeting: keynesian critique. (Economia e Sociedade, Campinas). *17*, 629–653.

Aydin, B., & Volkan, E. (2011). Incorporating financial stability in inflation targeting frameworks. (IMF Working Paper, WP/11/224).

Ball, L. (1993). What determines the sacrifice ratio? (NBER Working Paper Series, WP No. 4306).

Ball, L., & Sheridan, N. (2003). Does inflation targeting matter? (NBER Working Paper No. 9577).

Barro, R. J., & Gordon, D. B. (1983a). A positive theory of monetary policy in a natural rate model. *Journal of Political Economy, 91*, 589–610.

Barro, R. J., & Gordon, D. B. (1983b). Rules, discretion and reputation in a model of monetary policy. *Journal of Monetary Economics, 12*, 101–121. .

Batini, N., & Laxton, D. (2006). Under what conditions can inflation targeting be adopted? the experience of emerging markets. (Central Bank of Chile Working Paper No. 406).

Baxa, J., R. Horváth, and B. Vašíček (2013). Time-varying monetary-policy rules and financial stress: Does financial instability matter for monetary policy? *Journal of Financial Stability 9 (1)*, 117–138.

Beetsma, R. M. W. J., & Jensen, H. (1998). Targets and contracts with uncertain central banker preferences. *Journal of Money Credit and Baking, 30*, 384–403.

Bernanke, B. S., & Blinder, A. (1988). Credit, money and aggregate demand. *American Economic Review, 78*, 435–439.

Bernanke, B. S., & Mishkin, F. S. (1992). Central bank behaviour and the strategy of monetary policy: observations from six industrialised countries. (NBER Macroeconomics).

Bernanke, B., Laubach, T., Minshkin, F., & Posen, A. (1999). *Inflation targeting: Lessons from the international experience.* Princeton University Press.

Blanchard, O. (2003). Comment on inflation targeting in transition economies: experience and prospects by Jiri Jonas and Frederic Mishkin. (NBER Conference on Inflation Targeting, Bal Harbour, Florida).

Bokil, M., & Schimmelpfennig, A. (2005). Three attempts at inflation forecasting in Pakistan. [IMF Working Paper No. WP/05/105].

Bowen, A. (1995). British experience with inflation targetry. (Centre for Economic Policy Research, London).

Brito, R. D., & Bystedt, B. (2010). Inflation targeting in emerging economies: Panel evidence. *Journal of Development Economics, 91*, 198–210.

Bryan, M. F., Cecchetti, G. S., & Wiggins, L. (1997). Efficient inflation estimation. (NBER Working Paper No. 6183).

Bryan, M. F., & Cecchetti, S. G. (1994). *Measuring core inflation*. University of Chicago Press.

Bryan, M. F., & Pike, J. C. (1991). Median price changes: an alternative approach to measuring current monetary inflation. (Federal Reserve Bank of Cleveland Economic Commentary).

Bryant, R. C. (1996). Central bank independence, fiscal responsibility and the goals of macroeconomic policy: An American perspective on the New Zealand experience. (Brookings Discussion Papers in International Economics 126).

Calvo, G., & Mishkin, F. S. (2003). The mirage of exchange rate regimes for emerging market countries. *Journal of Economic Perspectives, 17*, 99–118.

Capistran, Carlos & Ramos-Francia, Manuel (2010). Does Inflation Targeting Affect the Dispersion of Inflation Expectations? *Journal of Money, Credit and Banking*, *42* (1), . 113–134

Carare, A., Schaechter, A., Stone, M., & Zelmer, M. (2002). Establishing initial conditions in support of inflation targeting. (IMF Working Paper No.02/102).

Cecchetti, S. G., & Ehrmann, M. (1999). Does inflation targeting increase output volatility? an international comparison of policy makers' preferences and outcome. (NBER Working Paper No. 7426).

Chaudhry, M. A., & Choudhry, M. A. S. (2006). Why the state bank of Pakistan should not adopt inflation targeting? (SBP Research Bulletin).

Chowdhury, A., & Islam, I. (2011). Attaining the millennium development goals: The role of macroeconomic policies. *International Jounal of Social Economics, 38*(12), 930–952.

Clarida, R., & Gertler, M. (1997). How the Bundesbank conducts monetary policy. (NBER Working Paper No. 5581).

Cogley, T. (2002). A simple adaptive measure of core inflation. *Journal of Money, Credit and Banking, 34(1),* 94–113.

Concalves, C. E. S., & Salles, J. M. (2008). Inflation targeting in emerging economies: what do the data say? *Journal of Development Economics, 85(1),* 312–318.

Corbo, V., landerretche, O., & Schmidt-Hebbel, K. (2001). Assessing inflation targeting after a decade of world experience. *Internaitonal Journal of Finance and Economics, 6*, 343–368.

Coulibaly, D. & Kempf, H. (2010). Does Inflation Targeting decrease Exchange Rate Pass-through in Emerging Countries? (Working papers 303, Banque de France.)

Cutler, J. (2001). A new measure of core inflation in the U.K. (MPC Unit Discussion Paper No. 3 (London, Bank of England)).

Dale, S. (2009). Inflation targeting: learning the lessons from the financial crisis. (Remarks at Society of Business Economists' Annual Conference, London).

Debelle, G. (1998). Inflation targeting and output stabilisation. (IMF Working Paper 97/35).

Debelle, G. (1999). Inflation targeting in practice. (Research Discussion Paper 1999-08, Economic Analysis Department Reserve Bank of Australia).

Debelle, G., & Stevens, G. (1995). Monetary policy goals for inflation in Australia [Research Discussion Paper 9503 Reserve Bank of Australia].

Dennis, R. (1997). Bandwidth, bandlength, and inflation targeting: some observations. (Reserve Bank of New Zealand Bulletin, No.1).

Demir, Banu & Yigit, Taner M. (2008). Announcements and credibility under inflation targeting, *Economics Letters, Elsevier*, *100*(2), 249–253

Drew, A., & Hunt, B. (1998). The forecasting and policy system: preparing economic projections. (Reserve Bank of New Zealand Discussion Paper No. G98/7).

Eckstein, O. (1981). Core inflation. (Englewood Cliffs, N.J. Prentice-Hall).

Epstein, G. A., & Yeldan, A. E. (Eds.). (2010). *Beyond inflation targeting: Assessing the impacts and policy alternatives*: Edward Elgar Publishing Limited.

Felipe, J. (2009). Does Pakistan need to adopt inflation targeting? some questions. *SBP Research Bulletin, 5(1),* 113-161.

Filho, I. C. (2010). Inflation targeting and the crisis: an empirical assessment. (IMF Working Paper, WP/10/45).

Fillion, J. F., & Tetlow, R. (1993). Zero inflation or price level targeting? some answers from stochastic simulations on a small open-economy macro model in economic behaviour and policy choice under price stability. (Bank of Canada Publications).

Fouejieu, Armand (2017). Inflation targeting and financial stability in emerging markets. *Economic Modelling, 60,* (C), 51–70.

Frappa, Sébastien and Mésonnier, Jean-Stéphane (2010). The housing price boom of the late 1990s: Did inflation targeting matter? *Journal of Financial Stability*, *6*(4), 243–254.

Friedman, B., & Kuttner, K. (1996). A price target for U.S. monetary policy? lessons from the experience with money growth targets. (Brookings Papers on Economic Activity).

Fuhrer, J. C. (2009). Inflation persistence. (Federal Reserve Bank of Boston Working Paper No. 09-14.).

Gambetti, Luca & Pappa, Evi (2009). Does inflation targeting matter for output and inflation volatility? (Working Papers 410, Barcelona Graduate School of Economics).

Gartner, M. (1994). Democracy, elections and macroeconomic policy: Two decades of progress. *European Journal of Political Economy, 10*, 85–109.

Gartner, M. (2000). Political macroeconomics: a survey of recent developments. *Journal of Economic Surveys, 14*, 527–561.

Gavin, W. T. (2003). Inflation targeting: Why it works and how to make it work better (Federal Reserve Bank of St. Louis, Working Paper 2003-027B).

Genberg, H. (2002). Inflation targeting—the holy grail of monetary policy? (IHEID Working Papers, 022002, Hong Kong Institute for Monetary Research).

Giavazzi, F., & Giovannini, A. (2010), The low-interest-rate trap. Available at: www.voxEU.com

Grauwe, P.D., and Vansteenkiste, I. (2007). Exchange rates and fundamentals: A non-linear relationship?. Available at: https://doi.org/10.1002/ijfe.310

Gürkaynak, Refet S. et al. (2010). Does inflation targteting anchor long-run inflation expectations ? Evidence from the U.S., UK, and Sweden. *Journal of the European Economic Association*, *8*(6), 1208–1242.

Haider, A. & Hanif, Muhammad (2009). Inflation forecasting in Pakistan using artificial neural networks. *Pakistan Economic and Social Review, 47,* 123–138.

Haldane, A. (1995). Inflation targeting. (A Conference of Central Banks on the Use of Inflation Targets Organised by the Bank of England).

Haldane, A. (2000). Ghostbusting: The UK experience of inflation targeting. (IMF Seminar, March 2000).

Hanif, M. N. and M. J. Malik (2015) Evaluating Performance of Inflation Forecasting Models of Pakistan. (MPRA Paper No. 66843).

Hayat, Z. (2017). Pakistan's monetary policy: Some fundamental issues. *The Pakistan Development Review, 56*(1), 31–58.

Hayat, Z., Balli, F., Obben, J., & Shakur, S. (2016). An empirical assessment of monetary discretion: The case of Pakistan. *Journal of Policy Modelling*, *38*(5), 954–974.

Hayat, Z., Balli, F., and Rehman, M. (2017). The relevance and relative robustness of sources of inflation bias in Pakistan. *Economic Modelling*, 63, 283–303.

Hayat, Z., Balli, F., and Rehman, M. (2018). Does inflation bias stabilise real growth? Evidence from Pakistan. *Journal of Policy Modelling*, *40*(6), 1083–1103.

Hayat, Z., Khilji, J., and Balli, F. (2019). What monetary discretion can and can't do under boom and bust cycles? Evidence from an emerging economy. *Journal of Economic Studies*, *46*(6), 1224–1240.

Herrendorf, B. (1998). Inflation targeting as a way of precommittment. (Oxford Economic Papers 50)

Hossain, Akhand Akhtar (2014). Inflation and inflation volatility in Australia, Economic Papers, *The Economic Society of Australia*, *33*(2), 163–185.

Hussain, M. (2005). Inflation and growth: Estimation of threshold point for Pakistan. *Pakistan Business Review, 7*(3), 1–15.

Johnson, D. R. (2002). The effect of inflation targeting on the behaviour of expected inflation: Evidence from an 11 country panel. *Journal of Monetary Economics 49*, 1493–1519.

Jonas, J., & Mishkin, F. S. (2003). Inflation targeting in transition countries: Experience and prospects (NBER Working Paper No. 9667).

Kahn, G. A., & Parrish, K. (1998). Conducting monetary policy with inflation targets. (Federal Reserve Bank of Kansas City Economic Review). 5–32.

Kakwani, Nanak & Son, Hyun H. (2008). Poverty equivalent growth rate. *Review of Income and Wealth 54*(4), 643–655.

Khalid, A. M. (2006). Is inflation targeting the best policy choice for emerging economies? a survey of emerging market experiences and lessons for Pakistan. (State Bank of Pakistan Research Bulletin).

King, M. (1996). How should central banks reduce inflation? conceptual issues. (Economic Review, Federal Reserve Bank of Kansas City, Issue Q IV).

King. M. (2002). The inflation target ten years on (Bank of England Quarterly Bulletin, Winter 2002).

Kumhof, M. (2002). A critical view of inflation targeting: Crisis, limited sustainability, and aggregate shocks. (Central Bank of Chile Working Paper No. 27).

Kuttner, K. N., & Posen, A. S. (1999). Does talk matter after all? inflation targeting and central bank behaviour. (Federal Reserve Bank of New York Staff Report No.88).

Kydland, F. E., & Prescott, E. C. (1977). Rules rather than discretion: The inconsistency of optimal plans. *Journal of Political Economy 85*, 473–492.

Laidler, D., & Robson, W. (1993). The great Canadian disinflation. (Montreal:C.D Howe Research Institute).

Levin. A.T., Natalucci, F. M., & Piger, J. M. (2004). The macroeconomic effects of inflation targeting. (Economic Research, Federal Reserve Bank of St. Louis).

Libich, J. (2008). An explicit inflation target as a commitment device. *Journal of Macroeconomics, 30*(1), 43–68.

Lin, S. (2010). On the international effects of inflation targeting. *The Review of Economic and Statistics, 92*(1), 195–199.

Lin, S., & Ye, H. (2009). Does inflation targeting make a difference in developing countries? *Journal of Development Economics, 89*, 118–123.

Lodhi, M.A.K. (2007). Evaluating core inflation measures for Pakistan. (SBP Working Paper Series No.18).

Lucotte, Yannick (2012). Adoption of inflation targeting and tax revenue performance in emerging market economies: An empirical investigation (2012). *Economic Systems, 36*(4).

Masson, P. R., Savastano, M. A., & Sharma, S. (1997). The scope for inflation targeting in developing countries. (IMF Working Paper No. 97/130).

Marques, C., P. Neves, & Sarmento, L. (2000). Evaluating Core Inflation Indicators. (Bank of Portugal, working paper No. 3-00).

McCallum, B. T. (1996). Inflation targeting in Canada, New Zealand, Sweden, the United Kingdom and in general. (NBER Working Paper No. 5597).

Mendonça, Helder & De Guimarães e Souza, Gustavo (2012). Is inflation targeting a good remedy to control inflation? *Journal of Development Economics, 98,* 178–191.

Mishkin, F. S. (1997). Strategies for controlling inflation. (NBER Working Paper No. 6122).

Mishkin, F. S. (2000b). Inflation targeting in emerging market countries. *American Economic Review, 90(2),* 105–109.

Mishkin, F. S. (2004). Can inflation targeting work in emerging market countries? (NBER Working Paper No. 10646).

Mishkin, F. S., & Posen, A. S. (1997). Inflation targeting: Lessons from four countries. (NBER Working Paper Series, WP No. 6126).

Mishkin, F. S., & Savastano, M. (2000). Monetary policy strategies for Latin America. (NBER Working Paper No. 7617).

Mishkin, F. S., & Schmidt-Hebbel, K. (2001). One decade of inflation targeting in the world: what do we know and what do we need to know (Central Bank of Chile Working Paper No. 101).

Mishkin, F. S., & Schmidt-Hebbel, K. (2007). Does inflation targeting make a difference? (NBER Working Paper Series No. 12876).

Moinuddin. (2009). Choice of monetary policy regime: should the SBP adopt inflation targeting? *SBP Research Bulletin 5*(1).

Mollick, André Varella & Cabral, René & Carneiro, Francisco G. (2011). Does inflation targeting matter for output growth? Evidence from industrial and emerging economies, *Journal of Policy Modeling, 33*(4), 537–551.

Mubarik, Y. (2005). Inflation and growth: an estimate of the threshold level of inflation in Pakistan. *SBP- Research Bulletin, 1*, 35–44.

Naqvi, B., & Rizvi, S. K. A. (2010). What does Pakistan have to join inflation targeters club, a royal flush or a seven-deuce offsuit? (MPRA Paper No. 19575).

Iqbal, N., & Nawaz, S. (2010). Investment, inflation and economic growth nexus. *Pakistan Development Review, 48*(4), 863–874.

Neumann, M. J., & Von, H. (2002). Does inflation targeting matter? (Federal Reserve Bank of St. Louis Review).

Nuguer. V., & Powel. A. (2020). Inclusion in times of Covid-19. (Inter-American Development Bank). DOI: http://dx.doi.org/10.18235/0002529

Omer, M., & Saqib, O. M. (2009). Monetary targeting in Pakistan: A skeptical note. *SBP Research Bulletin, 5*(1).

Person, T., & Tabellini, G. (1993). Designing institutions for monetary stability. (Carnegie-Rochester Conference Series on Public Policy 39).

Petursson, T. G. (2005). Inflation targeting and its effects on macroeconomic performance. (The European Money and Finance Forum).

Quah, D., & Vahey, S. P. (1995). Measuring core inflation. *Economic Journal, 105*, 1130–1144.

Rivlin, A. M. (2002). *Comment on U.S. monetary policy in the 1990s by N. Gregory Mankiw*: Cambridge, MIT Press

Riaz, M. (2012) Forecast analysis of food price inflation in Pakistan: Applying rationality criterion for VAR forecast. *Developing Country Studies, 2*(1).

Riazuddin, R., Lodhi, M. A. K., Ashfaq, M., & Ahmad, B. A. (2013). A new measure of core inflation in Pakistan. (SBP Working Paper Series No. 66).

Roger, S. (2010). Inflation targeting turns 20. *Finance and Development, 47*(1), 46–49.

Roger, S., & Stone, M. (2005). On target? the international experience with achieving inflation targets. (IMF Working Paper, WP/05/163, Washington DC).

Rogoff, K. (1985). The optimal degree of commitment to a monetary target. *Quarterly Journal of Economics, 100*, 1169–1190.

Saleem, N. (2010). Adopting inflation targeting in Pakistan: An empirical analysis. *The Lahore Journal of Economics, 15*(2), 51–76.

Sargent, T. J. (1986). *Rational expectations and inflation*: New York: Harper and Row.

Schaechter, A., Stone, M. R., & Zelmer, M. (2000). Adopting inflation targeting: practical issues for emerging market countries. (International Monetary Fund, Washington DC).

Sellon, G. H., & Weiner, S. E. (1996). Monetary policy without reserve requirements: analytical issues. (Federal Reserve Bank of Kansas City, Economic Review, Fourth Quarter).

Siklos, P. L. (1999). Inflation target design: changing inflation performance and persistence in industrial countries. (Federal Reserve Bank of St. Louis Review 81, No.2).

Silver, M. (2007). Core inflation: measurement and statistical issues in choosing among alternative measures. (IMF Staff Papers, 54 (1)].

Siregar, Reza and Goo, Siwei (2010). Effectiveness and commitment to inflation targeting policy: Evidence from Indonesia and Thailand. *Journal of Asian Economics*, *21* (2), 113–128.

Smith, J. K. (2004). Weighted median inflation: is this core inflation? *Journal of Money, Credit, and Banking, 36*, 253–263.

Sophastienphong, K., & Kulathunga, A. (2008). Getting finance in South Asia 2009: indicators and analysis of the commercial banking sector. Washington DC: World Bank

Svenson, L. E. O. (2009). Flexible inflation targeting: Lessons from the financial crisis. (BIS Review 112/2009).

Svensson, L. E. O. (1995). Optimal inflation targets, conservative central banks and linear inflation contracts. (NBER Working Paper No. 5251).

Tahir, S. (2006). Core inflation measures for Pakistan. (SBP Research Bulletin).

Tambakis, D. N. (2004). Inflation bias with a convex short-run Philips curve and no time-inconsistency. (Pembroke College, Cambridge and Cambridge Endowment for Research in Finance).

Taylor, J. B. (1983). Comments. *Journal of monetary economics, 12*, 123–125.

Truman, E. M. (2003). *Inflation targeting in the world economy*. Institute for International Economics,Washington DC.

Turner, D. (1996). Inflation targeting in New Zealand: What is the appropriate bandwidth? (Reserve bank of New Zealand Monetary Policy Workshop).

Vega, J. L., & Wynne, M. A. (2001). An evaluation of some measures of core inflation for the Euro Area. (ECB Working Paper No. 53).

Vega, M., & Winkelried, D. (2005). Inflation targeting and inflation behaviour: A successful story. *International Journal of Central Banking*, *1*(3), 153–175.

Walsh, C. (1995). Optimal contracts for central bankers. *American Economic Review*, *85*, 150–167.

Walsh, C. E. (2009). Inflation targeting: What have we learned? *International Finance*, *12*, 195–233.

Wilson, B. K. (2006). The links between inflation, inflation uncertainty and output growth: new time series evidence from Japan. *Journal of Macroeconomics, 28*(2006), 609–620.

Woodford, Michael. (2012). Inflation Targeting and Financial Stability. (NBER Working Paper No. w17967).

Wynne, M., A. (1999). Core inflation: a review of some conceptual issues. (ECB Working Paper No. 5, Frankfurt, European Central Bank).

Zaidi, A. K., & Zaidi, I. (2011). Rethinking monetary policy framework of State Bank of Pakistan. (SBP Research Bulletin).

Zaidi, I. M. (2006). Exchange rate flexibility and the monetary policy framework in Pakistan. (SBP Research Bulletin).

Zhang, L. H. (2001). Sacrifice ratios with long-lived effects. (Department of Economics, The Johns Hopkins University).