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The relevance and relative robustness of sources of inflation bias in Pakistan

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ABSTRACT

We empirically examine the relevance and relative robustness of stabilization and non-stabilization sources of inflation bias for the typical discretionary monetary policy strategy of Pakistan. First, the stabilization and non-stabilization sources of inflation bias are identified, and their proxy variables are constructed. Second, a robustness evaluation strategy is developed based on bivariate and multivariate analysis of cointegrating relationships among inflation bias indicators and potential sources thereof to determine their long-term relevance and relative robustness or fragility. The stabilization sources of inflation bias such as exploitation of the inflation output trade-off for growth stimulation and the central bank's preference for growth stabilization are the most relevant and relatively robust sources of inflation bias vis-à-vis the non-stabilization sources. Among the non-stabilization sources, only openness is partially relevant but is fragile.

1. Introduction

The major criticism of the discretionary monetary policy came into the limelight in the 1970s, when Kydland and Prescott's (1977) model showed that in the long-run, these policies yield excess inflation without output gains—a phenomenon commonly referred to as 'inflation bias'. The prime concern is that inflation bias causes twofold losses to society: on one side, society suffers from high average inflation rates; on the other, high inflation rates act as a detriment to real economic growth (Hayat et al. 2016). Researchers have highlighted numerous potential determinants of inflation bias emanating from a variety of sources. Nevertheless, they may broadly be identified and classified as stabilization and non-stabilization sources. We posit that the stabilization sources of inflation bias pertain to a discretionary central banker's attempt either to stimulate output or to stabilize it, largely at the expense of inducing or tolerating excess inflation in the economy. For example, as per the pioneering conventional theory of inflation bias given by Kydland and Prescott (1977), a discretionary central banker tends to exploit the trade-off between inflation and output to stimulate the latter beyond its natural rate. On the other hand, inflation bias may also arise from the precautionary motives of a discretionary central banker to stabilize output (Cukierman, 2000; Cukierman and Gerlach, 2003). The notions of surprise inflation on the back of monetary surprises, and high average monetary expansion discussed by Barro and Gordon (1983b) may also be characterized as stabilization sources of inflation bias. For example, monetary surprises, which primarily may be meant to increase output in the short-term, produce excess inflation in the long term. Similarly, a high average monetary expansion with the belief that this will provide an incentive for the economy to grow may translate into higher inflation if, over the long term, the amount of money injected to the economy is more than its absorptive and productive capacity.

The non-stabilization sources of inflation bias are defined as the sources that may not necessarily be under the direct control of the central bank and may not be meant to stimulate or stabilize real economic growth on the part of the central bank at the expense of producing or accommodating higher inflation, such as fiscal dominance, either in the form of using seigniorage money by the government for its purposes (see Barro, 1983b) or increased levels of government borrowing, leading to a lack of central bank independence (see Cukierman, 1992). Another nontrivial non-stabilization source of inflation bias may be the rational behaviour of economic agents. They tend to adjust their inflation expectations, while understanding the temptation of a discretionary central banker to inflate for temporary output gains as highlighted by Kydland and Prescott (1977), and Barro and Gordon (1983a). The openness channel, as investigated by Romer (1993) in the context of the time inconsistency problem of monetary policy, and the balance of payments leading to excess inflation in the economy, as emphasized by Mendonca (2005) are yet other sources of inflation bias that could be classified as non-stabilization sources.

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Although they are embedded both in theoretical and empirical literature, the determinants of inflation bias have neither been pooled together nor classified as such to empirically examine their relevance and relative robustness to guide monetary authorities.[1] Instead, the empirical literature has been sparse (Berlemann, 2005) and its focus has largely remained on validating evidence of the predictions of the theory, estimating the extent of inflation bias and seeking evidence of central bankers' asymmetric preferences. For instance, Ireland (1999) and Ruge-Murcia (2003a) examined the validity of the predictions of Barro and Gordon's (1983a) model. The former found supporting evidence for the conventional explanation whereas the latter on the contrary concluded that the Fed targets the natural unemployment rate (as suggested by Blinder, 1998) and that it weights more heavily positive than negative unemployment deviations from its target. Cukierman and Gerlach (2003) conducted a preliminary test on whether the precautionary motive for the inflation bias holds to support their new inflation bias proposition. Garman and Richards (1989), and Surico (2008) estimated the extent of inflation bias while computing its point estimates. Ruge-Murcia (2003b), Sweidan (2009) and Kobbi (2013) investigated whether the central bankers' preferences are asymmetric.

With this background, we first identify and classify the potential determinants of inflation bias under the broader categories of stabilization and non-stabilization sources, and where necessary, we propose and construct their proxy variables for empirical examination. Second, we devise an objective strategy spelled out through a clear algorithm for determination of the long-term relevance and relative robustness of stabilization and non-stabilization sources of inflation bias in an iterative bivariate and multivariate setting, subject to a certain predefined criterion to eliminate any room for subjectivity. This methodology, although applied here for determination of relevance and relative robustness of inflation bias sources only, essentially manifest a formal objective strategy for determination of relevance and relative robustness of variables of interest in any area of economic inquiry.

For the purpose of analysis, we chose an ideal case of a traditional discretionary monetary policy with a reasonably long history of discretion. The State Bank of Pakistan (SBP) not only has historically been targeting dual objectives of inflation and real growth but frequently and explicitly targeted the latter at higher levels than its natural rate as modelled by Kydland and Prescott, 1977 (Hayat et al. 2016). This particular feature distinguishes Pakistan's traditional case of discretionary monetary policy from the modern cases of discretion such as the U.S where the Fed instead targets the natural rate (Blinder, 1998), subject to inflation being at levels consistent with price stability. Since our analysis is focused on a typical case of traditional discretionary monetary policy rather than monetary policy in general and the context is that of an emerging economy, our results may therefore have greater implications for the conduct of monetary policy in developing and emerging market economies, which normally tend to be ambitious of achieving higher growth rates and therefore are more susceptible to be more biased against inflation. For example, the average inflation rates in developing countries that did not focus on inflation by not adopting inflation targeting remained higher than the countries that adopted it (see e.g. Concalves and Salles, 2008; Lin and Ye, 2009; Abo-zaid and Tuzemen, 2012 among others). In case of Pakistan, Hayat et al. (2016a,b) concluded that following discretionary monetary policy the central bank has been biased against inflation and that the higher the degree of the bias, the more the negative harmful effects it had on real growth. Their results thus imply that the Pakistani society has essentially suffered twofold losses, first in the form of being hurt by higher average inflation rates, and second by not reaping the benefits of otherwise attainable relatively higher real growth rates, had the inflation been stabilized at low levels.[2] Thus it is crucial to understand the sources that play the most relevant and relatively robust role in determination of inflation bias.

Our key findings suggest that the stabilization sources of inflation bias such as growth stimulation and growth stabilization are not only relevant but relatively robust for significantly and consistently explaining excess inflation in the long term compared to the non-stabilization sources. Unlike the two sources of inflation bias suggested by conventional and new inflation bias theory (i.e. inflation output trade-off and output volatility), none of the non-stabilization sources is consistently relevant or relatively robust in the long term for explaining excess inflation. Openness, a non-stabilization source however is only partially relevant but fragile.

We organize the remainder of the paper as follows. Section 2 discusses and deduces the stabilization and non-stabilization sources of inflation bias from the literature and highlight the dearth of literature in the area with specific reference to Pakistan. Section 3 outlines the algorithm and the specific methodological framework for the underlying analysis and estimation strategy. Section 4 discusses the data sources and constructs proxy variables for the stabilization and non-stabilization sources to be used in estimations. Section 5 presents the results and Section 6 concludes the paper.

2. Stabilization and non-stabilization sources of inflation bias

In this section we not only briefly bring forth, discuss and classify the sources of inflation bias broadly under stabilization and non-stabilization sources but also highlight the dearth of the related literature in Pakistan's specific context.

2.1. Stabilization sources

As highlighted earlier, the stabilization-sources of inflation bias pertain to a discretionary central bank's attempts either to stimulate or stabilize output at the expense of inducing or tolerating excess inflation in the economy. These may include exploitation of the inflation output trade-off and a preference for output stabilization, and monetary surprises and core money. Each of these is discussed in the subsections below.

2.1.1. Exploitation of the inflation output trade-off and preference for output stabilization

To start with, it is important to understand the core arguments in the conventional as well as the new inflation bias theories. The underlying motivation for the exercise of discretion under the conventional theory is the aim to exploit the Phillips Curve, which suggests that unemployment can be reduced by accepting a slightly higher inflation than would otherwise exist (Gordon, 2011). Kydland and Prescott (1977), and Barro and Gordon (1983a), however, argued that the realization of this exploitation is not possible, as the public is rational and forms its expectations in view of its understanding of the motive behind the central banker's decision to inflate. As a result, in the long run, the exploitation of the inflation output trade-off leads to a higher than equilibrium rate of inflation. In contrast to Kydland and

[1] This issue may not be as important in advanced countries as it is in developing and emerging market economies, because, in the former, the central banks have evolved mechanisms for dealing with the time inconsistency problem of a discretionary monetary policy (Berlemann, 2005). In the latter, nevertheless, the average inflation rates tend to be sub-optimally high in central banks with discretionary monetary policies vis-à-vis the inflation targeting countries (see Hayat et al. 2016 and references therein).

[2] The implications of higher inflation for the Pakistani society are grave in the sense that a considerable section of the population is poor and therefore more vulnerable to high inflation. For example, as per the latest official estimates for 2015, nearly 39% of Pakistanis live in multidimensional poverty, with asymmetric distribution of poverty across urban (9.3%) and rural (54.6%) areas [Source: Economic Survey of Pakistan 2015–2016]. Majority of the country's population (61.242% of total population in 2015) lives in the rural areas of the country [Source: World Bank Development Indicators].