



Is inflation targeting a good remedy to control inflation? ☆

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ABSTRACT

Since the 1990s inflation targeting (IT) has been adopted by several central banks as a strategy for monetary policy. It is expected that the adoption of this monetary regime can reduce inflation and inflation volatility. This article is concerned with these issues and makes use of the Propensity Score Matching methodology on a sample of 180 countries for the period from 1990 to 2007. For analysis, the sample is split into two sets of countries (advanced and developing). The findings suggest that the adoption of IT is an ideal monetary regime for developing economies and, in addition to reducing inflation volatility, can drive inflation down to internationally acceptable levels. Regarding advanced economies, the adoption of IT does not appear to represent an advantageous strategy. In brief, the empirical results indicate that the adoption of IT is useful for countries that must enhance their credibility for the management of monetary policy.

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1. Introduction

Since the early 1990s, inflation targeting framework (IT) has been adopted by several central banks as a strategy for the implementation of monetary policy. IT has as its main feature the official announcement of ranges for inflation fluctuations and the explicit recognition that the main objective of monetary policy is to assure a low and stable inflation rate. This monetary regime works as a guide for inflation expectations and it is associated with an increase in central bank transparency, which, in turn, increases accountability in the implementation of monetary policy and thus improves the central banks' credibility.²

An important step in controlling inflation is to guide inflationary expectations, thus one main task of a central bank is to build credibility through the commitment to price stability. Credibility is important because it influences public expectations affecting interest and exchange rates and thereby improves the implementation of monetary policy and a lower and stable inflation rate.

Nowadays, there is a growing literature (both theoretical and empirical) that seeks to demonstrate the advantages and weaknesses of the IT regime. Nonetheless, the effectiveness of this framework for inflation control fuels a controversial debate between policymakers and academics. Two key questions remain unanswered in a conclusive way: (i) How successful is IT in reducing and stabilizing the inflation rate? (ii) Are effects caused by IT sufficiently homogeneous when both developing and industrialized countries are taken into consideration? The answer to these questions depends on the observation of the countries that have adopted IT; as such, the analysis is fundamentally empirical.

Although the empirical results are not always convergent, it is possible to identify a common element in the studies – the self-selection problem – which in turn may create a bias in the outcomes (Lin and Ye, 2007).³ To mitigate the bias problem, this article adopts a method used by the medical literature and that is typically used to solve microeconomic problems: Propensity Score Matching, or PSM (Rosenbaum and Rubin, 1983). PSM emerged from the theory of counterfactuals, which calculates possible outcomes for patients who do receive or do not receive a given medical treatment. Due to the logical impossibility of observing this situation, the solution is to estimate the event. Hence, the matching framework is adequate for

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² See, Svensson (1997), Mishkin (1999), Bernanke et al. (1999), Landaretche et al. (2001), de Mendonça and Simão Filho (2007), and Blinder et al. (2008).

³ This problem is due to the fact that the adoption of IT is voluntary. For a wide discussion about the problem and its origins, see Wooldridge (2002).

these cases. Moreover, the propensity score also serves as a strategy for overcoming selection bias problems in the estimations.

In comparing inflation to medicine, inflation can be seen as an analogy for a typical illness in capitalist economies. In a general way, inflation is an illness without a cure; that said, the illness can still be treated in order to control the symptoms. Under this view, IT can be understood as a remedy for stabilizing and controlling inflation. Hence, just as in medicine, this study involves a quasi-natural experiment in which it is analyzed whether the remedy (IT) leads to the desired effects, or whether observed outcomes derive from other factors. To shed light on this question, this article looks at countries that adopted inflation targeting (inflation targeters – ITers) to see whether the changes with respect to inflation/inflation volatility observed over time are really due to the adoption of IT.

With the above-mentioned objective in mind and with recourse to panel data methodology, a set of 180 countries is considered in the analysis of the period 1990 to 2007. Note that among these countries, 29 adopted IT during the period under consideration. Due to the difficulty in determining the date when each country adopted IT, this analysis conducts extensive research of the literature as well as consultation with all the respective central banks. As a consequence, two sets of data are used: one with the start date of partial adoption of inflation targeting (soft inflation targeting); another with the date of full adoption of inflation targeting (full-fledged inflation targeting).

The analysis in this paper employs the best-fitted methodology available in the literature, i.e., PSM. The sample is split into two sets of countries (advanced and developing countries), which provides, using the same database, distinct and comparable results.⁴ Based on the same methodology, it is therefore possible to evaluate whether the outcomes for countries under IT still remain when advanced and developing countries are analyzed separately. Additionally, cases of high inflation in the study are controlled with the objective of rendering a more robust analysis. In brief, it is expected that with the assessment of the conditions described above, this study can improve the analysis of effects on inflation and volatility exclusively caused by implementation of IT. The article is organized as follows: **Section 3** summarizes the research in literature regarding (a) IT, and (b) central banks vis-à-vis the inflation targeting adoption date according to conceptual criteria. **Section 3** describes the matching method known as propensity score and the database. **Section 4** presents the estimation of PSM models and reports the results regarding the evaluation of IT worldwide. **Section 5** concludes the article.

2. IT adoption date

Despite the extensive literature on IT, there is no consensus as to the exact date that IT was implemented for the first time. Indeed, varying criteria are used by academics and policymakers. Because the main contribution of this study is empirical, the correct identification of the period under treatment (period under IT) is crucial; thus this study considers the information available in the inflation targeting literature and information from central banks regarding adoption date.

With the intention of avoiding the date-of-adoption problem and of strengthening this analysis, this study adopts two possible start dates for each country, as proposed by [Vega and Winkelried \(2005\)](#). The first set of dates refers to the period when the country announces a numerical target for inflation and the transition to IT is confirmed (soft IT). In this case, the monetary authority releases an inflation target to the public, although a set of policies that characterize a complete IT is not assumed (initial classification). The second set of

dates refers to complete adoption of IT (full-fledged IT). Full-fledged IT assumes explicit adoption of IT and the absence of other nominal anchors (conservative classification).

Table A.1 (see **Appendix A**) consolidates the data regarding the different dates of IT adoption for the countries considered in this study. The dates in the table were obtained through several studies concerning IT in the period 1997 to 2008. In cases where the literature and consultation with central banks present two distinct dates as to the date of adoption for a given country, the earlier date is considered as “initial” and the later is classified as “conservative.”⁵

As can be seen in **Table A.1**, the date of IT adoption is not homogenous among the sources. Even when the presence of one or two authors is observed in different articles, there are different dates for several countries.⁶ The reason for this concerns the option of some countries using a transition period leading up to full-fledged IT. In a general way, the dates in advanced countries are less controversial because a transition period is not adopted. This behavior is evidenced by the difference in years between the two classifications used. For the set of countries that adopted IT, the average difference is 1.7 years; for the 17 developing countries, the difference is 2 years; and for the 12 advanced countries, the difference is 1.3 years.

3. Methodology

Over time, the experience of countries that have adopted IT, as well as the number of ITers, increases. This burgeoning database is a fertile ground for new possibilities for measuring the IT effects on inflation; consequently, the empirical literature includes myriad ways to exhibit results. For example, [Landarretche et al. \(2001\)](#) conduct an empirical study through the use of Vector Autoregression Analysis (VAR) regarding the advantages of IT adoption for the period 1980 to 1999 for three sets of countries (ITers, potential ITers, and non-ITers) in a total sample of 25 countries. They found that ITers have been successful in meeting targets and have consistently reduced inflation-forecast errors. [Johnson \(2002\)](#) compares five ITers with six non-ITers from 1984 to 2000, based on dummy coefficients; it was found that inflation targets correlated with disinflation and smaller forecast errors. In the same way, [Neumann and von Hagen \(2002\)](#) take into consideration six industrial ITers and three non-ITers, quantifying the response of inflation on supply shocks; they found evidence that ITers reduced inflation to low levels and curbed inflation and interest rate volatility.

Taking into account a sample of 21 ITers, [Pétursson \(2004\)](#) uses a dummy variable for the period after the adoption of IT with the objective of evaluating the performance of macroeconomic indicators. Under this view, IT is successful and increases the probability that monetary policy can engender good decision-making, thereby improving the credibility of monetary policy. [Levin et al. \(2004\)](#) considered 11 industrialized countries (including five ITers) in analyzing the effect caused by IT on the persistence of inflation through a univariate autoregressive process. They found that IT has played a role in anchoring inflation expectations and in reducing inflation persistence. Based on a sample of 14 full-fledged ITers, [de Mendonça \(2007a\)](#) analyzed macroeconomic performance before and after adoption of IT and concluded that IT is a good framework for disinflation, and contributes to reducing interest rates without curtailing economic growth.

⁵ Due to their entrances into the European Union, the abandon date of IT by Finland and Spain is also shown.

⁶ For example, South Africa, Australia, Spain, Israel, and Sweden (see [Bernanke et al., 1999](#); [Bernanke and Mishkin, 1997](#); [Landarretche et al., 2001](#); [Mishkin and Schmidt-Hebbel, 2001, 2007](#)).

⁴ The division is made taking into consideration the classification made by the International Monetary Fund (IMF).

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