



Exchange rate regimes and real exchange rate volatility: Does inflation targeting help or hurt?



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ABSTRACT

This paper revisits the comparison of the effects of inflation targeters versus hard fixers and intermediate exchange rate regimes. In particular, we are interested in exploring the impact of inflation targeting (IT) on real effective exchange rate (REER) volatility for a panel of 62 developing countries over the period 2006–2012. We also analyze the impact of IT regimes on REER in terms of its two component parts, i.e. relative tradable prices across countries as well as sectoral prices of tradables and nontradables within countries. The paper accounts for self-selection concerns regarding policy adoption and examines the effects of commodity exports and foreign exchange intervention. Notably, IT regimes seem to have experienced greater REER volatility, largely driven by external prices in developed countries. For developing countries, IT regimes show no difference in REER volatility, though there is some evidence that they have lower volatility in internal prices.

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1. Introduction

The spate of financial crises that hit the emerging economies between mid-1990 and early 2000s led to the de-pegging of many currency regimes as they shifted to greater exchange rate flexibility. With the adoption of more flexible regimes many countries also moved towards conducting monetary policy anchored around inflation targeting (IT). According to International Monetary Fund's (IMF's) *Annual Report on Exchange Arrangements and Exchange Restriction*, 34 countries had adopted inflation targeting regimes by 2014. Since then there have been a few more entrants to this “club”, including India most recently in March 2015. The adoption of an IT arrangement in developing countries was partly driven by recommendations from the IMF. For instance, Indonesia, Korea, Thailand as well as the Philippines in Asia adopted IT regimes in the late 1990s after Asian Financial Crises as part of IMF rescue package.

According to Mishkin (1999), an IT regime includes the following five elements:

“(1) public announcement of medium-term numerical targets for inflation; (2) an institutional commitment to price stability as the primary, long-run goal of monetary policy and to achievement of the inflation goal; (3) an information-inclusive strategy, with a reduced role for intermediate targets such as money growth; (4) increased transparency of the monetary policy strategy through communication with the public and the markets about the plans and objectives of monetary policy-makers; and (5) increased accountability of the central bank for attaining its inflation objectives.”

This set of institutional arrangements and public communication is believed to increase monetary policy transparency and central bank accountability. Bordo and Siklos (2014) argue that central bank credibility, which was badly compromised after the crash of classical gold standard around 1914, has been enhanced in recent decades because of the adoption of inflation targeting. However, doubts on the superiority of IT regimes persist (Walsh, 2009). In contrast to hard fixers, inflation cannot be easily managed by monetary authorities. There may also be a substantial time lag between policy and its inflation outcomes. Therefore, IT

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does not provide immediate signals to the public or the markets about the stance of monetary policy (Mishkin, 1999). Also, Brito and Bystedt (2009) argue that IT's achievement in containing inflation may come at the cost of simultaneous lower economic growth. In this context, inflation reduction in isolation merely indicates more aversion to inflation of monetary authorities in IT regimes. Moreover, as warned by Bernanke and Woodford (2005), some countries may be lacking institutional maturity and consistency of macroeconomic fundamentals to implement sound IT regimes. In such cases IT may not necessary yield better results than other alternatives.

There has been a great deal of focus on the impact of IT regimes on various indicators of macroeconomic performance.¹ However, there are few studies that have investigated the effect of inflation regimes on exchange rate volatility. Using a sample of 7 countries over the period 1985–2005, Edwards (2006) concludes that the phenomenon of volatility rising with IT regimes is mainly due to floating exchange rate regimes since the result is overturned after controlling for exchange rate regimes. In other words, the adoption of IT regimes per se did not increase the extent of exchange rate volatility. Rose (2007) explores this issue and finds that IT regimes tend to have lower exchange rate volatility and less frequent “sudden stops” of capital flows than the countries not operating such regimes since IT allows monetary authorities to be more domestically focused and brings no obvious international cost. Berganza and Broto (2012), on the other hand, classify IT regimes into “strict IT” as IT with pure floating regime and “flexible IT” as IT with managed floating regime. Although IT adoption may lead to higher exchange rate instability, foreign exchange interventions in IT countries seem to be more effective in containing exchange rate volatility than in non-IT countries. This suggests that exchange rate volatility under IT countries with “managed” regimes tend to be lower than those with flexible regimes.²

A major concern with most prevailing studies on the issue is that they do not fully account for the self-selection concerns of policy adoption, i.e. do countries with more or less volatile exchange rates choose to adopt IT regimes? An important paper in this regard is by Lin (2010) who uses propensity score matching methods to account for this issue. Applying the methodology to a pooled sample of 23 countries that adopted IT regimes by the end of 2004, the author finds strong and robust evidence that IT reduces exchange rate volatility in developing countries but raises them in industrial countries.

Building on the foregoing literature, this paper revisits the comparison of the effects of inflation targeters versus hard fixers and intermediate exchange rate regimes. We are interested in exploring the impact of inflation targeting on real effective exchange rate (REER) volatility in both developed

and developing countries.³ In addition, we further decompose REER into two component parts, viz. relative tradable prices across countries as well as sectoral prices of tradables and nontradables within countries. To account for the sampling issue highlighted by Gagnon (2013), we use a panel data originally constructed by Rose (2014) and appropriately modified by Gagnon (2013). Overall our panel has 62 countries over the period 2006–2012. We also take into account self-selection concerns regarding policy adoption by following the methodology proposed by Lin (2010).

The paper is also related to two other strands of literature, viz. impact of fixed versus flexible regimes on exchange rate volatility, including the so-called “Mussa puzzle” (Stockman, 1983 and Mussa, 1986) as well as the literature on REER decomposition into its two sub-components – external prices (deviation from purchasing power parity) and internal prices (relative price of tradables and nontradables) *a la* Engel (1999).

The remainder of the paper is organized as follows. Section 2 discusses the definitions and priors regarding the impact of IT on REER volatility. Section 3 outlines the empirical model and summarizes the data and data sources. Section 4 discusses the results. To preview the main findings, we find that IT regimes have relatively greater REER volatility than other regimes, though there appears to be a difference between developed and developing countries. IT regimes in developed countries are more variable than other types of exchange rate regimes mainly due to greater volatility of external prices. In contrast, the impacts of IT on REER volatility in developing countries are not so obvious, though there is some evidence that IT regimes have greater volatility than hard fixers and have lower volatility in internal prices. Section 5 concludes the paper.

2. Possible linkage between REER volatility and IT regimes

The real exchange rate (RER) is a measure of internal and external price competitiveness. The RER in logarithmic form is defined as $rer_t = e_t + p_t - p_t^*$, and can be decomposed into relative price of traded goods between economies and the relative price of nontraded to traded goods within each economy by introducing $p_t = (1 - \alpha)p_t^T + \alpha p_t^N$ for the domestic country and $p_t^* = (1 - \beta)p_t^{T*} + \beta p_t^{N*}$ for the foreign country.

$$\begin{aligned} rer_t &= e_t + p_t - p_t^* \\ &= (e_t + p_t^T - p_t^{T*}) + \alpha(p_t^N - p_t^T) - \beta(p_t^{N*} - p_t^{T*}) \\ &= \underbrace{(e_t + p_t^T - p_t^{T*})}_{(rer_t^T)} + \underbrace{\alpha(p_t^N - p_t^T) - \beta(p_t^{N*} - p_t^{T*})}_{(rer_t^N)} \end{aligned}$$

where p_t^* denotes the prices in foreign country, p_t refers to domestic prices and e_t denotes the nominal exchange rate of the foreign currency to the domestic currency. p_t^T (p_t^N) denotes the price of tradables (nontradables) in home country. Denoting α (β for foreign) as the share of nontradables in the determination of the aggregate price level. The RER, therefore, can be decomposed into a measure of internal (rer_t^N) and external (rer_t^T) price competitiveness (see Ouyang and Rajan, 2013 and references cited within). Using the bilateral trade data among 70 economies, we calculate the trade-weighted REER and its external and internal

¹ Ball and Sheridan (2005) find no evidence that IT improves the macroeconomic performance (inflation, output and interest rates) for OECD countries. But other studies show that IT does make a difference (Kim, 2014; Gonçalves and Carvalho, 2009; Gonçalves and Salles, 2008; Lin and Ye, 2009; Minea and Tapsoba, 2014; Fouejieu and Roger, 2013). In particular, Rose (2014) pays more attention to the global financial crisis (GFC) and its post period (2007–2012). He finds little difference in the macroeconomic performance of countries with IT regimes and hard fixers. However, Gagnon (2013) countered that the findings of Rose (2014) might be biased towards hard fixers since the analysis had not included those countries that were originally hard fixers in 2006 but ceased to be ones for at least one year thereafter due to their inability to maintain a hard fix during the GFC period. Gagnon (2013) further concluded that countries with IT regimes have performed better in terms of inflation, unemployment rate, and the changes of these variables.

² Gonçalves and Carvalho (2009) consider the possible reverse causality and find that the volatility of the RER is not a statistically significant determinant of the probability of IT adoption.

³ Hausmann et al. (2006) documents that the real exchange rate in developing countries is much more volatile than that in industrial countries. The larger volatility cannot be fully explained by the larger shocks (both real and nominal), more currency crises or by different elasticities to these shocks.

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