



Exchange rates, price levels, and inflation targeting: Evidence from Asian countries[☆]

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ABSTRACT

This study examines how the adoption of inflation-targeting influenced exchange rate pass-through and volatility in four Asian countries – Indonesia, South Korea, the Philippines, and Thailand – over the sample period of January 1990 to June 2007. We find that adopting inflation targeting helped reduce pass-through in South Korea, and Thailand, while the results are less clear for Indonesia and the Philippines. Nevertheless, the findings indicate that inflation targeting caused a decline in exchange rate volatility in all four countries. The important lesson from the experiences of these Asian countries is that the adoption of inflation targeting contributes to achieving the ultimate goal of inflation stability through reducing exchange rate pass-through or variability.

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1. Introduction

Exchange rates – among the most important variables used in modeling open economies – strongly influence monetary policy. Following the Asian Financial Crisis of 1997–1998, crisis-affected countries and emerging economies facing a world of highly volatile capital flows – notwithstanding the “fear of floating” phenomenon – moved toward adopting a more flexible exchange rate regime (see e.g., Calvo and Reinhart, 2002). Floating exchange rate regimes now being more widespread, inflation targeting has become the center of monetary policy discussions. Many hope that it will prove to be an effective way to improve policy performance, as in the many developed countries that adopted inflation targeting in the early 1990s.¹

Asian countries are following the trend of adopting inflation targeting. To date, Indonesia, South Korea, the Philippines, and Thailand have adopted a flexible exchange rate and inflation targeting. Such structural reform seems to diminish the importance of policy debates on managing exchange rates in emerging countries. This does not, however, imply that exchange rates have vanished from policy discussions. Indeed, many questions related to exchange rates and inflation targeting continue to figure prominently in such discussions. The fundamental question is whether or not inflation targeting contributes to price stability through external trade channels associated with exchange rate movements. This question is crucial for policymakers who oversee small open economies, like those in Asian countries, which rely heavily on external trade.

This paper considers the relationship between exchange rates, price levels, and inflation targeting in Asian countries by addressing two policy issues: first, how has the adoption of inflation targeting affected the magnitude of pass-through from exchange rates to domestic prices? Second, how has inflation targeting affected the variability of exchange rates? In this study, we direct these questions to Indonesia, South Korea, the Philippines, and Thailand to examine empirically the impact of such a policy regime on price stabilization.

Many empirical studies have analyzed exchange rate pass-through to understand the inflationary transmission mechanism in

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¹ For other studies on inflation targeting, see e.g., Mishkin (2000), Mishkin and Schmidt-Hebbel (2001), Mishkin and Savastano (2001), Schmidt-Hebbel and Werner (2002), Parrado (2004), and Carare and Stone (2006).

various economic environments. Among them, [Campa and Goldberg \(2005\)](#), in their study examining 25 OECD countries, suggest that pass-through tends to be lower for countries with low inflation and low exchange rate variability. [Gagnon and Ihrig \(2004\)](#), in their study covering 20 industrial countries, assert that monetary policy in stabilizing inflation plays a vital role in reducing the pass-through. More recently, [Choudri and Hakura \(2006\)](#), covering 71 countries, find a positive relation between pass-through and the average inflation rate. These results strengthen the argument of [Taylor \(2000\)](#) that a low inflationary environment leads to a decline in exchange rate pass-through.²

In addition to the pass-through issue, policymakers have also been concerned about exchange rate volatility, since fluctuations in the exchange rate could pose a threat to the inflation target. Although it is generally believed that inflation targeting could function well under a floating exchange rate regime, some argue that the combination of inflation targeting and a floating regime might cause exchange rate volatility to increase, making such volatility one of the costs of inflation targeting, as demonstrated by [Gali and Monacelli \(2005\)](#). However, Chile's experience with inflation targeting, as mentioned in [Schmidt-Hebbel and Tapia \(2002\)](#), indicates that the volatility of nominal exchange rates is no higher under inflation targeting than in other countries with floating exchange rate regimes and may in fact help reduce unexpected shocks by making monetary policy transparent and predictable, as shown in a recent study by [Edwards \(2006\)](#) covering seven countries with some extensions to Chile.

In this regard, recent studies on exchange rate pass-through or volatility issues have focused on Asian countries. The empirical work of [Ito and Sato \(2008\)](#), covering the period of 1994–2006, demonstrates that pass-through to the consumer price index (CPI) is relatively low compared with pass-through to the producer price index (PPI) in Indonesia, Thailand, Malaysia, Singapore, and South Korea. [Cortinhas \(2007\)](#) investigated pass-through in five ASEAN countries over the period of 1968–2001, finding that the Philippines and Thailand exhibit some evidence of pass-through, but not for Singapore and Malaysia.³ In addition, extant empirical evidence concerning exchange rate volatility in Asian countries focuses mainly on its impact on trade (see e.g., [Rahmatsyah et al., 2002](#); [Siregar and Rajan, 2004](#); [Baak et al., 2007](#)). To the best of our knowledge, few studies have taken into consideration the effect of inflation targeting on exchange rate pass-through and volatility in Asian countries. This paper is one of the first attempts to investigate this.

Our results indicate that, the degree of pass-through declined for either the PPI or the CPI in South Korea and Thailand with the adoption of inflation targeting, although the evidence is less clear for Indonesia and the Philippines. The degree of inflationary inertia plays an important role in determining the magnitude of pass-through. There is, additionally, some evidence that the adoption of inflation targeting reduces exchange rate volatility in all four countries (Indonesia, South Korea, the Philippines, and Thailand), and reform in the direction of a floating regime positively affects exchange rate variability. This is consistent with the results of various empirical studies, such as [Edwards \(2006\)](#) and [Rose \(2007\)](#), but contrasts with the findings of [Gali and Monacelli \(2005\)](#). Interestingly, two very different effects on exchange rate volatility – one associated with reform involving a transition toward a

floating regime and the other associated with reform involving inflation targeting under a floating regime – appear to cancel each other out. The most important implication of our results is that inflation targeting could be effective in stabilizing price levels and lowering inflation volatility through either of two channels: reduced exchange rate pass-through or exchange rate volatility. Some of our findings coincide with evidence adduced by [Edwards \(2006\)](#).

The remainder of the paper is structured as follows. Section 2 presents the empirical analysis and evaluates how inflation targeting has influenced exchange rate pass-through and exchange rate volatility in Indonesia, South Korea, the Philippines, and Thailand. Based on the estimated results, we discuss the role of inflation targeting as a monetary policy measure for price stabilization. Section 3 offers concluding remarks.

2. Empirical analysis

Any new direction in monetary policy should emphasize price stability. Since inflation targeting has been successfully adopted by several industrialized countries, it has also become increasingly attractive as a policy measure in developing economies. Indeed, some Asian countries have adopted inflation-targeting regimes (South Korea in 1998, Thailand in 2000, the Philippines in 2002, and Indonesia in 2005).⁴

To evaluate the impact of the introduction of inflation targeting on price stability in Asian countries, our empirical analysis is based on the following steps. First, we examine how the introduction of inflation targeting influences the impact of a change in exchange rates on domestic prices, that is, exchange rate pass-through. Second, we study how the introduction of inflation targeting impacts exchange rate variability. These two examinations yield important implications on price fluctuations associated with exchange rate movements. If inflation targeting reduces pass-through or exchange rate volatility, it can help not only to stabilize price levels but also to mitigate the volatility of domestic prices. To verify this, we also examine the impact of inflation targeting on inflation (or price) variability.

2.1. Exchange rate pass-through

Exchange rate pass-through indicates how changes in nominal exchange rates affect domestic prices. The question is whether the adoption of inflation targeting leads to a corresponding reduction in exchange rate pass-through. Following the studies of [Campa and Goldberg \(2005\)](#), [Gagnon and Ihrig \(2004\)](#), and [Edwards \(2006\)](#), we estimate the following autoregressive distributed lag model for each country⁵:

$$\begin{aligned} \Delta \ln P_t = & \beta_0 + \beta_1 \cdot \Delta \ln P_t^* + \beta_2 \cdot \Delta \ln P_{t-1} + \beta_3 \cdot \Delta \ln P_{t-1} \times FLT \\ & + \beta_4 \cdot \Delta \ln P_{t-1} \times DIT + \sum_{l=0}^2 \delta_l \cdot \Delta \ln E_{t-l} + \sum_{i=0}^2 \varphi_i \cdot \Delta \ln E_{t-i} \\ & \times FLT + \sum_{k=0}^2 \gamma_k \cdot \Delta \ln E_{t-k} \times DIT + \sum \alpha_j x_j + \varepsilon_t \end{aligned} \quad (1)$$

where P_t , E_t , and P_t^* are the monthly price index (CPI or PPI), the nominal effective exchange rate (NEER), and the index of foreign prices, respectively, and \ln represents a natural log. The other

² Some studies attempt to explain this phenomenon by considering the prevalence of producer currency pricing over local currency pricing of imports and whether exchange rates are endogenous to a country's inflation performance. See [Campa and Goldberg \(2005\)](#) and [Devereux and Engle \(2003\)](#).

³ Moreover, [Ghosh and Rajan \(2009\)](#), in their empirical study covering the period of 1980–2006, find no evidence that pass-through has declined over time in South Korea and Thailand, unlike in some other industrialized countries, but rather that it rose during the Asian Financial Crisis.

⁴ Although Bank Indonesia began the practice of announcing its annual inflation target at the beginning of 2000, it did not begin adopting full-fledged inflation targeting until 2005.

⁵ [Campa and Goldberg \(2005\)](#) used a distributed lag model; [Edwards \(2006\)](#) specified a partial adjustment model; and [Gagnon and Ihrig \(2004\)](#) used an autoregressive distributed lag model similar to the model we specify.

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