



# Effect of credibility and exchange rate pass-through on inflation: An assessment for developing countries<sup>☆</sup>



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## ABSTRACT

This study examines, through a panel data analysis for 114 developing countries, the exchange rate pass-through on inflation and on its volatility and, in particular, how the central bank credibility affects this relationship. Based on the idea that credibility can be measured by the difference between the policymaker's plans and the public's beliefs about those plans, several indicators were built. The findings denote that central bank credibility is able to more than counteract the bad effects on inflation caused by the exchange rate pass-through and thus contribute to greater price stability in developing economies. In brief, for the case of monetary authorities committed to anchor inflation expectations there is a gain of credibility that works as a tool to eliminate the pass-through effect on inflation.

## 1. Introduction

The macroeconomic stability achieved by the central bank's success in maintaining a low and stable inflation is able to reduce the impact of shocks on inflation transmitted by the pass-through of the exchange rate. In this context, the ability of the central bank to guide the expectations of private agents is an important tool to mitigate shocks on inflation. In other words, if there exists expectations that the central bank will have success in keeping inflation under control, it is possible that the exchange rate pass-through effect on inflation is neutralized. This study examines the exchange rate pass-through on inflation and on its volatility and, in particular, how the success of the central bank in maintaining inflation expectations in a low and stable level (gain of credibility) affects this relationship. This is done taking into account the success of the central bank in anchoring inflation expectations based on the difference between inflation expectations and their respective targets and tolerance interval (credibility measures), and the shocks transmitted through changes in the exchange rate (pass-through measure) in a panel data model. Furthermore, other macroeconomic variables, which in turn may affect inflation rate, are also considered in the model. Data covering a comprehensive sample of 114 developing countries for the period from 1990 to 2013, gathered from the International Financial Statistics (IFS) and World Development Indicators (WDI), are utilized in this study. The analysis is focused on developing countries because the impact of external shocks on changes in the domestic price level tends to be greater in these countries and the credibility is not consolidated

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enough to anchor market inflation expectations.

The evidence presented in this study suggests that the central bank's success in maintaining a low and stable inflation is able to mitigate the effects of international shocks transmitted through the exchange rate pass-through on inflation and on its volatility in developing countries. In particular, the positive effect of the central bank credibility on the exchange rate pass-through depends on the commitment of the monetary authority to anchor inflation expectations. In addition, the findings denote that the exchange rate pass-through, the global macroeconomic uncertainty, an increase in the money supply, and a backward-looking behavior of the private agents exert an upward pressure on inflation and contribute to greater inflation volatility in developing countries. On the other hand, solid institutional framework, greater integration with the international capital market, some control over the exchange rate, the degree of trade openness and fiscal stability are important to maintain low and stable inflation.

The exchange rate pass-through is one of the main determinants of inflation and the central bank credibility is important to anchor the market inflation expectations. According to Taylor (2000) a credible central bank is able to reduce the exchange rate pass-through impact on domestic inflation. The essence of the effect of credibility on the exchange rate pass-through can be understood through the exchange rate channel and the stability of macroeconomic policies. The exchange rate channel has a significant influence on the price level because besides the direct effect of the exchange rate on any tradable good, the exchange rate affects prices of imported items in the basket of goods and the prices of imported inputs (Calvo & Reinhart, 2002; de Mendonça & Tostes, 2015; Shi, Xu & Yin, 2015). Furthermore, greater macroeconomic vulnerability of developing countries means that economic shocks may cause a flight of capital and, consequently, depreciation of the exchange rate. Therefore, in the absence of a long track record of stable macroeconomic policies in developing countries that can anchor inflation expectations (lack of credibility), exchange rate volatility represents an additional risk for destabilizing expectations (Goldfajn & Olivares, 2001).

In general, the literature that analyzes the effect of the exchange rate pass-through on inflation takes into account three main variables: domestic inflation, foreign price indices, and the nominal exchange rate. Goldfajn and Werlang (2000) and Choudhri and Hakura (2006) analyze this phenomenon making use of a measure of domestic inflation and the depreciation of the nominal exchange rate. Gagnon and Ihrig (2004) consider as a measurement for the pass-through a combination of foreign price index and the nominal exchange rate, both weighted by foreign trade. Because this study is focused on developing countries, we follow Bogdanski, Tombini, and Werlang (2000), in which the exchange rate pass-through is a result of the change of the sum of the nominal exchange rate and the wholesale price index (USA).

Evaluating the success of a central bank in the conduct of the monetary policy is a challenge. Some studies quantify the success of the central bank by measuring credibility. One strand of the literature measures credibility concerned with the weight that private agents attach to the inflation target announced by the central bank in forming their inflation expectations (e.g., King, 1995; Bomfim & Rudebusch, 2000). Other thread, which is related to the present analysis, considers as a measure of credibility the difference between the inflation expectations of private agents and the inflation target announced by the central bank (e.g., Cukierman & Meltzer, 1986; Svensson, 2000; Cecchetti & Krause, 2002; de Mendonça, 2007; de Mendonça & de Guimarães e Souza, 2009).

Unlike the research mentioned above, there are fewer studies that are concerned with the influence of the central bank credibility on exchange rate pass-through. Using observations from the Brazilian economy after adoption of inflation targeting, de Mendonça and Tostes (2015) show that central bank credibility is relevant to reduce the pass-through effect on market prices. Aleem and Lahiani (2014) based on an analysis for 5 emerging countries from 1994 to 2009 conclude that a credible monetary policy reduces exchange rate pass-through. Kara & Ögünç (2008), through an analysis for the Turkish experience under inflation targeting, found that credibility gains of monetary policy might have been effective in weakening the pass-through. The present study differs from the above-mentioned in several aspects. While Aleem and Lahiani (2014) and Kara and Ögünç (2008) do not use an explicit measure of credibility for the success of the monetary policy, and de Mendonça and Tostes (2015) make use of only one measure, this study builds three different credibility indices using information from International Financial Statistics. Moreover, with the objective of increasing robustness in the analysis, we also compute the same indices taking into account inflation expectations available from the Consensus Forecast database. In addition, this analysis is made taking into account a comprehensive data of 114 developing countries for the period from 1990 to 2013 rather than the case of one economy, as with de Mendonça and Tostes (2015) and Kara and Ögünç (2008), or few countries as with Aleem and Lahiani (2014) for a small period of time. In brief, all these improvements permit us to pay more attention to the influence that central bank credibility has on the exchange rate pass-through and its consequence for inflation and its volatility.

The remainder of this paper is organized as follows. The next section provides the methodology and data used in this study. Section 3 presents empirical evidence, through a panel data analysis, regarding the impact of the exchange rate pass-through on inflation and on its volatility, as well as, a robustness analysis. The last section presents the conclusions.

## 2. Data and methodology

There is no doubt that the exchange rate pass-through is a key determinant of inflation (Taylor, 2000; Devereux and Engel, 2002; and Shi et al., 2015). In particular, there exists evidence that the effect of variations in the exchange rate on domestic prices in developing countries is greater than in developed countries (e.g., Calvo & Reinhart, 2002; Choudhri and Hakura, 2006). Hence, in order to observe the pass-through effect (PTH) on developing countries, this study, such as presented in de Mendonça and Tostes (2015), and Bogdanski et al. (2000), considers as a measure of this phenomenon the change of the sum of the log of the nominal exchange rate (EX) and the log of the wholesale price index (USA - WPI), i.e.,  $PTH = \Delta(\ln EX + \ln WPI)$ . One reason to include WPI in PTH is that “an increase in home producer prices relative to foreign producer prices is typically associated with an increase in home

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