

Box 2.1

Exchange Rate Pass-Through in Developing Countries

Exchange rate is one of the key determinants of inflation, especially in developing countries. The pass-through effect from exchange rate to prices (exchange rate pass-through) differs across countries and over time. This box tries to explain why exchange rate pass-through differs and its relationship with monetary policy credibility, based on the results of relevant studies in the literature and comparative data on countries¹.

The common conclusion of the studies examining the exchange rate pass-through across different time spans is that it follows a low and stable trend in developed countries, but a higher, yet decreasing trend in developing countries. One of the most recent studies in this subject, Jasova et al. (2016), calculated the pass-through coefficients covering the period 1994-2015 for 22 developing countries and showed that the pass-through decreased significantly after the 2008 crisis, in a statistically significant way. According to the study, the twelve-month exchange rate pass-through decreased from an average of 20% in the pre-crisis period to 8.2% in the post-crisis period. In addition, the analysis using the moving sample shows that the pass-through decreased rapidly especially after the second half of the 2000s. The economics literature generally attributes this decline to the adoption of inflation targeting and a low inflation environment.

As well as changing over time, the size of the pass-through can also show significant differences across countries. Cross-country studies show that the pass-through in developing countries is higher than in developed countries (Table 1).

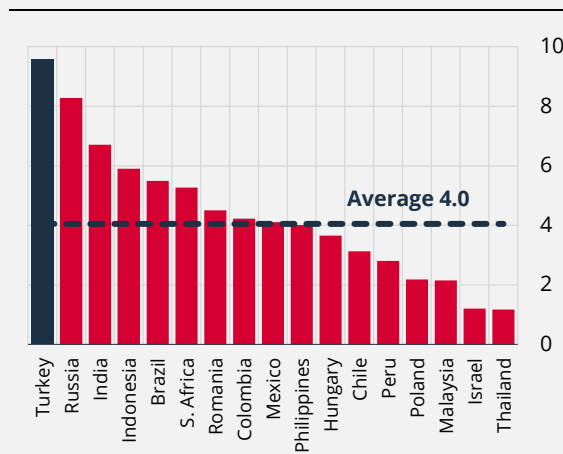
Table 1: Estimates of the Exchange Rate Pass-Through Coefficients

Study	Period	Pass-through Coefficient (12 Months Cumulative, %)	
		Developed Countries	Developing Countries
Lopez-Villavicencio and Mignon (2017)	1994-2015Q3		7.5
Forbes et al. (2017)	1990-2015	5	23
Carriere-Swallow et al. (2016)	2000-2015	10	30
Caselli and Roitman (2016)	1979-2000		22
Frankel et al. (2012)	1990-2002	2	34
Razafimahefa (2012)	1985-2008Q2		41
Kohlscheen (2010)	Floating Exchange Rate Periods		24
Ca' Zorzi et al. (2007)	1975-2004Q1	3.3	24
Choudhri and Hakura (2006)	1979-2000	20	24
Goldfajn and Werlang (2000)	1980-1998	19	75

In the economic literature, country-specific dynamics are highlighted as the reasons for the difference in the pass-through from exchange rate to inflation. Empirical findings reveal that factors such as the level and volatility of inflation, the magnitude and persistence of exchange rate changes, foreign currency indebtedness and the import content of domestic consumption are important in determining the pass-through. Accordingly, in economies where inflation is higher and more volatile, exchange rate changes are greater, foreign currency indebtedness (dollarization) is higher, and the share of imported products in domestic consumption is higher, exchange rate pass-through is also high. In economies with high and volatile inflation, production costs change frequently and at high rates so prices have to be adjusted more frequently. This situation facilitates the pass-through of exchange rate changes on prices, and the effect of higher depreciation rates is greater. In addition, high foreign currency indebtedness causes exchange rate changes to have negative balance sheet effects, thus requiring price adjustments even for firms that do not exhibit a tight relationship between exchange rate and production costs. In countries where the share of imported content in consumption and intermediate goods is high, prices are affected more by exchange rate changes both through the prices of imported goods in the consumption basket and the imported input prices to be used in domestic production.

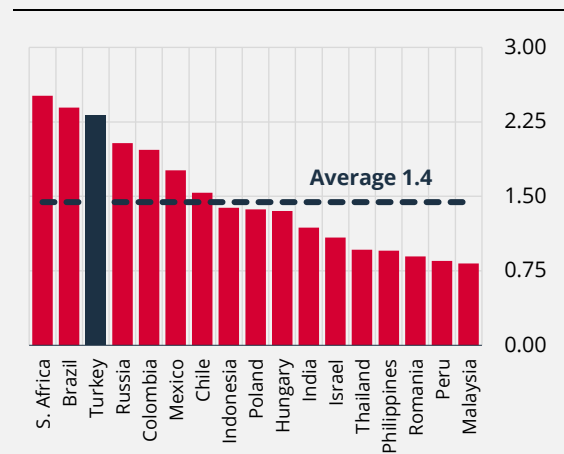
Charts 1-4 compare the inflation level, the size of exchange rate changes for the years 2004-2020, the foreign currency indebtedness ratio and the import content of domestic consumption and exports for developing countries. While Turkey was close to the average for selected countries in terms of import content of consumption, it ranked higher for the inflation, the magnitude of changes in exchange rates, and foreign currency indebtedness. Since 2017, there has been a divergence from developing countries with a persistent double digit inflation rate, while the foreign exchange indebtedness of the corporate sector has reached higher levels vis-à-vis other countries. These indicators partially explain the variation in exchange rate pass-through across countries. In many countries where the import content of consumption and foreign currency indebtedness are higher than Turkey, exchange rate pass-through is limited. This observation underlines the role of determinants of pass-through other than the cost / balance sheet channels.

Chart 1: Average Consumer Inflation (2004-2020, Annual, %)



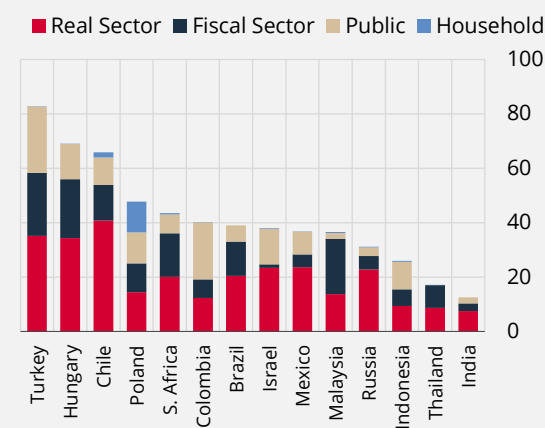
Source: Bloomberg.

Chart 2: Monthly Average Change in the Exchange Rate During the 2004-2020 Period (% , Absolute Value)



Source: Bloomberg.

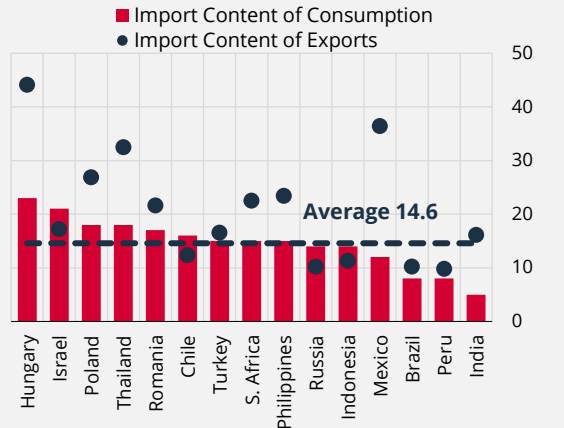
Chart 3: Share of Foreign Currency Denominated Debt in GDP* (%)



Source: IIF.

*As of the 3rd quarter of 2020.

Chart 4: Import Content of Consumption and Exports* (%)



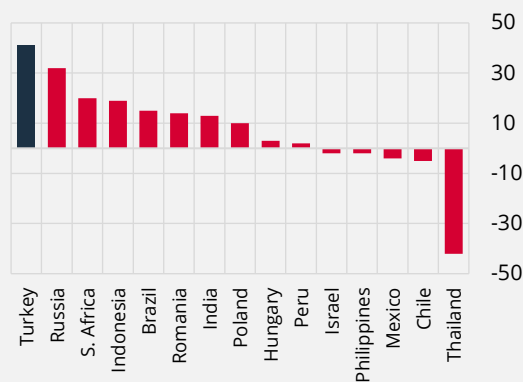
Source: Carriere-Swallow et al. (2016), OECD.

* The import content of exports in the study covers the average of the years between 2000 and 2015. OECD's data on import content of consumption represents the data for 2019.

¹ In the analyses, unless otherwise stated, the nominal effective exchange rate index published by the BIS was used as the exchange rate and the consumer price index as the price level.

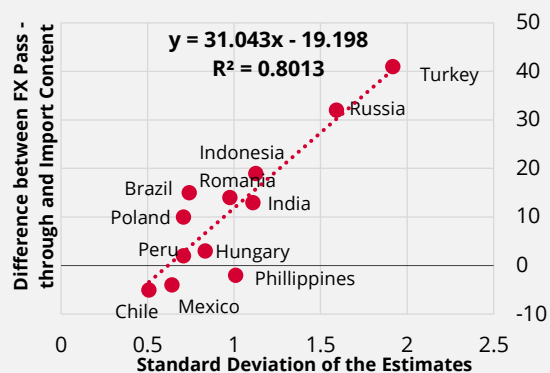
The credibility of monetary policy lies at the heart of all factors affecting the pass-through, except for structural factors such as the import content of consumption and production. A predictable and credible monetary policy focused on inflation will ensure low inflation level and volatility, as well as limit the pass-through of exchange rate shocks to inflation. Many studies such as Carriere-Swallow et al. (2016) provide empirical evidence that inflation targeting and a credible monetary policy reduce pass-through. The authors first separated the pass-through beyond what the cost factors implied by subtracting the import content of consumption presented in Chart 4 from the exchange rate pass-through coefficients estimated for countries. Accordingly, while the exchange rate pass-through in Turkey is 40% higher than what the import content of consumption implies, no additional exchange rate effect is observed on structural pass-through in countries such as Hungary, Israel and Poland, where imported content is reported as high (Chart 4 and Chart 5). In Chile, where corporate sector indebtedness is at a similar level as in Turkey, exchange rate pass-through is limited to the levels implied by the imported component (Chart 3 and Chart 5). In the aforementioned study, a statistically significant relationship was found between monetary policy credibility and the pass-through coefficients adjusted for imported components. While in countries where the credibility of monetary policy is relatively high, exchange rate pass-through follows the course of the share of imported products, in countries where it is low, an additional pass-through effect is observed. Uncertainty about inflation forecasts, which is one of the most used variables in the literature on policy credibility, can be used for a similar analysis. Average forecast uncertainties for developing countries are calculated by using Consensus Economics inflation forecasts for the period 2010-2020.² Accordingly, inflation forecast uncertainty is below average in Latin American countries such as Chile, Mexico, Peru and European countries such as Poland and Hungary. As for Turkey and Russia, these indicators are at relatively high levels. The strong relationship between the inflation forecast uncertainty and the pass-through coefficients adjusted for import content indicates that increasing the credibility of monetary policy and reducing inflation uncertainty are as important as reducing the import input rate in terms of exchange rate pass-through (Chart 6).

Chart 5: Difference Between Exchange Rate Pass-Through Coefficient and Import Content of Consumption (% Point)



Source: Carriere-Swallow et al. (2016).

Chart 6: Relation Between Exchange Rate Pass-Through and Standard Deviation of the Estimates



Source: Carriere-Swallow et al. (2016), Consensus Economics, CBRT.

Sources

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² The estimation uncertainty was calculated by summing the standard deviation of the inflation forecasts for the same calendar year and the next calendar year in the January Consensus bulletins of 2020 and 2021.

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