Twin stability problem: joint issue of high current account deficit and high inflation

Mustafa Kılınç, Cengiz Tunç and Mehmet Yörükoğlu[1]

Abstract

The low level of global interest rates and the high liquidity resulting from the quantitative easing policies adopted by advanced countries in the wake of the global financial crisis of 2007–09 bolstered capital flows to emerging market economies. However, the uncertainties relating to the future path of global monetary policies and the prospects for economic recovery led to high volatility in risk appetite, capital flows and exchange rates. In the process, emerging market economies with higher current account deficits faced larger currency depreciations and, consequently, higher cumulative increases in consumer prices. High current account deficits combined with strong inflationary pressures created a twin problem of financial and price stability. Exchange rate pass-through turned out to be an important parameter of this twin problem with a high degree of pass-through amplifying the relationship between current account deficits and inflationary pressures. Moreover, the twin problem created significant constraints for monetary policy and necessitated the use of complementary macroprudential (and other) policy tools.

Keywords: Financial stability, price stability, current account balance, inflation, exchange rate pass-through

JEL classification: E31; E44; F32

[1] Central Bank of the Republic of Turkey.

1. Introduction

The global financial crisis (GFC) of 2007–09 led to a volatile pattern of economic growth for the world economy. Recovery from the crisis was initially brisk for most countries but growth slowed down significantly afterwards, creating concerns about whether this slowdown was permanent or temporary.[2] In the process advanced economy (AE) central banks brought down their policy rates to levels close to zero and began to implement unconventional monetary policies (UMPs) involving quantitative easing to support the recovery. The global liquidity thus generated bolstered capital flows to emerging market economies (EMEs). However, those flows also exhibited a highly volatile pattern given the uncertainties regarding world economic growth and monetary policies.

These volatilities exerted depreciation pressures on most EME currencies and those pressures were strongest for countries with high current account deficits. Since the uncertainties regarding the interest rates and balance sheets of AE central banks tend to have important implications for capital flows to EMEs, concerns about the financing of high current account deficit in some EMEs implied that such economies faced higher depreciations of their currencies. Given the exchange rate pass-through to prices, higher depreciations generated upside pressures on inflation. This created a twin stability problem: a financial stability problem due to high current account deficits and a price stability one due to high inflationary pressures. Such a relationship imposed significant constraints on monetary policy in reaching price stability. It also showed the need for coordinated policies to handle the concurrent financial stability problem.

In the following section of this paper, we document the possible relationships between current account balances, exchange rates and inflation for 12 countries over the period ranging from October 2010 to October 2015. Then in the third section, we estimate exchange rate pass-through in Turkey and Indonesia (two countries with large to moderate current account deficits), and in Mexico and Korea (a country with a moderate current account deficit and a country with a high current account surplus) to quantify the possible inflationary effects of current account balances. We show that pass-through is higher in Turkey and Indonesia, possibly amplifying the inflationary pressures resulting from the current account deficits. The last section concludes.

2. Twin stability problem: possible relationship between high current account deficits and high inflation

In this section, we begin by ascertaining whether there is a statistical relationship between current account balances, exchange rate movements and inflation in a group of 12 countries for the period that followed the GFC, specifically from October 2010 to October 2015, and afterwards. We then try to look at whether there is any possible economic relationship between financial and price stability. We chose end-2010 as our starting period because the recovery from the GFC was by then complete in most countries and economic growth was starting to slow down. The Federal Reserve

[2] See, for example, Teulings and Baldwin (eds) (2014).

launched the second phase of its quantitative easing programme in support of economic recovery and some EMEs began to implement new policies to handle problems created by ample global liquidity and low interest rates. In the period covered by our analysis, a number of developments caused significant movements in risk appetite, capital flows and exchange rates, including the European debt crisis of 2011–12, the third installment of the quantitative easing programme pursued by the Federal Reserve in November 2012, signals that the Federal Reserve would begin to taper its policy of quantitative easing in May 2013 and the introduction of forward guidance by Federal Reserve relating to a lift-off of interest rates in 2015.

Table 1 summarises current account, exchange rate and inflation data for our sample. Countries are ordered from those with the highest current account deficit to those with the highest current account surplus (all relative to GDP). This ordering illustrate a wide dispersion of countries' current account balances. Then, in the second column, we show the cumulative change in exchange rates against the US dollar over our selected reference period. Those numbers also show a wide dispersion with a cumulative depreciation of 130% in Brazil to no change in Korea. In the third column, we look at the cumulative change in the price level. We see that consumer prices increased by about 50% in Turkey and India but rose by only 10% in Thailand, Korea and Malaysia. The last column of Table 1 presents information on average inflation levels over the reference period.

Current account balances, exchange rates and consumer price inflation in selected countries (October 2010 to October 2015) Table 1

	Current account balance (average over period; % of GDP)	Cumulative exchange rate change (relative to USD end/beginning period)	Cumulative consumer price change (ratio of CPI end/beginning period)	Consumer price inflation (average over period, in %)
Turkey	–7.1	2.1	1.5	7.8
S. Africa	–4.7	2.0	1.3	5.3
Colombia	–3.7	1.6	1.2	3.2
India	–3.0	1.5	1.5	8.3
Brazil	–2.9	2.3	1.4	6.5
Indonesia	–1.8	1.5	1.3	5.8
Chile	–1.7	1.4	1.2	3.0
Mexico	–1.5	1.3	1.2	3.7
Thailand	1.8	1.2	1.1	2.1
Philippines	3.3	1.1	1.2	3.4
Korea	4.5	1.0	1.1	2.0
Malaysia	6.8	1.4	1.1	2.4

Source: Bloomberg and authors' calculations.

In Graph 1, we set portfolio flows to EMEs in relation to a widely used index of exchange rate volatility for those countries. We see that with the start of the European debt problems in mid-2011, there is a jump of exchange rate volatility in EMEs. In 2012, financial markets and exchange rates stabilise somewhat, and, with the start of

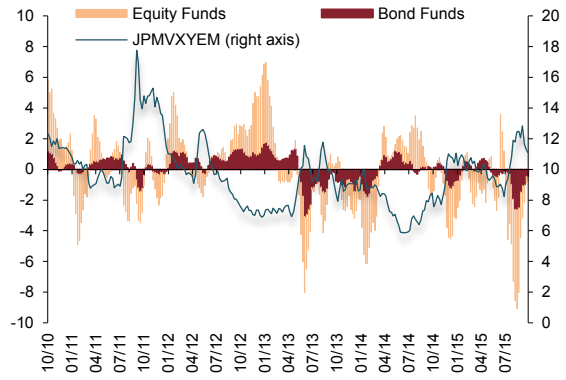
the third phase of quantitative easing by the Federal Reserve in October 2012, we see the emergence of a global "risk-on" period characterised by significant portfolio flows to EMEs. However, with the tapering signal emanating from the Federal Reserve in May 2013, a "risk-off" period ensues with large portfolio outflows from EMEs and renewed currency volatility. There is some stabilisation of portfolio flows and exchange rate movements in mid-2014 but concerns about a lift-off of interest rates by the Federal Reserve lead again to portfolio outflows and higher currency volatility that last until 2015. These developments show the significant volatility of EME portfolio flows and exchange rates after the GFC.

Graph 1 shows the evolution of exchange rates in the post-crisis period of volatile global financial markets. We partition our countries into two sub-groups to see whether there are any patterns between exchange rate changes and current account balances. Group 1 includes the countries in the upper half of the current account balance distribution (ie those with deficits). Group 2 comprises countries in the lower half of the distribution (those with lower deficits and surpluses). Graph 1 shows that both the exchange rate cycles and the extent of currency depreciation differed significantly between the two groups. In the case of Group 1, exchange rates depreciated significantly and permanently in three cycles (from the European debt crisis of mid-2011, the tapering signal of May 2013 through to the low volatility period that began in mid-2014). By contrast, for Group 2 the depreciation of currencies was temporary in the first two cycles. At the end of the period, cumulative depreciation amounted to 80% for Group 1 while it was only 20% for Group 2.

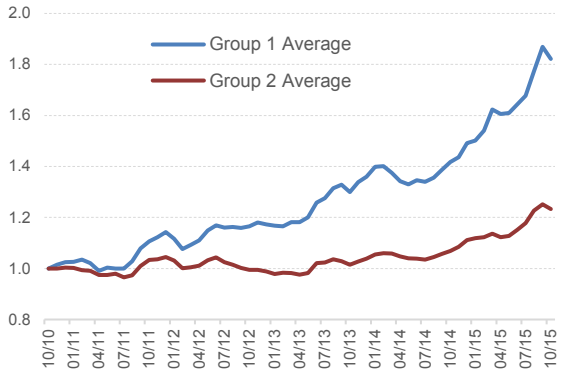
Portfolio flows to EMEs
(Four-week moving average; USD bn) and currency volatility index (JPMVXYEM; in %)

Sub-group averages exchange rates
(Against USD; Oct. 2010 =1)

Graph 1



Source: EPFR, Bloomberg.



Source: Bloomberg.

The two sub-groups are based on averages of the current account balance/GDP numbers shown Table 1. As explained in the text, Group 1 comprises the first half of countries and Group 2 the second. Group 1 includes Turkey, South Africa, Colombia, India, Brazil and Indonesia. Group 2 includes Chile, Mexico, Thailand, Philippines, Korea and Malaysia.

Graphs 2 shows the average current account balance to GDP ratio (left-hand side) and average inflation (right-hand side) for our two sub-groups. The left-hand panel of Graph 2 shows that gGroup 1 countries had a relatively stable average current account deficit to GDP ratio of 4%. Group 2 countries had an average current account balance of 2% with some improvement towards the end of period. In the right-hand

panel, one can see a difference in inflation levels that is comparable to the difference in exchange rates shown in Graph 1. In other words, the first group of relatively high current account deficit countries had persistently higher inflation levels over the period than the second group of low current account deficit or surplus countries.

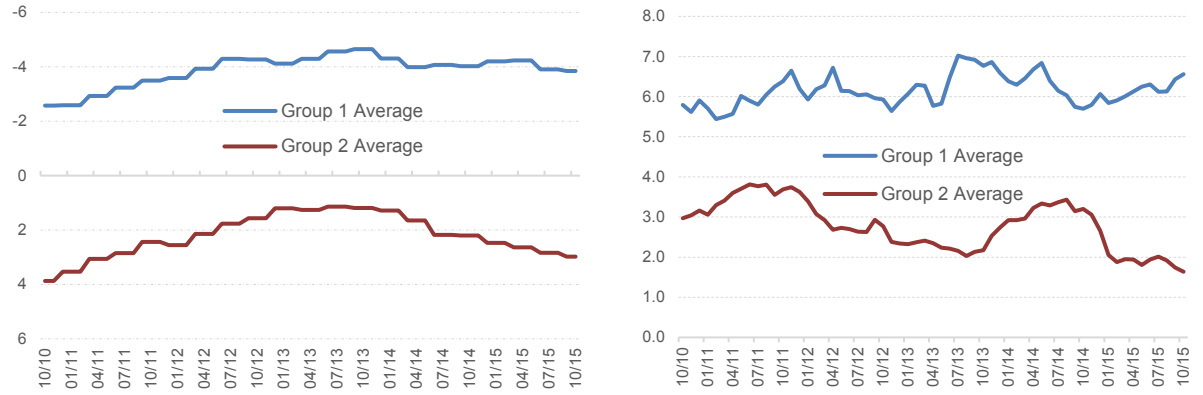
Current account balance

(as a % of GDP)

Consumer price inflation

(%)

Graph 2



Source: Bloomberg and authors' calculations.

The two sub-groups are based on averages of the current account balance/GDP numbers shown Table 1. As explained in the text, Group 1 comprises the first half of countries and group 2 the second. Group 1 includes Turkey, South Africa, Colombia, India, Brazil and Indonesia. Group 2 includes Chile, Mexico, Thailand, Philippines, Korea and Malaysia.

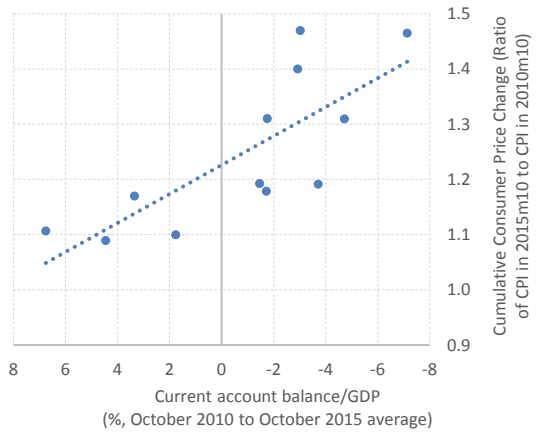
In Graph 3, we look at similar statistical relationships on a country-by-country basis rather than on an average basis for our sub-groups. The left-hand panel of Graph 3 shows the relationship between average current account balance for each country and the cumulative change in the consumer price level after the onset of the GFC. We see that a higher current account deficit is associated with a higher increase in the cumulative price level. In the right-hand panel of Graph 3, the same data on current account deficits is coupled with data on inflation levels. Again, we find that countries with higher current account deficits also have higher average inflation levels.

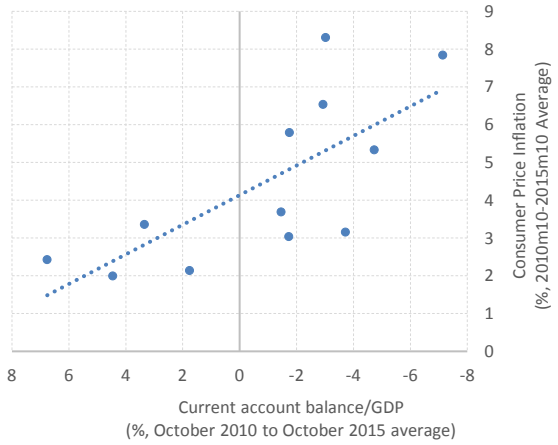
This statistical relationship between the current account balance and inflation in Graph 3 does not necessarily imply an economic relationship. But as noted earlier and observed in Graph 1, differences in exchange rates developments across countries could provide a possible economic mechanism from current account deficits to inflationary pressures. Graph 4 shows the relationship between current account balances and cumulative exchange rate changes in the relevant period. We see that, similar to Graph 1, countries with higher current account deficits experience higher cumulative exchange rate depreciations. After the GFC, low interest rates and high global liquidity generated by quantitative easing policies supported capital flows to EMEs. But with the uncertainties attached to conventional and unconventional policies, capital flows demonstrated a volatile pattern. During the risk-off periods, exchange rate depreciations were larger in high current account deficit countries as concerns regarding the financing of such deficit were exacerbated.

Current account balance as a percentage of GDP and cumulative consumer price change

Current account balance as a percentage of GDP and consumer price inflation level

Graph 3





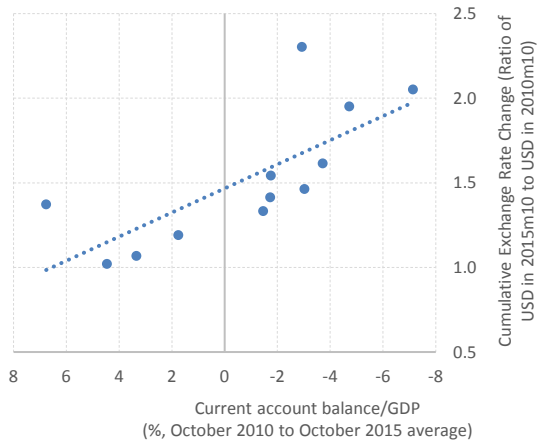
Source: Bloomberg and authors' calculations.

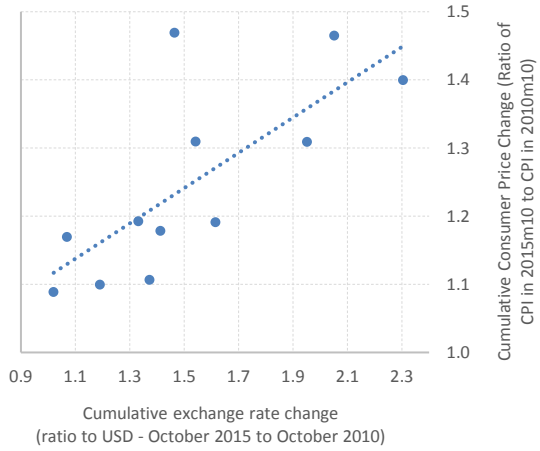
As high current account deficit countries experienced larger depreciations of their currencies, such larger depreciation would be expected to feed into domestic prices. In Graph 4, we see that countries with higher cumulative exchange rate depreciations also had also higher cumulative consumer price changes. That graph illustrates what are mainly statistical relationships. It may well be the case that some countries facing higher currency depreciations, experienced higher consumer price changes resulting from to other factors. Therefore it is crucial to show that exchange rate changes actually fed into inflationary pressures. To show and quantify this channel, we estimate in the next section the exchange rate pass-through for Turkey and Indonesia (two countries with current account deficits from the first group) and Mexico and Korea (a moderate current account deficit country and a large current account surplus county from the second group).

Current account balance/GDP (%) and cumulative exchange rate change

Cumulative exchange rate change and cumulative consumer price change

Graph 4





Source: Bloomberg.

3. Exchange rate pass-through: Turkish, Indonesian, Mexican and Korean cases

We estimate the exchange rate pass-through using a comprehensive structural VAR model borrowed from Kılınç and Tunç (2014). An important feature of the model is the block exogeneity assumption which differentiates the external variables from the domestic ones for small open economies, and prevents the domestic variables from influencing the external ones either contemporaneously or in lag forms. The block exogeneity feature is widely used for small open economies (Cushman and Zha (1997), Canova (2005), Mackowiak (2007), Giordani (2004), Franken et al (2006), and Hoffmaister and Roldos (2001)).

We define the true structure of the economy by the following model:

$$\Gamma(\mathrm{L})y(t) = e(t)$$

and the reduced-form equation as:

$$y(t) = B(L)y(t) + u(t).$$

If we define $\Gamma(\mathrm{L}) = \Gamma_0 + \Gamma^0(L)$, where Γ_0 is the contemporaneous coefficient matrix in the structural form and $\Gamma^0(L)$ is the coefficient in $\Gamma(L)$ without the contemporaneous coefficient, then $B(L) = -\Gamma_0^{-1}\Gamma^0(L)$. And the disturbances in the structural form equation are related to the residuals in the reduced form in the following way:

$$e(t) = \Gamma_0 u(t).$$

Using the block exogeneity feature, we can decompose the SVAR model into external (y_e) and domestic (y_d) blocks as follows:

$$y(t) = \begin{pmatrix} y_d(t) \\ y_e(t) \end{pmatrix}, \quad B(L) = \begin{pmatrix} B_{11}(L) & B_{12}(L) \\ B_{21}(L) & B_{22}(L) \end{pmatrix}, \quad u(t) = \begin{pmatrix} u_d(t) \\ u_e(t) \end{pmatrix}, and\ \Gamma_0 = \begin{pmatrix} \Gamma_{0,11} & \Gamma_{0,12} \\ \Gamma_{0,21} & \Gamma_{0,22} \end{pmatrix}$$

and impose that both $B_{21}(L)$ and $\Gamma_{0,21}$ are set to zero so that the domestic variables have neither contemporaneous nor lagged effect on the external variables. We employ the following identification structure for the contemporaneous relationship between the disturbances in the structural form equation and the residuals in the reduced form model ($e(t) = \Gamma_0 u(t)$):

$$\begin{pmatrix} e_{ip}(t) \\ e_{cpi}(t) \\ e_{m3}(t) \\ e_{ner}(t) \\ e_{embi}(t) \\ e_i(t) \\ e_{wcpi}(t) \\ e_{wipi}(t) \\ e_{ffr}(t) \end{pmatrix} = \begin{pmatrix} a^0_{1,1} & 0 & 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 0 & a^0_{2,2} & 0 & a^0_{2,4} & 0 & 0 & a^0_{2,7} & 0 & 0 \\ 0 & 0 & a^0_{3,3} & 0 & 0 & a^0_{3,6} & 0 & 0 & 0 \\ a^0_{4,1} & a^0_{4,2} & a^0_{4,3} & a^0_{4,4} & a^0_{4,5} & a^0_{4,6} & a^0_{4,7} & a^0_{4,8} & a^0_{4,9} \\ a^0_{5,1} & a^0_{5,2} & 0 & a^0_{5,4} & a^0_{5,5} & a^0_{5,6} & 0 & 0 & a^0_{5,9} \\ 0 & 0 & 0 & a^0_{6,4} & a^0_{6,5} & a^0_{6,6} & 0 & 0 & a^0_{6,98} \\ 0 & 0 & 0 & 0 & 0 & 0 & a^0_{7,7} & a^0_{7,8} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 & a^0_{8,8} & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & a^0_{9,7} & a^0_{9,8} & a^0_{9,9} \end{pmatrix} + \begin{pmatrix} u_{ip}(t) \\ u_{cpi}(t) \\ u_{m3}(t) \\ u_{ner}(t) \\ u_{embi}(t) \\ u_i(t) \\ u_{wcpi}(t) \\ u_{wipi}(t) \\ u_{ffr}(t) \end{pmatrix}$$

In our model, we use as external variables the world energy price index ($wcpi$) from the World Bank, the world industrial production index ($wipi$) from CPB Netherlands Bureau for Economic Policy Analysis and the federal funds rate (ffr) from the Federal Reserve. We use as domestic variables the country-level industrial

production index (ip), the core consumer price index (cpi), the monetary aggregate ($m3$), the nominal exchange rate as units of local currency for one unit of US dollar (ner), the EMBI as country risk premium ($embi$) and the domestic interest rate (i). All domestic data are sourced from Bloomberg. We take the natural logarithms of ($wcpi$), ($wipi$), (ip), (cpi), ($m3$) and (ner) and use a Hodrick–Prescott filter to decompose these variables into trend and cyclical components. We then use the cyclical component for the analysis. For the other variables, namely $(ffr), (embi)\ and\ (i)$, we simply take first differences.

We make the standard assumption of the existing literature that all domestic and external variables have a contemporaneous impact on the nominal exchange rate given that the nominal exchange rate reacts immediately to all innovations. We also assume that consumer prices internalise any news relating to exchange rate and world commodity price developments contemporaneously while the effects of other variables materialise in the subsequent periods.

Employing the above model, we estimate the exchange rate pass-through in Indonesia, Korea, Mexico and Turkey using data for the period ranging from January 2006 to October 2015. Graph 5 shows the cumulative pass-through in Turkey and Mexico. Over a one year horizon, pass-through is close to 10% in Turkey and around 3.5% in Mexico. Over a two year horizon, pass-through is 16% in Turkey and 6.5% in Mexico.[3] These numbers mean that a 10% depreciation of the domestic currency generates 1% and 1.6% in additional inflation in one year and two years respectively in Turkey. These numbers are 0.35% and 0.65% respectively for Mexico.

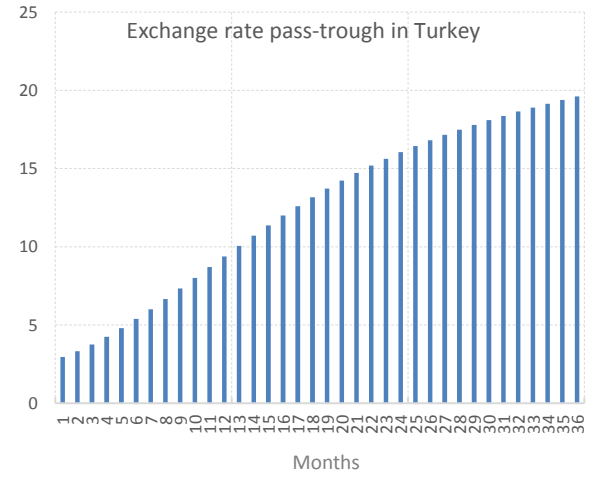
Cumulative exchange rate pass-through to core consumer prices in Turkey

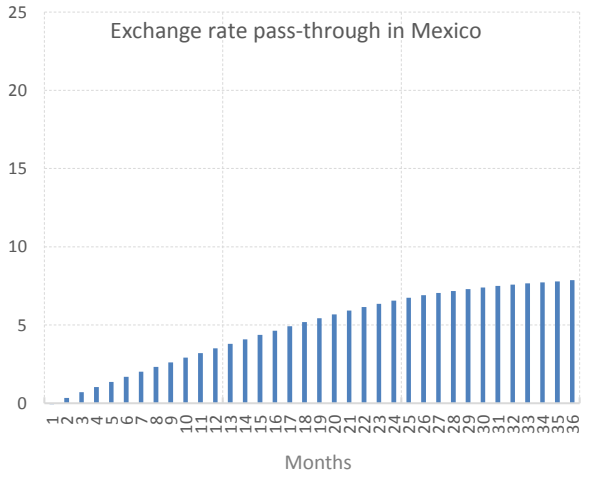
(%; January 2006 to October 2015)

Cumulative exchange rate pass-through to core consumer prices in Mexico

(%; January 2006 to October 2015)

Graph 5



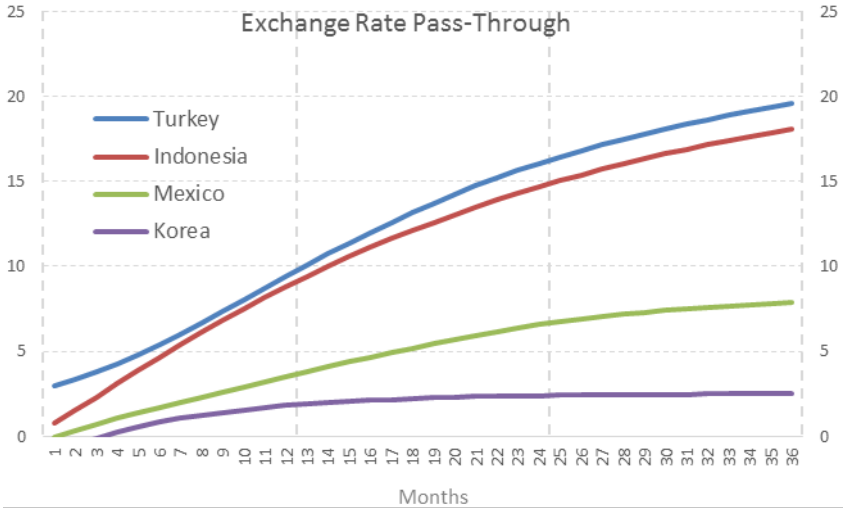


[3] These numbers are consistent with the findings of the literature. For Turkey, see Kilinç and Tunç (2014) and Kara and Ogunc (2012). For Mexico, see Peon and Brindis (2014).

In Graph 6, we add the exchange rate pass-throughs for Indonesia and Korea to those of Turkey and Mexico. In one year, pass-through is close to 9% in Indonesia and around 2% in Korea. Over a two year horizon, pass-through is around 15% in Indonesia and 3% in Korea.[4] These numbers mean that a 10% depreciation of the domestic currency generates 0.9% and 1.5% in additional inflation over one year and two years respectively in Indonesia. These numbers are 0.2% and 0.3% respectively for Korea.

Cumulative exchange rate pass-through to consumer prices in Turkey, Indonesia, Mexico and Korea

(%; January 2006 to October 2015) Graph 6



Graphs 4, 5 and 6 present stark differences in the exchange rate effects on inflation in Turkey and Indonesia, on the one hand, and Mexico and Korea on the other. For the same amount of currency movement, inflationary pressures in Turkey and Indonesia are much stronger. Moreover, Turkey and Indonesia experienced much stronger depreciations over the October 2010 to October 2015 period, around 105% and 55% respectively. Over the same period, Mexico experienced a 33% depreciation while it was only 2% in Korea. Even though differences in current account balances do not necessarily account for all of the differences in exchange rate movements, it seems that differences in current account positions could be an important determinant of inflation. Combined with a high pass-through parameter, exchange rate changes exerted significant pressures on domestic prices in Turkey and Indonesia. However, exchange rate effects in Mexico and Korea could be

[4] These numbers are also consistent with the findings of the literature. For Turkey, see Kilinç and Tunç (2014), and Kara and Ogunc (2012). For Mexico, see Guillermo Peón and Rodríguez Brindis (2014). For Indonesia and Korea, see Prasertnukul et al (2010).

characterised as moderate to non-existent in comparison.[5] This could be taken to illustrate that high current account deficits could lead to higher inflationary pressures in some EMEs. When combined with a high exchange rate pass-through, this effect could be further amplified. Overall, countries with high current account deficits can face a twin stability problem: financial stability issues relating to the current account and price stability issues relating to inflationary pressures (themselves resulting from exchange rate movements). The relationship we found from the current account deficit to inflation imposes significant constraints on monetary policy, especially if the current account deficit is partly related to structural factors, credit dynamics and/or terms of trade movements. In these cases, the optimal policy mix would require the use of complementary macroprudential policies or other policies.

4. Conclusion

The world economy followed a very volatile path after the GFC. EMEs, in particular, witnessed boom-bust cycles in capital flows and exchange rates. Some EMEs with high current account deficits faced strong downward movements of their exchange rates which put upward pressures on their domestic prices. The combination of high current account deficits and inflation posed a twin stability problem for those economies, resulting in significant constraints on monetary policy and the necessity of adopting complementary policy tools. The exchange rate pass-through is an important parameter of the twin stability problem with a high pass-through amplifying the relationship between current account deficit and inflation.

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[5] A simple quantitative analysis shows that in Turkey a 105% depreciation and a 16% pass-through coefficient imply total increase of 17% of inflation; in Mexico a 33% depreciation and a 6.5% pass-through coefficient imply 2% of additional inflation. Given the cumulative consumer price changes shown in Table 1, these pass-through-generated rises in inflation account for around 11% of the cumulative price change in Mexico and around 37% of the cumulative price change in Turkey.

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