Monetary policy independence in Chile[1]

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Abstract

International financial integration and a high co-movement in risk premia have caused long-term interest rates in developing countries to become highly correlated with long-term interest rates in the main financial centres. Arguably, this reveals a limit to monetary policy independence. We analyse the case of Chile since the early 2000s, showing that exchange rate flexibility and inflation credibility have enhanced the ability to have a monetary policy based upon domestic inflationary objectives. The apparent tension between a central bank's capacity to determine short-term monetary conditions while exerting a less strong influence on the long end of the yield curve suggests that a complementary role for other macroprudential tools is required if price and financial stability objectives are to be achieved.

Keywords: Monetary policy independence, interest rates, financial integration, Taylor rules

JEL classification: E43, E58, F3

[1] We thank Álvaro González for excellent support. The views expressed in this note do not necessarily represent those of the Central Bank of Chile. At the time this paper was written, Opazo was Head of the Financial Stability Group at the Central Bank of Chile.

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1. Introduction

The international financial conditions faced by emerging market economies (EMEs) have changed significantly over the last decade. The low interest rates and the stable risk premium of the 2000s gave way during the 2008–09 financial crisis to extremely low risk-free interest rates in the main financial markets and, in contrast, a very high risk premium for EME debt. In the last few years, interest rates in the main financial centres have remained at historically low levels in response to the aggressive monetary policies undertaken by the main central banks, while EME spreads have been reduced, albeit with some volatility. Overall, financial conditions for EMEs have been very attractive since 2011.

In contrast to previous episodes, the positive environment for financial assets in EMEs was accompanied by several economic problems in developed economies in the aftermath of the 2009 financial crisis. The combination of expansionary monetary policies and poor macroeconomic conditions in developed markets, together with deleveraging financial institutions, enhanced a global financial cycle that has affected all developing countries. As pointed out by Rey (2013), the ability of EMEs to influence or manage domestic financial conditions has come under pressure, as financial flows and asset prices have been more affected by conditions in developed markets than by domestic macroeconomic conditions.[4]

This phenomenon is especially relevant as many developing countries shifted toward flexible exchange rate regimes during the 2000s as they adopted or moved towards inflation targeting regimes.[5] Conceptually, the ability to run an independent monetary policy implies the adoption of a flexible exchange rate system. In a context of perfect capital mobility, monetary policy independence results in exchange rate adjustments and asset price changes. These adjustment valves should prevent the development of flows that may contribute to the build-up of financial vulnerabilities. More generally these adjustments should help to mitigate potential imbalances.

Two questions arise in this context. First, how far have emerging market economies been able to run independent monetary policies in the last few years, or is it the case that global liquidity conditions have generated a global cycle to which EMEs have been unable to adjust. A second question points to the implications that this debate on monetary policy independence has on asset prices changes and, in particular, on exchange rate fluctuations.

Using evidence from Chile, this paper seeks to shed some light on the following dimensions: (i) the ability of the central bank to steer domestic short-term interest rates independently of the level or direction of foreign short-term interest rates, (ii) its ability to affect interest rates on the long part of the yield curve, (iii) the consequences of monetary independence for the exchange rate.

[4] See also BIS (2014) for a discussion on financial spillovers from advanced economies' monetary policies.

[5] See Claro and Soto (2013) for the experience of Chile.

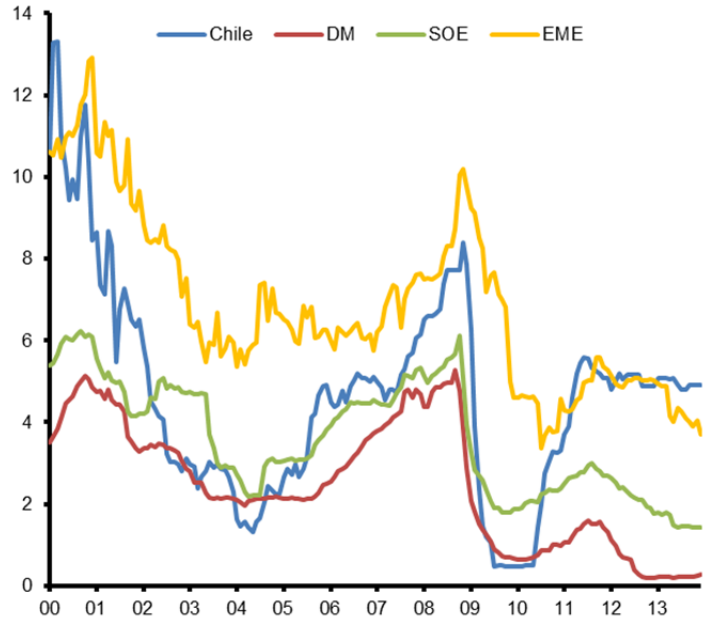
2. Some facts

i. Short-term rates

Figure 1 plots the 90-day nominal interest rate in a series of countries: emerging economies (EME), developed economies (DM), small open economies (SOE) and Chile. We use these series as a proxy for the monetary policy stance. Alternatively, we could use the monetary policy rate, which shows a very similar pattern. However, for the sake of analysing the exchange rate and financial flows' responses to interest rate differentials, we think the 90-day rate is more relevant as a market reference.

Short-term interest rates[1]

(percentage) Figure 1



[1] The interest rate for EMEs, DMs and SOEs corresponds to the median rate of each group. For the countries included see Annex 1.

The figure shows an interesting pattern. During the 2000s, Chile's short-run monetary policy conditions were very similar to those in developed markets, both in levels as well as in its cyclical pattern. During the 2009 crisis, Chile was also able to lower interest rates to record low levels as DMs did, while a period of monetary policy normalisation started in 2010. Since then, monetary conditions in Chile have been different from those in developed economies and, if anything, closer to those in other developing countries.

Table 1 presents additional evidence on this point. It reports the correlation coefficient between Chile's nominal rate and the median rate in different groups of countries for different maturities. We divide the sample into pre-crisis and post-crisis periods: January 2000–August 2008, and January 2010–November 2013,

respectively.[6] In the 2000–08 period, we observe a high correlation between Chile's 90-day nominal rates and those in the rest of the world. After the crisis, the Chilean short-run correlation essentially breaks down, especially with developed countries. In contrast, correlations between long-term interest rates have increased in the last few years (this point will be developed later).

Correlation coefficient between domestic rates in Chile and alternative groups[1]

(percentage) Table 1

		2000-2008.08	2010-2013
Short-Term rate[2]	DM	77.1	2.3
	SOE	80.3	11.5
	EME	81.4	32.2
Long-Term rate[3]	DM	56.6	65.9
	SOE	15.4	75.7
	EME	40.2	48.0

[1] Correlation coefficient between Chile and the median country in each group. [2] 90-day interest rate. [3] 10-year government bond interest rate.

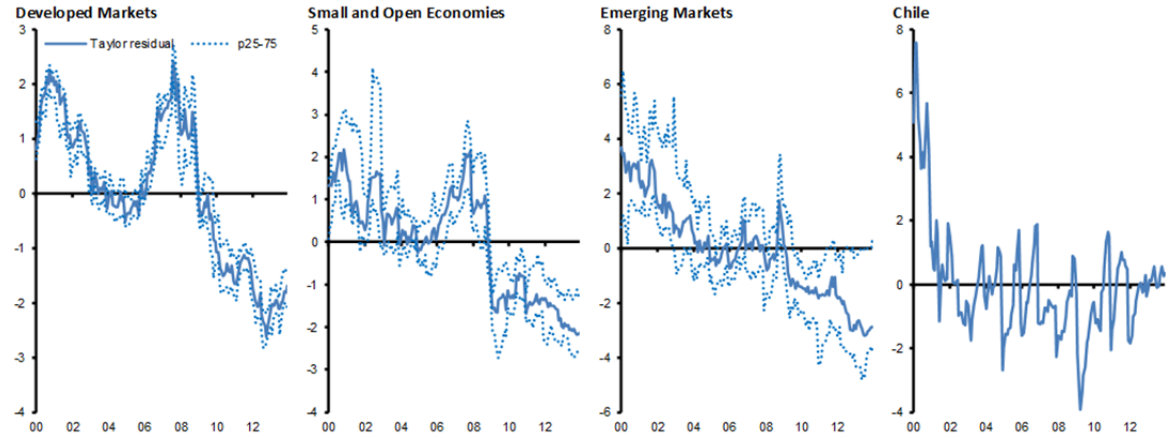
Although one might be tempted to attribute these changes to gains in monetary policy independence with respect to DMs, for instance, it is important to point out that these correlations could be explained by cyclical conditions. In particular, it is possible that the obvious differences in macroeconomic conditions in the last few years between developed and developing markets explain the gap in short-run rates. Figure 2 explores this issue more formally. It reports the unexplained component of the short-term interest rates as derived from a simple Taylor rule. In each group we report the error term of the median country, as well as the p25 and p75 values. The figure shows that Chile's short-term monetary conditions have been roughly consistent with the Taylor rule, revealing that local macroeconomic conditions have been the main driver of rates since the early 2000s. In essence, the high correlation of monetary conditions between Chile and DMs in the pre-crisis period has been driven by similar cyclical conditions, while in the last years the fall in the correlation relates to fundamentally different domestic conditions.

Apparently, this is not the case in other emerging market economies. In some, short-term interest rates in the last few years have been lower than a simple Taylor rule would have prescribed. This suggests that global monetary conditions could have had some impact on the ability or willingness of EMEs' central banks to manage short-term interest rates exclusively from a consideration of domestic conditions. Alternatively, this could reveal that considerations other than inflation – such as exchange rate fluctuations – might help to explain monetary policy conditions in some emerging economies.

[6] We skip the last quarter of 2008 and all of 2009 where risk spreads surged in all countries and asset prices co-moved very significantly.

Short-term interest rate not explained by a simple Taylor rule[1]

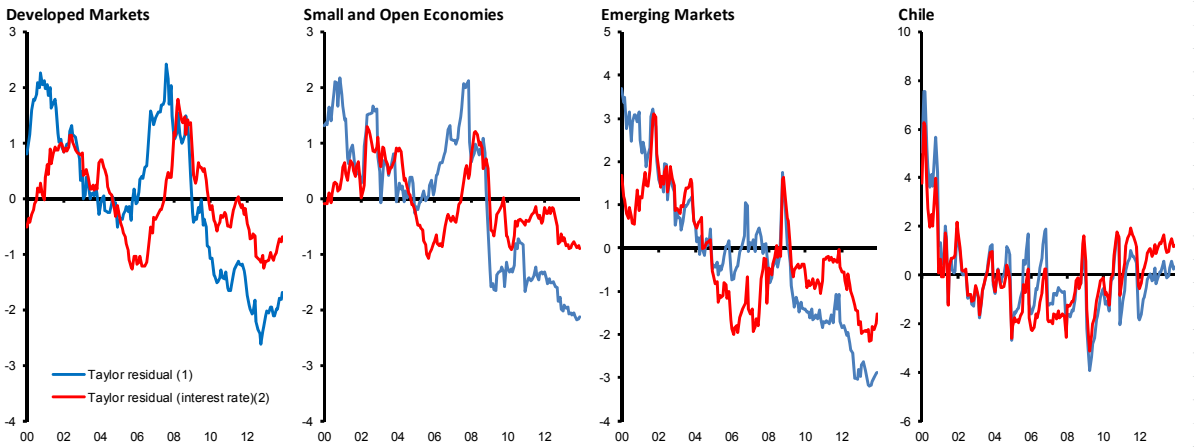
(percentage) Figure 2



[1] Corresponds to the residual from the following equation $i = \alpha + \beta(y - y^P) + \gamma(\pi - \pi^P) + u$ where i is the 90-day interest rate, $(y - y^P)$ is the GDP differential between the current GDP and the cycle GDP approximated with a Hoddrick-Prescott filter, and $(\pi - \pi^P)$ the gap between the inflation rate and the long-term inflation approximated with a Hodrick-Prescott Hoddrik-Prescott filter. The sample period goes from 2000m1 and 2013m12. For the countries included see Annex 1.

Impact of US short-term interest rate on domestic interest rates

(percentage) Figure 3



Notes: (1) Corresponds to the residual from the following equation $i = \alpha + \beta(y - y^P) + \gamma(\pi - \pi^P) + u$ where i is the 90-days interest rate, $(y - y^P)$ is the GDP differential between the current GDP and the cycle GDP approximated with a Hodrick-Prescott Hoddrik-Prescott filter, and (π-π^P) the gap between the inflation rate and the long-term inflation approximated with a Hodrick-Prescott Hoddrik-Prescott filter. (2) The augmented Taylor rule corresponds to: $i = \alpha + \beta(y - y^P) + \gamma(\pi - \pi^P) + i^* + u$, where i^* is the 90-day lLibor rate in the United States. The sample period goes from 2000m1 and 2013m12. For the countries included see Annex 1.

Another way to check for the potential influence of external conditions on the local short-term interest rate is to incorporate the US short-term interest rate into our simple Taylor rule specification. The results shown in Figure 3 reveal that the US short-term interest rate effectively influenced the expansiveness of the monetary policy stance of DMs, SOEs and EMEs. In Chile, this effect is negligible, suggesting that the Central Bank of Chile's management of short-term interest rates has not

been driven by global conditions above and beyond the effects that they have on Chile's cyclical condition and inflation perspective.

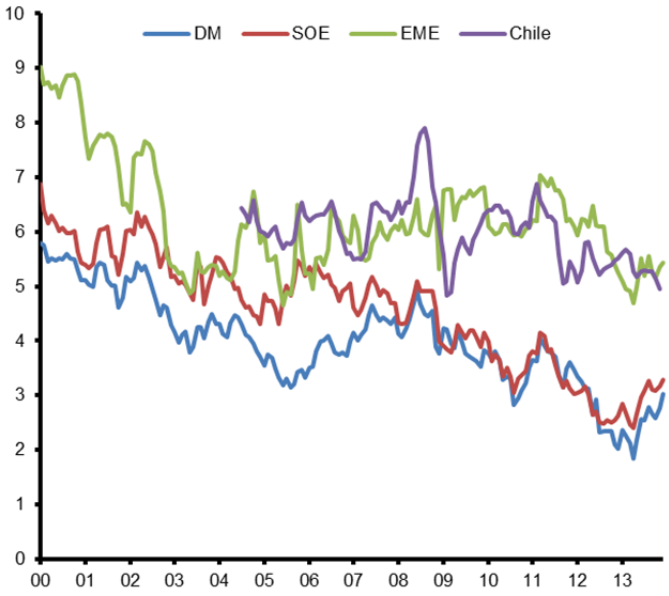
ii. Long-term rates

Figure 4 plots the evolution of 10-year nominal interest rates for the same group of countries. The pattern across time and countries is different from that at the short end of the yield curve, as expected. Developed economies consistently have lower long-term nominal interest rates on sovereign bonds than EMEs, reflecting – on average – lower inflation rates and lower risk spreads. It is also worth highlighting that long-term interest rates in developing countries are much more stable than short rates. In contrast with the evidence presented in Figure 1, the monetary policy cycle has a much milder impact on long-term rates.

Long-term local currency-denominated bonds[1]

(percentage)

Figure 4



[1] The lines of the country groups are the median rate of the 10-year government bond of the respective group. For the countries included see Annex 1.

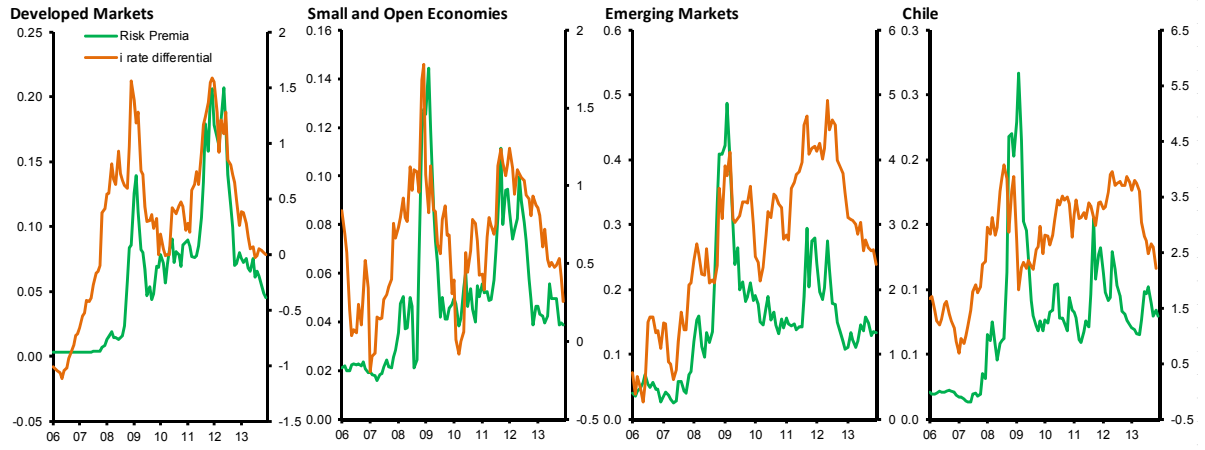
As the bottom part of Table 1 shows, the correlation coefficient of long-term rates across different groups of countries has been high throughout the period. Indeed, if anything, this correlation has increased in the last few years. This reveals several features. The dynamics shaping the valuation of long-term assets are less affected by short-run conditions; instead, long-term determinants of macroeconomic performance (Claro and Soto (2012)) as well as global factors (Longstaff et al (2011), IMF (2013)) have a much more significant effect in determining long-term rates. This was true in the period before the crisis, and it seems to be even more relevant after the crisis.

To illustrate this point, Figure 5 shows that the higher co-movement of long rates is closely matched with the co-movement of risk spreads, which has a strong global component, and Figure 6 shows that the risk premium across countries is highly correlated with the VIX index, which is a metric of global risk conditions.

Therefore, in contrast with short-term monetary conditions (previous section), the dynamics of sovereign long-term interest rates is highly influenced by global factors.[7]

Long-term interest rate and risk premium[1]

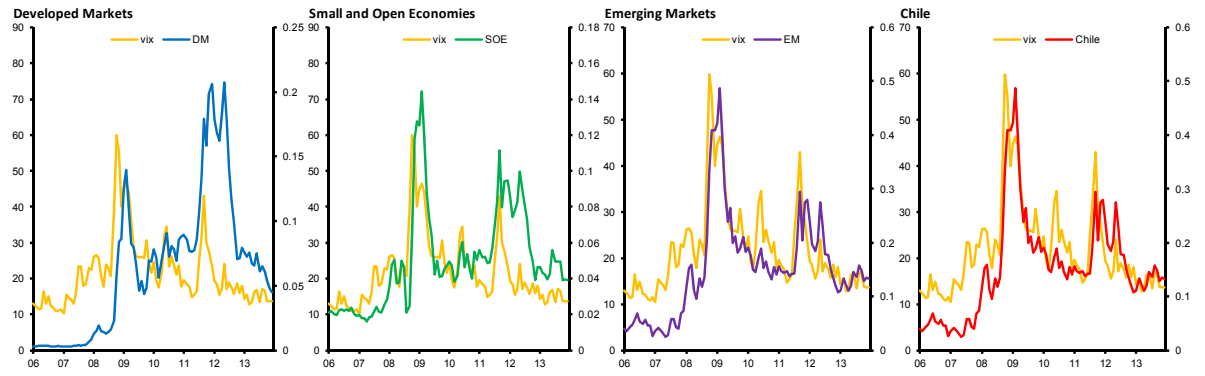
(percentage) Figure 5



[1] The lines of the country groups are the median of the described variable, of the respective group. For the countries included see Annex 1.

Risk premia and volatility index[1]

(percentage) Figure 6



[1] The lines of the country groups are the median of the described variable of the respective group. For the countries included see Annex 1.

The difference in the role of global factors in short-term and long-term interest rates is very relevant, especially because no definition of monetary policy

[7] The evidence that global factors are relevant in determining long-term rates, and that this relationship has increased in the last few years, is consistent with Rey (2013), who suggests that push factors related to liquidity conditions in developed markets have been a critical driver of long rates. In this line, Longstaff et al (2011) show for a group of economies that the explained variance for the first principal component is 43% during the period 2000–06, while the explained variance increases to 75% during the period 2007–10. In particular, the first principal component estimated by Longstaff et al is quite close to the VIX. A similar conclusion is obtained by Pan and Singleton (2008), who find a strong relation between sovereign credit spreads and the VIX index.

independence is comprehensive enough. In a context of financial integration, it is probably the case that a better assessment of monetary policy independence could be done by analysing the dynamics of short-term rates. This does not mean, of course, that long rates are not relevant for macrofinancial decisions; they are – for instance, consumption and investment decisions are affected by interest rates all along the yield curve. However, with capital mobility, the capacity of monetary policy to affect long-term interest rates is clearly smaller, and global factors play a much more prominent role. Also, the global drivers of long-term rates can change over time; in the last few years one hypothesis worth pursuing is that global liquidity in developed countries and the search for yield of financial intermediaries have affected risk spreads and hence rates in emerging markets.

Whether this implies a reduction in monetary policy autonomy or whether it rather reveals a high level of global interdependence is a question of semantics. As mentioned above, the reduced ability of the short-term interest rate to influence the long-term rate could imply that monetary policy is less capable of influencing decisions based on long-term interest rates – for instance, funding and investments in the real state sector. This doesn´t mean that central banks have been deprived of any ability to achieve their inflation or financial stability goals. Instead, it probably suggests that, in a context of global financial integration, monetary policy independence reflects the ability to affect financial conditions in different degrees across the yield curve.

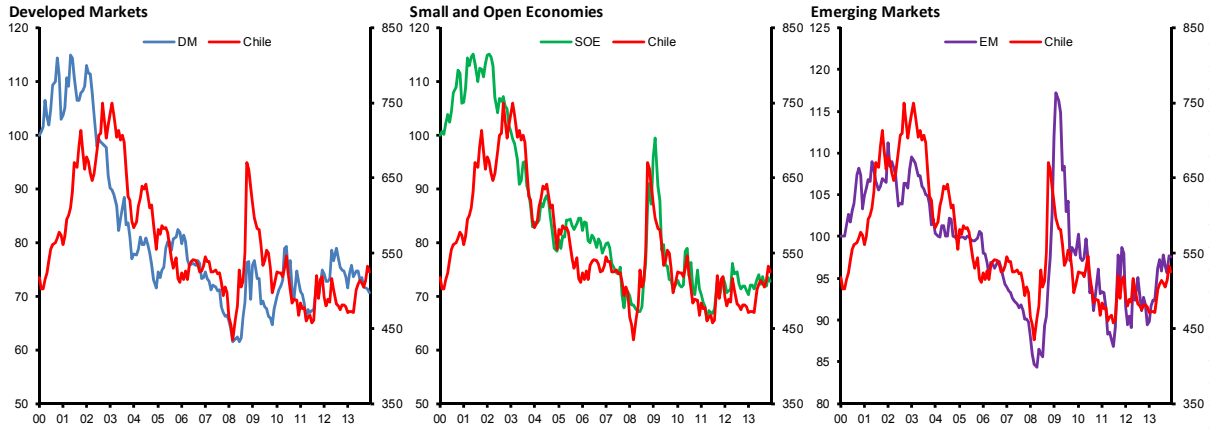
iii. Independent monetary policy and the nominal exchange rate

Figure 7 plots the evolution of Chile's peso against a group of other currencies. An increase means a depreciation of the peso. Overall, since the early 2000s all currencies have had a similar performance against the US dollar. We observe a strengthening of domestic currencies in developing countries in the first half of the 2000s, following by a sharp depreciation during the crisis, which rapidly reversed itself in a few quarters. The last few years have been a period of strong EME currencies. But this trend has strongly reversed since the second half of 2013.

The evolution of the exchange rate also seems to be highly influenced by common and global factors. This is true at low frequency, as Figure 7 shows for a period with heterogeneous monetary policy and cycles. But it also holds at high frequencies, even when idiosyncratic shocks play a larger role. Obviously the short-run dynamic of the nominal exchange rate could be associated with a wide range of shocks, including the implementation of policies oriented to mitigate its changes. Table 2 shows a variance decomposition of a rolling window of quarterly exchange rate changes. Even at high frequencies, the analysis shows that the risk premium is a key driver of exchange rate volatility.

Chilean peso vis-à-vis other countries' currencies[1]

(January 2000=100) Figure 7



[1] The lines of the country groups are the median of the described variable, of the respective group. For the countries included see Annex 1.

Exchange rate variation: components of the explained volatility[1]

(percentage) Table 2

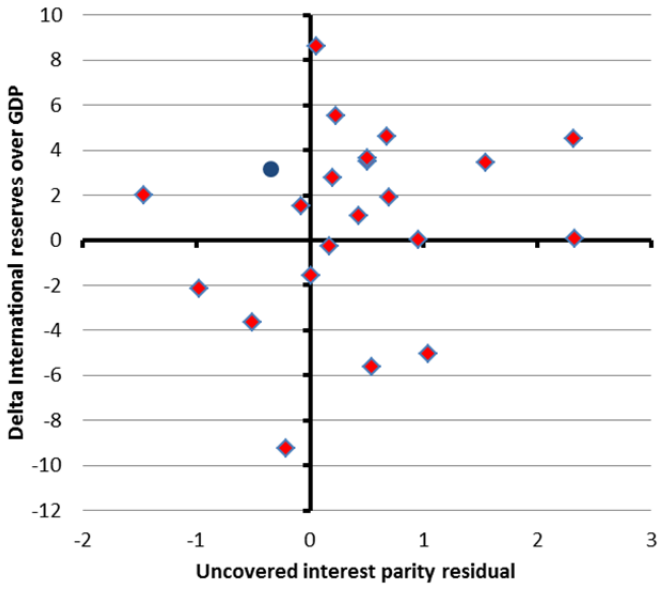
	2010-2013		
	EME	**SOE**	**Chile**
	(standard deviation)		
Exchange rate (% change)	4.92	4.91	4.82
	(percentage explained of the dependent variable volatility)		
i differential	2	8	0
Risk premia	28	21	25
Cov (i, risk)	0	-11	0
Residual	71	77	75

[1] After estimating the exchange rate percentage variation from the equation: $\frac{\Delta e}{e} = \alpha + \beta(i - i^*) + \gamma(CDS - CDS^*) + u$, the table shows the standard deviation of the four components of the equation, where $\frac{\Delta e}{e}$ is the quarterly percentage variation of the exchange rate, $(i - i^*)$ is the short-term interest rate differential, and $(CDS - CDS^*)$ the risk premia differential with respect to the US interest rate.

In this regard, it is useful to recall that the literature on the effectiveness of policy interventions suggests only short-lived effects (Edwards (1999); Tapia and Tokman (2004); Cowan, Rappoport and Selaive (2007); and Claro and Soto (2013)). To illustrate this point, Figure 8 plots the unexplained component of the exchange rate derived from UIP vis-à-vis the change in reserves as a percentage of GDP. As we can see, no clear relationship arises between these variables.

Uncovered interest rate parity equation residual and international reserve variation: Emerging markets 2010–13[1]

(percentage) Figure 8



[1] The residual corresponds to the error u in the equation: $\frac{\Delta e}{e} = \alpha + \beta(i - i^*) + \gamma(CDS - CDS^*) + u$.

Conclusion

The international financial conditions faced by emerging market economies have changed significantly over the last decade. Expansionary monetary policies combined with poor macroeconomic conditions in developed markets and deleveraging by financial institutions has enhanced a global financial cycle that affects all developing countries. This global cycle has evinced a higher co-movement of some key asset prices. In particular, the analysis shows that this higher co-movement has been observed in long-term interest rates and exchange rates. Nonetheless, short-term interest rates have shown different degrees of co-movement across countries, suggesting different responses to such global effects.

In general, the short-term monetary policy stance in developed and developing countries has responded to domestic conditions, but it has also been influenced by global liquidity conditions, or by other domestic factors, such as exchange rate volatility. In many developing countries, these factors have driven interest rates below the levels suggested by traditional Taylor-rule interest rate policies. A different result is found for Chile, where the evolution of the domestic interest rate follows the domestic cycle rather closely.

That global factors act differently on short-term and on long-term interest rates is a very relevant consideration when assessing the degree of monetary policy independence. On the one hand, global factors do not necessary dilute the potential influence of central banks on short-term interest rates, and hence on

decisions based upon short rates. On the other hand, global factors could have a stronger influence on agents' decisions based on long-term interest rates (eg housing investments).

The fact that, even with exchange rate flexibility, long-term rates are strongly affected by global factors does not mean in our opinion that monetary policy independence is non-existent, but rather that the limits of monetary policy in affecting price stability and financial stability have become more apparent. These limitations suggest that the old principle of "one instrument – one goal" is even more valid than ever before. In other words, central banks will find it increasingly difficult to achieve price and financial stability by relying solely on interest rates. Therefore, macroeconomic management must be complemented with macroprudential tools. This is precisely the reason why the latter area has been the focus of attention in recent years, within both central banks and institutions responsible for financial supervision.

Annex 1. Country list

Developed Markets	Emerging Markets		Small and Open Economies
Austria	Argentina	Malaysia	Australia
Belgium	Brazil	Mexico	Canada
Finland	Bulgaria	Nigeria	Denmark
France	Chile	Peru	Israel
Germany	China	Poland	New Zealand
Greece	Colombia	Romania	Norway
Ireland	Croatia	Russia	South Korea
Italy	Czech Rep.	Slovakia	Sweden
Japan	Hungary	South Africa	
Netherlands	India	Thailand	
Portugal	Indonesia	Turkey	
Slovenia	Latvia	Ukraine	
Spain	Lithuania	Vietnam	
Switzerland			
United Kingdom			
United States			

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