US Monetary Policy and its impact on Monetary Policy in Chile[1]

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I want to start my remarks by thanking the organizers for inviting me to this distinguished panel.

The question on whether and how US monetary policy has affected Latin American countries is very broad. Today, I would like to focus on two dimensions of this question. The first one is to analyze the impact of monetary policy in the US on the management of short term interest rates in Chile. The second dimension has to do with the impact of US monetary policy on asset prices - like the exchange rate and long term interest rates. Nominal short term rates are a limited metric for measuring monetary and financial conditions, and hence a broader view at domestic financial conditions enhances our understanding of the effects of US monetary conditions.

Let me start with the link between policy rates in the US and Chile. The evidence shows that since the early 2000s the Central Bank of Chile has been able to manage short term interest rates independently from what the Federal Reserve does.[2] Of course, this does not mean that CLP and USD short term interest rates have been uncorrelated throughout this period. By independent monetary policies I mean the ability to manage short term interest rates taking into account domestic cyclical conditions. In essence, after controlling for the cyclical conditions of the Chilean economy – in a significant part driven by the US business cycle – the monetary policy rate (MPR) has closely followed what an output gap-inflation trade off à la Taylor rule would suggest.

[Insert Figures 1 and 2]

The ability to run an independent monetary policy has been especially noticeable in the years after the global financial crisis on 2008-09. While US monetary policy has been extremely expansionary, the MPR in Chile was kept at a relatively high level of 5% for almost three years. This difference mainly reflects the divergence of the business cycle: while growth in America and Europe remained sluggish in the aftermath of the crisis, it averaged more than 5% in Chile between 2010 and 2013. This pattern contrasts with that of the majority of Emerging Market Economies (EMEs), whose short term interest rates have deviated from traditional Taylor rule metrics to take into

[1] Remarks prepared for the Symposium "Building the Financial System of the 21st Century: An Agenda for Latin America and the United States", organized by the Program on International Financial Systems, Harvard Law School., Nov 12-14, Cambridge, MA. I am grateful to Elías Albagli, Carola Moreno and Alberto Naudón for comments. The views expressed in these remarks do not necessarily represent those of the Central Bank of Chile.

[2] Claro, S., and L. Opazo (2014), "Monetary policy independence in Chile," BIS papers 78: 111-123.

account the US Fed Funds rate. It is probably the case that exchange rate considerations have played a critical role in this. [3]

[Insert Figure 3]

In a context of financial integration, the consequence of having an independent monetary policy in Chile in the last five years was a strong appreciation of the CLP relative to the USD and other developing countries' currencies which followed more closely the US monetary policy. This is evident in the secular appreciation of the CLP relative to the USD, other emerging market currencies as well as in multilateral terms, as described in Figure 4. In the last 18 months, since the so-called tapering talk began in April 2013, the CLP has depreciated in a significant way in bilateral and real terms, in tandem with a reduction of 200 bp in the monetary policy rate in Chile and expectations of increases in the Fed funds rate in the next quarter in the United States.

[Insert Figure 4 on exchange rates]

The ability and decision in Chile to allow for exchange rate fluctuations keeping control of short term nominal rates started in the early 2000s. The inflation targeting regime and the flexible FX regime were adopted after the difficult adjustment that Chile endured after the Asian crisis of the late 1990s. Ever since, FX interventions have been the exception rather than the rule. [4] The traditional fear-of-floating associated with balance sheet mismatches and inflation credibility has been left behind, as a consequence of an explicit effort to make the flexible FX regime credible. This is a cornerstone of Chile's macroeconomic framework. As in any standard IT regime, the management of monetary policy by adjusting short term interest rates is aimed at keeping 2-year projected inflation at 3%.

In essence, monetary policy in the last few years was trying to avoid an acceleration of domestic demand and a credit boom that would fuel inflation dynamics, in a context of very expansionary international financial conditions and terms-of-trade. Now, when these extraordinary conditions in the United States are normalizing and Chile's economy is undergoing a period of slower growth, short term rates have been pushed downwards, the CLP has depreciated in real terms and the current account has seen a relevant adjustment, too. This highlights the mechanism of adjustment of the Chilean economy to changes in external conditions, and shows how far monetary policy independence in Chile has gone.

That said, and bringing me to the second aspect I wish to highlight today, an exclusive focus on short term nominal rates is too narrow a perspective for analyzing monetary and credit conditions. Linkages of domestic and international financial conditions also occur through other channels, like financial flows (gross and net) and asset price changes. More specifically, I want to focus on the path of long-term interest rates, which are critical for investment decisions and asset valuation.

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[3] See papers in "The transmission of unconventional monetary policy to the emerging markets," BIS papers 78, august 2014.

[4] Claro, S. and C. Soto (2013), "Exchange rate policy and exchange rate interventions: the Chilean experience," BIS papers 73:81-93.

Historically, long terms rates in Chile and other emerging market economies have co-moved with those in the United States and other advanced economies. For example, the monthly correlation coefficient of 10-year US Treasury bond rates and Chilean 10 year BCP rates was about 0,6 between 2005 and 2014. This relationship in long rates has important implications for assessing financial conditions and for evaluating the dependence of local long rates to foreign determinants. The dilemma vs. trilemma debate pointed out by Rey (2013), which emphasizes the limits to monetary policy independence in a context of financial integration, points exactly in the direction of questioning the ability of countries to run independent monetary policy if long term risk-free yields fluctuate in tandem with US long term yields.[5] From a related though different perspective, Obstfeld (2014) argues that "to the extent that long-term rates are strongly subject to global forces, the power of short term rates to steer the economy could diminish."[6] His paper states that the ability of monetary policy to affect inflation dynamics is not fundamentally altered by financial integration and global flows, but changes in advanced economies' financial conditions can spill across borders to (EMEs) in the form of asset price changes or capital flows, imposing limits on macroeconomic management and highlighting the trade-off between inflation objectives and financial stability considerations.

Longer term interest rates not only reflect the expected path of short term rates – hereafter I refer to this component as neutral rate –, but also risk factors such as the term premium. The literature shows that countries' term premiums are highly correlated, in particular with US government bond premiums.[7] The evidence in Chile points in the same direction; the correlation of Chile's long term rates is high and significant with the term premium component of the US 10-year rate, measured using the Adrian et al, (2013) decomposition. Figure 5 shows part of this evidence: there is a high correlation between the term premium in the US and the in Chile's public bond markets.

[Insert Figure 5]

One hypothesis is that the abundance of liquidity in the main financial markets has affected the term premium, lowering long term rates in the US. Jeremy Stein, who shares this panel, has discussed this issue extensively and convincingly, in my opinion, arguing that "easing of monetary policy —even via conventional policy tools in normal times—tends to reduce both the term premiums on long-term Treasury securities and the credit spreads on corporate bonds."[8]

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[5] Rey, H. (2013), "Dilemma, not trilemma: the global financial cycle and monetary policy independence," Proceedings of the Jackson Hole conference, Federal Reserve Bank of Kansas City.

[6] Obstfeld, M. (2014), "Trilemmas and Tradeoffs: Living with Financial Globalization", manuscript, University of California, Berkeley.

[7] See Hellerstein, R. (2011), "Global bond risk premiums," Staff Report 499, Federal Reserve Bank of New York, June.

[8] See, for example, Stein, J. (2014), "Incorporating financial stability considerations into a monetary policy framework," Federal Reserve Board, March 21, 2014, and Stein, J. and S. Hanson "Monetary policy and long-term real rates," forthcoming in Journal of Financial Economics.

Hence, the evidence suggests that one important –if not the most important-- mechanism through which monetary policy in the United States has affected Chile in the last few years is through changes in long term rates, in particular in term premiums. The extraordinary expansion of monetary policy in the United States has lowered long term rates to historical minimums, both because of a fall in the expected path of short term rates and also due to a decrease in the risk and term premiums.[9] A similar phenomenon has been experienced in Chile, where long term rates have decreased sharply. Since January 2010, 10-year government bond yields have fallen almost 200 basis points. This coincides with a fall in the term premium of around 100 basis points – which arguably is an international phenomenon –, as well as a fall in the path of short term rates. The evidence (not shown for space considerations) also suggests that this latter component reflects mainly the path of the MPR in the short run and not a change in the arrival level of the MPR.

[Insert Figure 6 US rate decomposition]

[Insert Figure 7 rates decomposition in Chile]

I want to argue however that there have been no important conflicts between monetary policy in Chile and the dynamics of term premiums in the markets after the crisis of 2008-09. Let me focus on the post 2008-09 recovery in Chile. After the 2009 recession, the economy recovered quite fast, growing at rates above 5% between 2010 and 2012. This path required a major increase in the monetary policy rate, from its minimum of 0.5% during 2009 to a level considered consistent with the inflation target.

At a time when monetary policy in Chile was in a neutral/restrictive stance, US short term rates were at their minimum, and risk premiums where very low. Moreover, when the Federal Reserve announced and put in place a QE program since mid-2011, there was a drastic fall in 10y rates in the United States from 4% to almost 2%, mostly explained by a significant decrease in the risk premium.

[Insert Figure 8]

As figure 9 shows, there was at that time a substantial fall in the term premium in Chile's 10y rates, as well, but the yields did not fall as much because the neutral component of domestic rates was increasing at that time, coherent with the communication of the Central Bank and market participants' expectations regarding the expected path of monetary policy in a highly dynamic environment.

[Insert Figure 9]

Interestingly, the opposite pattern is observed since April 2013, when the tapering talk in the United States pushed up the term premium and US long rates at the same time the Central Bank

[9] Adrian, T., R.K. Crump, and E. Moench (2013), "Pricing the term structure with linear regressions," Journal of Financial Economics 110(1): 110-138.

of Chile was communicating an easing bias in its monetary policy stance in response to the first signals of changes in cyclical conditions in the Chilean economy. This can be seen in figure 9, as well.

Overall, the evidence suggests that while the neutral rates component of long-term yields in Chile reflects largely its independent monetary policy stance consistent with a divergent business cycle, the risk premium component seems to be systematically correlated with that of US long term rates.

The fact that long term rates in the US influence bond markets in emerging economies more generally, and Chile in particular, is highly relevant for policy makers for several reasons. First, most economic models in modern Central Banks assign an essential role to financial conditions in determining output and inflation dynamics, so understanding how domestic long-term rates depend on global fixed-income markets seems like a natural agenda for Central Bankers.

Second, whether monetary policy strategies that pursue explicit asset pricing objective --such as lowering long term rates-- are indeed exceptional is not entirely clear yet. After all, recent evidence suggests that the long term asset purchase programs in the US and England were effective in lowering rates.[10] Faced with this success, it is not obvious that Central Banks around the world will not adopt similar policies in the future. This will probably depend on how successful these Central Banks are in the process of normalizing their extraordinary monetary policies. To the extent that asset prices linger as part of Central Banks´ objectives and toolkits however, this opens up a whole new dimension on how monetary policy is transmitted internationally, with consequences that could eventually extend into financial stability concerns. This is a topic where we have more questions than answers at the moment.

Let me conclude with some bullet points.

a) Chile's monetary policy has evolved in the last 15 years with a credible commitment to a flexible exchange rate system. This process has facilitated the management of short term rates in a way consistent with domestic inflation dynamics. In this sense, Chile's experience does support the idea that exchange rate flexibility and financial integration are compatible with monetary policy independence.
b) Monetary policy independence does not rule out co-movement in short term rates. The experience in the first part of the 2000s shows that the Chilean cycle was highly correlated to that in the United States. This has not been the case in the last few years after the financial crisis, translating into a divergent path of short term rates.
c) An exclusive focus on short term rates as a metric for monetary policy stance and financial conditions is too narrow. In many countries, and Chile is not the exception, long term rates

[10] See Gagnon, J., M. Raskin, J. Remache and B. Sack (2011), "The financial markets effects of the federal reserve´s large scale asset purchases", International Journal of Central Banking 7(1):3-43, and D´Amico, S., W. English, D. Lopez-Salido and E. Nelson (2012), "The federal reserve´s large-scale asset purchase programmes: rationale and effects", Economic Journal 122.564:415-446.

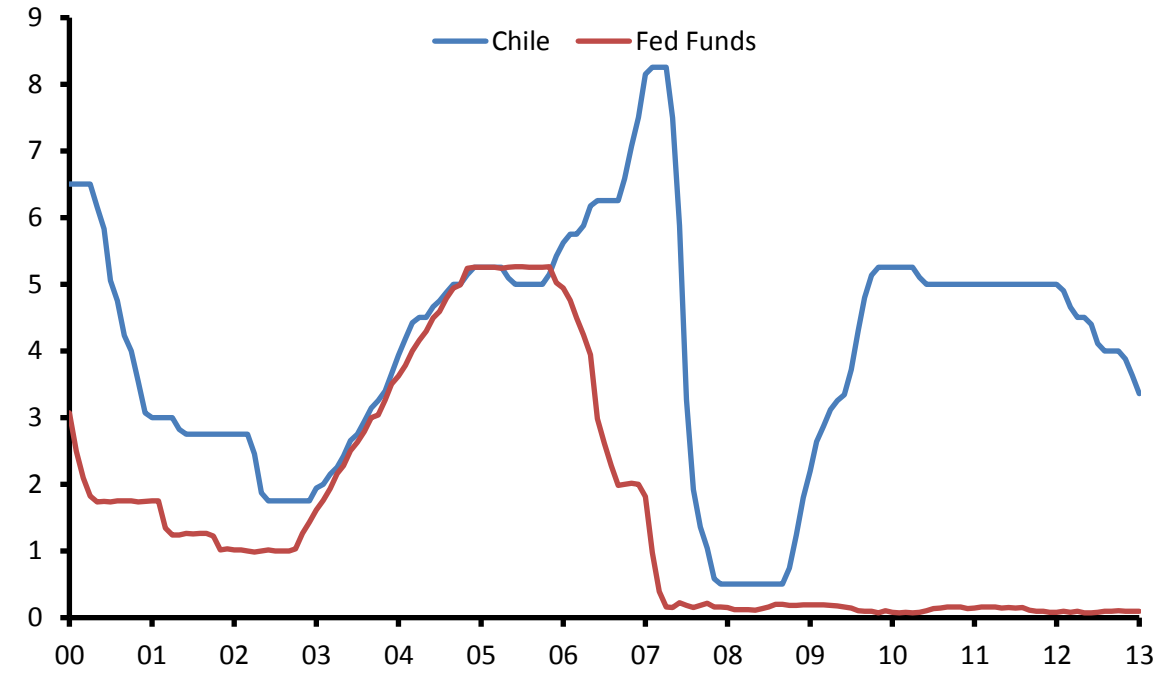
highly co-move with those in the United States. There is evidence in Chile that this co-movement is mainly driven by the co-movement in the term premiums, which have been highly volatile in the United States in recent years.

d) The evolution of longer-term rates in Chile in the past few years has reflected changes in its two components: a downward and highly volatile trend of the risk premium in the United States, and a monetary policy strategy which – broadly speaking – has moved in the opposite direction to that in the United States. There is no evidence that US monetary policy has materially affected the capacity of the Central Bank of Chile to achieve its inflation objectives in a context of financial stability. Preliminary evidence shows that while term premiums have followed the US pattern, the neutral component of long term rates have broadly responded to the monetary policy strategy of the Central Bank of Chile.

e) Conceptually, the linkage of longer-term rates in Chile to those in the United States could pose some challenges to monetary policy making, either because it can introduce difficulties in macroeconomic management or because of financial stability considerations. The experience since the financial crisis has shown that fluctuations in the term premiums is a very relevant transmission mechanism from US monetary policy, and the volatility in term premium will probably drive volatility in long term rates in emerging markets. This is probably one the largest challenges central banks around the world are facing now-a-days.

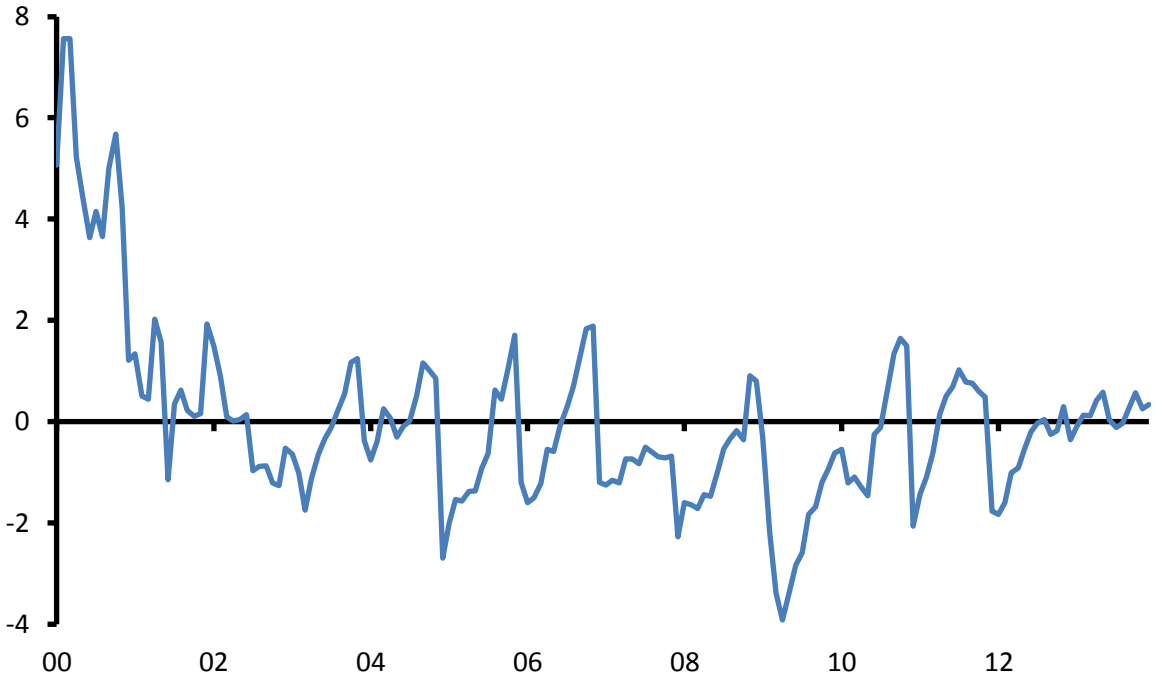
Thank you.

Figure 1: Monetary Policy Rates in Chile and the United States (Monthly average, percentage)



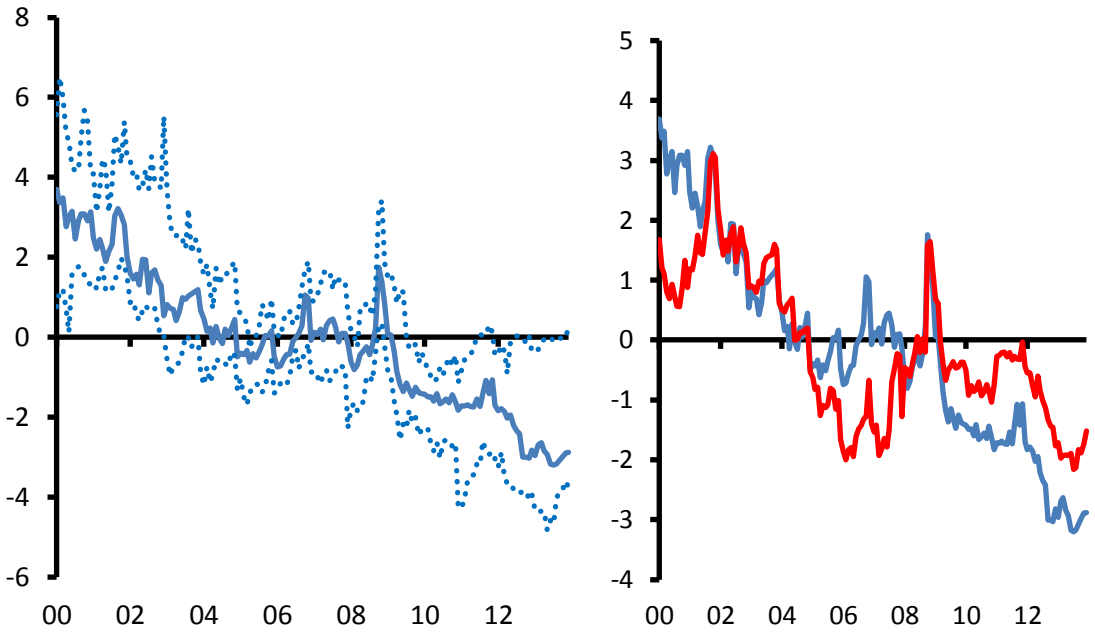
Source: Central Bank of Chile and Federal Reserve

Figure 2: Percentage deviation of 90-days interest rate from a simple Taylor rule in Chile: 2000-2013



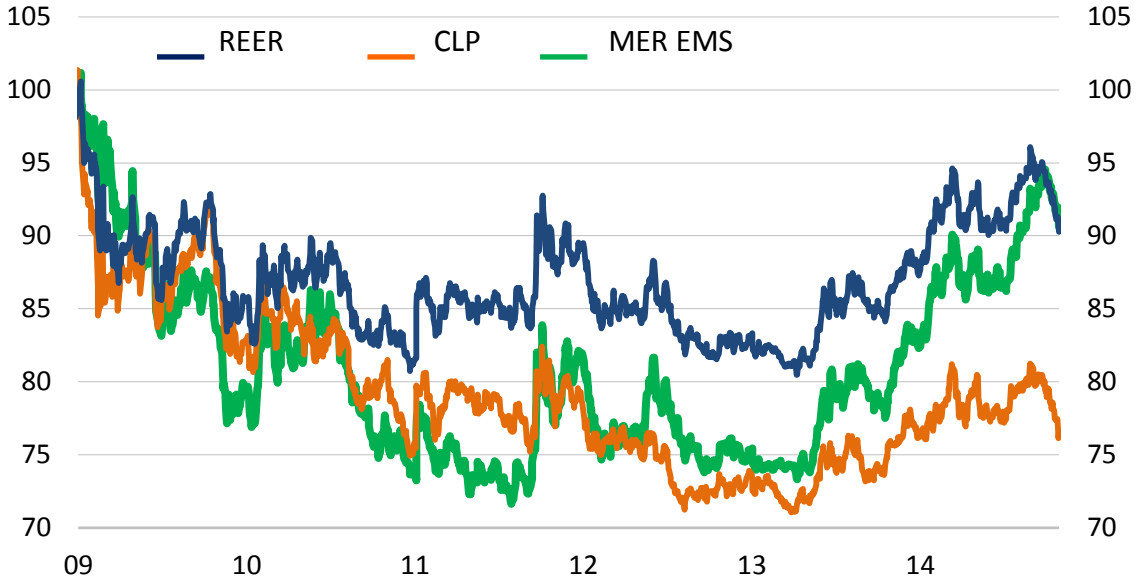
Source: Claro and Opazo (2014)

Figure 3: Percentage deviation from a simple Taylor rule in Emerging Markets: 2000-2013



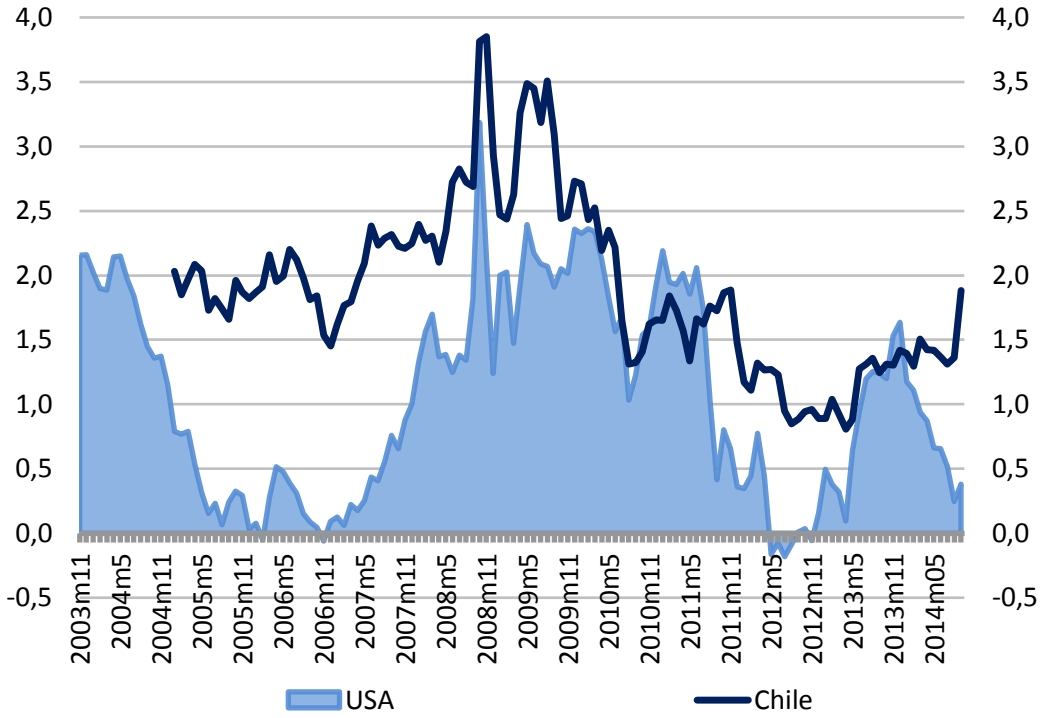
Note: Left panel: median, p25, p75. Right panel: median deviation from traditional Taylor rule (blue line) and from an augmented Taylor rule including US short term interest rates (red line). Countries included: Argentina, Brazil, Bulgaria, Chile, China, Colombia, Croatia, Czech Rep., Hungary, India, Indonesia, Latvia, Lithuania, Malaysia, Mexico, Nigeria, Peru, Poland, Romania, Russia, Slovakia, South Africa, Thailand, Turkey, Ukraine, Vietnam.
Source: Claro and Opazo (2014)

Figure 4: Nominal, bilateral and multilateral exchange rate in Chile (2009=100)



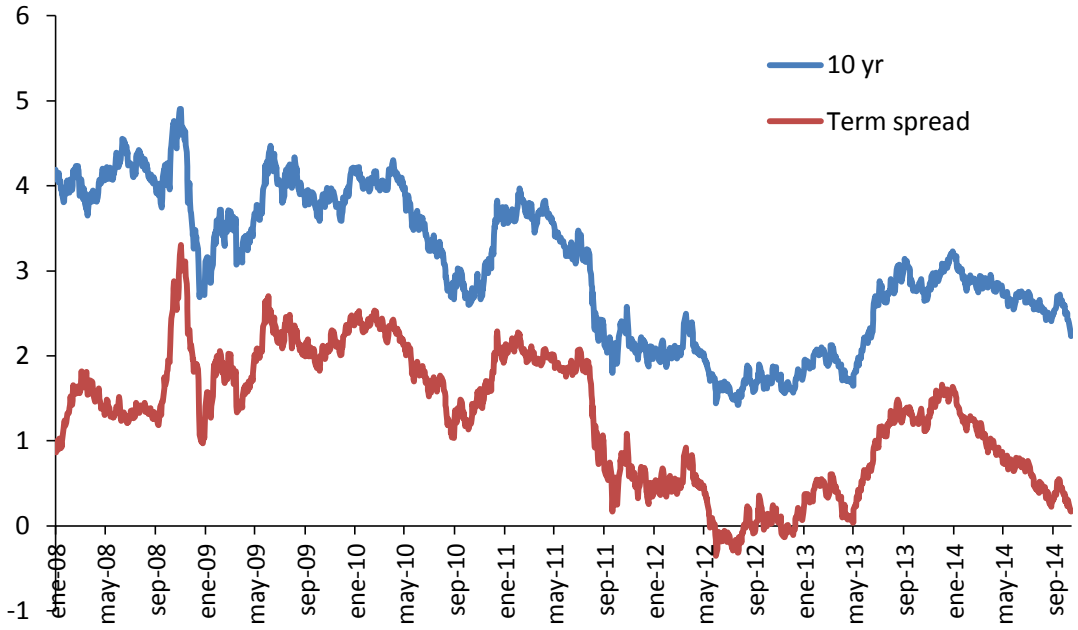
Note: An increase indicates a depreciation of the CLP against the USD or a basket of currencies. REER is the Real Exchange Rate and MER EMS is the multilateral exchange rate relative to a group of EMEs.
Sources: Bloomberg and Central Bank of Chile.

Figure 5: Term premium 10-year government bonds: Chile and United States (percent)



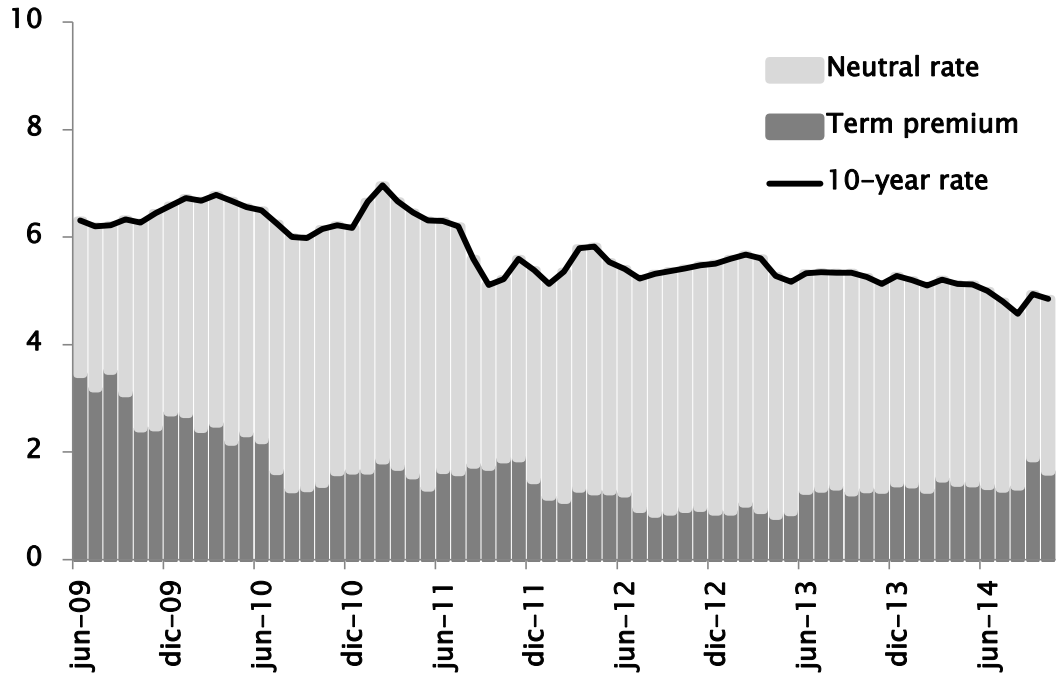
Sources: Adrian, Crump and Moench (2013) and Central Bank of Chile.

Figure 6: 10-year Treasury Bonds and term spread (percent)



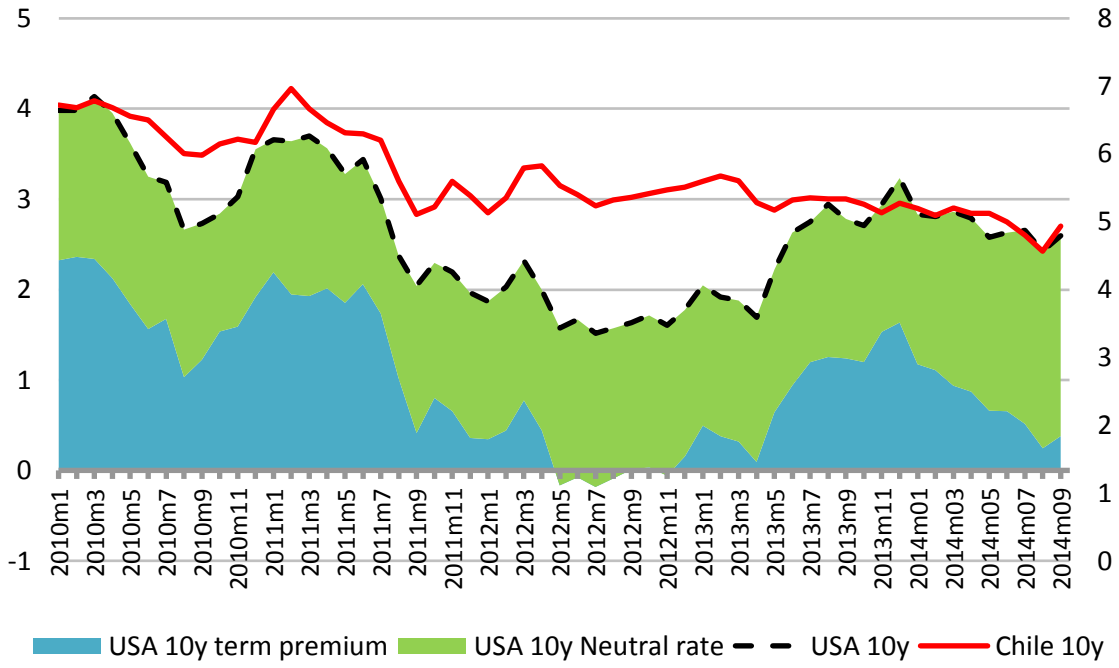
Source: Adrian, Crump and Moench (2013).

Figure 7: 10-year rate decomposition in Chile (percent)



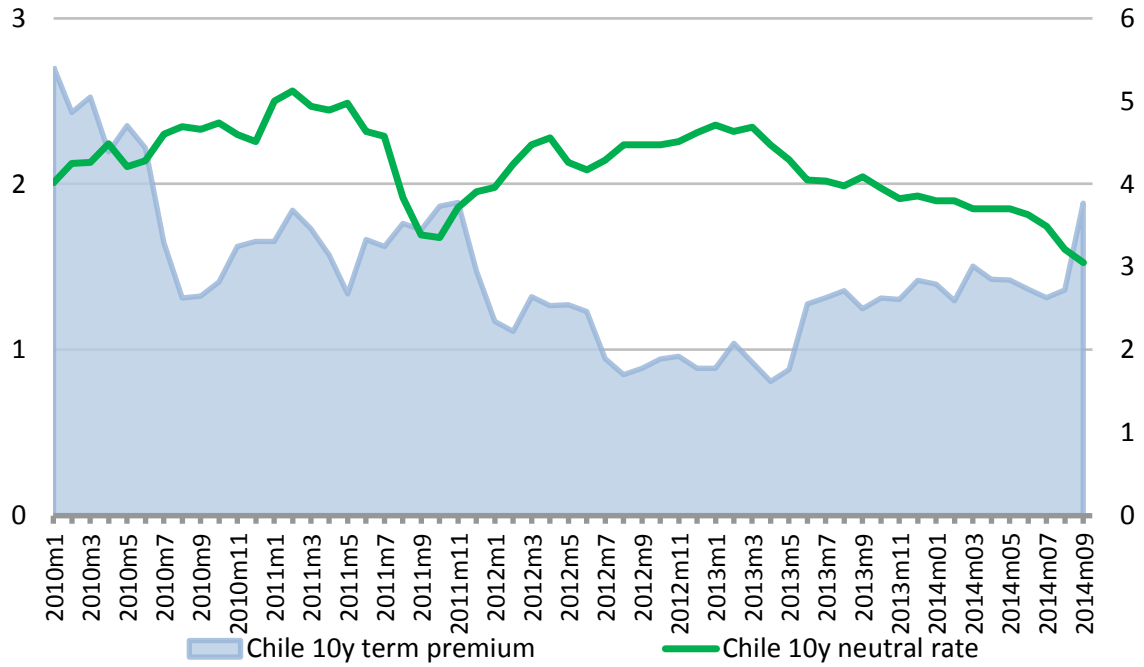
Source: Central Bank of Chile

Figure 8: Chilean 10-year rate and US government 10y rate decomposition



Source: Central Bank of Chile and Adrian, Crump and Moench (2013).

Figure 9: Neutral rates and term premium decomposition of Chile's 10-year rate



Source: Central Bank of Chile