ECONOMICS

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Brazil – Exchange Rate

BRL – A High-Beta Currency

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- **We updated our exercises comparing the BRL's behavior to a benchmark (14 emerging currencies), and we maintain our conclusion that the BRL is a high-beta currency, as it has usually outperformed other currencies during periods of favorable international liquidity conditions (favorable common factor) and underperformed during adversity.**
- **Recently, the BRL has outperformed the benchmark, significantly exceeding its recent historical pattern, reinforcing our view that idiosyncratic factors (the improvement in the political environment and the expectation of fiscal balance stability in the future) were important in the recent movement and we are assuming that the favorable effect of this factor on the BRL is permanent.**
- **Nevertheless, all the metrics we present in this piece suggest that room for further appreciation is limited, given that we expect no further improvement in the political environment and that the fiscal agenda still has to be approved by Congress.**
- **Moreover, if there is a setback in international liquidity conditions (common factors), we expect to see BRL depreciation ahead, even with the world's currency market less volatile, only to adjust the BRL to emerging currencies' basket movements.**
- **Therefore, we maintain our call that the BRL is in a depreciation trend in the upcoming years, and we forecast BRL3.65/USD for year-end 2016 and BRL3.95/USD for year-end 2017.**

Introduction

Throughout this year the market consensus has postponed its expectations for U.S. monetary tightening. For example, the most recent consensus expectation for the next hike in Fed funds is through 2017. The Fed funds interest rate is expected to be close to zero for a longer period, which, coupled with the negative primary interest rates in Japan and the negative real interest rates in Europe, have promoted more favorable international liquidity conditions. Riskier assets, as a result, have been gaining in value in anticipation of continuation of these favorable liquidity conditions. Among these assets, the movements of currencies have been important, particularly those of emerging economies, as their movement directly affects key variables for the macro scenario, such as inflation, interest rates, and GDP growth. This has been no different in Brazil. The BRL has strengthened 23.5% since December 2015, which is triggering ongoing revisions of the consensus outlook for the currency.

One of the most important aspects of Brazilian macro reality is that the BRL has outperformed other EM currencies (see the charts on the following page). This has led to concerns about the main causes of this gap. Some market observers have argued that the improvement in the political environment (the higher governability) and the fiscal adjustment agenda are behind the appreciation in the currency.

We do believe that the better governability and fiscal outlook have supported an improvement in fundamentals, such as the currency. However, there are other factors that should be considered as well. For instance, since 2000 (our sample), the BRL has usually outperformed other currencies in periods of favorable international liquidity conditions (when such currencies strengthen) and underperformed during adversity. In 2013, when the market consensus started to price in a potential tapering in the Fed's bond-buying program, known as quantitative easing, in the following months, thus increasing risk aversion (an adversity scenario especially for emerging economies), the BRL underperformed other currencies. At that time, our exercises with emerging currencies reached the conclusion: the BRL has a high beta against other currencies. (See our report *High Beta BRL*, July 10, 2013.)

It is not the purpose of this study to investigate why that happens. However, one possible cause may be that Brazil is a closed economy. Having a very low level of exports relative to GDP or as a percentage of capital flows requires greater variations of the currency to adjust the trade balance and the current account when liquidity conditions shift. Another possible reason commonly mentioned by market observers is the liquidity of Brazilian assets, which are easier to buy at times of favorable liquidity conditions and easier to sell at distressed prices when risk aversion increases.

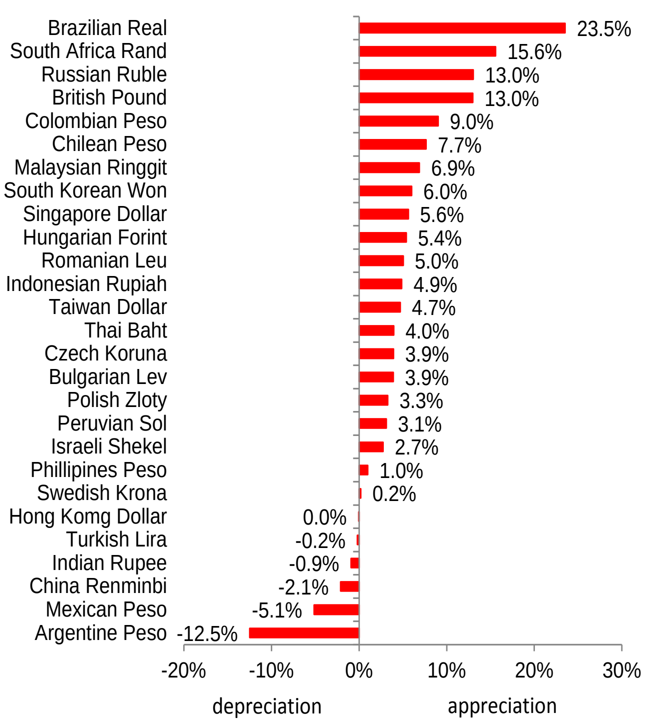
In this piece, our goal is to establish that the BRL's current excessive appreciation may be partially a consequence of the historical pattern of the BRL regarding the international liquidity conditions variation. We try to quantify the relationship between a benchmark currency basket and the BRL, in order to measure the contribution of a common global factor (in this case, international liquidity conditions) to the recent variation in the BRL.

Our conclusion and measurements bring important insights for the future. First, the common factor (international liquidity conditions) plays a role in the BRL's behavior. Second, we conclude that, although the BRL has appreciated faster than most other emerging currencies, in line with high-beta behavior, the recent outperformance significantly exceeded its recent historical pattern, reinforcing the idea that some idiosyncratic factor also had importance in the recent movement. This factor could be the improvement in the political environment or the expectation of fiscal balance stability in the future, for instance. We are assuming that the last factor (idiosyncratic) has a favorable effect in the BRL that is permanent. However, we consider that the current common factor effect is temporary. If the common factor (international liquidity) continues to be favorable, it will strengthen emerging currencies, including the BRL, but the opposite also holds true. On the common factor side, we expect the Federal Reserve to continue monetary normalization; in addition, other advanced economies cannot hold a negative nominal or real interest rate indefinitely; and finally, there are elections on the international political calendar that could also pressure the FX market. Therefore, a shift in international liquidity conditions should be expected eventually, in our opinion, and the historical pattern of the BRL will produce some depreciation from the actual level.

That said, we think the greater appreciation/depreciation movements of the BRL should not come as a surprise, as the volatility of the Brazilian currency has usually been among the highest in the world. The interesting thing about the BRL's recent behavior is that both the idiosyncratic and common factors have worked in the same direction, which explains the outperformance this year even against other high-volatility and high-beta currencies and the underperformance last year.

BRL Appreciation Has Exceeded That of Most Other Currencies

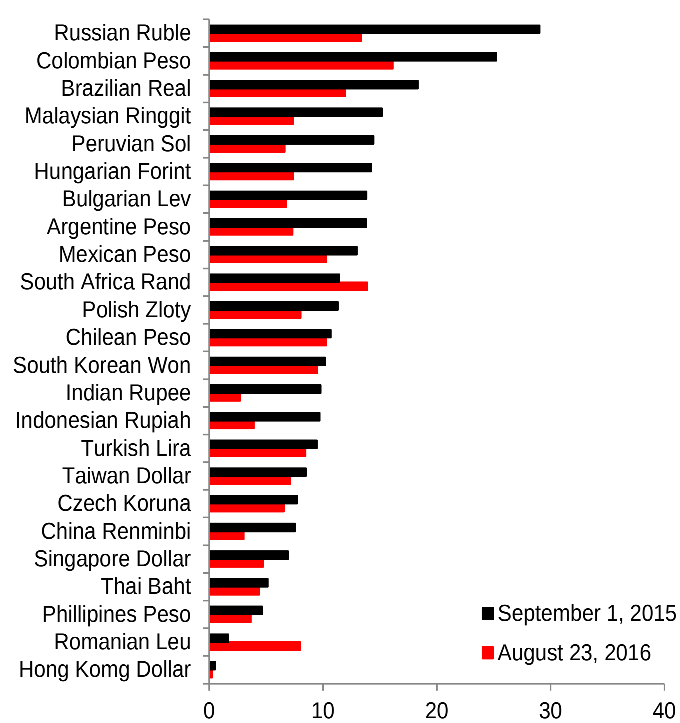
Currency Nominal Variation against the USD (Dec 31 to Aug 17), Selected Countries



Source: Bloomberg.

BRL Volatility Is Also among the Highest

Standard Deviation of Monthly Variations (Jan 2004 – June 2013), Selected Countries



Source: Bloomberg.

Defining a Benchmark

In order to assess and quantify the importance of idiosyncratic and common factors for the movements of the Brazilian currency, we start by constructing a benchmark. The main purpose is to have an indicator that incorporates the average impact of international liquidity conditions on currencies.

For this purpose, we have created different baskets of emerging currencies in real effective terms (against USD) and calculated correlation rates of monthly variations of each basket against the BRL real effective rate (against USD). The currencies in the emerging adjusted basket (14 currencies) are weighted by their respective importance in the fixed income market (the same weights as in JPMorgan’s Emerging Market Bond Index); in the emerging linear basket (23 currencies), all currencies have the same weight; for emerging commodities (9 currencies), all currencies also have the same weight; for LatAm (5 currencies), we assign the same weight for each currency. The relations between each basket and the BRL were not as close as one might expect – likely, in our view, because the baskets comprised economies with different government intervention levels in the exchange rate market or, for instance, with different lists of exports that result in varying responses to the commodities market’s behavior. The emerging commodities basket and LatAm are likely examples of the latter case. The emerging adjusted basket is composed only of emerging economies with floating exchange rate regimes. The table below shows the correlation between real BRL variations and each currency basket.

Correlation Rate of Monthly Variations between Real Effective BRL and Select Currency Baskets (also in real terms) (both relative to the USD)

	Emerging Linear (23 currencies)	Emerging Adjusted (14 currencies)	LatAm (5 currencies)	Emerging Commodities (9 currencies)
Since 2000	**52.0%**	**47.7%**	**45.1%**	**33.6%**
Since 2004	**63.6%**	**56.3%**	**58.2%**	**45.0%**

Source: Santander estimates based on Bloomberg data.

For the purposes of this report, we chose the emerging adjusted basket as the best benchmark to compare with the BRL; it comprises real effective exchange rate variations (against the USD, adjusted by inflation and weighted by their respective importance in the global sovereign debt market) of 14 economies (China, Philippines, Peru, Chile, Indonesia, Malaysia, Hungary, Poland, Turkey, Russia, Mexico, Colombia, South Africa, Argentina). The criteria were weighted by representation in the external debt market.

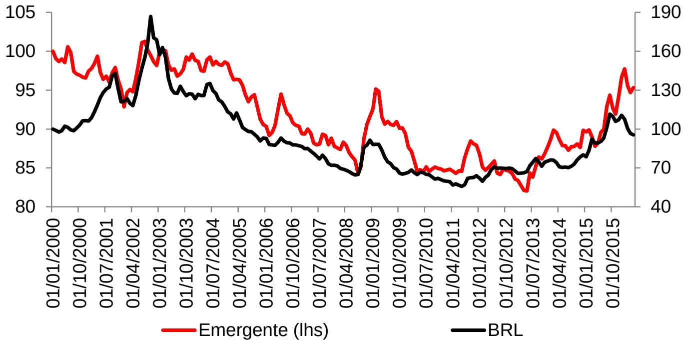
Is Recent BRL Strengthening within the Historical Pattern?

The following charts show the historical performance of the BRL against the benchmark on a monthly basis. We use both the real effective exchange rate (REER), on the left side, and a nominal exchange rate (NER) basket weighted by the importance of each emerging country in the fixed income market, on the right. Although the long-term relationship is probably distorted by the inflation differential, it seems to hold up well and may be particularly useful in the short term, in our view.

The charts suggest a close relationship between those variables. However, in order to obtain such a close fit on the charts, we had to adjust the scale, which means that although the BRL and benchmark move in tandem and generally in the same direction, the magnitudes are different. Moreover, a marginal additional appreciation could lead to a sharper-than-expected appreciation. But it cuts both ways if a worsening of the external environment would generate substantial weakness for the BRL.

BRL vs. REER Benchmark (EM adjusted)

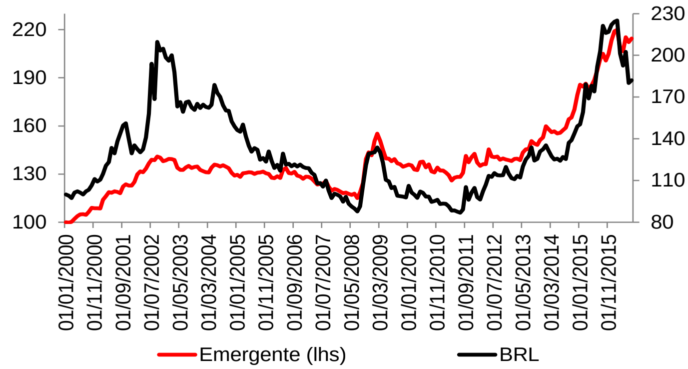
Average = 100



Source: Santander estimates.

BRL vs. NER Benchmark (EM adjusted)

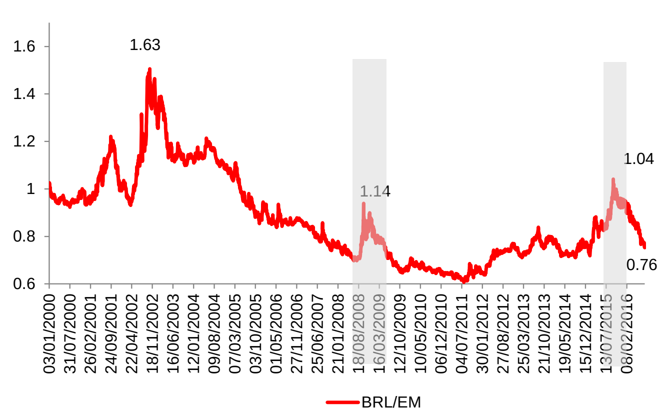
Average = 100



Sources: Bloomberg, Santander estimates.

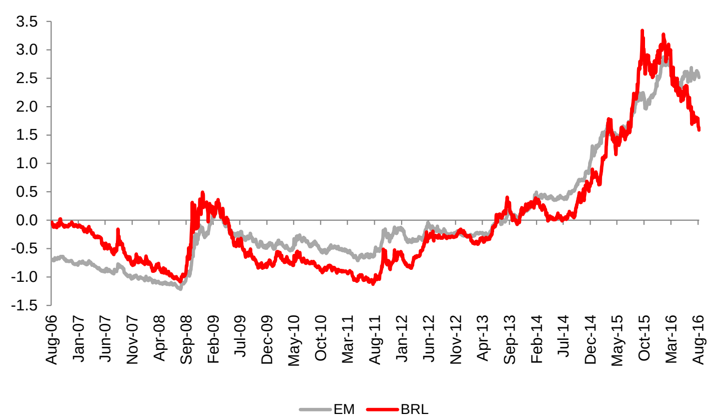
A simple visual inspection suggests that the Brazilian currency has moved well ahead of the benchmark. In particular, the chart on the right, BRL vs. benchmark in nominal terms, shows that the BRL appreciated much more than the benchmark, i.e., taking into account only the historical pattern, it would have to appreciate less than it appreciated. The BRL's recent nominal appreciation was greater than the benchmark (23% vs. 2% from the end of December to the end of July 2016); in our view, this movement appears excessive based on the historical pattern, which could be explained by the improvement in the political environment and the fiscal outlook. However, given that we expect no further improvement in the political environment and that the fiscal agenda still has to be approved by Congress, the BRL ratio to benchmark (chart below, on the left) – a better way to measure the recent outperformance of the BRL –, suggests that the room for further appreciation is limited. This ratio has fallen since last September 29, and it is close to the bottom of this data series (in August 2011, the ratio level was at 0.62). On the other hand, if there is a setback in international liquidity conditions, we would expect BRL depreciation ahead, even with the world's currency market less volatile, only to adjust BRL to emerging currencies' basket movement. Another aspect of the BRL's behavior against the other emerging currencies that is easily observed in the nominal exchange rates is the outperformance of the BRL in conditions of favorable international liquidity and its underperformance in adverse situations. For this, we measure the variation of the BRL against its historical average (January 2004 to the present) measured in standard deviations. Thus, we see that the BRL underperformed the benchmark during the 2008 credit crisis and outperformed between the end of 2009 and the beginning of 2012, and again the BRL underperformed the benchmark during 2015 and is outperforming this year.

BRL Ratio to Benchmark



The base of both currency indices is January 2000. Source: Santander estimates.

BRL and Benchmark Volatility (in standard deviation)



Source: Santander estimates.

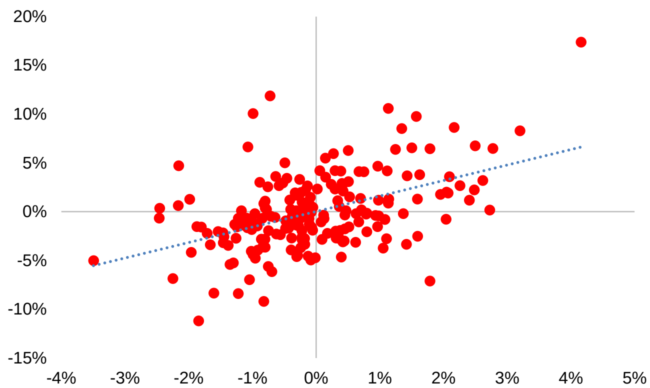
The bad news is that, assuming a neutral scenario for the global economy – i.e., supposing emerging currencies remain flat in the coming months – we find no reason to believe that the Brazilian currency would be biased toward appreciation based on its historical pattern. Indeed, we believe the contrary.

Historical Relationship between the BRL and Emerging Currencies

It may also be important to quantify the recent historical sensitivity of the BRL relative to the benchmark in order to construct scenarios and define strategies. The following charts show the levels and variations of those variables.

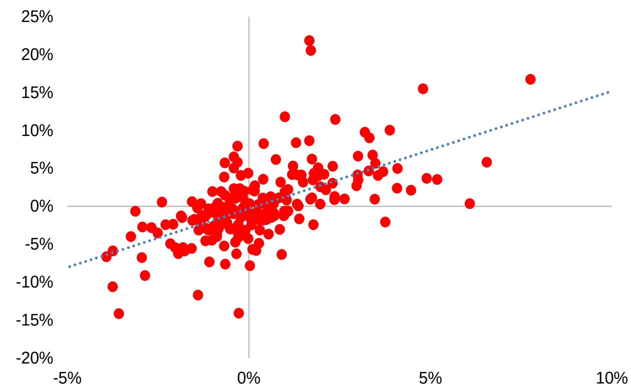
REER BRL vs. REER Benchmark (EM adjusted)

% 12 months



Source: Santander estimates

NER BRL vs. NER Benchmark (EM adjusted)



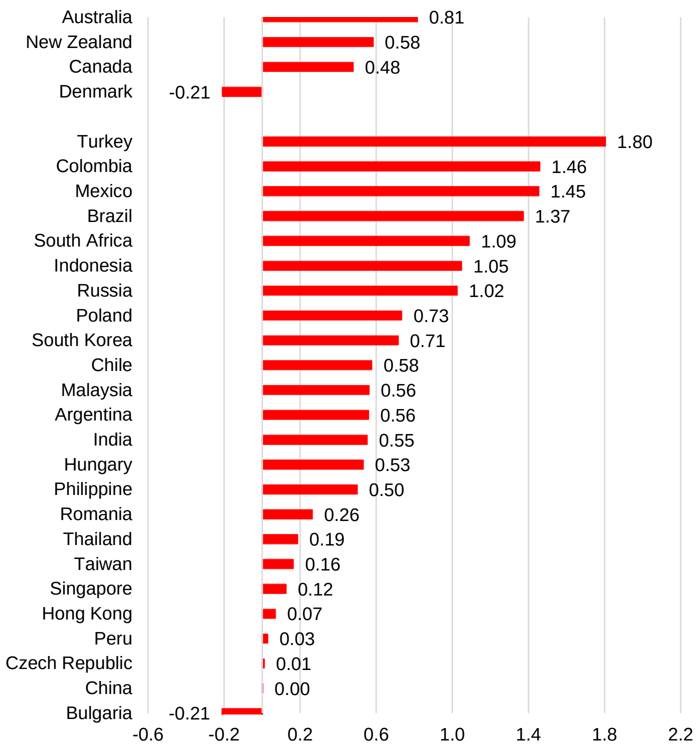
Source: Santander estimates.

In real terms, the relationship of the BRL to our benchmark measure of emerging currencies may be 1 to 1.6, while the relationship of the BRL and benchmark measure in nominal terms may be 1 to 1.5, using a monthly variation for both.

Beta

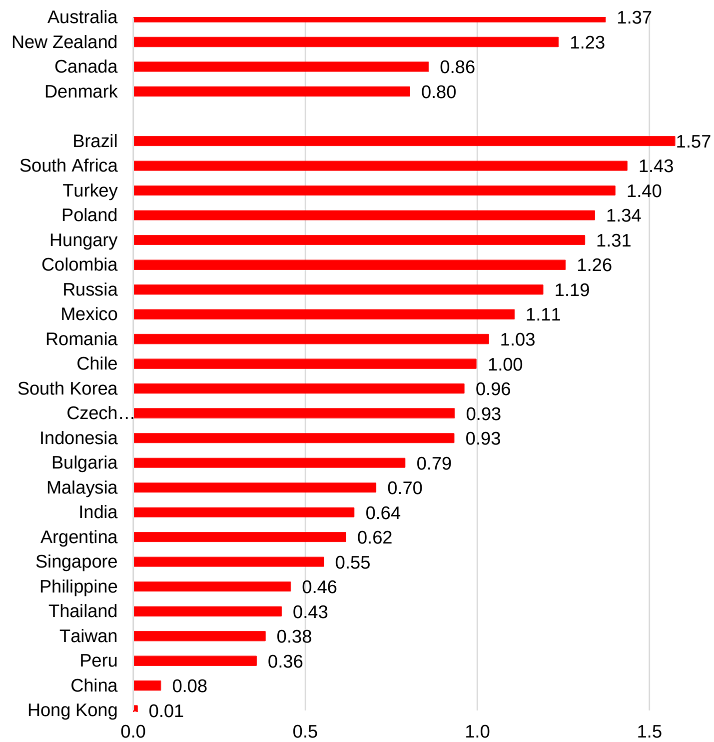
Another way of illustrating and understanding this is through the BRL beta (the sensitivity of the BRL to the emerging currencies basket). In this exercise, we adopted the random-walk hypothesis, a simple concept that the best forecast for a given asset price is its previous value plus an error(with or without drift). Based on that, we ran a simple OLS (ordinary least square regression) with two explanatory variables: (1) country currency lagged 1 period, and (2) emerging currency basket. In the sample for March 2000 to June 2016 (monthly frequency) for the real effective exchange rates (REER), BRL movements have amplified those of our EM currency basket by a factor of 1.37. In the sample for March 2000 to July 2016 (monthly frequency) for nominal exchange rates (NER), BRL movements have amplified those of our EM currency basket by a factor of 1.57. In the table on the following page, we present a cluster of currencies betas (each one against the benchmark), showing the BRL in the higher end of the range. In addition, all countries we believe to be high beta appear at the top of the rankings (REER and NER).

Beta Comparison (REER)



Source: Santander estimates.

Beta Comparison (NER)



Source: Santander estimates.

Conclusion

In the various exercises presented in this piece, we can observe that the BRL has usually outperformed other currencies during periods of favorable international liquidity conditions (favorable common factor) and underperformed during adversity. This behavior can be observed when comparing the BRL with a benchmark that was defined by a basket of 14 emerging economy currencies, both in real terms (REER) and nominal terms (NER). Even a simple correlation and a linear regression posited that the relation of the BRL and the benchmark is higher than 1. In our opinion, these outcomes confirm that the BRL is a high-beta currency.

That said, we conclude that, although currently the BRL has strengthened more than most other emerging currencies, this outperformance significantly exceeded its recent historical pattern, which could be explained by the improvement in the political environment and in the fiscal outlook – idiosyncratic factors that we believe will continue. However, we consider that the current state of the common factor (international liquidity) is temporary.

All the measures presented in this piece suggest that the room for further appreciation is limited, given that we expect no further improvement in the political environment, and the fiscal agenda still has to be approved by Congress. Moreover, if there is a setback in international liquidity conditions, we should see BRL depreciation ahead, even with the world's currency market less volatile, only to adjust BRL to emerging currencies basket movement.

We expect the Federal Reserve to continue monetary normalization; in addition, other advanced economies cannot maintain a negative nominal or real interest rate indefinitely; and finally, there are elections on the international political calendar that would also pressure the FX market. Therefore, we maintain our call that the BRL is in a depreciation trend, and we forecast BRL3.65/USD for year-end 2016 and BRL3.95/USD for year-end 2017.

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