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Fair value *currency models*

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Alan Greenspan, former chairman of the Fed, once said that after having struggled to forecast the exchange rate for more than half a century, he developed significant humility about his expertise in the field. In fact, in floating exchange rate regimes like ours, short-term currency movement follows what we call a random path, making the task of predicting its behavior challenging. On the one hand, understanding its fundamentals, compatible with equilibrium levels of other macroeconomic variables, allows longer-term trends and movements to be inferred.

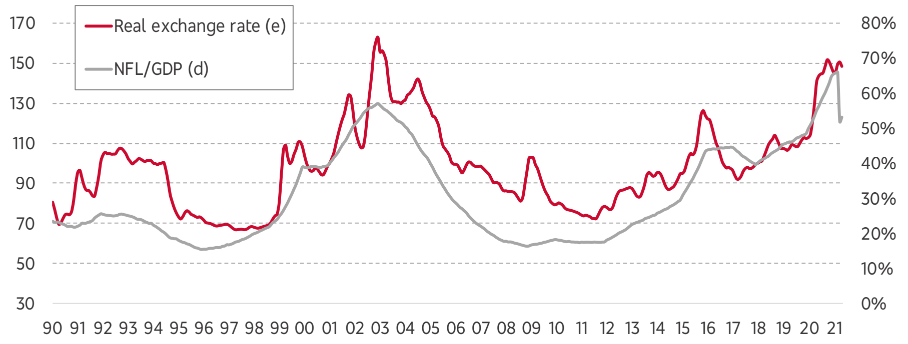
Economic literature devotes part of its efforts to determining these equilibrium levels, whether based on theoretical or empirical models. Here, we used two of these models in an attempt to identify possible misalignments of the Brazilian currency against the U.S. dollar. In the first, we employed economic fundamentals recurrently used in literature – terms of trade, net foreign liabilities (NFL) and the real exchange rate itself – in a vector error correction (VEC) model. In the second, we adopted high frequency financial variables, such as CDS, interest differential and CRB.

Vector error correction is a model used to predict systems of equations comprised of stationary time series (trendless) that correlate with each other. Its main characteristic is to restrict the behavior of the variables in order to correct any deviations from their long-term equilibrium through partial adjustments. As such, the model precisely meets the need to estimate equilibrium levels of the exchange rate in the long run.

The key variables suggested by literature to explain the behavior of the real exchange rate include net foreign liabilities, the terms of trade and lagged values of the explanatory variable. On the one hand, the NFL aggregates Brazilian investment positions abroad (including the Central Bank of Brazil's international reserves) and foreign investments in the country (such as FDI and Brazilian foreign debt). In this sense, the higher the flow of foreign investment to Brazil, the greater the pressure for the Brazilian currency to appreciate. Additionally, since it is the proportion of the NFL in relation to the GDP, economic growth also contributes to the appreciation of the real exchange rate.

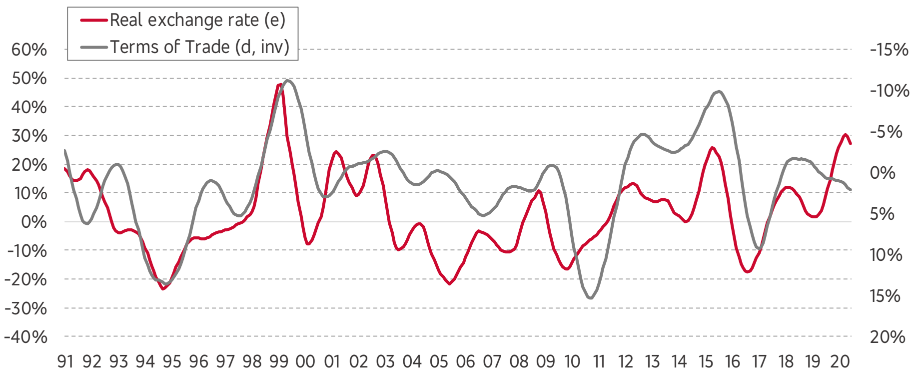
On the other hand, the terms of trade are associated with the flow of trade between Brazil and abroad or with current transactions. This occurs to the extent that an improvement in the terms of trade results in an increase in the trade balance and, consequently, in an appreciation of the real exchange rate. Charts 1 and 2 portray the relationship between the real exchange rate and the NFL as a proportion of the GDP and the variation in terms of trade and the Brazilian currency, respectively.

Chart 1: Real exchange rate and Net Foreign Liabilities (NFL)



Source: BCB, IBGE, Bradesco

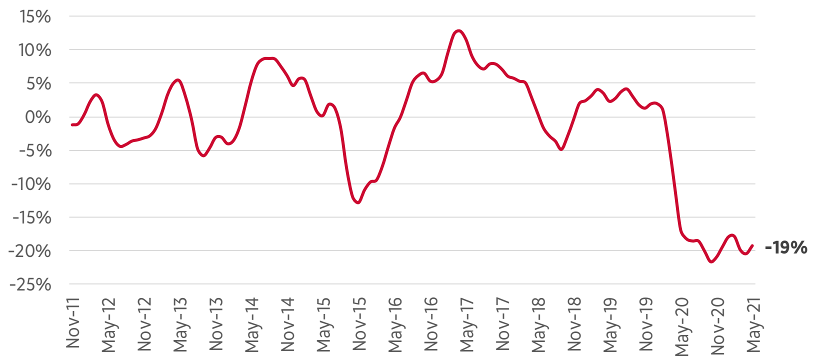
Chart 2: Real exchange rate (12 months) and terms of trade



Source: Secex, BCB, Bradesco

In order to capture longer-term trends, we estimated the above model from 1990 to 2019. The forecast outside the sample suggests a misalignment of the real exchange rate between the Brazilian currency and the U.S. dollar of 19% until May this year. This equates to a nominal rate of around BRL/USD 4.30.

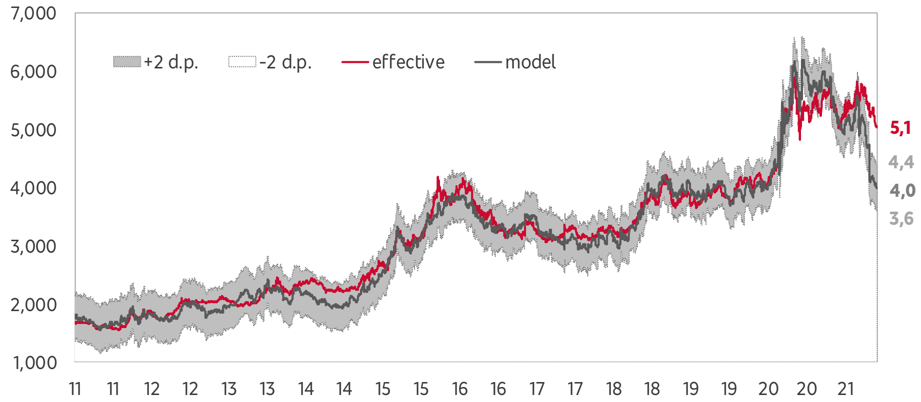
Chart 3: Misalignment between the real exchange rate and the equilibrium rate



Source: BCB, Bradesco

As an alternative way of measuring the equilibrium level of the Brazilian real, we also used a high-frequency model with financial variables. Here, the behavior of the nominal exchange rate is explained, among other factors, by the country risk (represented by the Brazilian CDS), by the interest differential between Brazil and the US (which expresses the attractiveness of the Brazilian market to foreign investors), and the commodity price index in U.S. dollars, given the importance of these products to our export basket[1]. In this case, using daily data from 2006 to 2019, we found a suggested exchange level of BRL/USD 4.00. That points to a 22% deviation from the last survey on June 9.

Chart 4: Daily nominal exchange forecast model – BRL/USD



Source: BCB, Bradesco

We have already argued on other occasions that part of this misalignment is associated with the exceptionally low interest rates in Brazil – in fact, since the beginning of monetary normalization by the Central Bank of Brazil in March, the Brazilian real has appreciated 10%. The other part, however, is associated with fiscal fundamentals, which are not fully incorporated into the models and have further deteriorated since the beginning of the Covid-19 pandemic, a period in which public debt jumped from 75% to 87% of the GDP.

This downward trend in public finances, which intensified as of 2015 and resulted in the loss of Brazilian investment grade at the end of that year, had been well captured by the CDS. However, both series lost adherence more recently, which explains the gap between the model and the effective exchange rate. In fact, this behavior currently seems to be better reflected in the slope of the local interest rate curve, but the CDS still significantly outweighs its explanatory power in the exchange models.

Thus, although not captured directly, the surprising growth in recent months and the Treasury`s new annual financing plan removed part of the short-term fiscal risk, contributing to closing part of this gap. In any case, if on the one hand we anticipate that the Central Bank will continue the process of normalizing interest rates, bringing the Selic to at least 5.75% by the end of this year, on the other hand, a complete closing of the gap depends on repeated signaling of commitment to a fiscal policy that actively seeks to reduce the public debt or recurrent positive surprises with growth and revenue.

[1] The model also included the CDS of a set of emerging countries, the price of the U.S. dollar against a basket of currencies (DXY) and the slope of the U.S. interest curve.

Therefore, we believe there is room for further appreciation of the Brazilian currency in the coming months to levels below BRL/USD 5.00. The distribution of risk scenarios remains bimodal for the medium term. If the stronger domestic growth data are confirmed, the fiscal debate does not deteriorate and conditions prevail for the Fed to keep its promise on maintaining interest rates low, there is a reasonable chance that the exchange rate will stabilize well below BRL/USD 5.00. The opposite is true: if there is frustrated growth, worsening of the hydrological scenario, anticipation of the global interest rate hikes or deterioration in the fiscal debate, the exchange rate can easily return to levels above the current ones. Given the low visibility of the scenario, we position our expectation for the exchange rate at BRL/USD 5.10 at the end of this year, even though fair value models continue to point to lower numbers.

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