CEMAP Newsletter
Center for Applied Macroeconomic Research - FGV EESP

Will the Brazilian exchange rate remain weak in near future?[1]

The purpose of this note is to provide estimates of the equilibrium real exchange rate for the Brazilian economy relative to a basket of currencies. To achieve this objective, we have employed variables that are widely recognized in the economic literature as long-term determinants of the exchange rate. We have constructed econometric models using these variables to map the long-term relationships between them. For further information on this matter, please refer to Marçal et al. (2015), "Addressing important econometric issues on how to construct theoretically based exchange rate misalignment estimates"; CEMAP Working Paper number 7. http://bit.ly/CEMAP-TD-07.

Updated estimates of Brazilian exchange rate misalignment have been calculated using data up to March 2023 (see Table 1). The results show that the Brazilian effective real exchange rate was slightly undervalued at the end of March 2023. The estimated misalignment was approximately -4%. Although this value is small, given the precision of the estimate, it can be statistically inferred that the value is significantly less than zero (Figure 5). This is the first time since May 2022 that a value significantly different from zero has been obtained. During this period, the real exchange rate was overvalued relative to fundamentals, while the nominal exchange rate fluctuated around values close to R$4.75 per dollar.

The analysis of Figures 2 and 3 suggests that there is a continuous deterioration trend in the fundamentals since mid-2021. This deterioration in fundamentals has prevented a stronger appreciation of the Brazilian currency, causing it to fluctuate persistently around or above the range of R$5.00 per dollar. This contrasts with the pre-pandemic fluctuation levels that were in the range of R$4.00 to R$5.00 per dollar. As will be discussed in more detail later in this note, the fundamentals of the Brazilian exchange rate are compatible with a more depreciated equilibrium exchange rate level than that prevailing in the period before the pandemic.

Table 1 and Figure 2 display the estimated values of exchange rate misalignment and its temporal evolution, respectively. Figure 1 shows the misalignment estimate with the respective precision bands. This is a methodological innovation that will be permanently included in the estimates produced by CEMAP.

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Exchange Rate in the near future: What to expect.

Figure 4 displays the monthly evolution of the fundamentals since 1970. Some points draw attention in the recent period. The Brazilian international investment position has worsened due to the successive current account deficits in recent years. The last positive results in the current account date back to the pre-2008 period, i.e., around fifteen years ago. Since then, the Brazilian economy has been presenting annual current account deficits. There has also been a decline in the terms of trade of the Brazilian economy compared to the historical peak observed in the early 2010s, in the series that begins in the 1980s. The evolution of the average of the fundamentals and the effective real exchange rate can be seen in Figures 2 and 3.

Anual Data	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
					Índice														
Real Effective Exchange Rate	**60.4**	**73.5**	**81.7**	**87.4**	**90.4**	**89.2**	**100.0**	**103.2**	**92.0**	**86.4**	**84.6**	**69.6**	**73.2**	**79.7**	**71.4**	**70.0**	**55.6**	**53.8**	**60.3**
Fundamentals-TB,PII,BS,TOT	66.1	72.8	79.5	78.7	82.7	83.9	79.1	73.3	74.1	74.7	73.2	76.4	77.5	77.8	75.3	69.0	69.7	62.7	58.1
					% sobre o equilíbrio														
Desalinhamento-TB,PII,BS,TOT	-8.5	0.8	2.8	11.1	9.8	6.5	26.8	41.2	24.1	15.7	15.6	-8.4	-5.5	2.5	-5.0	1.6	-20.1	-14.1	4.0

Monthly Data	Sep-21	Oct-21	Nov-21	Dec-21	Jan-22	Feb-22	Mar-22	Apr-22	May-22	Jun-22	Jul-22	Aug-22	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23
Real Effective Exchange Rate	**56.0**	**53.7**	**53.9**	**53.3**	**54.3**	**57.8**	**61.3**	**64.5**	**63.0**	**61.9**	**58.7**	**61.0**	**60.6**	**61.2**	**60.0**	**59.5**	**59.2**	**60.0**	**59.8**
Fundamentals-TB,PII,BS,TOT	66.7	63.7	62.1	60.4	53.8	53.4	54.9	57.4	58.2	59.8	58.3	60.4	59.6	60.3	60.1	60.8	58.7	59.5	62.5
Misalignment-TB,PII,BS,TOT	-16.1	-15.8	-13.3	-11.8	0.9	8.2	11.7	12.5	8.1	3.6	0.7	1.0	1.8	1.5	-0.2	-2.1	0.9	0.9	-4.2
Lower Bound - 95%	-23.3	-22.0	-23.8	-23.1	-8.8	-1.4	1.9	-1.8	-6.2	-10.5	-9.6	-10.2	-7.5	-5.8	-7.6	-6.4	-2.7	-1.5	-7.8
Lower Bound - 90%	-22.1	-21.0	-22.2	-21.3	-7.3	0.1	3.4	0.4	-3.9	-8.2	-8.0	-8.4	-6.1	-4.7	-6.4	-5.8	-2.1	-1.1	-7.2
Upper Bound - 90%	-8.8	-9.6	-2.9	-0.5	10.6	17.8	21.4	26.8	22.4	17.6	10.9	12.1	11.1	8.9	7.3	2.2	4.4	3.3	-0.6
Upper Bound - 95%	-10.0	-10.5	-4.5	-2.3	9.1	16.3	19.9	24.6	20.1	15.4	9.3	10.4	9.6	7.7	6.1	1.5	3.9	2.9	-1.2
Undervalued(+)/Overvalued(-) - 95%	-	-	-	-	Eq.	Eq.	+	Eq.	Eq.	Eq.	Eq.	Eq.	Eq.	Eq.	Eq.	Eq.	Eq.	Eq.	-
Undervalued(+)/Overvalued(-) - 90%	-	-	-	-	Eq.	+	+	+	Eq.	Eq.	Eq.	Eq.	Eq.	Eq.	Eq.	Eq.	Eq.	Eq.	-

Source: Observatory on Exchange Rate-EESP-FGV.

Table 1: Exchange Rate Misalignment in Brazil

The deterioration of the fundamentals is driven by two main factors: a) the worsening of the terms of trade; and b) the deterioration of the current account balance. Both variables are not under direct control of the authorities and depend on a broader economic balance. Strong improvements in the terms of trade fundamentally depend on factors that explain the demand and supply of the products exported and imported by the country. In this regard, a return to the historical peaks observed seems unlikely. Thus, a strong improvement in the fundamentals would have to come from an improvement in the current account balance. In a context of fiscal policy with negative primary deficits for several years and a very slow fiscal adjustment path proposed by the current government, the

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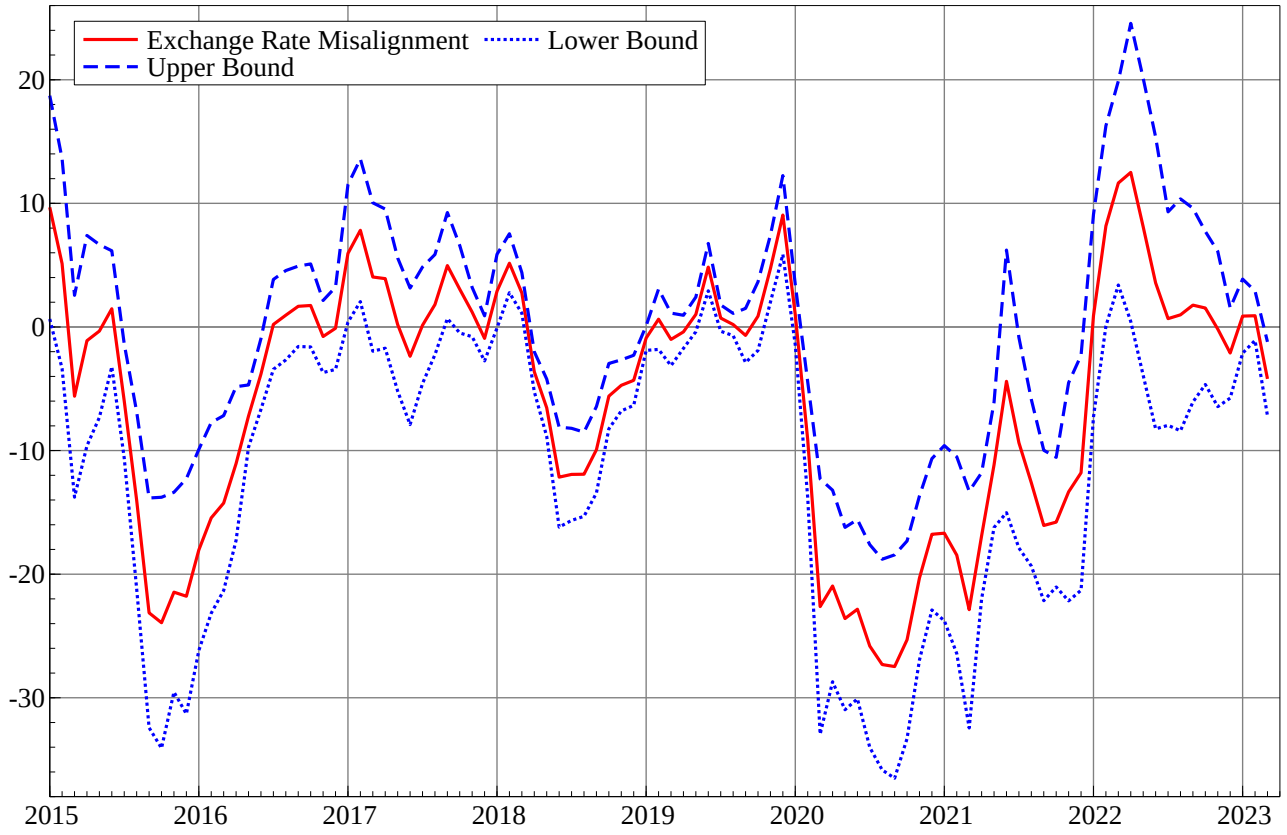
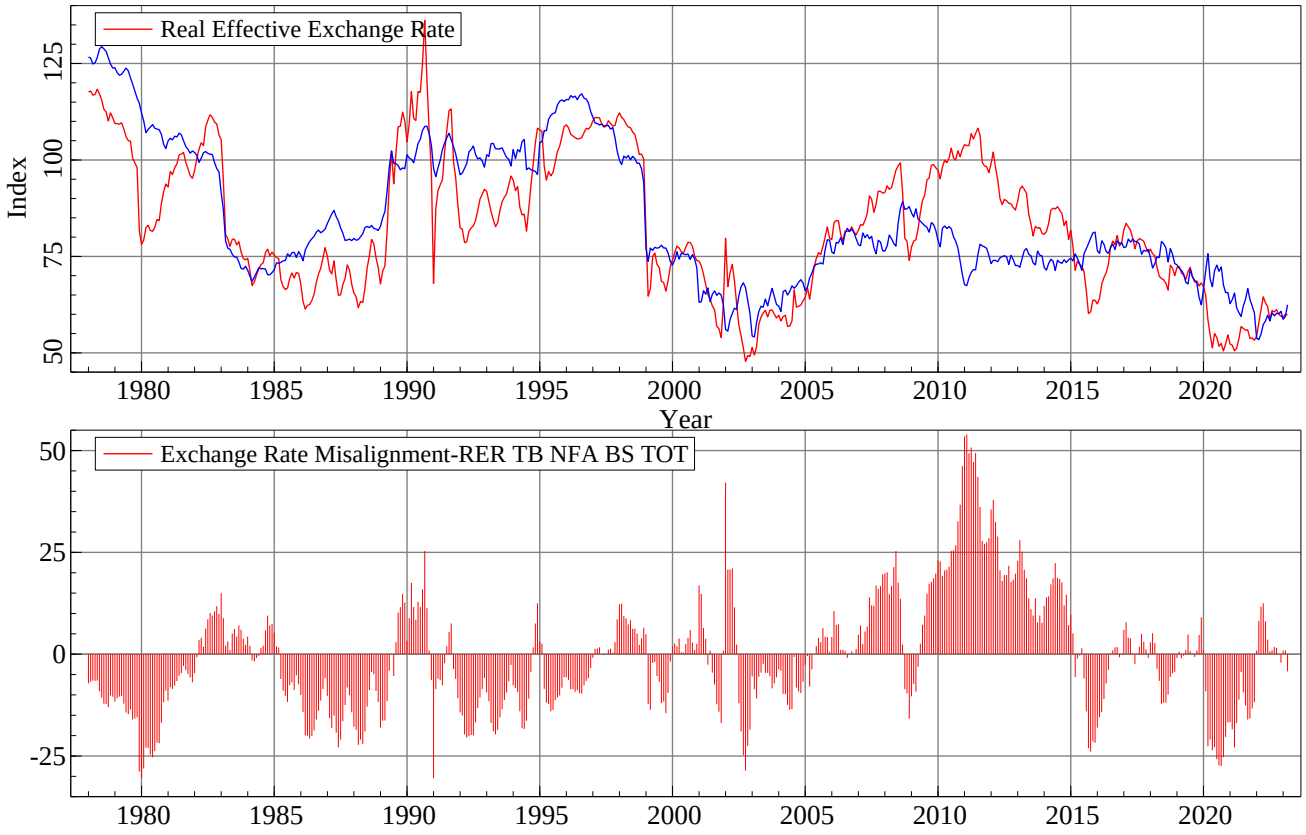
reversal of the negative current account balance would come through an economic policy that generates a reduction in private consumption and investment. This fact is unlikely given the negative political repercussions in terms of popularity. Although it is not a sustainable long-term equilibrium, the fundamentals are expected to remain at a level compatible with a depreciated exchange rate in the near future.



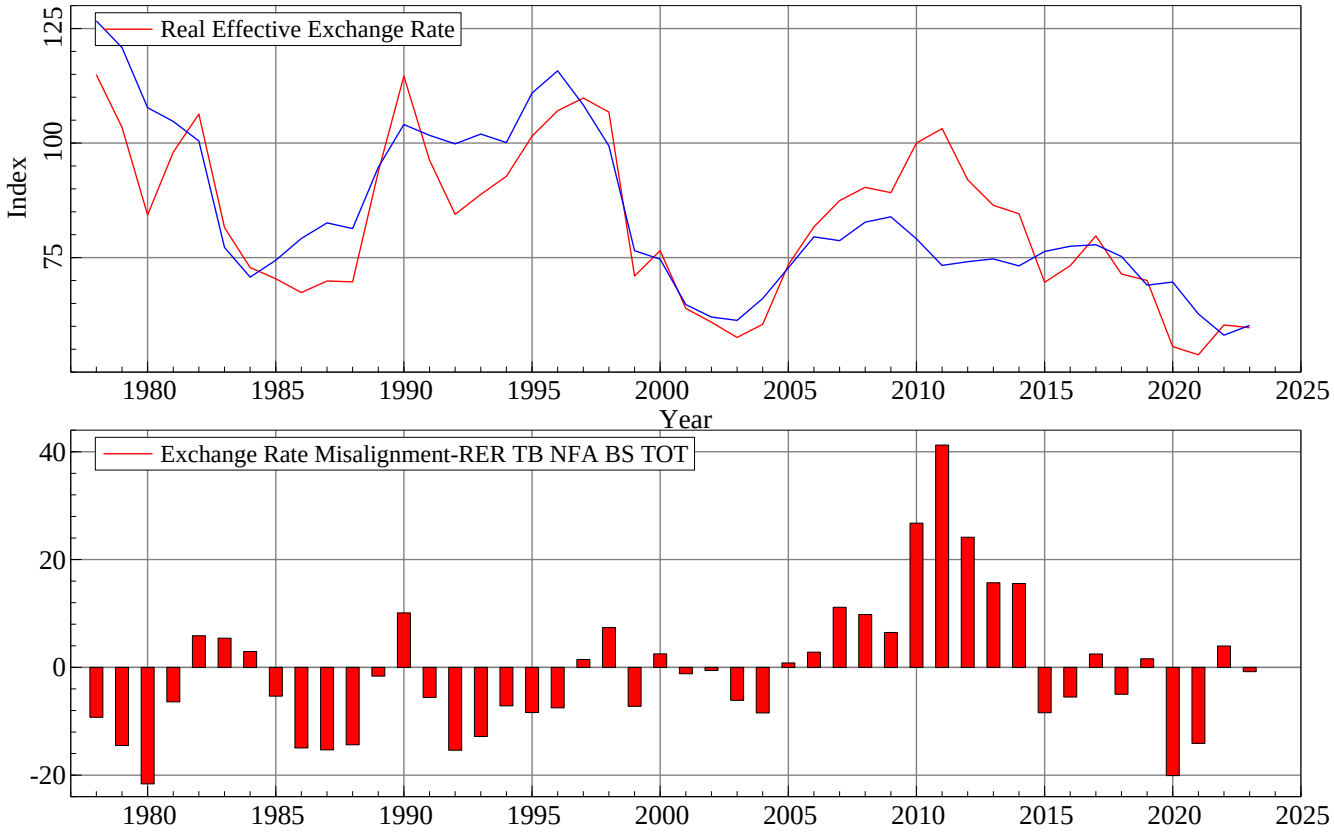
Source: Observatory on Exchange Rate-EESP-FGV.
Database: IBGE, Brazilian Central Bank and Funcex.

Figure 1: Exchange Rate misalignment with bands - Montlhy - Recent trends



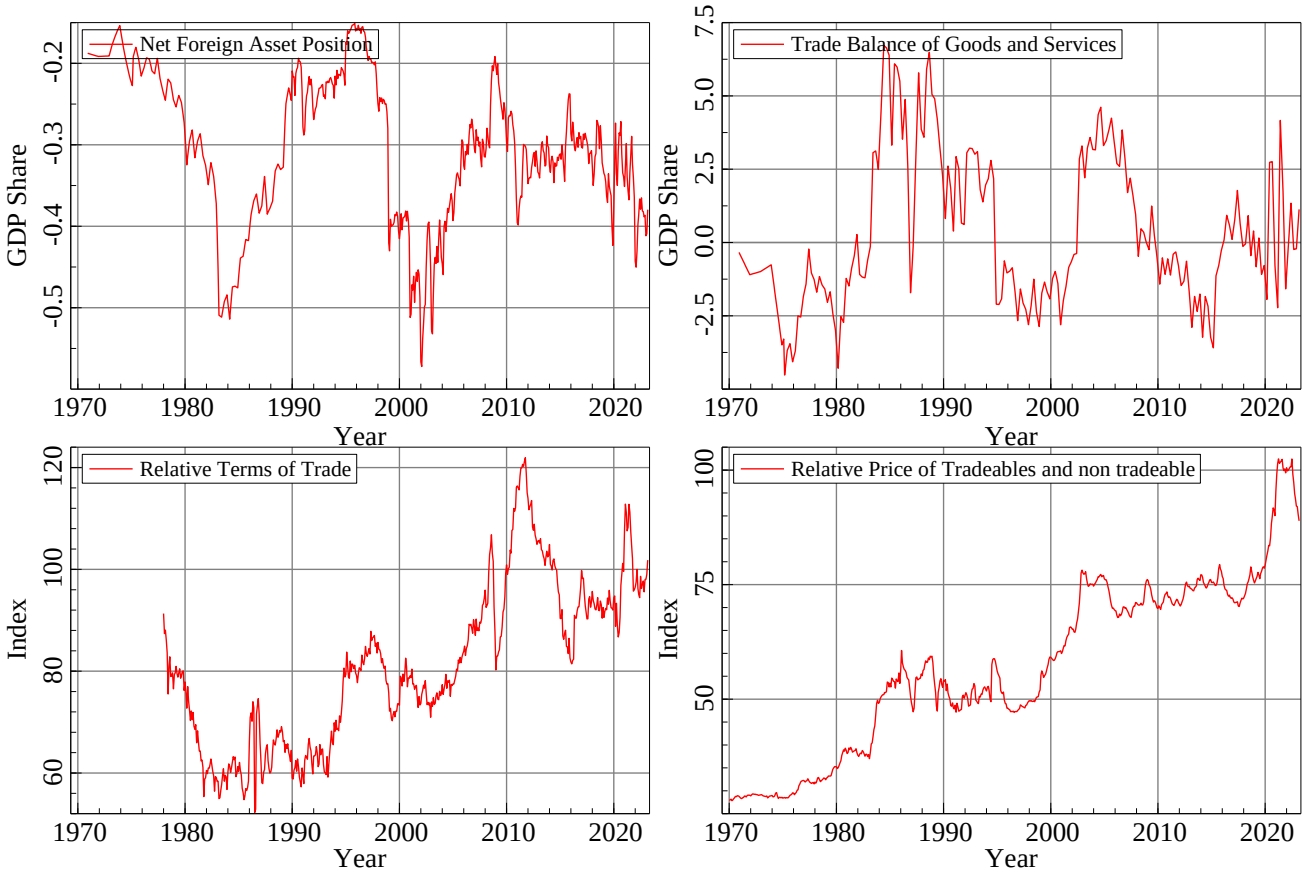
Source: Observatory on Exchange Rate-EESP-FGV.

Figure 2: Effective Real Exchange Rate, Fundamentals and exchange rate Misalignment.



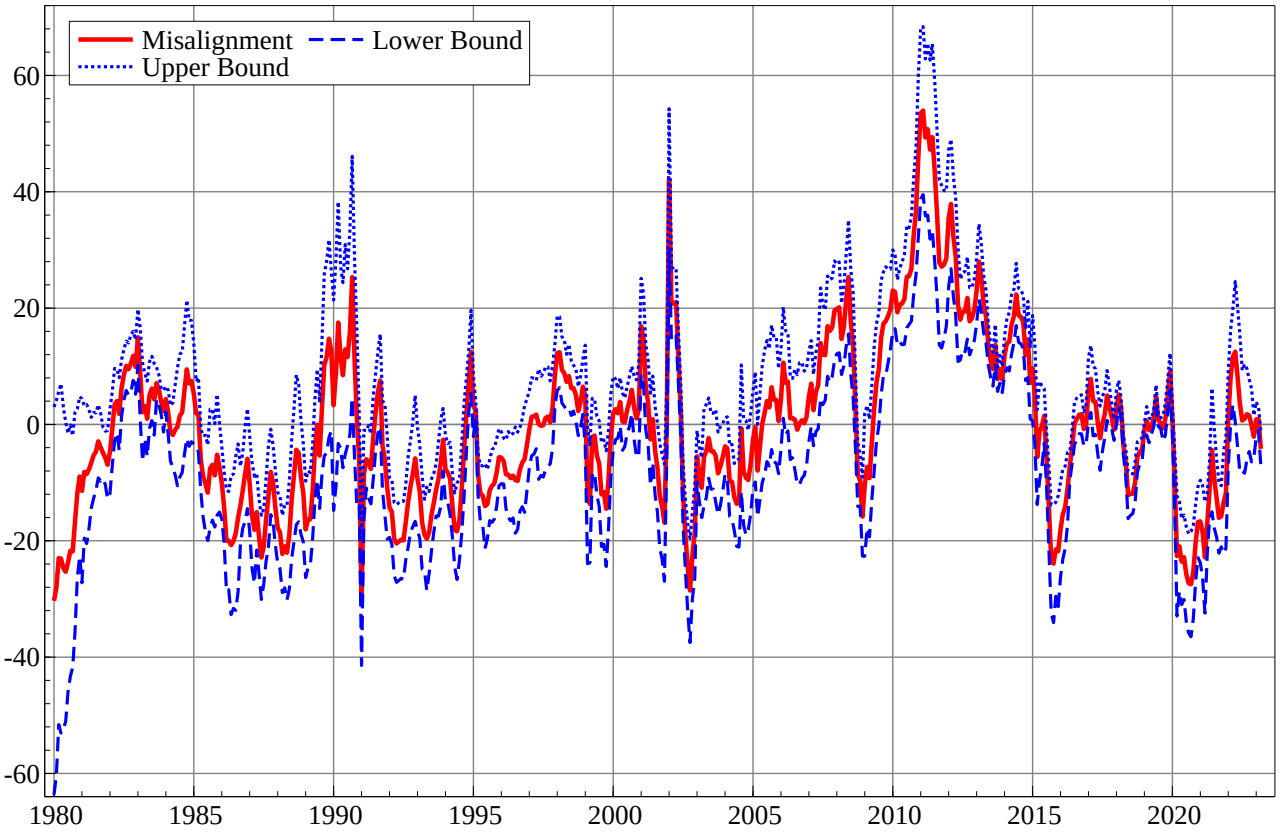
Source: Observatory on Exchange Rate-EESP-FGV.

Figure 3: Exchange Rate Misalignment - Anual Average



Source: Observatory on Exchange Rate-EESP-FGV.
Database: IBGE, Brazilian Central Bank and Funcex.

Figure 4: Time evolution of the fundamentals series.



Source: Observatory on Exchange Rate-EESP-FGV.

Figure 5: Brazilian Real effective exchange rate misalignment with bands - Monthly

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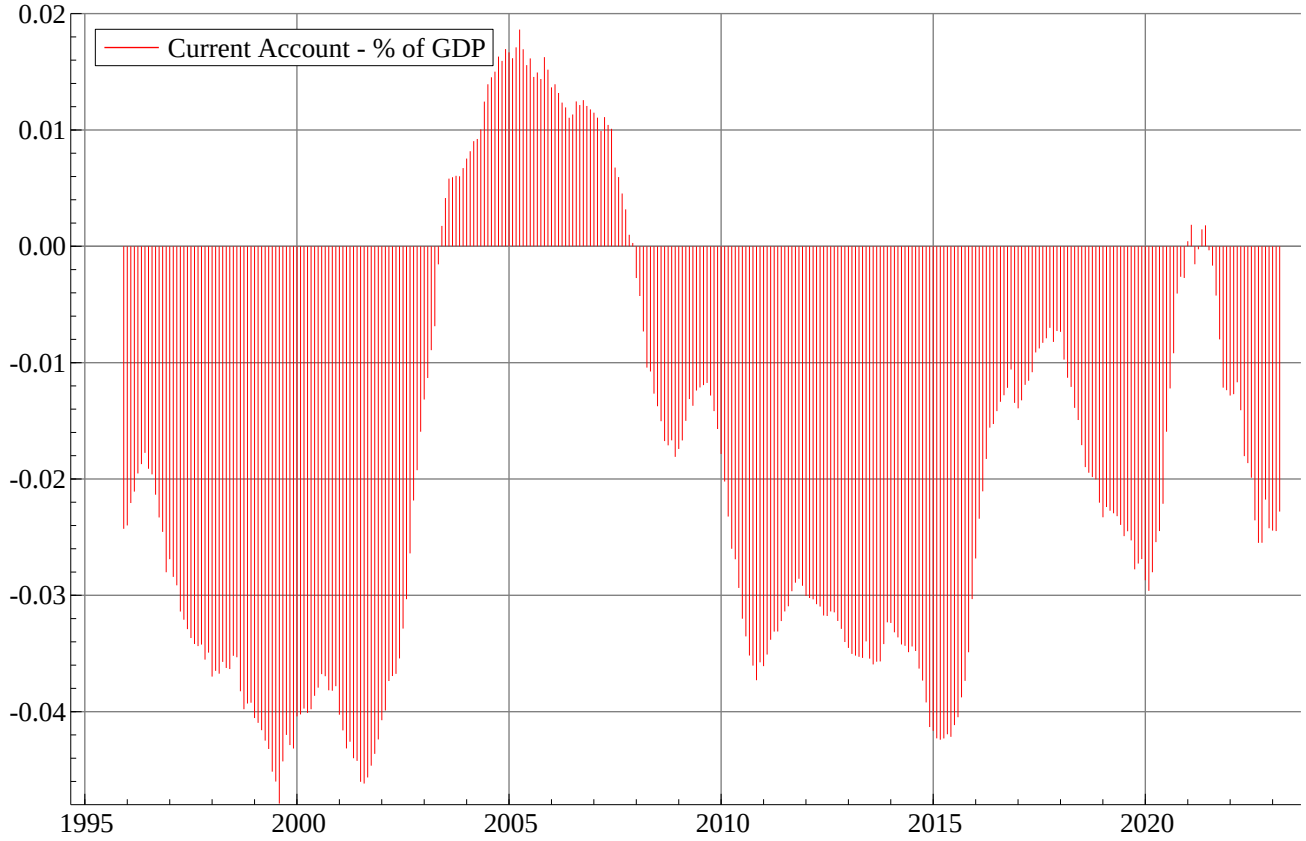

Source: Observatory on Exchange Rate-EESP-FGV.

Figure 6: Current Account Result - % of GDP - twelve months totals

Short description of the models:

There is a debate in the literature about which variables determine the long-run real exchange rate. The estimates presented in this letter are based on the fundamentals approach. This approach uses economic fundamentals obtained from an economic model that takes into account the role of asset stocks in determining the equilibrium exchange rate.[2]

The econometric models used in this analysis include the following variables: net international investment position as a proportion of Gross Domestic Product (GDP), relative terms of trade (TOT), the balance of goods and services (TB), and a relative price indicator between producers of tradable and non-tradable goods sectors (BS).[3]

With these variables, the long-term equilibrium exchange rate is estimated. Deviations from this rate in relation to the observed exchange rate are exchange rate misalignments.[4]

The long-term equilibrium real exchange rate can be estimated from a time series econometric model. The estimation is performed by decomposing the series into transitory and permanent components, after the analysis of stationarity and cointegration. The transitory component is linked to misalignment and the permanent component is linked to long-term equilibrium.

Finally, it is worth noting that the measure of exchange rate misalignment presented here should not be used as a prediction of the real exchange rate. The existence of misalignment of the Brazilian currency does not necessarily imply that there will be abrupt corrections in the exchange rate in any direction in the near future. The measure should be understood as an equilibrium that tends to prevail over longer periods. Unforeseen changes in fundamentals, such as changes in terms of trade or in the international investment position, may cause the equilibrium exchange rate to change.

[2]Similar approaches have been implemented in Kubota (2009) [Kubota (2009), M. Real Exchange rate misalignments. (PhD thesis). Department of Economics, University of York, York, 2009. 201 pages], Alberola et al. (1999), [Alberola, E., S. Cervero, et al. Global Equilibrium exchange rate: Euro, Dolar, 'Ins', 'Outs' and other major currencies in a Panel Cointegration Framework. IMF Working Paper. Washington: IMF. 99-175 1999.].

[3]The trading partners used to calculate the currency basket were the United States, Argentina, the Netherlands, Germany, Japan, Belgium, Italy, France, Mexico, the United Kingdom, Chile, Spain, Paraguay, Uruguay, South Korea, Canada, Colombia, Russia, China, Ireland, Finland, Portugal, Luxembourg, Austria, and Greece.

[4]MacDonald (2000) provides a review of the main approaches to estimating the real equilibrium exchange rate. [MacDonald, R. Concepts to Calculate Equilibrium Exchange Rate: An Overview; Discussion Paper 3/00; Economic Research Group of the Deutsche Bundesbank, 2000.]