Country Risk

Information up to March 2016

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BANCO CENTRAL DO BRASIL

Frequently Asked Questions Series

"Frequently Asked Questions" Series

Central Bank of Brazil

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Country Risk[1]

This paper is part of the Banco Central do Brasil's "Frequently Asked Questions" series (FAQ). This series, which is produced by the BCB's Investor Relations and Special Studies Department (Gerin), provides information on economic topics of interest to investors and the general public.

The Banco Central do Brasil (BCB) is producing this series as part of its ongoing efforts to enhance the transparency of the Brazilian economic policy and the effectiveness in communicating its actions.

[1] Gerin thanks the Research Department of the Central Bank of Brazil for its collaboration, which was fundamental for the publishing of this material.

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Country Risk

General Overview

1. What is the country risk?

Country risk, or Brazil risk, intends to objectively express the risk to which foreign investors are subject to when investing in the country. In the international market, the most used daily indicators for this objective are the EMBI+Br and the Credit Default Swap (CDS), both regarding Brazil.

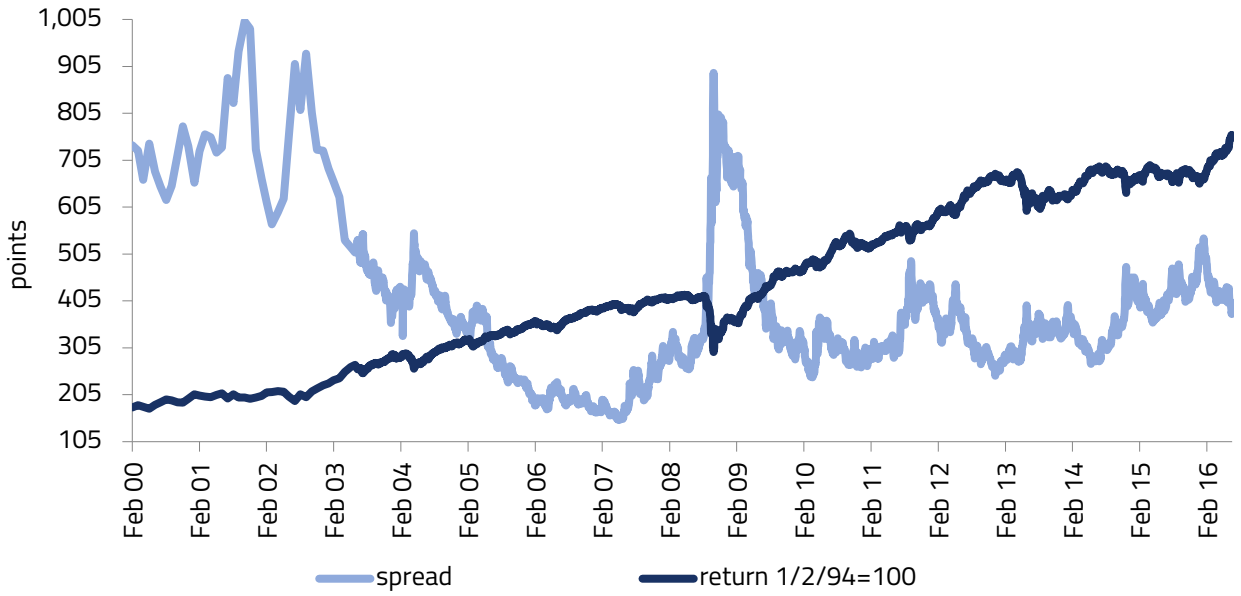
EMBI

2. What is the EMBI+?

The EMBI+ (Emerging Markets Bond Index Plus), calculated by J.P.Morgan Chase, is an weighted index tracking the rate of return for actively traded and dollar denominated external debt instruments in emerging markets. EMBI+ calculus reflects the price movement (and also the returns associated with them) of the EMBI+'s securities and is given by the weighted average of the daily returns paid in the previous day's index. The index variation between two dates is equivalent to the yield of the portfolio in the period. For the majority of the portfolios in the EMBI+, the basis (an index number equal to 100) is December 31st, 1993, when calculation of the EMBI+ began.

There are many related EMBI+'s numbers which are released by JP Morgan. Two of the most used are: the return rate for a given period and the spread over Treasury (see Question 3). Chart 1 shows the return and the spread of EMBI+.

Chart 1 – EMBI+ (2000 to 2016)



Source: Bloomberg

3. How is the EMBI+ calculated?

The EMBI+ is built as a composition of three types of debt instruments of emerging countries: Bradies[2], eurobonds, and sovereign external loans.

The weight of each debt instrument on the EMBI+ is given by the weight of their issuance as a percentage of total instruments in the index and country weight is calculated by aggregating the weights of instruments for each country.

Initially the daily return for each individual instrument is calculated, then, the arithmetic average of the daily returns is weighted by the market value for each type of debt. Finally, it is estimated the arithmetic average of the average daily returns of the three types of instruments, weighted by their market value. The result is a rate of return for the EMBI+ as a whole, which is applied to the previous day's index to reach the current day of the index. The calculus of the spread over Treasury is the difference between the yield of each paper to maturity and the yield of the corresponding point on the curve of US Treasury securities. The spread is expressed in basis points. Considering the spread for the index as a whole, it uses the same calculation procedure but adding the cash flows of the securities that make up the index portfolio.

EMBI+ is calculated every business day, according to the US bond market schedule. The base (an index number equal to 100) is December 31st, 1993, when the EMBI+ calculus started.

Besides total EMBI+, it is released subindices for each country, region and type of debt instrument.

[2] Bradies are securities created in the occasion of the restructuration of external debts of countries which adhered to the Brady Plan in the 90s. In the Brazilian case, it occurred in 1992, involving the exchange of public sector debt instruments for seven new bonds issued by the Republic, each one with its peculiarities. Among these bradies, the C-bond (or Front-Loaded Interest Reduction Bond with Capitalization) was the most liquid Brazilian security in the international market. The National Treasury repurchased all the bradies negotiated in the market at that moment.

4. What is the composition of EMBI+?

On March 31st 2016, EMBI+ was comprised of investment grade (60%) and high yield (40%) securities. It was concentrated in debt issuers from Latin America (39.4%), followed by Europe (28.8%), Asia (22.9%) and Africa (6.3%). Turkey was the country with the higher share in the index, 14.0%, followed by Russia (11.7%), Mexico (11.5%), Indonesia (10.2%), the Philippines (8.6%), Brazil (7.9%) and Colombia (6.0%). Argentina used to be an important issuer in the EMBI+ basket, but the decrease of the market value of its securities made its share drop to 3.6%.

5. Which criteria are followed to add and drop securities in the EMBI+ portfolio?

Instruments in the EMBI+ must initially meet three eligibility criteria and a liquidity criteria: (i) a minimum of US$500 million outstanding; (ii) a BBB+/Baa1 or below rating requirement for the issuer country; (iii) more than 2.5 years remaining to maturity. Once these criteria are met, liquidity criteria are applied. The five EMBI+ liquidity ratings are in Table 1.

Table 1 – EMBI+ Liquidity Ratings

Rating	Face amount outstanding minimum	Average bid/ask	Quoted by designated brokers
L1	US$2 billion	Spread ≤ 3/8 point	Quoted by all designated brokers
L2	US$1 billion	Spread ≤ ¾ point	Quoted by at least half of the designated brokers
L3	US$500 million	Spread ≤ 1½ point	Quoted by at least ¼ of the designated brokers
L4	US$500 million	Spread ≤ 3 points	Quoted by at least one designated broker
L5	US$500 million	Spread > 3 points [1]	Not quoted by any designated broker [1]

[1] If any of these conditions is complied, rating will be L5. For ratings from L1 to L4, both conditions (average bid/ask and quotation by designated brokers) must be complied to ensure rating.
Source: JP Morgan

These liquidity ratings are used to determine when the instruments are added to or dropped from the EMBI+. To be added, instruments must be rated as L1, L2 or L3. The inclusion in the basket occurs at the end of the first month in which they are rated L1, at the end of the third consecutive month in which they are rated L2 or higher, or at the end of the sixth consecutive month they are rated L3 or higher. Instruments are dropped at the end of the first month they are rated L5, or at the end of the sixth consecutive month they are rated L4. When a country receives a rating higher than BBB+/Baa1 from Moody's/S&P rating agencies, it is dropped from the index. An instrument dropped from the EMBI+ is not eligible to re-enter the EMBI+ for 15 months. Such a step further ensures that the composition of the index is not subject to temporary liquidity trends.

6. How does the EMBI+ differ from the EMBI Global?

On March 31st 2016, EMBI+ comprehended 155 debt instruments from 16 emerging countries with a total face value of US$309.2 billion and a market value of US$325.4 billion. EMBI Global has less liquidity restrictions, encompassing on the same date 503 sovereign and quasi-sovereign dollar-denominated debt instruments from 65 countries. Its market value totaled US$692.3 billion. Therefore, EMBI+ represents a more liquid and selected set of investment opportunities in emerging market countries. Notwithstanding, EMBI+ and EMBI Global are highly correlated.

7. What is the EMBI+Br?

J. P. Morgan Chase separately calculates a specific EMBI+ index for each country participating in the index. The brazilian EMBI+ is the EMBI+Br. The spread of EMBI+Br is the value commonly used by investors and general public as measure of Brazil-risk. This spread is the difference between the weighted average Brazilian external debt securities yields and the US Treasury securities yields with similar maturity.

The market uses EMBI+Br to measure the country ability to honor its financial commitments, i.e., the higher the risk indicator, the higher the credit risk of the country. Thus, to attract foreign capital to finance its external debt, a particular country with high EMBI+ spread needs to offer high interest rates on its securities.

8. What is the portfolio used to calculate EMBI+Br?

On March 31st 2016, the EMBI+Br portfolio consisted of 15 securities issued abroad by Brazil.

CDS

9. What is Credit Default Swap (CDS)?

CDS is a bilateral contract that allows the investor to buy protection for a specific credit against a credit event of the issuer of a certain asset. The issuer is known as entity of reference. A credit event (default) includes delinquency, failure to pay, debt restructuring, or issuer bankruptcy. To purchase this protection, the buyer pays periodically to the seller, usually quarterly or semiannually, and the amount is set as a percentage of the principal. This percentage is known as spread, premium, or fixed rate, and represents, for the investor in a risky asset, the cost for protecting its investment against a credit event related to the issuer.

10. Why CDS may be used as a measure of Brazil risk?

CDS premium works as a measure of credit risk of the entity of reference, and is denominated in basis points. For example, if an investor buys protection against a credit event for US$100 million in Brazilian sovereign assets for 5 years (5Y Brazil CDS), with an annual premium of 200 basis points, there will be periodic payments of US$2 million to the seller of the protection. These payments are made until the contract matures or the issuer becomes insolvent – what comes first. If there is no insolvency, the contract ends on its maturity without cash flow exchanges. If there is insolvency, the seller of the protection pays to the buyer an amount which compensates the losses resulting from the credit event, immunizing the credit risk. The higher the probability of insolvency, the higher the CDS premium, acting as a measure of credit risk of the entity of reference.

11. In case of insolvency, how is the payment to the CDS buyer made?

CDS contract must specify how the payment will be made in case of insolvency, which may be through cash or securities (the most common). In a cash payment, the protection buyer keeps the asset after the credit event but is compensated by the seller for the incurred loss, that represents the difference between par value and after-default value, usually denominated as a percentage of total and known as recovery rate. The main obstacle for settling in cash is to determine the asset value after default, since its liquidity after the credit event is severely damaged. In a payment through securities, the buyer delivers the specified security, or one to be chosen in a basket of assets from the entity of reference, and receives the total financial value of the principal (par or 100% of face value). With the default of the entity of reference, if the protection buyer does not have the securities on its portfolio, even with worse liquidity conditions, these assets may be purchased in the secondary market with a high discount, for example at 25% of face value. The difference between market value of defaulting asset and delivery price to the protection seller represents the financial compensation of the protection buyer. An advantage embedded in this option for the protection buyer is that, given the difficulty in pricing the asset after default, it is easier to deliver it to the seller. The most common type of contract has the possibility of choosing the security from a basket of assets. For sellers, settlement through securities may be the most interesting option, given the possibility of the issuer in the future restructuring the debt (for example, the company may negotiate the debt payment through rescheduling cash flows, postponing short-term due installments or discounting due principal, or may be purchased by another company which assumes the debt) and the asset may recover part of its value in the long term.

12. Which are the main investors in the CDS market?

The biggest clients for CDS are the banks, not only buying but also selling protection, insurance companies, brokers, hedge funds, pension funds, companies, mutual funds and government agencies.

13. Is CDS used just as a protection against credit risk?

No. CDS is used for credit risk protection and is also used for other objectives, such as assuming positions in credit risk. For example, if an investor has negative perspectives about a company, it may buy protection through CDS. If the credit quality of this asset worsens, protection cost increases, matching probability of insolvency, and the investor may sell the protection getting profits.

Contributes for this use of CDS the fact that it is a synthetic instrument, with unlimited issuance, in opposition to bonds, and it eases its use in stress moments.

14. Must CDS Brazil premium be equal to EMBI+Br spread?

The credit spread of a bond compensates the buyer of this security for insolvency risk. If the bond is negotiated at par, maximum loss in the case of default is the difference between par value and recovery rate. Likewise, CDS spread is the value of a protection against insolvency, and the profit is par value less recovery rate. Therefore, one would expect that CDS premium had a value similar to these spreads, but this does not often occur due to factors such as liquidity and effective maturity, that may differ between the two instruments, mainly during crises[3].

Country Rating

15. What is a country rating?

A rating is a risk assessment attributed to a debt issuer country based on an evaluation conducted by an institution specialized in analyzing credit, about the ability and willingness of this country to honor, timely and totally, its debt service. The rating is a relevant instrument for the market, since it gives to potential creditors an independent opinion regarding credit risk for the debt of the analyzed country. After globalization, rating is a universal language that assesses risk degree of any debt security.

[3] For a comparative analysis of CDS and EMBI+Br spreads, see, in Portuguese: http://www4.bcb.gov.br/pec/GCI/port/focus/X20071031-Análise%20Comparativa%20de%20Duas%20Medidas%20de%20Risco-Brasil.pdf

16. What are the main rating agencies? And how ratings are broken down?

The main international rating agencies are Standard & Poor's (S&P), Fitch Ratings and Moody's. Table 2 shows the scales used by these rating agencies. The ratings are ordered from the lowest to the highest credit risk. Ratings from AAA/Aaa to BBB-/Baa3 are considered as investment grade, and ratings below the latter are considered speculative grade. Generally speaking, when a country is rated as investment grade, it allows new types of investors to purchase its securities, such as foreign pension funds, which are huge investors with restrictions for buying securities from countries rated as speculative grade.

Table 2 – Rating Scales

	Moody's	S&P	Fitch
Investment Grade	Aaa	AAA	AAA
	Aa1	AA+	AA+
	Aa2	AA	AA
	Aa3	AA-	AA-
	A1	A+	A+
	A2	A	A
	A3	A-	A-
	Baa1	BBB+	BBB+
	Baa2	BBB	BBB
	Baa3	BBB-	BBB-
Speculative Grade	Ba1	BB+	BB+
	Ba2	BB	BB
	Ba3	BB-	BB-
	B1	B+	B+
	B2	B	B
	B3	B-	B-
	Caa1	CCC+	CCC
	Caa2	CCC	CC
	Caa3	CCC-	C
	Ca	CC	DDD
	C	C	DD
		D	D

Sources: *Moody's*, *Standard & Poor's* and *Fitch Ratings*.

Table 3 presents ratings given by agencies to a selected group of countries including a prospective indicator for these economies – outlooks (positive, negative or stable). It is noteworthy to highlight that these ratings are global, i.e., not restrict to emerging economies, and are periodically revised, since credit quality (or default risk) of a country may change from time to time.

Table 3 – Long-Term Foreign Currency Ratings (as of March 2016)

Country	Moody's		S&P		Fitch	
	Rating	Outlook	Rating	Outlook	Rating	Outlook
Brazil	Ba2	Stable	BB	Stable	BB+	Stable
Bulgaria	Baa2	Stable	BB+	Stable	BBB-	Stable
Chile	Aa3	Stable	AA-	Stable	A+	Stable
China	Aa3	Stable	AA-	Stable	A+	Stable
Colombia	Baa2	Stable	BBB	Stable	BBB	Stable
Ecuador	B3	Stable	B+	Stable	B	Stable
Egypt	Caa1	Stable	B-	Stable	B	Stable
Hong Kong	Aa1	Stable	AAA	Stable	AA+	Stable
India	Baa3	Stable	BBB-	Stable	BBB-	Stable
Japan	A1	Stable	A+	Stable	A	Stable
Malaysia	A3	Stable	A-	Stable	A-	Stable
Mexico	A3	Stable	BBB+	Stable	BBB+	Stable
Morocco	Ba1	Stable	BBB-	Stable	BBB-	Stable
Paraguay	Ba1	Stable	BB	Stable	BB	Stable
Peru	A3	Stable	BBB+	Stable	BBB+	Stable
Philippines	Baa2	Stable	BBB	Stable	BBB-	Stable
Poland	A2	Stable	BBB+	Stable	A-	Stable
Russia	Ba1	Positive	BB+	Stable	BBB-	Stable
South Africa	Baa2	Under revision	BBB-	Stable	BBB-	Stable
South Korea	Aa2	Stable	AA-	Stable	AA-	Stable
Turkey	Baa3	Stable	BB+	Stable	BBB-	Stable
UK	Aa1	Stable	AAA	Stable	AA+	Stable
Ukraine	Caa3	Stable	B-	Stable	CCC	Stable
Uruguay	Baa2	Stable	BBB	Stable	BBB-	Stable
US	Aaa	Stable	AA+	Stable	AAA	Stable
Venezuela	Caa3	Stable	CCC	Stable	CCC	Stable

Sources: *Moody's*, *Standard & Poor's* and *Fitch Ratings*.

17. Is there more than a type of rating?

Yes. There are ratings for domestic and external issuances. The rating for issuances abroad may be both in domestic or foreign currency, and represents an absolute measure of the government ability to pay back its debt denominated in local or foreign currency, respectively. Ratings for issuances abroad, in domestic or foreign currency, are comparable among countries. Ratings for domestic issuances are not comparable internationally. Similar ratings for domestic issuances from different countries may show big differences in the ability to pay. For example, an AAA rating in the Brazilian scale is not comparable to an AAA rating in the Chilean and Argentinean scales. Ratings in local currency measure ability to pay in that currency and in the considered jurisdiction. They exclude country risk and transfer risk effects, not reflecting the possibility of investors having difficulties to repatriate principal and interest, due to, for example,

a foreign exchange crisis in the issuer country. The objective of this rating is to allow the investor to compare the risk of issuers from different countries isolated from transfer risks.

Agencies also differentiate ratings according to tenure. Short-term rating refers to the ability of paying financial commitments up to 12 months. Beyond this horizon, long-term ratings are attributed.

18. What is the methodology adopted by agencies to rate countries?

For evaluating credit risk, rating agencies use not only quantitative analysis, looking at financial statements, cash flows, and statistical projections but also qualitative elements, such as the external environment, juridical questions, and perceptions regarding the issuer and its processes. Besides evaluating guarantees and hedges against risks, it incorporates the time factor. Time influences rating definition, since longer horizons imply lower predictability. Thus, a country may present debt securities with different ratings, according to offered guarantees, tenures, among other characteristics.

Generally speaking, methodology for rating sovereign risk is based on known experiences about insolvency or quasi insolvency to identify key indicators (quantitative or qualitative) which measure ability and willingness to pay countries' debt service. Standard & Poor's, for example, divides the analytical structure of sovereign ratings in nine categories: political risk; economic structure; prospective economic growth; fiscal flexibility; general government debt burden; offshore and contingent liabilities; monetary flexibility; external liquidity; and external debt burden[4]. A grade is attributed to each of these categories, from one (the highest grade – lowest risk) to six, and there is not an exact formula to combine the grades to determine the rating. Analytical variables are interrelated and weights are not fixed.

19. Is sovereign rating the same as country risk?

The concepts of country risk and sovereign risk are different. Sovereign ratings reflect the macro and microeconomic fundamentals of the country in the long term, and thus tend to be more stable than country risk measures, influenced by short term factors. Conjunctural aspects are taken into account for ratings if imply crucial and structural changes in the long term. However, countries with higher ratings tend to present lower country risk, and vice-versa, pointing to a high (negative) correlation between these two indicators.

[4] For a methodological description of each of these criteria, see the report *Sovereign Credit Ratings: A primer*, from Standard & Poor's (2008)

Brazil: country risk

20. When Brazil risk increases, is there an increase in the interest payment expenses incurred by the country for external bonds?

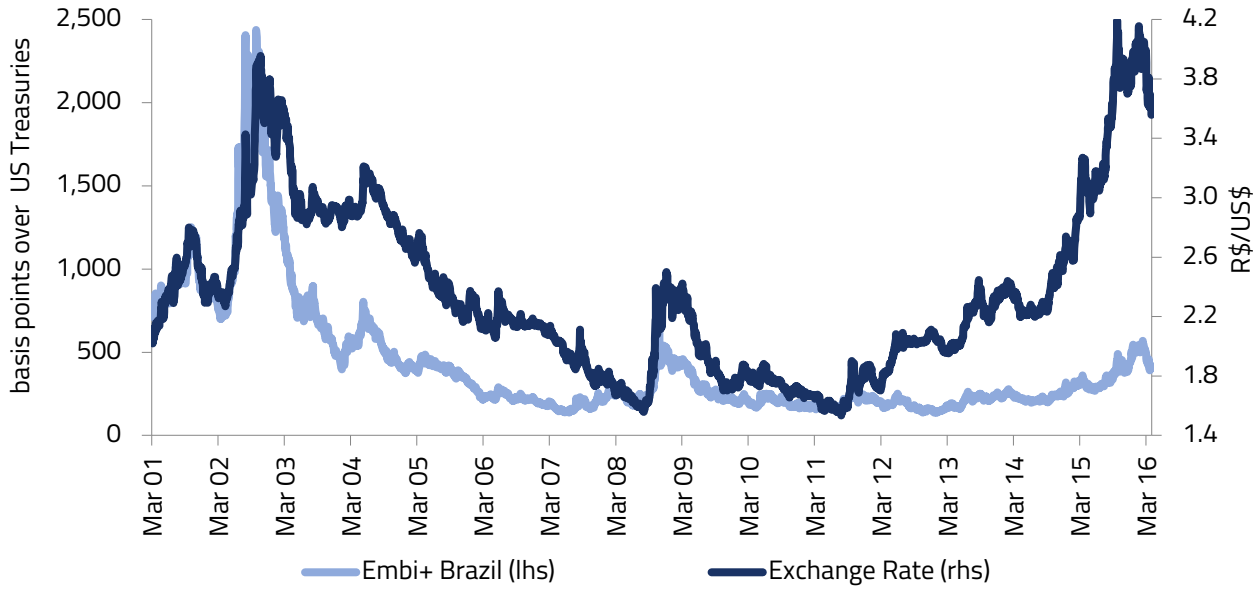
No. Interest paid by the Republic on its internationally-issued bonds is set at the time of their issuance. Investors who bought the bond that Brazil issued with 11% p.a. interest maturing in 2040 will be remunerated with interest at 11% p.a. until the maturity. Changes in country risk will affect only the average return received by new investors who buy this bond in the secondary market. If the premium risk decreases, the price of the security increases. For example, if country risk reaches 200 basis points and equivalent Treasuries yield 3% p.a., the market price of these bonds maturing in 2040 will be adjusted relative to the face value in order to guarantee 5% p.a. as the return. If the risk falls to 100 basis points, the market price will have increased, to assure a return of 4% p.a. to investors who buy the bond. The country does not incur additional interest costs. However, the risk indicator is a reference for new sovereign and private issuance in the international market, i.e. the decrease in the country risk implies lower costs for new securities.

21. What is the relationship between the Brazil risk and the exchange rate?

The simple observation of Chart 2 suggests that Brazil risk and exchange rate (R$/US$) are highly correlated. Generally, in financially-open-economies, changes in the sovereign risk perception are followed by changes in net capital inflows, impacting the exchange rate. A drop in the country risk allows not only the Republic but also other domestic economic agents to access international capital markets in more favorable conditions, since it broadens the basis of international investors willing to finance domestically issued securities. It is noteworthy to remember that interest rates in sovereign issuances serve as a reference or a benchmark for private securities issuances, i.e., the drop in the country risk allows lower funding costs also for private agents.

As a persistent decrease in the country risk reflects a better perception of investors regarding macroeconomic perspectives for the country, this process is followed by a better access to long-term capitals, as direct and portfolio investment. It translates into a higher capital supply for the country, allowing the exchange rate to move towards a stronger *real.* In the same way, a persistent increase in the country risk, at the time that worsens access conditions for domestic agents to access external funds, moves the exchange rate towards a *real* more depreciated.

Chart 2 – Brazil Risk and Exchange Rate (up to March 2016)



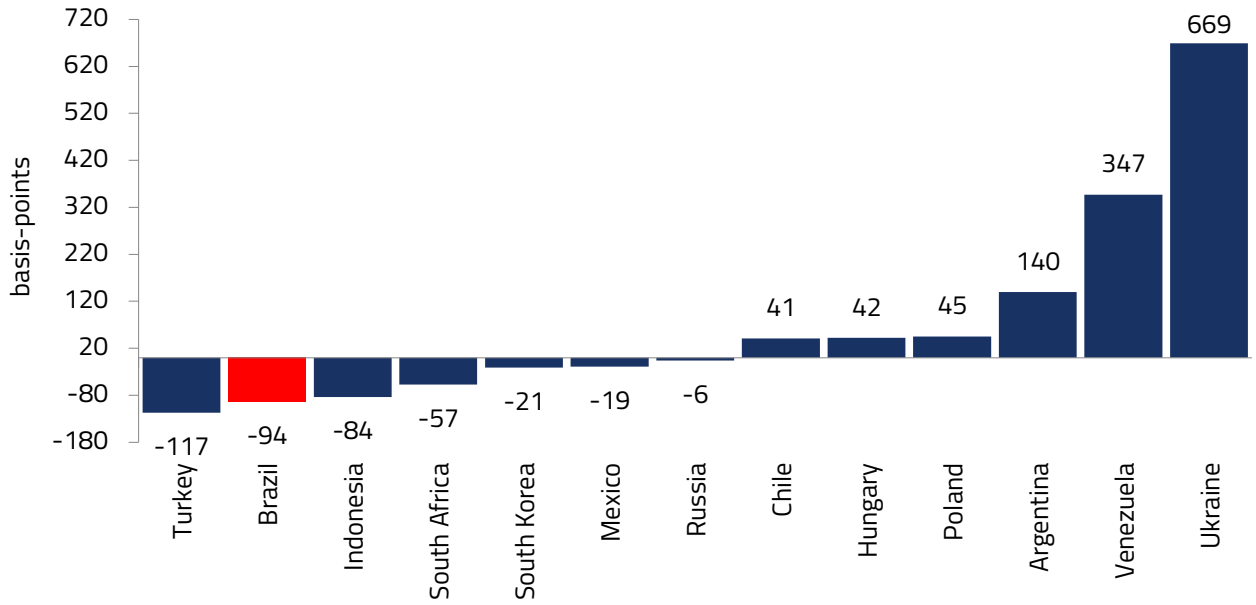
Sources: Morgan Markets and BCB.

22. How the 2008 financial crisis impacted Brazil risk?

Differently from past crises, when macroeconomic vulnerability was higher, the Brazilian economy was in better conditions to face the impacts of the Lehmann Brothers bankruptcy in September 15th 2008, which led to one of the worst financial crisis in the world history. Chart 3 shows that one year after the crisis, perception of Brazil risk was 94 basis points lower than in September 2008. Brazil was less affected than most of the emerging countries.

This is a clear evidence that investors perception about Brazilian economy risk improved, as a result of the continuity for many years of the macroeconomic policy based on the tripod – inflation target regime, floating exchange rate and fiscal responsibility.

Chart 3 – CDS Change from Sep 15th 2008 to Sep 15th 2009



Source: *Bloomberg*.

More information

23. Where may I get more information about country risk and sovereign ratings?

The methodology for calculating EMBI+ was consolidated from reports released by J.P. Morgan Chase: *Introducing the Emerging Markets Bond Plus - EMBI+* (July 12th 1995), *EMBI+/EMBI rules for adding and dropping issues* (September 30th 1998), and *Emerging Markets Bond Index Plus (EMBI+) – Rules and Methodology* (December 2004) and *EMBI Global and EMBI Global Diversified – Rules and Methodology* (June 2014). EMBI+ composition comes from the April 1st 2016 EMBI Monitor report. These data may be accessed at www.morganmarkets.com, after previous register.

Daily EMBI+ data may be consulted at information providers such as Thomson Reuters, Bloomberg, and some daily newspapers. For information about sovereign ratings, access rating agencies webpages: Standard & Poor's, Moody's and Fitch Ratings.