Price Indices in Brazil

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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Price Indices in Brazil

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.

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Price Indices in Brazil

General View

1. What are price indices? How are they calculated?

Price indices are numbers that aggregate and represent the prices of a particular product basket. Its variation measures, therefore, the average variation in the prices of the products in this basket. It may refer, for example, to the consumer prices, producer prices, production costs or prices of exports and imports. The most widespread indices are the consumer price indices (IPC), which measure the change in the cost of living of the population segments (the rate of inflation or deflation).

For example, the IPCA (Broad Consumer Price Index) reached 4,591.18 in February 2016 and 4,610.92 in March 2016. The reference base, in this case, is December 1993=100. According to this data, the inflation rate in March 2016 was 0.43% and the accumulated inflation between December 1993 and March 2016 reached 4,510.92%, i.e., the prices measured by this indicator increased 46.1092 times in the period.

The calculation of a price index involves several methodological issues, especially the definition:

- Of the price index purpose. For example, the index may measure the inflation experienced by entrepreneurs in the building sector, by all consumers, by low-income consumers etc;
- Of the the area of collection, item directly linked to the purpose of the index. For example, the IPC-Fipe is collected only in the city of São Paulo;
- Of the sources and forms of collection: type and size of outlets, sectors surveyed, interview form (personal or telephone), etc;

- Of the frequency of collection: monthly or quarterly, for example;
- Of what goods and / or services will be included in the basket to be searched. For example, the IBGE uses the Household Budget Survey (POF) to identify the goods and services most frequently consumed by each income group, and so builds the baskets that make up the IPCA, the IPCA-15 and the INPC;
- Of the methodology of calculation, which define how to combine in a single statistical measure the price variation of the set of goods and services surveyed. Two common methods are Laspeyres' and Paasche's.

2. Why are there so many price indices in Brazil?

The various price indices were built over time with different purposes. The IPC-Fipe, for example, was created by the Municipality of São Paulo with the goal to readjust the salaries of municipal employees. The IGP-M was created to be used in the adjustment of financial transactions, especially long-term., and the IGP-DI to guide the behavior of the general prices in the economy. The INPC is used for salary adjustments, while de IPCA adjusts the quarterly and half-yearly financial transactions and balance sheet of the open companies, besides, it is the official inflation measure of the country.

Table 1 shows some of the price indices produced in Brazil.

Table 1–Examples of Price Indices in Brazil

Agency	Price Index	Consumer Price Index (CPI)?
IBGE	IPCA (Índice Nacional de Preços ao Consumidor Amplo)	Yes
	INPC (Índice Nacional de Preços ao Consumidor)	Yes
	IPP (Índice de Preços ao Produtor)	No
	SINAPI (Sistema Nacional de Pesquisa de Custos e Índices da Construção Civil) [a]	No
Ibre-FGV	IGP-M, IGP-DI and IGP-10	No, but they contain a CPI component
	Índice de Preços Pagos pelos Produtores Rurais (IPP)	No
	IPC-3i ((Índice de Preços ao Consumidor da Terceira Idade))	Yes
Fipe	IPC-Fipe	Yes
	Fipe-Zap	No
Dieese	Cesta Básica	Yes
Sinduscon-SP	Custo Unitário Básico (CUB) da construção civil do estado de São Paulo	No

Source: Gerin. [a] in partnership with Caixa Econômica Federal – CAIXA.

3. What are the major price indices in Brazil?

- Consumer price indices produced by IBGE: IPCA (Broad Consumer Price Index) and INPC (National Consumer Price Index);
- General price indices produced by the Getulio Vargas Foundation (FGV): IGP-DI (General Price Index – Internal Availability), IGP-M (General Price Index – Market), and their components: the Broad Producer Price Index (IPA), the Consumer Price Index (IPC) and the National Index of Construction Cost (INCC);
- The Consumer Price Index for the city of São Paulo (IPC-Fipe).

There are price indices which measure exactly the same basket of goods and services, but differ in the collection period. This is the case of the IGP-10, IGP-M and IGP-DI, which are built the same way, and also the IPCA and IPCA-15.

Table 2 summarizes the characteristics of the price indices more frequently used in Brazil.

Table 2 – Features of the Main Price Indices

Agency	Index	Component Indices	Income Bracket (in minimum wages)	Coverage Area	Survey period	Release Date	Since
IBGE	IPCA-15	none	1 to 40	9 Metropolitan Regions + Brasília and Goiânia	middle of the previous month - middle of this month	By the 25th of the reference month	2000
	IPCA			10 Metropolitan Regions + Brasília, Goiânia and Campo Grande	Calendar month	By the 15th of the following month	1979
	INPC		1 to 5				
FGV	IGP-10	IPA (60%) IPC (30%) INCC (10%)	1 to 33 for the IPC (the remaining componentes are not consumer price indices)	7 biggest Metropolitan Regions	11th of the previous month - 10th of this month	By the 20th of the reference month	1993
	IGP-M				21st of the prev month - 20th of this month 1st Preview - 21st to 30th 2nd Preview - 21st to 10th	By the 30th of the reference month 1st Prev - by the 10th 2nd Prev - by the 20th	1989
	IGP-DI				Calendar month	By the 10th of the following month	1944
Fipe	IPC-Fipe	none	1 to 10	Municipality of São Paulo	Calendar month, updated every week	Within 10 days of the last survey date	1939

Sources: IBGE, FGV and Fipe .

4. What is the importance of each of the main price indices in Brazil?

The IPCA index is the most relevant from the monetary policy point of view, as it was chosen by the National Monetary Council (CMN) as the reference for the inflation targeting system implemented in June 1999. Besides, one of the most trade brazilian treasury bonds, the NTN-B, is indexed to the IPCA.

The INPC index is widely used in wage negotiations, as it measures the price change for those who are in the salary bracket up to 5 minimum wages;

IGP-DI is a fairly traditional index: its history dates back to 1944. It is currently used for the correction of certain contractually regulated prices. Until 2005, for example, this index served as reference for the readjustment of the telephone tariffs, which in January 2006 came to be adjusted by the IST (telecommunication services index), composed by a combination of other indices, among them: IPCA, INPC, IGP-DI and IGP-M;

The IGP-M index is the most widely used as financial indexer, including the NTN-C inflation linked treasury bonds. It is also used in the correction of some regulated prices, as for example, the electricity;

The IPC-Fipe, although restricted to the city of São Paulo, has methodological peculiarities and disclosure (the index is updated every week according to a Four-Week accumulated period) that reinforce its importance.

To know more about Brazilian public bonds, see FAQ 6 – Public Bonds and Public Debt Management.

5. When and why Brazil started to use this variety of indices?

IGP-DI represented for decades the country's official inflation measure, having been widely used even as monetary correction index. It is a hybrid index (i.e. it combines wholesale and retail prices). This is a rare practice in the world: price indices refer in general either to consumer prices or to producer prices. With rising inflation in the 70s and 80s, and with multiple rules then in force for the correction of financial asset values, exchange rate, wages, rents, and contracts in general, other indices also gained relevance. This was the case of the INPC, used as a parameter adjustment in wage negotiations.

The deterioration of the Brazilian inflation, from 1983 on, made the inflation measurement even more complex. The adoption of various economic stabilization plans was usually accompanied by the revision of the indexing rules and by changes in the inflation measures, including changes in the methodology and in the collection period, the exclusion of items in the reference basket or even discontinuation of the calculation of certain indices. The market need to have an index released on the last day of the month to fix contracts relating to financial transactions and balance sheets, for example, led to the creation of the IGP-M. For this reason, the price collection is made from the 21st of the month preceding the reference to the 20th of the reference month.

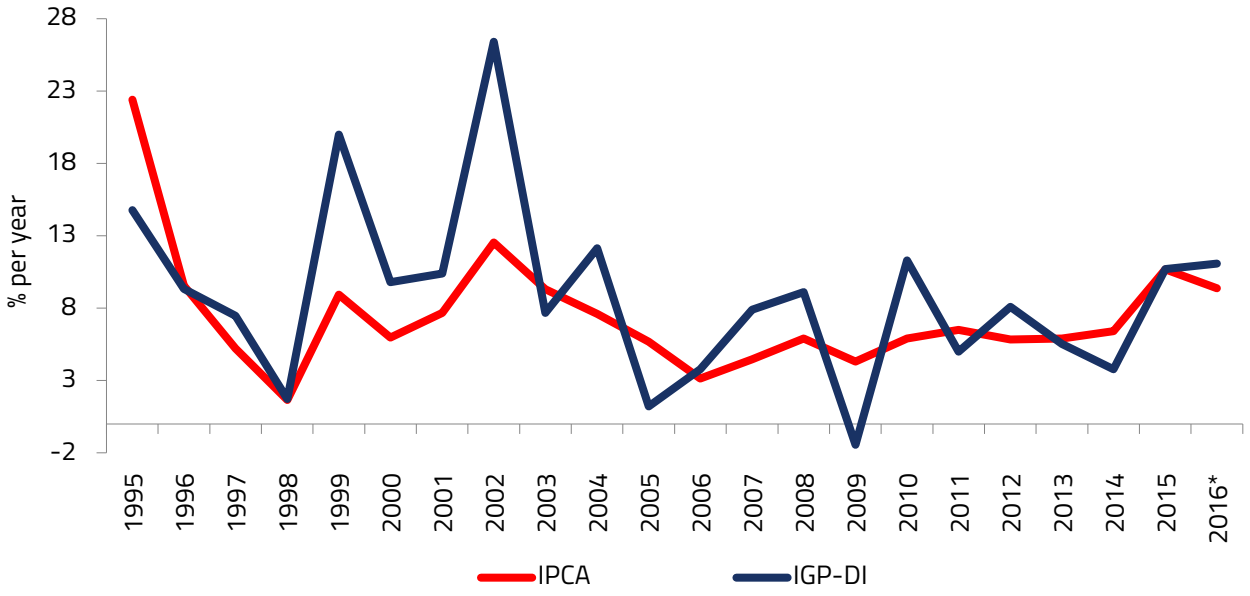
6. What has been the importance of price indices in recent years?

In July 1994, during the Real Plan implementation, a large number of indexation mechanisms were eliminated from the Brazilian economy. In the new low inflation environment, the importance of the different indices for measuring inflation diminished. Beginning in 1999, however, some measures of inflation became important again as a consequence of three factors: (i) the adoption of an inflation targeting regime; (ii) the strong realignment of relative prices caused by the continued depreciation of the Brazilian currency during in 1999-2003 and (iii) the persistence of indexation rules in the economy, in particular for the readjustment of the prices regulated by contracts established in the privatization process.

In practice, the adoption of inflation targeting regime led the BCB to seek as much information as possible about the current inflation and its tendency, and about the expectations for the various measures of inflation.

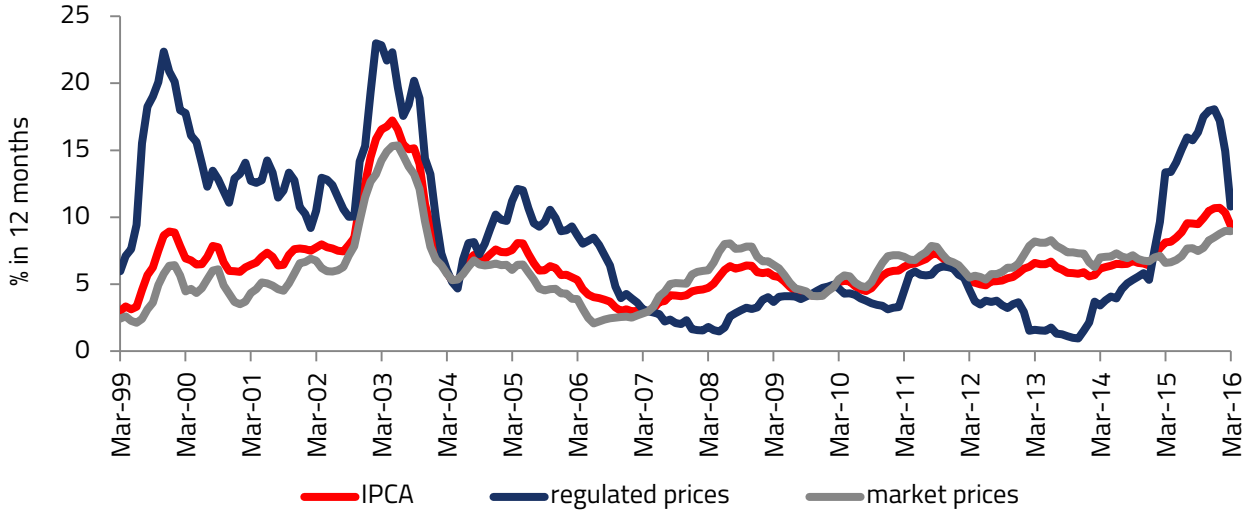
Trends in exchange rate depreciation or appreciation, which may occur in a floating exchange rate regime in different periods of time, can produce temporary mismatch of various price indices, in particular between IGPs and IPCA as shown in Chart 1. This arises from the greater relative share of tradable goods in IGPs, compared to consumer price indices. Finally, to the extent that many of the prices regulated by contracts have their adjustment based on IGPs, the readjustment of these prices can also decouple temporarily of the variation of the prices formed in market or "free", as demonstrated in Chart 2.

Chart 1 - IPCA and IGP-DI (annual changes)



Sources: IBGE and FGV. (*) 12 months until March 2016. These two series can also be found at BCB's Time Series Management System, with the codes SGS 433 and SGS 190 (all 'SGS' references correspond to search codes in the BCB's Time Series Management System)

Chart 2 - IPCA, Regulated and Market Prices (up to March 2016)



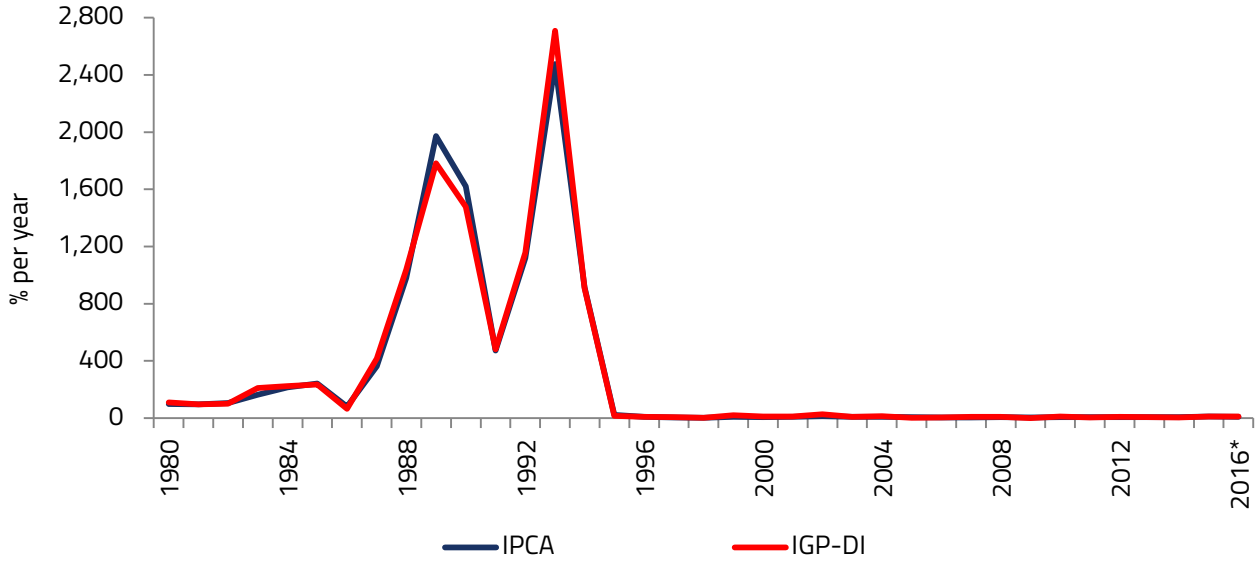
Sources: IBGE, for the IPCA (SGS 433), and BCB, for the regulated (SGS 4449) and market (SGS 11428) prices time series.

Comparison of price index

7. In the long term, how are the evolutions of the IPCA and the IGP-DI compared?

Chart 3 shows the annual variations of IPCA and IGP-DI since 1980, with the corresponding data in Table 3 and Table 4. It highlights the strong convergence in the evolution of the indices. Indeed, the average variation of IGP-DI, between 1980 and 2015, was 115.05% per annum, only 2.7 p.p. higher than the average variation of IPCA.

Chart 3 - IPCA and IGP-DI (1980 to 2016*)



Sources: IBGE and FGV. *variation in 12 months up to Mar 16.

Table 3 - IPCA and IGP-DI (annual change)

Year	IPCA (%)	IGP-DI (%)	Year	IPCA (%)	IGP-DI (%)	Year	IPCA (%)	IGP-DI (%)
1980	99.28	110.25	1993	2.477.15	2.708.39	2006	3.14	3.79
1981	95.65	95.20	1994	916.43	909.67	2007	4.46	7.89
1982	104.80	99.71	1995	22.41	14.77	2008	5.90	9.11
1983	164.00	210.98	1996	9.56	9.33	2009	4.31	-1.43
1984	215.28	223.81	1997	5.22	7.48	2010	5.91	11.30
1985	242.25	235.13	1998	1.66	1.71	2011	6.50	5.00
1986	79.66	65.04	1999	8.94	19.99	2012	5.84	8.10
1987	363.41	415.87	2000	5.97	9.80	2013	5.91	5.52
1988	980.22	1.037.53	2001	7.67	10.40	2014	6.41	3.78
1989	1.972.91	1.782.85	2002	12.53	26.41	2015	10.67	10.70
1990	1.620.97	1.476.71	2003	9.30	7.67	2016*	9.39	11.07
1991	472.69	480.17	2004	7.60	12.14			
1992	1.119.09	1.157.84	2005	5.69	1.22			

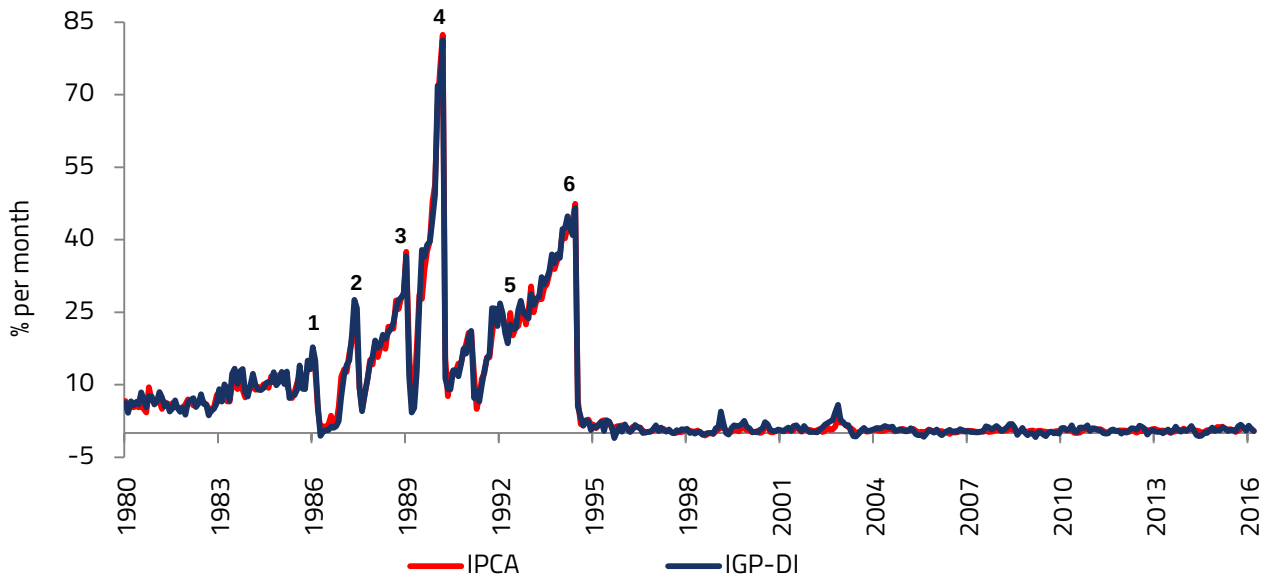
Sources: IBGE and FGV. *variation in 12 months up to Mar 16.

Table 4 - IPCA and IGP-DI (average annual change by period)

Period	IPCA (%)	IGP-DI (%)
1980-89	265.38	271.77
1990-99	270.84	274.11
2000-15	6.71	8.06
1980-15	**112.31**	**115.05**

Source: BCB.

Chart 4 - IPCA and IGP-DI (up to March 2016)



Sources: IBGE and FGV.

Chart 4 displays monthly variations of IPCA and IGP-DI in the last 36 years. The figures in the graph identify the anti-inflationary plans in the last two decades: (1) Cruzado Plan, (2) Bresser Plan, (3) Summer Plan, (4) Collor Plan I, (5) Collor II Plan and (6) Real Plan. As noted, the first five attempts to stabilize the Brazilian economy failed. Following sudden collapses right after the implementation of the stabilization plans, inflation quickly returned to ever higher levels. The effective control of inflation occurred only with the Real plan.

8. How does IBGE calculate its consumer price indices (IPCA, IPCA-15 and INPC)?

IBGE's national consumer indices are calculated from the aggregation of regional consumer price indices. Up to December 2013, the survey covered the nine largest metropolitan regions of the country (Belém, Belo Horizonte, Curitiba, Fortaleza, Porto Alegre, Recife, Rio de Janeiro, Salvador, São Paulo), in addition to the Federal District and the municipality of Goiânia. From January 2014 on, the collection area for IPCA, IPCA-15 and INPC includes the metropolitan region of Vitória and the municipality of Campo Grande. The regional weights are shown on Table 5.

Table 5 – Weighting of Metropolitan Indices in IPCA and in INPC

Metropolitan region	State where it is located	IPCA (%)	INPC (%)
Belém	Pará	4.65	7.03
Belo Horizonte	Minas Gerais	10.86	10.60
Brasília	Distrito Federal	2.80	1.88
Campo Grande	Mato Grosso do Sul	1.51	1.64
Curitiba	Paraná	7.79	7.29
Fortaleza	Ceará	3.49	6.61
Goiânia	Goiás	3.59	4.15
Porto Alegre	Rio Grande do Sul	8.40	7.38
Recife	Pernambuco	5.05	7.17
Rio de Janeiro	Rio de Janeiro	12.06	9.51
Salvador	Bahia	7.35	10.67
São Paulo	São Paulo	30.67	24.24
Vitória	Espírito Santo	1.78	1.83
Total		**100.00**	**100.00**

Source: IBGE.

Products and services included in each of these indices (IPCA, IPCA-15 and INPC) are determined by another IBGE survey, POF (Household Budget survey). From the reference month of January 2012, INPC, IPCA and IPCA-15 incorporated the structures of expenses obtained from POF 2008-2009.

As noted in Table 2, IPCA and INPC cover different income levels. INPC is restricted to employees in the income bracket from 1 to 5 minimum wages, while IPCA includes household incomes of any nature up to 40 minimum wages.

The IBGE Survey for consumer price indices is subdivided into the following main groups: food and beverage, housing, household items, clothing, transportation, health and personal care, personal expenses, education and communication. The relative weight of each group is re-estimated monthly, considering the consumption basket in the base date and the relative change in prices of the goods and services of the group. Table 6 shows the weights by group in March 2015.

Table 6 - Weighting of the Product Groups in IPCA and in INPC (in March 2016)

Group	Weight in IPCA (%)	Weight in INPC (%)
Food and Beverages	25.52	31.11
Housing	15.51	17.76
Household items	4.25	5.04
Clothing	5.99	7.24
Transportation	18.49	15.76
Health and personal care	11.10	9.44
Personal expenses	10.62	7.33
Education	4.71	2.98
Communication	3.82	3.33
Sum	**100.00**	**100.00**

Source: IBGE.

The price surveys are carried out in commercial establishments and service providers, public utilities and households (in the latter case, for calculating the value of rental and condominium expenses). The collected price is the cash sale. Prices are collected during the calendar month and the indices released at the beginning of the second ten-day period of the following month.

IPCA-15 is calculated in the same way as the IPCA, but with the collection period 15 days in advance (i.e., computing from the middle of the previous month to the middle of the current month) and its disclosure occurs around 25th of each month. For historical reasons, the IBGE also publishes IPCA-E, quarterly, which in fact is the same IPCA-15 index, but with a longer base, retreating to 1991. This index was especially created for the correction of the UFIR index (used for updating tax values up to the year 2000), and from December 1994 on started to be released on a quarterly basis.

For more information about these indices, please see the calculation methodology (in Portuguese).

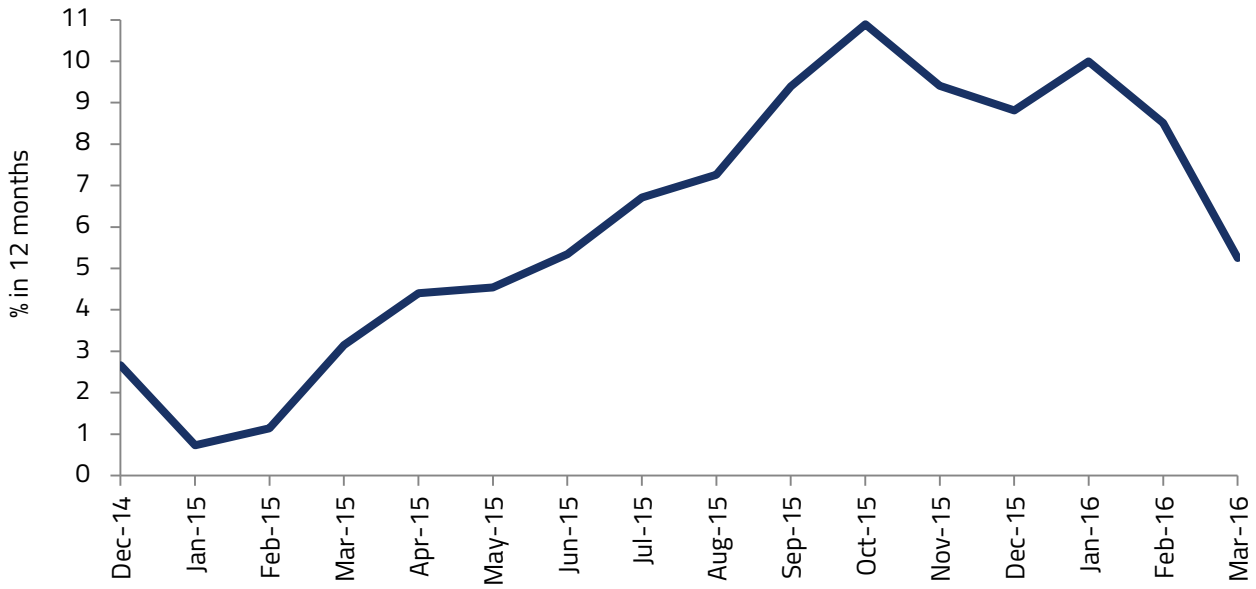
Price indices methodology

9. What is the purpose of the Producer Price Index (IPP) calculated by the IBGE? What does it measure?

The Producer Price Index (IPP, in Portuguese) aims to measure the average change in the selling prices received by the industries. Extractive and manufacturing industries, which produce goods and services, are considered. Chart 5 shows the evolution of the IPP.

The IPP investigates, in little more than 1,400 companies, the prices received by the producer, exempt from taxes, tariffs and shipping and defined according to the most usual business practices. The collected products are specified in detail (physical and transaction aspects), thus ensuring that homogeneous products are compared over time. Thus, around 5,000 prices are collected monthly.

Chart 5 - IPP Evolution (up to March 2016)



Source: IBGE.

10. How does FGV calculate its indices?

The Brazilian Institute of Economics (FGV-IBRE), created in 1951, is responsible for collecting data which are the basis for the calculation of IGPs (IGP-DI, IGP-M[1] and IGP-10[2]). The difference between these three indices refers to the dates of the price survey and the dissemination of the results obtained. The IBRE also discloses the IGP-OG (Global supply), which distinguishes from the IGP-DI by the major/minor share of goods exported/imported in the respective IPAs.

[1] SGS 189

[2] SGS 7447

Each IGP is a weighted average of the following price indices: the IPA (Wholesale Price Index), the IPC (Consumer Price Index) and the INCC (Civil Construction National Index) with a weight of 60%, 30% and 10% respectively. The definition of the weights, established when deploying index calculation, was justified by the aim of providing approximately the value added of each sector (wholesale, retail and construction) in GDP, at that time.

For further information, access calculation methodology (in Portuguese).

11. What are the IGP-M "Previews"?

The IGP-M "full" (or "closed", that is, for the entire period of its calculation) is published by the 30th of each month, computing the price variation between the 21st of the previous month to the 20th of the month referred to in the index.

In addition, two calculation previews of the IGP-M results are made and published by the 10th and the 20th of the respective month. The first preview refers to the price variation occurred in the first ten days of period covered by the full index (from the 21st to the last day of the previous month). Similarly, the results of the second preview refer to the first 20 days of the calculation period of the "full" IGP-M. Therefore, the result of the second preview incorporates the results of the first one and the final result incorporates the second preview results.

The previews cannot be compared with each other, or both in relation to the monthly result, but they can be chained (unlike the four-week period results of the IPC-Fipe). Therefore, the result of the second preview incorporates the results of the first one and the final result incorporates the second preview results.

12. How is the Broad Producer Price (IPA)[3] calculated?

The Broad Producer Price (IPA) is an index of wholesale prices nationwide which is parte of the FGV's IGP. Like the IGP, it is released in three versions which differ only by their price collection period:

- IPA-DI, which data are collected between the first and the last day of the reference month;
- IPA-M. which data are collected between the 21st day of the previous month and the 20th day of the reference month; and
- IPA-10, which data are collected between the 11th day of the previous month and the 10th day of the reference month.

The IPA indices unfold in other sub-indices, divided into two sets:

- According to the origin of production: agricultural, with 24.2% weight, and industrial, with 75.8% weight;
- Considering the processing stages: final goods (36.0%), intermediate goods (39.9%), raw materials (24.2%).

[3] SGS 7450

The weighting system of the IPA is built in stages. Initially, the series Agricultural Products, Mining and Manufacturing Industry are weighted up according to the average contributions of these activities in gross added value, calculated by IBGE in the National Accounts framework. The weighting of the Industrial Products series is obtained by the sum of the Mining Industry and the Manufacturing Industry series.

For the agricultural activity, the weightings of the products included in the index have as reference the average production values observed in the IBGE researches: the Municipal Agricultural Production (PAM) and the Municipal Livestock Production (PPM), of IBGE.

In the industrial portion, the weightings are based on the Annual Industrial Survey (PIA), also from IBGE.

13. How is the IPC (FGV index) calculated?

Until 1989, the IPC was calculated only for the city of Rio de Janeiro, covering families with incomes between 1 and 5 minimum wages. Since January 1990, the IPC gave place to the IPC-Br[4], calculated for the families with incomes between 1 and 33 minimum wages. Later on, it was again referred to as simply IPC. Its price research is developed daily, covering seven major cities of the country: São Paulo, Rio de Janeiro, Belo Horizonte, Salvador, Recife, Porto Alegre and Brasília.

The general index is composed of eight groups: food; housing; clothing; health and personal care; education; reading and recreation; transportation; miscellaneous expenses and communication. The consumer basket was defined according to the Household Budget Survey (POF) from IBGE.

Since 2003, FGV has been promoting the IPC-S (weekly). Two other special consumer price indices are calculated from the same database: the Consumer Price Index of the Third Age (IPC-3i) and the Consumer Price Index Class1 (IPC-C1). The first measures the change in prices of goods and services to households composed, mostly, by individuals over 60 years of age, while the second is a monthly indicator that measures the change in prices of a basket of goods and services for families with incomes between 1 and 2.5 minimum wages.

14. How is the INCC[5] calculated?

The INCC measures the monthly evolution of housing construction costs, from the average of the indices of seven state capitals (São Paulo, Rio de Janeiro, Belo Horizonte, Salvador, Recife, Porto Alegre and Brasília). The list of items included in the INCC and their respective updated weights is based on estimates provided by the Brazilian Association of Technical Standards (ABNT) for materials and equipment, services and labor.

[4] SGS 191
[5] SGS 192

The INCC unfolds into two groups: labor (16 items) and materials, equipment and services (51 items).

15. How does Fipe calculate "IPC-Fipe" price index?

The IPC-Fipe[6], calculated for the income brackets between 1 and 20 minimum wages, is the price index with the longest historical series, beginning in January 1939. It is collected in the city of São Paulo, which is home to 5.85% of the resident population[7] and whose GDP corresponds to 10.73% of Brazilian GDP[8].

Methodologically, this index shows some singularities. One of them refers to the calculus of the four week period variations in price, wherein the price average computed in a group of four consecutive weeks is compared with the price average for the previous four consecutive weeks.

The weight system was last changed based on the household budgets survey conducted in 2009/10, the results of which were incorporated into the price surveys from July 2011 on. The current system comprises the following groups and their weights: Housing (30.9%), food (22.9%), transportation (17.6%), personal expenses (11.9%), health (7.7%), clothing (5.3%) and education (3.7%).

Other questions about price indices

16. Are there other price indices in Brazil?

Yes. In addition to the main price indices (mentioned in question 3), there is a number of other price indices, as mentioned in question 2. Most of them are tied to specific cities or regions of the country or to economic activity sectors.

In terms of their importance and the attention paid by the press, the most notable include the National Basic Consumer Basket, which is calculated monthly by the Inter-union Department of Statistics and Social-Economic Studies (Dieese); the São Paulo Basic Consumer Basket, produced by the Consumer Protection Foundation of São Paulo (Procon-SP), in partnership with Dieese, and the São Paulo Cost of Living Index (ICV), also produced by Dieese.

The National Basic Basket research covers the entire country and accompanies the evolution of thirteen basic food products.

The São Paulo Basic Basket research started in 1989, with the daily collection of products prices and brands from a defined set of goods based on the consumption of a standard family in São Paulo. Currently, it is held in 70 supermarkets in the city. The index is composed of 31 products.

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[6] SGS 193

[7] IBGE, Estimativas populacionais para os municípios e para as Unidades da Federação brasileiros em 01.07.2015.

[8] IBGE, Produto Interno Bruto dos Municípios 2012 (in Portuguese).

The ICV Dieese is calculated since October 1958 in the city of São Paulo. It involves 104 workers families and encompasses 155 goods and services.

17. What is "core" inflation? How is it calculated?

Core inflation is a price index derived from another price index and which aims at obtaining the persistent component of inflation, or the long term inflation[9]. For example, it is possible to calculate the core inflation using disaggregated data of IPCA.

The core inflation calculation aims at obtaining a less volatile measure than the traditional indices, allowing a view of the underlying behavior of prices that exclude or assign less weight in the index composition to the seasonal increases, caused by temporary or casual factors.

Core inflation indicators may be useful to central banks in conducting monetary policy, especially for countries that adopt the inflation target framework. The Central Bank of Brazil, for example, pursues a goal measured by the variation of IPCA, and uses core measures as part of a broad set of information that supports decision making of monetary policy. These core measures are periodically published in the official documents of the Monetary Policy Committee (Copom).

Since the publication of the Inflation Report in Sept/2011, the BCB announced a new set of core measures of inflation associated with the IPCA, which includes the core by exclusion of the monitored household food (IPCA-EX2[10]), the core by exclusion (IPCA-EX[11]), the double weighting core (IPCA-SD[12]), the non-smoothed trimmed-means core (IPCA-MA[13]) and the smoothed trimmed-means core (IPCA-MS[14])[15].

Chart 6 shows the twelve-month-inflation for IPCA and its five core measures described above. It is worth noting that international experience and the literature support the assessment that it is important to analyze a varied set of core measures, rather than focusing on specific measures, since, in practice, there is no core measure that is superior in every evaluation criteria.

[9] Roger, Scott, Core Inflation: Concepts, Uses and Measurement (July 1998). Reserve Bank of New Zealand Discussion Paper No. G98/9. Available at SSRN: http://ssrn.com/abstract=321390 or http://dx.doi.org/10.2139/ssrn.321390

[10] SGS 16121.

[11] SGS 11427.

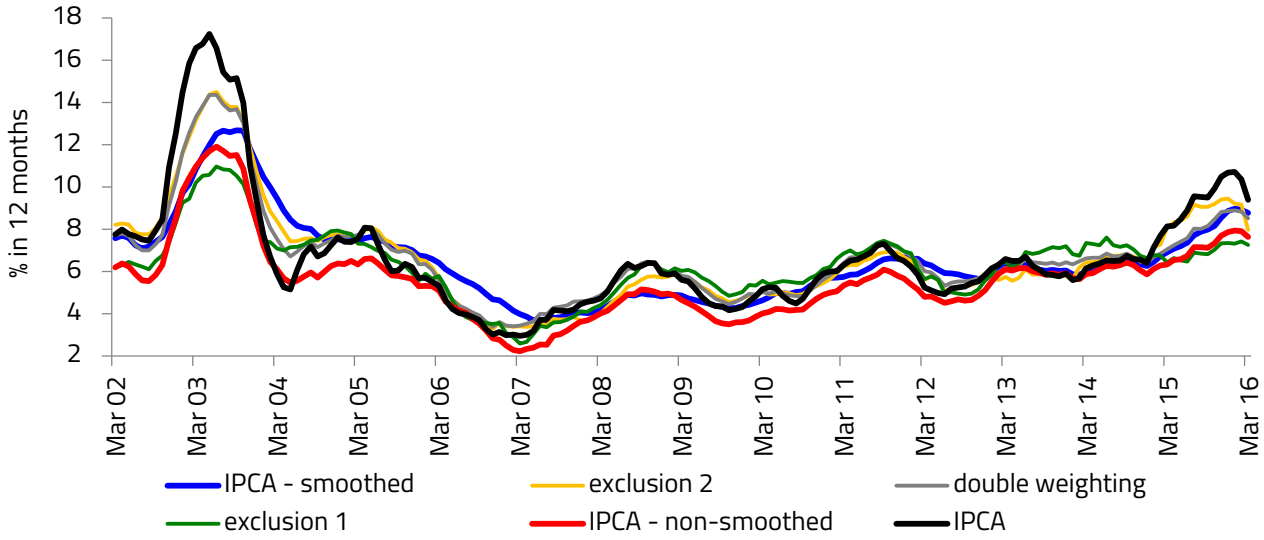
[12] SGS 16122.

[13] SGS 11426.

[14] SGS 4466.

[15] See boxes "Methodology of the New Set of Core Inflation Measures", released in the Inflation Report as of December 2009 and "Novas Medidas de Núcleo de Inflação", released in Portuguese in the Inflation Report as of September 2011.

Chart 6 - IPCA and Core Inflation (up to March 2016)



Source: BCB.

Several other procedures involving price indices calculations can be used. The Institute of Applied Economic Research (IPEA), for example, calculates the inflation trend based on a model of reduced volatility, combining two techniques, trimmed averages and exponential smoothing. For more details, visit http://www.ipea.gov.br. The FGV estimates the IPC-Br core using the method of symmetric trimmed average (20% in each tail), with specific prices smoothed over 12 months.

For further information on the various measures of core inflation, please see the study "Evaluating Core Inflation Measures for Brazil" by Francisco Figueiredo.

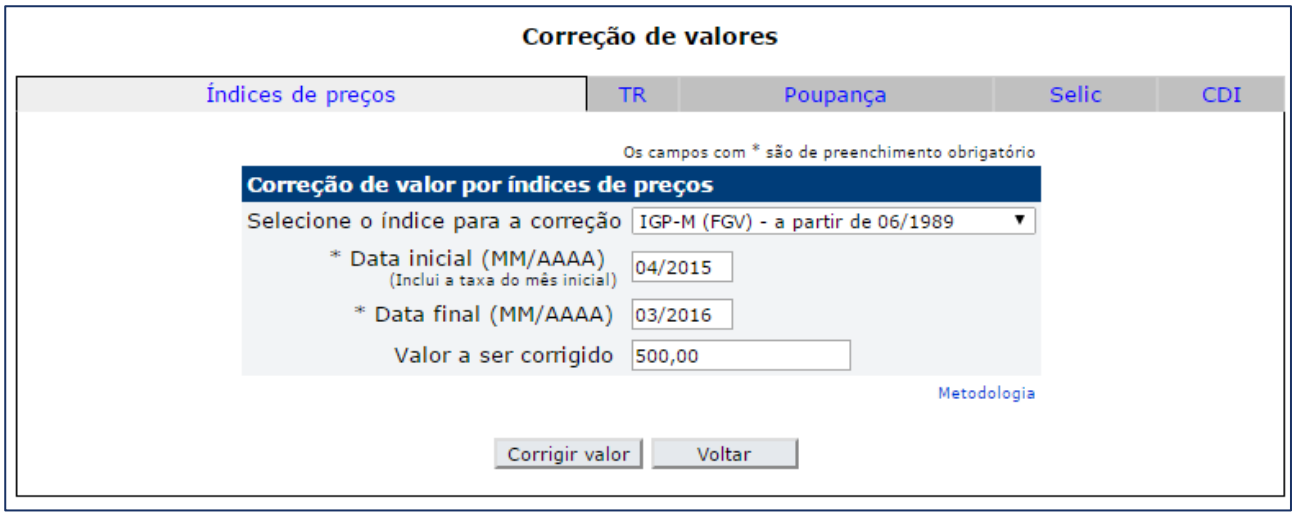
18. How can I adjust a value for inflation?

BCB's webpage offers a feature called "calculadora do cidadão" (citizen's calculator; in Portuguese), which allows you to update nominal values for several brazilian price indices. The user must choose the "values correction" option, and, on then select the price index for correction.

Suppose, for example, that the user wishes to correct the value of their rent, at R$ 500, for the 12-month-accumulated-IGP-M (between April 2015 and March 2016, inclusive). The user must fill in the screen as shown in Figure 1, and select the option "correct value" ("corrigir valor"). The result will be shown as in Figure 2: R$ 557.84. Please note that you should use the comma instead of dot[16].

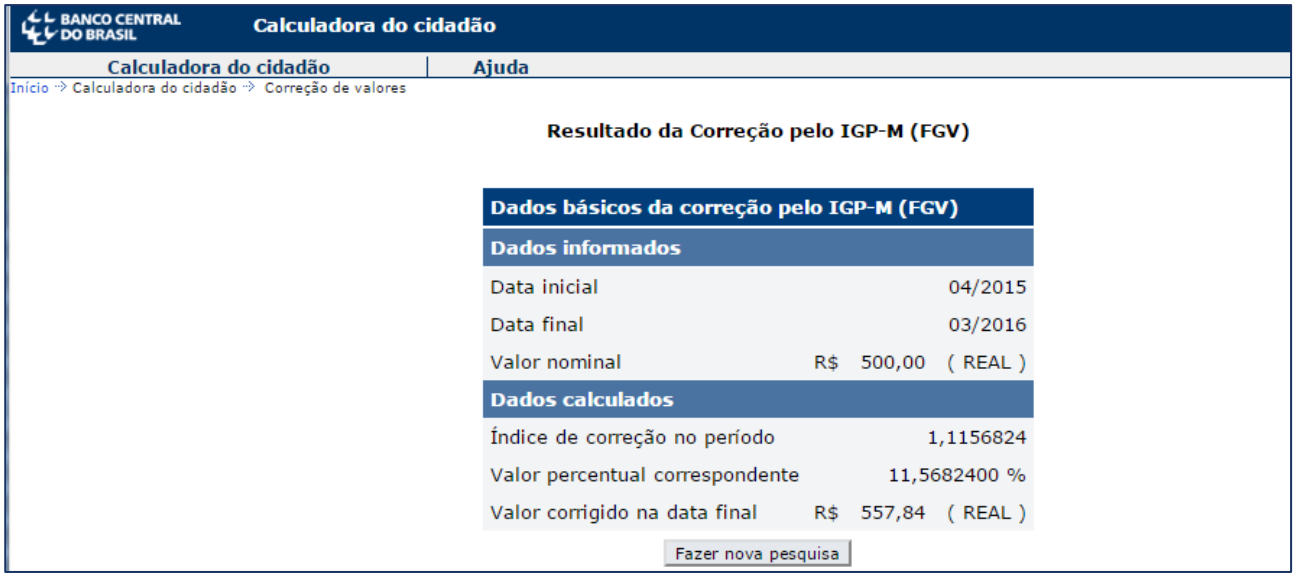
[16] Brazilians use a dot to separate thousands (eg. 1.200 in Portuguese is written 1,200 in English); a comma to mark the decimal place, eg 1,5 = 1.5.

Figure 1 – BCB's Citizen Calculator – "Value Correction" Option



Source: BCB.

Figure 2 – BCB's Citizen Calculator – Result of Correction by the IGP-M



Source: BCB.

If the user wants to do the same calculation without using the Citizen's Calculator, he/she must follow the steps below:

- get the IGP-M monthly data,
- divide each value by 100,
- add 1 to each variation and
- multiply the resulting values, as shown in Table 7. The resulting value is correction index of the period.
- Multiply the correction index of the period by the value to be corrected - in the example above, R$ 500.

- As R$ 500 X 1.1156824 = R$ 557.8412, we have the value of the fixed rent is approximately equal to R$ 557.84.

Table 7 – How to Calculate 12-Month-Accumulated IGP-M (up to March 2016)

	IGP-M (% per month)	1+ [Monthly change/100]	Multiplication of the items of the previous column
Apr/15	1.17	1.0117	
May/15	0.41	1.0041	
Jun/15	0.67	1.0067	(1.0117) X (1.0041) X (1.0067)
Jul/15	0.69	1.0069	
Aug/15	0.28	1.0028	X (1.0069) X (1.0028) X (1.0095)
Sep/15	0.95	1.0095	
Out/15	1.89	1.0189	X (1.0189) X (1.0152) X (1.0049)
Nov/15	1.52	1.0152	
Dec/15	0.49	1.0049	X (1.0114) X (1.0129) X (1.0051)=
Jan/16	1.14	1.0114	
Feb/15	1.29	1.0129	**1.1156824 = correction index of the period**
Mar/16	0.51	1.0051	

Sources: FGV (or BCB SGS 189) and Gerin.

19. Where can I obtain time series data on inflation in Brazil?

Brazilian price data time series are available on the Central Bank of Brazil website => Economic activity => price indicators. Inflation data is also available on the BCB website in the Economic Indicators section.

On the Central Bank web page, the public can access the "citizen calculator", which updates the nominal values according to various price indices.

The Central Bank also provides worksheets in Excel® with the main economic indicators (in Portuguese). The price indices are in chapter I – Economic Conjuncture.