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BANCO CENTRAL DO BRASIL

Inflation Report

December 2016

Volume 18 \ Number 4

"This document represents the Copom's best effort to provide an English version of its Inflation Report. In case of any inconsistency, the original version in Portuguese prevails".

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Inflation Report

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Statistical Conventions

...	data not available.
-	nil or non-existence of the event considered.
0 ou **0.0**	less than half the final digit shown on the right.
*****	preliminary data.

Hiphen between years indicates the years covered, including the first and the last year.
A bar (/) between years (1970/1975) indicates the average of the years covered, including the first and the last year or even crop or agreement year, when mentioned in the text.

Occasional discrepancies between constituent figures and totals as well as percentage changes are due to rounding.

There are no references to sources in tables and graphs originated in the Banco Central do Brasil.

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Principles for the Conduct of Monetary Policy in Brazil

Mission and objectives

The Banco Central do Brasil (BCB) has as mission to ensure the stability of the currency's purchasing power and a solid and efficient financial system. The compliance with the task of ensuring price stability is achieved by means of the inflation targeting framework, with inflation targets set by the National Monetary Council.

The experience, both domestic and international, shows that the best contribution of monetary policy to sustainable economic growth, low unemployment and improvement in people's living conditions is to keep inflation low, stable and predictable.

The economic literature indicates that high and volatile inflation rates generate distortions that lead to increased risks and negatively affect investment. These distortions shorten the planning horizons of families, businesses and governments, and erode business confidence. High inflation rates subtract the purchasing power of wages and transfers, with negative repercussions on household's confidence and consumption. Moreover, they produce inefficient price dispersion and reduce the informational value from prices that contributes to the efficient allocation of resources in the economy.

High and volatile inflation has also regressive distributive effects. The less favored groups of the population, which generally have more restricted access to instruments to protect them from the loss of the currency's purchasing power, benefit the most from price stability.

In short, high inflation rates reduce potential economic growth, affect job creation and income, and worsen income distribution.

Implementation

impacts the economy with long, variable and uncertain lags. This is due to the substantial uncertainty associated with inflation projections in the relevant horizons, which arises naturally from the incidence of favorable and unfavorable shocks to the economy over time. The Committee should seek to conduct.

Monetary policy impacts the economy with long, variable and uncertain lags, usually estimated to extend up to two years. As a result, there is substantial uncertainty associated with inflation projections in the relevant horizon for the conduct of monetary policy, which arises naturally from the incidence of favorable and unfavorable shocks to the economy over time. It is thus expected that, even under appropriate policy, realized inflation will fluctuate around target. The Monetary Policy Committee (Copom) should seek to conduct monetary policy so that inflation projections point to inflation converging to the target. Therefore, it is genuine that monetary policy is carried out in a forward-looking way.

The inflation targeting framework in Brazil is flexible. The horizon that the BCB sees as appropriate for the return of inflation to the target depends on both the nature of the shocks that affect the economy and their persistence.

The Banco Central do Brasil believes that a clear and transparent communication is essential for monetary policy to achieve its objectives efficiently. Thus, the BCB regularly publishes evaluations of the economic factors that determine the inflation trajectory, as well as the potential risks to this trajectory. The Copom Statements and Minutes, and the Quarterly Inflation Report are key vehicles in communicating these assessments.

Inflation Report

The inflation forecasts are presented in scenarios, and are conditional on assumptions for some economic variables. Traditionally, these projections involve two scenarios: the reference and the market scenarios. The first assumes unchanged interest and exchange rates throughout the projection horizon. The second uses the trajectories for the Selic rate and the exchange rate drawn from the Focus survey, conducted by the Banco Central with independent analysts. It is important to stress that these scenarios are part of the quantitative tools that guide the Copom's monetary policy decisions, and that their assumptions do not constitute and should not be seen as the Committee's forecasts on the future behavior of interest and exchange rates.

The conditional inflation forecasts presented in this Report are not pointwise, i.e., they incorporate probability intervals that highlight the degree of uncertainty associated with them. Inflation forecasts depend not only on assumptions about interest rates and exchange rates, but also on a set of conjectures about the behavior of exogenous variables. The Copom uses a wide range of models and scenarios, with hypotheses associated with them, to guide its monetary policy decisions. By displaying some of these scenarios, the Committee seeks to increase the transparency of monetary policy decisions, contributing to its effectiveness in controlling inflation, which is its primary objective.

Contents

Executive summary

The Copom's baseline scenario envisages economic activity below expectations in the short term, in the context of a high level of economic slack. Forecasts for 2016 and 2017 GDP fell, the process of recovery of expectations components of confidence indices was interrupted and – after breaking a long sequence of falls in the second quarter – investment fell again in the third quarter.

The evolution of prices indicates an ongoing disinflationary process. Recent inflation figures came in more favorably than expected, partly due to the reversal of food price increases, but also with signs of more widespread disinflation. There are also signs of a pause, at the margin, in the process of disinflation of some components of the Extended National Consumer Price Index (IPCA) that are most sensitive to the business cycle and monetary policy. In general, these results contributed to a decrease in expectations for 2016 IPCA inflation measured by the Focus survey, which stand around 6.5%. As for 2017, inflation expectations reported in the same survey sit around 4.9% and expectations for 2018 and more distant horizons remain at 4.5%.

Inflation measured by the IPCA in the quarter ending in November printed 0.52 p.p. below Copom's projections in the September Inflation Report. The current report identifies the components that accounted for the largest discrepancies in this period, and presents forecasts for IPCA inflation for December, January and February, of 0.48%, 0.61% and 0.55%, respectively.

The global outlook is particularly uncertain, with the possible end of the benign period for emerging economies. The process of normalization of monetary policy in the United States resumed. Furthermore, the outlook for advanced economies is uncertain.

Regarding conditional inflation forecasts, under the usual procedures, the reference scenario projects

inflation at 6.5% in 2016, 4.4% in 2017, and 3.6% in 2018. In the market scenario, projections point to inflation at 6.5% in 2016, 4.7% in 2017, and 4.5% in 2018.

The projection for GDP growth in 2016 declined to -3.4%, and underwent minor changes in its composition. For 2017, the projection was revised from 1.3% to 0.8%.

1 Economic scenario[1]

The pace of economic activity has been slower than expected. Negative results posted in August have not been reversed in subsequent months, increasing the likelihood that the recovery of economic activity be further delayed and more gradual than anticipated. The Brazilian economy still exhibits a high level of slack in production factors, highlighted by depressed indices of industrial capacity utilization and, more importantly, by the evolution of the unemployment rate.

Consumer inflation has surprised favorably over the last months, in part benefitting from the reduction of food prices, but also showing signs of a more widespread disinflation process. This has contributed to the decline of inflation expectations for 2016 and 2017 as seen in the Focus survey. Signs of interruption of the disinflation process of some components of price indices that are most sensitive to the business cycle and monetary policy still remain. However, the ongoing downturn in the labor market as well as the economic slowdown support the disinflation outlook.

The global outlook is especially uncertain, with the possible ending of the benign period for emerging economies. Normalization of the monetary policy of the United States has resumed. Furthermore, uncertainties remain about the outlook for some advanced economies.

1.1 Global Outlook

Economic growth has accelerated in the United States and the Euro Area in the third quarter of 2016, as opposed to a moderation of economic activity in the United Kingdom and Japan. Highlights in the United States were the contributions of the external sector, inventories and household consumption, favored by improved labor market conditions and

1/ The analyses in this chapter consider December 15th as the cut-off date.

by the upward movements in the stock market and real estate prices. In the Euro Area, the acceleration of economic growth has reflected the boost in both government and private sector consumption, while in Japan the contribution of the external sector has been important. In China, fiscal policy stimulus contributed for the achievement of the economic growth target for 2016 and continued to support metallic commodities prices, which has also been influenced by the result of the elections in the United States, considering the prospect of higher infrastructure spending. Estimates of the United States' GDP have been revised upwardly, following expectations of a more expansive fiscal policy in 2017.

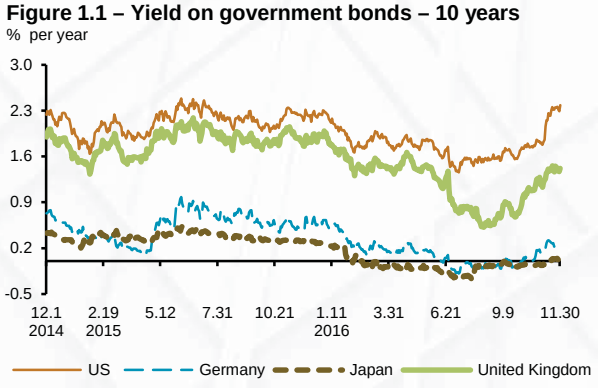
In a context of stronger economic activity and higher inflation in the United States, the prospect of rising fed funds rates came into effect in mid-December. At the end of the quarter up to November, annual returns of 10-year U.S. sovereign bonds have increased. This movement was followed by similar British and, to a lesser extent, German bonds, both still influenced by lower inflation rates – although the deflation risk has diminished – and policies of assets' acquisition promoted by the respective central banks.

At the same time, in this context of widening interest rate differentials, the U.S. dollar resumed its appreciation against other currencies – the dollar index reaching its highest level since March 2003 on the last days of November.

In this environment, the Standard and Poor's 500 (S&P500) index has reached a record level in the last days of November, with gains in the financial and energy sectors standing out. The Nikkei index in Japan posted expressive gains in the quarter up to November, responding to the strong devaluation of the yen, especially after the elections in the United States; Germany's Deutscher Aktienindex (DAX) index has been relatively stable. The Chicago Board Options Exchange Volatility Index (VIX) returned to a similar level as of the beginning of the period, after oscillating up, in the pre-election period, and down afterwards.

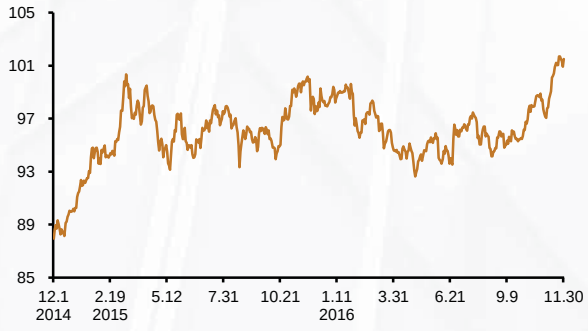
In emerging market economies, risk indicators and asset prices were affected by the steepening of the U.S. yield curve. Along these lines, after the elections in the United States, stock markets have backed up – with a few exceptions, such as China. The Emerging Markets Bond Index Plus (Embi+) and the Credit

Figure 1.1 – Yield on government bonds – 10 years



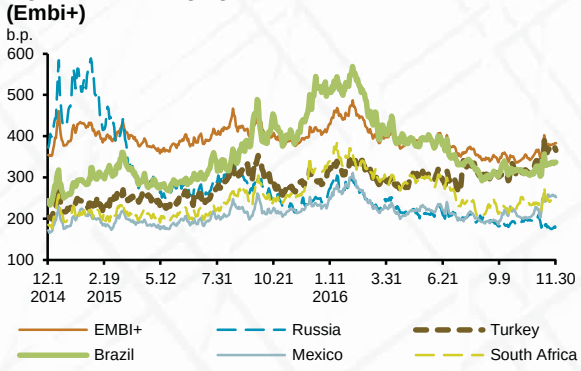
Source: Bloomberg

Figure 1.2 – Dollar Index Major



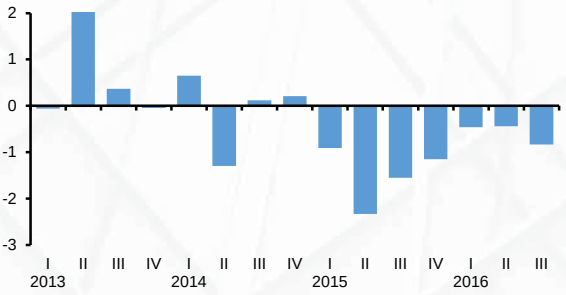
Source: Bloomberg

Figure 1.3 – Emerging Markets Bond Index Plus (Embi+)



Source:Thomson Reuters.

Figure 1.4 – GDP
Quaterly % change - S.A.



Source: IBGE

Table 1.1 – Gross Domestic Product
Quarter/previous quarter
Seasonally adjusted

% growth

	2015		2016		
	III Q	IV Q	I Q	II Q	III Q
GDP at market prices	-1.6	-1.1	-0.5	-0.4	-0.8
Crop and livestock	-2.1	0.4	-3.7	-0.8	-1.4
Industry	-1.5	-2.0	-0.8	1.2	-1.3
Services	-1.1	-0.7	-0.3	-0.6	-0.6
Households consumption	-1.9	-0.4	-1.5	-1.0	-0.6
Government consumption	0.1	-0.9	0.3	0.0	-0.3
Gross fixed capital formation	-3.8	-4.4	-1.6	0.5	-3.1
Exports	0.2	0.5	4.8	-1.8	-2.8
Imports	-6.4	-5.5	-1.5	2.8	-3.1

Source: IBGE

Default Swap (CDS) risk indicators moved upward, while domestic currencies have devalued against the U.S. dollar, especially the Mexican peso. However, rising commodities prices and the prospect of faster economic growth in the United States might benefit emerging market economies in the medium term.

In short, since the last Inflation Report, the probability of acceleration of the U.S. monetary policy normalization process has gained momentum. The global outlook has become more complex and uncertain for emerging market economies, particularly regarding liquidity and risk conditions. In contrast, the outlook for the world economic activity has become more favorable.

1.2 Domestic scenario

Economic activity and labor market

Economic activity performance has been worse than expected in recent months, signaling that the recovery may be futher delayed and be more gradual than previously anticipated. In this sense, the downward revision of GDP estimates for 2016 has influenced projections for 2017[2].

The Central Bank Economic Activity Index – Brazil (IBC-Br) declined 0.96% in the quarter ended in October, compared to a decline of 0.31% in the quarter up to July. Such decline reflected to some extent the dynamics of industrial activity, which receded 3.2% in the quarter up to October, compared to an increase of 2.1% in the quarter up to July, according to seasonally adjusted data of the Monthly Industrial Output (PIM-PF), from the Instituto Brasileiro de Geografia e Estatística (IBGE). Mining production growth decelerated from 3.0% to 0.4%, while manufacturing declined by 3.2%, reflecting contractions in capital goods (5.4%), with fluctuations in investment, non-durable (3.3%) and durable consumer goods (2.9%), all consistent with the recent performance of household consumption.

Business confidence indicators and industrial stock levels, in spite of recent fluctuations, point to enhanced confidence and persistent inventory adjustment, thus signaling improved prospects for

2/ See box Review of GDP Projections for 2016 and 2017, page 27 of this Report.

Figure 1.5 – Central Bank Index of Economic Activity – IBC-Br
Seasonally adjusted data

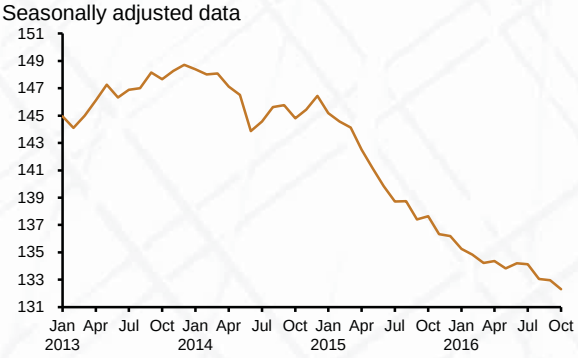
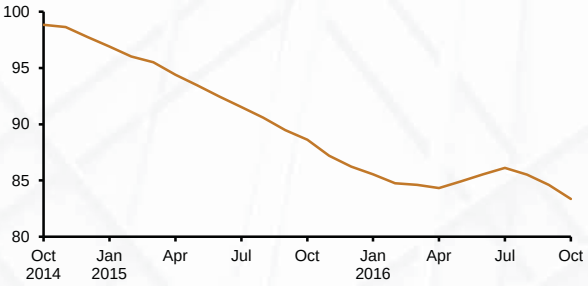
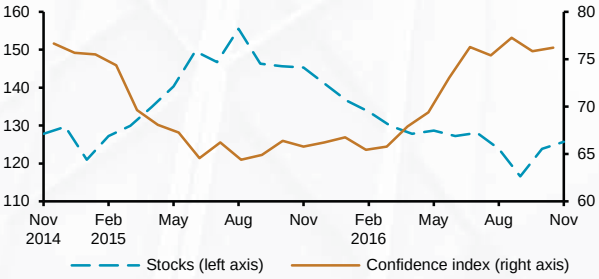


Figure 1.6 – Industrial production[1/]
Total (3MMA)
2012 = 100



Source: IBGE
1/ Seasonally adjusted data.

Figure 1.7 – Confidence and stocks[1/]
Manufacturing industry
2010 = 100



Source: FGV
1/ Seasonally adjusted data.
2/ Stock index calculted as 200 - released stock index

Table 1.2 – Volume of services

3-Month Period/Previous 3-Month Period[1/]

	2016			
	Jul	Aug	Sep	Oct
Total	-0.4	-0.7	-0.6	-2.2
Services rendered to families	-5.2	0.0	1.0	0.1
Information and communication services	0.2	0.1	-0.1	-1.4
Professional, administrative and complementary services	-2.0	-1.1	0.1	-0.2
Transportation, support activities for transportation and mailing activities	-0.5	-0.2	0.2	-2.1
Other services	-2.8	-3.1	-1.0	-2.3

Source: IBGE
1/ Seasonally adjusted data.

industrial activity in the quarters ahead. The Industrial Confidence Index (ICI)[3] increased 1.7 points to 87 points in the quarter up to November, according to Fundação Getúlio Vargas (FGV) seasonally adjusted data, reflecting elevation on indicators of durable consumer goods (7.9 points), intermediate goods (1.8 points) and non-durable consumer goods (1.1 points), as well as a reduction of 2.6 points on capital goods. The ICI has decreased in October and recovered somewhat in November, a trajectory observed on both of its components.

The services sector continues to reflect the performance of industry and the impact of the labor market downturn on disposable income. In this context, the volume indicator of the services sector volume, as measured by the IBGE Monthly Service Survey (PMS), receded 2.2% in the quarter up to October – a more intense slowdown than in the quarter up to July – with emphasis on the decrease in other services (2.3%).

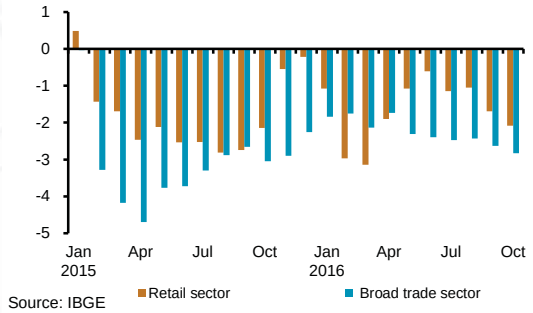
The FGV's Service Confidence Index (ICS) increased by 3.3 points in the quarter up to November, compared to the quarter up to August, when it increased by 6.2 points, a deceleration partially associated with the weak activity performance. The expectations indicator increased by 5.2 points while the current situation indicator increased by 1.2 points. At the margin monthly figures receded in October and November, driven by the negative performance of the expectations component.

On the demand-side, recent GDP data reflected the unfavorable scenario for household consumption, which fell by 0.6% in the third quarter, according to seasonally adjusted data, posting the seventh consecutive decline in this basis of comparison.

Household consumption follows a trend that is consistent with recent results of retail sales. According to seasonally adjusted data from the IBGE's Monthly Commerce Survey (PMC), expanded retail sales declined 2.8% in the quarter up to October, compared to the quarter up to July, when sales decreased by 2.5%, in the same basis of comparison. All ten segments surveyed posted reductions, especially the automobiles, motorcycles and parts segment (4.3%) and textiles, clothing and footwear

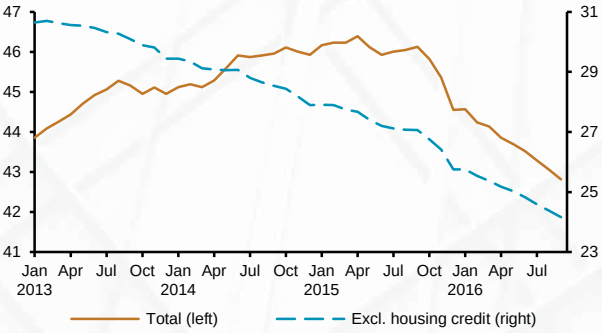
3/ Readings above 100 points indicate an optimistic sentiment.

Figure 1.8 – Retail sales
Seasonally adjusted data
3-Month Period/Previous 3-Month Period
% change



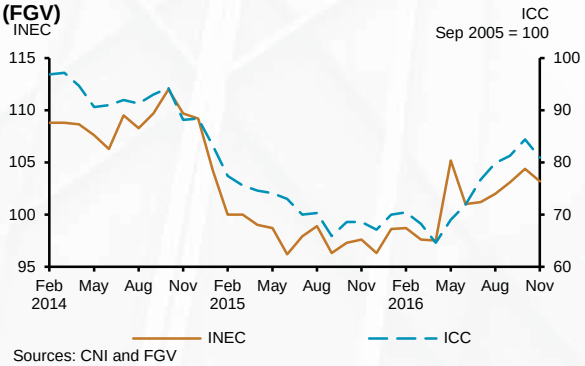
Source: IBGE

Figure 1.9 – Household indebtedness
% of total income in the last 12 months



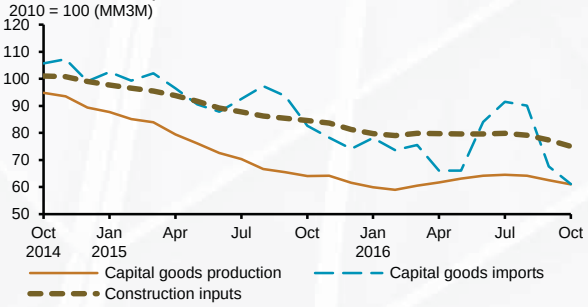
Source: BCB

Figure 1.10 – National Index of Consumer Expectations (CNI) and Consumer Confidence Index (FGV)



Sources: CNI and FGV

Figure 1.11 – Investments[1/]
Production and Imports of capital goods and Construction inputs
2010 = 100 (MM3M)



Source: IBGE, Funcex
1/ Seasonally adjusted data.

(4.4%). Retail sales[4] declined by 2.1% in that period.

Consumption, in the last quarters, has been reflecting prevailing conditions in the labor market – high level of unemployment rate and declining real income – and credit, as well as a high level of household indebtedness. In this sense, the recent decline in this indicator tends to generate positive effects on household consumption in the medium term.

In addition, it is worth noticing that confidence indicators continue to signal a recovery trend of consumer optimism, mainly driven by expectations components. The Consumer Confidence Index (ICC), from FGV, increased by 4.9 points in the quarter up to November, compared to the quarter up to August – the sixth consecutive monthly increase in this comparison basis. The Current Situation Index (ISA) increased by 1.7 points and the Expectations Index (IE), by 7 points. In the same direction, the National Consumer Expectations Index (Inec), published by the National Confederation of Industry (CNI), increased by 6.5 points in the quarter up to November, compared to the same period of the previous year.

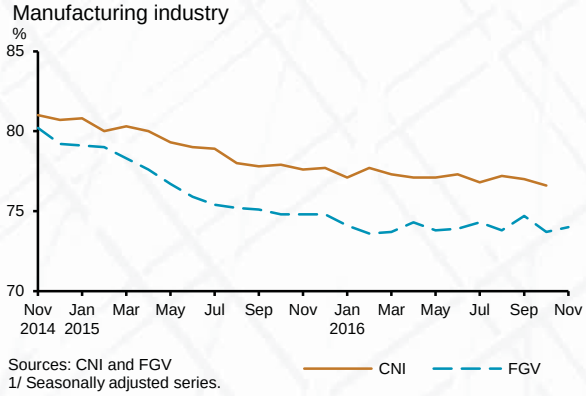
These two above-mentioned indicators posted monthly retractions in November, fundamentally associated, in the scope of the ICC, with the reduction of 4.9 p.p. in the expectations component.

Gross Fixed Capital Formation (GFCF) receded in the third quarter, after the interruption of a long declining sequence in the second quarter. Recent data suggest the persistence of negative prospects. In this sense, production and import of capital goods and the production of construction inputs decreased by 5.4%, 33.2% and 6.1% in the quarter up to October, compared to the quarter up to July. The decline in capital goods production reflected mainly the weak performance in the categories of goods for construction, for mixed and typically industrial use, and of transportation equipment.

The Brazilian economy still operates with a high degree of economic slack, with low levels of capacity utilization and, especially, high unemployment rates.

4/ Concept that excludes from the broad trade the vehicles, motorcycles and parts segment, and construction material.

Figure 1.12 – Capacity utilization
Manufacturing industry

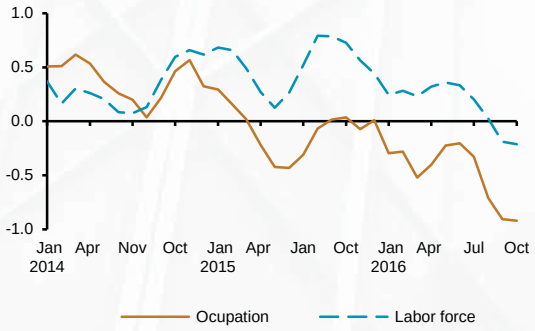


Sources: CNI and FGV
1/ Seasonally adjusted series.

Figure 1.13 – Unemployment rate

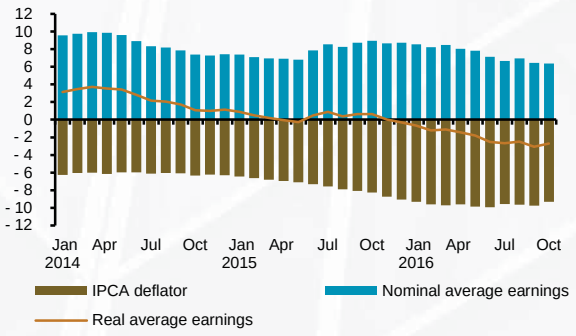
Source: IBGE (Continuous National Household Sample Survey).

Figure 1.14 – Employed population and Labor Force
Quater-over-quater change – %



Source: IBGE (Continuous National Household Sample Survey).

Figure 1.15 – Real and nominal earnings and IPCA
Accumulate at four quaters change – %



Source: IBGE (Continuous National Household Sample Survey).

The average level of the Capacity Utilization Index (NUCI) in manufacturing increased by 0.1 p.p. in the quarter up to November, compared to the previous quarter, averaging 74%, according to seasonally adjusted data from the FGV's Industry Survey. The indicator remains in a low level, suggesting the absence of supply restrictions for the recovery of the industrial activity.

The unemployment rate, as measured by the Continuous National Household Sample Survey (Continous PNAD), from IBGE, has reached 11.8% in the quarter up to October (11.6% up to July and 8.9% up to October 2015). The increase has been mainly driven by the occupied population (PO), which fell by 0.7% in the quarter and by 1.8% in twelve months, compared to respective variations of -0.4% and 1.4% in the labor force.

Formal labor market dynamics remain adverse, although the reduction of formal jobs has been slower than it was in 2015. According to the Employed and Unemployed Individuals General Registry (Caged), from the Ministry of Labour and Social Security (MTPS), 148,000 jobs were lost in the quarter up to October (351,300 in the same period of 2015). There were significant net losses in construction (83,200), services (48,500) and agriculture (36,100). Conversely, there was net hiring in commerce (17,300 jobs) and industry (10,100 jobs). In 2016, up to October, 792,300 formal jobs were eliminated, compared to 898,700 jobs in the same period of 2015.

Real average earnings declined by 1.3% in the quarter up to October, compared to the same period of 2015, according to PNAD Contínua data, contributing to a 3.2% decrease on real total wages in that period. At the margin, the above-mentioned indicators increased by 0.9% and 0.3% compared to the quarter up to July, partly favored by the ongoing disinflationary process. However, as the labor market lags economic activity, this marginal improvement should be considered cautiously.

Figure 1.16 – Interest rates – Credit to households

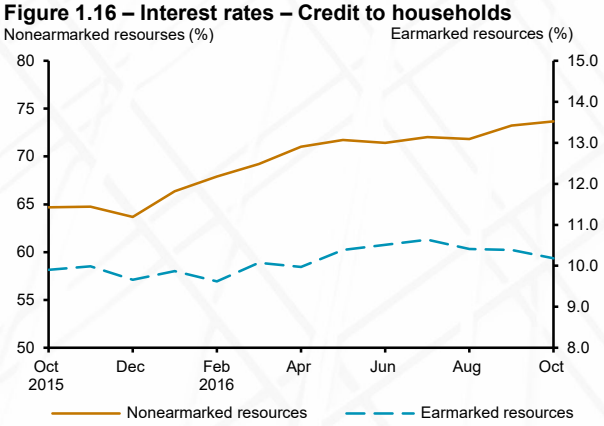


Figure 1.17 – Interest rates – Credit to non-financial corporations

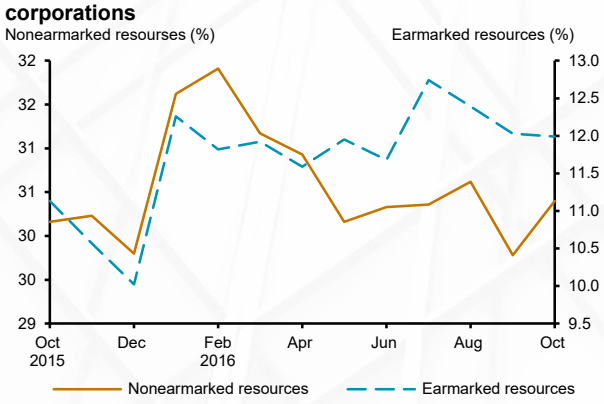
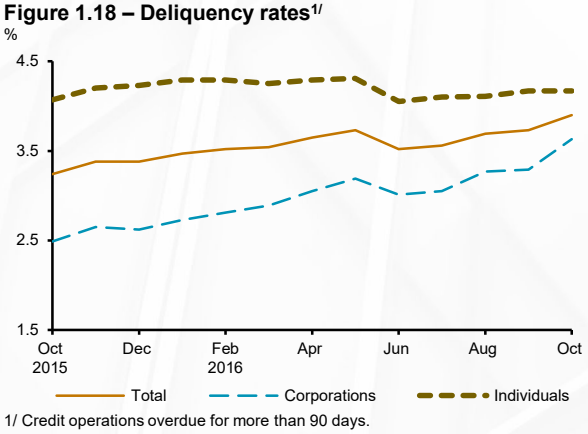


Figure 1.18 – Deliquency rates[1/]



1/ Credit operations overdue for more than 90 days.

Credit

The credit market continued to decelerate in the quarter up to October, in an environment of higher interest and delinquency rates. Total stock of corporations' loans declined by 1.9% while the total stock of loans to households increased by 0.5%. New transactions as of this quarter decreased in both segments partly reflecting the effects of banking sector union strikes in September and October. In this context, the Credit/GDP ratio remains on a declining trend since January. This ratio receded from 54.5% in December 2015 to 50.3% in October 2016.

Interest rates on loans to households increased by 0.3 p.p., driven by increasing rates on overdraft and personal loans. Interest rates charged on non-financial corporations decreased by 0.4 p.p. – driven by loans to fixed capital investments with BNDES funding – after significant increase in the quarter up to July.

The delinquency rate of total financial system loans, considering loans overdue more than ninety days, increased by 0.3 p.p. in the last quarter, as a result of 0.1 p.p. increase on loans to households and a 0.6 p.p. increase on loans for corporations, driven by increases on earmarked operations (0.2 p.p. and 0.7 p.p. respectively). Increasing delinquency rates on corporations loans are in part associated to the slower than expected recovery of economic activity.

Fiscal

The public sector posted a 2.23% of GDP deficit in the 12-month period up to October, compared to a deficit of 1.58% of GDP in 2015. In this environment, the approval of the Constitutional Reform Proposal (PEC) that regulates the expansion of government spending and the proposal for the reform of social security – forwarded to the National Congress on December 6 – are essential for the gradual recovery of the fiscal equilibrium and the resumption of a benign trajectory for net and gross debt indicators. Adjustment, in this context, will contribute significantly to the recovery of economic activity.

External demand and Balance of Payments

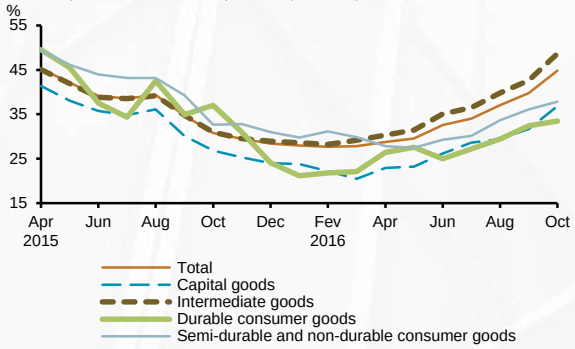
Table 1.3 - Balance of Payments

US$ billion

Itemization	2015			2016	
	Nov	Jan-Nov	Year	Nov	Jan-Nov
Current account	-2.9	-56.4	-58.9	-0.9	-17.8
Balance on goods	0.9	11.6	17.7	4.5	40.8
Exports	13.7	173.4	190.1	16.1	168.6
Imports	12.8	161.8	172.4	11.6	127.7
Services	-2.3	-34.4	-36.9	-2.3	-27.1
Primary income	-1.7	-35.9	-42.4	-3.3	-34.3
Secondary income	0.2	2.3	2.7	0.3	2.7
Financial account	-3.0	-54.3	-54.7	-0.7	-11.3
Direct investments	-5.9	-49.0	-61.6	-8.5	-55.8
Abroad	-1.0	10.8	13.5	0.2	7.9
In Brazil	4.9	59.9	75.1	8.8	63.7
Portfolio investments	-6.1	-24.2	-22.0	0.1	18.0
Derivatives	-0.3	3.2	3.4	0.3	-1.1
Other investments	11.3	14.2	23.9	6.7	18.9
Reserve assets	-1.9	1.6	1.6	0.8	8.6
Memo:					
Current account / GDP		-3.4	-3.3		-1.1

Figure 1.19 – Imports – Index of dissemination

3-month period over the same period in previous year



Source: BCB

The reduction of the current account deficit has decelerated but remains ongoing. The trade balance surplus increased and the deficits in the services and primary income accounts have declined in 2016 up to November, compared to the same period of 2015, in a scenario of depreciation of the domestic currency and retraction in economic activity. However, at the margin, some accounts, more linked to the economic activity and the exchange rate, show signs of inflection. Gross expenditures on international travel, for instance, which declined on year-on-year comparisons during the first half of the year, have increased for four months since August. Such tendency suggest the proximity of the bottoming out of the 12-month current account deficit, which, after reaching 4.4% of GDP in April 2015, declined to 1.1% of GDP in November 2016. The current account deficit is expected to increase moderately in 2017, in line with the expected recovery of the domestic demand.

In this context, although the positive contribution of the external sector to the GDP in the third quarter of 2016 has been driven, mainly, by declining imports – consistent with the performance of the manufacturing industry and the GFCF – its retraction has been less strong, and a greater number of goods increased their volume. In fact, during the first quarter of 2016, more than 70% of the products imported[5] posted declines in volume, the lowest level in the time series. This participation declined to around 55% in the quarter up to October 2016. Although total quantum variation remains negative, there are some signals of reaction, especially regarding intermediate goods.

In the financial account, net incurrence of liabilities exceeded net acquisition of financial assets in US$11.3 billion in 2016 up to November, signaling continuity of net capital inflows, albeit lower than inflows in the same period of 2015. Direct investments in the country, widely spread among economic activity sectors, remained sufficient to comfortably finance the current account deficit and.

Significant outflows of fixed-income securities traded in the country result from large inflows in previous years and the possibility of profit making,

5/ The Brazilian import content consists of almost 8,000 goods' codes, according to the Mercosur Common Nomenclature (NCM).

in addition to the lagged impacts of the sovereign ratings' downgrade. Regarding conditions for companies resident in Brazil to raise funds in international markets, improvements at the margin have contributed in two ways. Firstly, by the long-term rollover rates of direct loans and securities traded in the international market. These rates increased in the third and fourth quarters often accompanied by lengthening maturities. Secondly, by increasing intercompany loans inflows, largely in consequence of the internalization of revenues from subsidiaries abroad to their headquarters in Brazil. External indebtedness of non-financial corporations in foreign currency, declined slightly in the quarter up to September, compared to the quarter up to 2015.

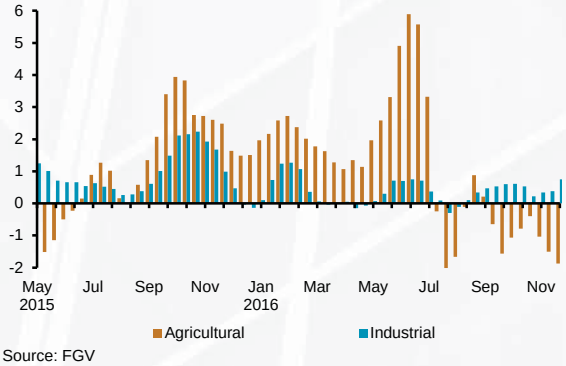
Brazilian external accounts remain on a favorable trend. The current account deficit is expected to decline from 3.3% of GDP in 2015 to 1.2% of GDP in 2016, financed by strong direct investment inflows – 4.2% of GDP in 2015 and 3.9% of GDP in 2016. The stock of international reserves – at the liquidity concept – accounted for 21% of GDP, equivalent to 32 months of imports of goods and 3.0 times the amount of external debt maturing over the next twelve months. The stock of foreign debt issued abroad, excluding operations between companies of the same economic group, has reached 19.0% of GDP in September, remaining virtually stable in comparison to the end of 2015.

1.3 Inflation and market expectations

Consumer inflation came below expectations in the quarter up to November, favored by the reversal of food price increases and, to a lesser extent, by more muted increases in prices of services and industrial goods. In this context, IPCA projections for 2016 and 2017 from the Focus survey have decreased, contributing along with current inflation reduction to contain the effects of inertial mechanisms on price formation.

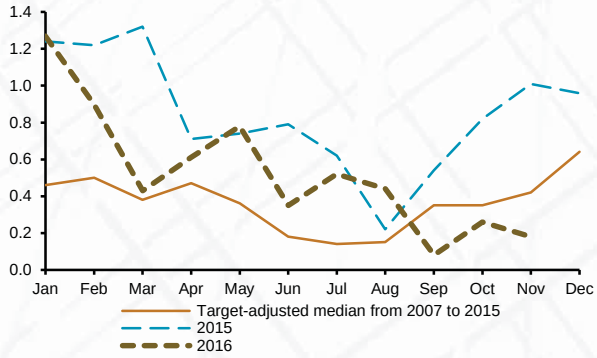
On the other hand, signs of pause, at the margin, in the process of disinflation of some IPCA components that are most sensitive to the business cycle and monetary policy persist – a development in line with the recent behavior of wages.

Figure 1.20 – IPA-10, IPA-M and IPA-DI
Monthly % change



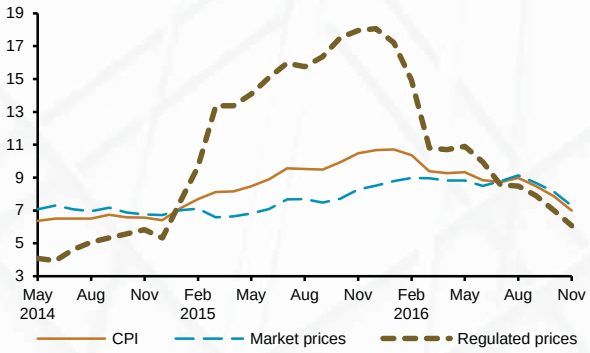
Source: FGV

Figure 1.21 – CPI - Seasonal pattern
Monthly % change



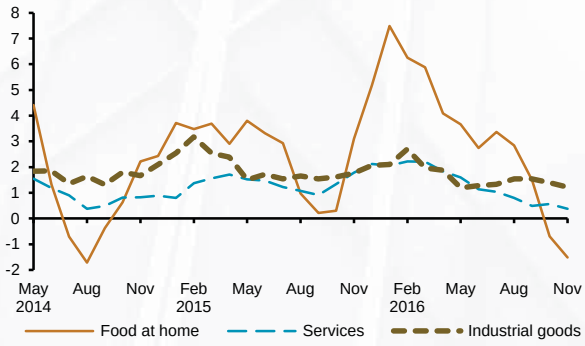
Source: IBGE and BCB

Figure 1.22 – CPI trajectory
% change in 12 montths



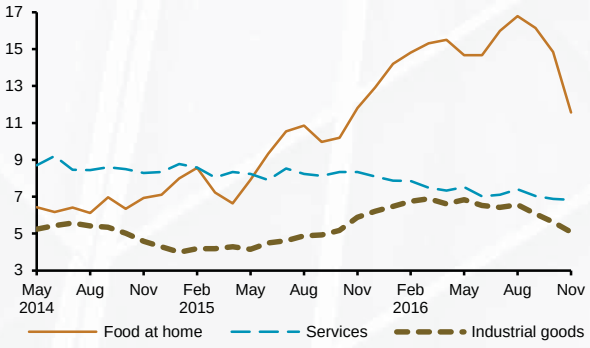
Source: IBGE and BCB

Figure 1.23 – Market prices trajectory
% change in 3 months



Source: IBGE and BCB

Figure 1.24 – Market prices trajectory
% change in 12 months



Source: IBGE and BCB

The Wholesale Price Index (IPA) remained stable in the quarter up to November, compared to an 1.78% increase at the end of August. There was a reversal in agricultural price inflation, from 4.36% to -3.79%, and an acceleration in industrial prices, from 0.75% to 1.58%. The decline in agricultural prices was widespread, especially in products that are relevant for IPCA dynamics, such as beans (39.40%), potatoes (28.37%), tomatoes (28.01%) and raw milk (17.16%), items that have increased significantly in previous months. A significant part of the transmission of this decline from wholesale to the retail segment has already occurred. However, some prices are still at a high level, which may contribute to food inflation falling short of the seasonal pattern in the upcoming quarters.

Consumer price indexes

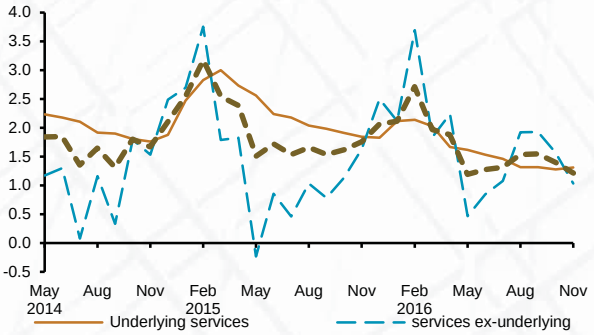
The Extended National Consumer Price Index (IPCA), published by the IBGE, reached 0.52% in the quarter up to November (1.32% in August), significantly below the historical median (1.12%) consistent with the mid-point of the inflation target[6]. The benign behavior of the IPCA in this quarter reflected the deceleration of market prices (from 1.62% to 0.33%), a movement mitigated by the acceleration of regulated prices (from 0.40% to 1.13%). Considering 12-month periods, the IPCA dropped from 8.97% in August to 6.99% in November, reflecting the slowdown of market prices (from 9.13% to 7.28%) and of regulated prices as well (from 8.49% to 6.07%).

The market prices trajectory in the quarter reflected the reversal in changes of the prices in the food at home subgroup (from 2.84% to -1.51%) and the deceleration in services (from 1.55% to 1.21 %) and industrial goods (from 0.80% to 0.38%).

Variations on the prices of the food at home subgroup were well below the seasonal pattern, in the midst of the progressive normalization of food supply conditions, affected by the dissipation of the *El Niño* effects on the supply of crop and livestock goods. The 12-month food inflation declined from 16.79% in August to 11.56% in November, a movement that will expectedly persist in the next quarter as high monthly rates observed in the same period of the previous year will no longer be weigh in this indicator.

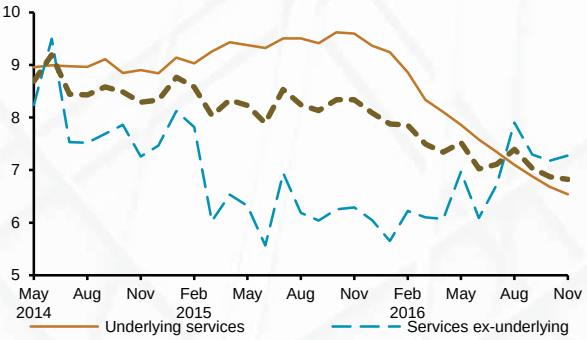
6/ Seasonal pattern obtained on the basis of monthly medians for the period from 2007 to 2015, adjusted to accumulate to 2.5% in the year.

Figure 1.25 – Services inflation
% change in 3 months



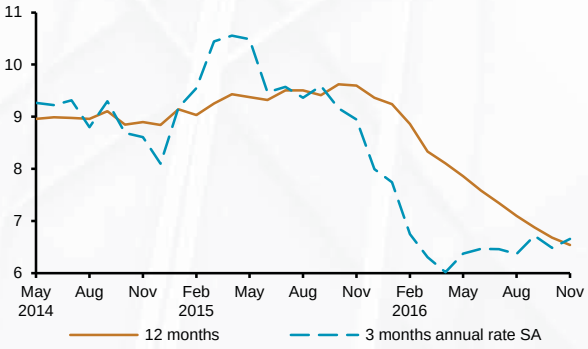
Source: IBGE and BCB

Figure 1.26 – Services inflation
% change in 12 months



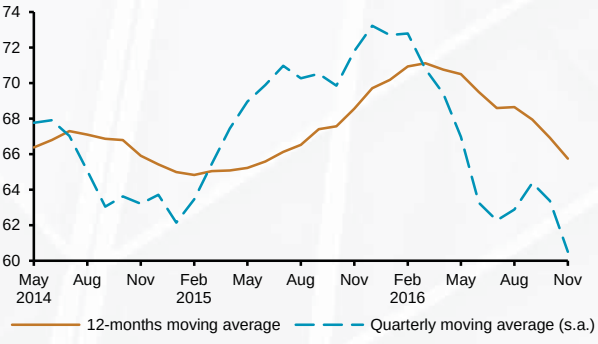
Fonte: IBGE e BCB

Figure 1.27 – Underlying services inflation
% change



Source: IBGE and BCB

Figure 1.28 – Diffusion index - IPCA
% of subitems with monthly increase



Source: IBGE and BCB

The deceleration of services inflation in the quarter up to November was driven by temporary factors, such as the reversal of increases in tourism prices and the exhaustion of the effects of seasonal price adjustments on education.

12-month services inflation declined to 6.82% in November, down from 7.40% in August. The services sector underlying inflation has also declined in twelve months, in spite of some resistance at the margin.

In the industrial goods segment, the highlight was the apparel and cigarette prices reduction, sharper than the seasonal pattern but in line with the declining trend of demand. Industrial goods 12-month inflation, which peaked at 6.89% in March, influenced by the exchange rate depreciation of 2015, are on a declining trend, reaching 6.56% in August and 5.08% in November.

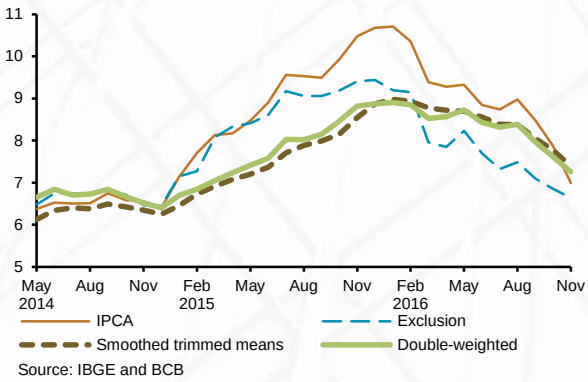
The quarterly acceleration of regulated prices largely reflected the effects of the yellow flag on electricity prices by the Brazilian Electricity Regulatory Agency (Aneel) and the increase in anhydrous ethanol price and its effects on gasoline prices. Despite the increase in the quarter up to November, regulated prices 12-month inflation continued to slow down, benefitting from the removal of higher figures at the end of 2015, a critical period of the domestic prices realignment.

Diffusion index and core inflation measures

The diffusion index, which measures the participation of IPCA components with positive price changes, averaged 57.64% in the quarter up to November (59.43% up to August and 70.51% in the same period of 2015), the lowest level for this quarter since 2009. The recent figures of the diffusion index suggest dissemination of the disinflation process among IPCA components, a performance consistent with the economic cycle and the convergence to the inflation target.

Core inflation indices in different calculation criteria, which reflect with less intensity temporary factors, have declined in quarterly changes. 12-month changes continue to slow down, although remaining

Figure 1.29 – Core inflation
12-month % change



Source: IBGE and BCB

above the inflation target.

The core IPCA excluding ten items of the food at home and fuels subgroups increased by 0.82% in the quarter up to November (1.22% in the end of August 2016). In the 12-month period up to November this indicator reached 6.64% (7.48% in August).

The core inflation index calculated according to the smoothed trimmed means[7] increased by 1.13%, compared to 1.66% in the quarter up to August, while the non-smoothed, 0.87% and 1.12%, respectively. In the twelve months up to November, these indices varied by 7.39% and 6.05%, respectively (8.37% and 6.97%, in order, until August).

The double-weighted inflation core[8] index increased 1.08% in the quarter, compared to 1.52% up to August. This indicator accumulated a 7.26% variation in the twelve months up to November, compared to 8.38% up to August.

Market expectations

According to the Focus survey, the median projections for the annual variation of the IPCA in 2016 and 2017 decreased between the end of September and the December 15th report, while those relative to 2018 and 2019 remained at 4.50%. The median of inflation expectations twelve months ahead – smoothed – declined from 5.15% to 4.87% in the same period.

The medians of estimates for the *Índice Geral de Preços-Mercado (IGP-M)* variation in that 4-year period also retreated, notably with the projection for 2016 declining by 0.99 p.p.

The median of estimates for the *Índice de Preços ao Produtor Amplo-Disponibilidade Interna (IPA-DI)* also decreased in that period, with projections for 2017 and 2018 remaining at 5.51% and 5.00%, respectively, while the projections for 2019 decreased 0.25 p.p., to 4.60%.

7/ The criterion used to calculate this indicator excludes items whose monthly variation is situated above the 80th percentile or below the 20th percentile in the distribution, besides smoothing over twelve months the fluctuation of items whose variations are concentrated in a few periods of the year.

8/ The criterion used to calculate this indicator consists of reweighting the original weights – based on the importance of each item to the IPCA basket – by their respective degrees of relative volatility, a procedure that reduces the importance of more volatile components.

Table 1.4 – Summary of market expectations

	6.30.2016		9.30.2016		12.15.2016	
	2016	2017	2016	2017	2016	2017
In percentage						
IPCA	7.27	5.50	7.23	5.07	6.50	4.90
IGP-M	9.32	5.62	8.01	5.50	7.02	5.07
IPA-DI	8.79	5.60	8.26	5.51	6.96	5.51
Regulated Prices	6.99	5.50	6.20	5.50	6.00	5.50
Selic (end-of- period)	13.25	11.00	13.75	11.00	-	10.50
Selic (average)	14.06	11.67	14.16	11.77	-	11.63
GDP growth	-3.39	1.00	-3.14	1.30	-3.48	0.59
In BRL/US$						
Exchange rate (end-of-peri	3.50	3.70	3.25	3.40	3.38	3.50
Exchange rate (average)	3.52	3.61	3.44	3.36	3.46	3.42

	6.30.2016		9.30.2016		12.15.2016	
	2018	2019	2018	2019	2018	2019
In percentage						
IPCA	4.80	4.50	4.50	4.50	4.50	4.50
IGP-M	5.00	4.88	5.00	4.70	4.82	4.50
IPA-DI	5.00	5.00	5.00	4.85	5.00	4.60
Regulated Prices	4.70	4.50	4.60	4.50	4.55	4.50
Selic (end-of- period)	10.50	10.00	10.00	10.00	9.88	9.50
Selic (average)	10.75	10.25	10.43	10.00	10.00	9.54
GDP growth	2.00	2.00	2.01	2.50	2.30	2.50
In BRL/US$						
Exchange rate (end-of-perioc	3.78	3.89	3.55	3.60	3.50	3.60
Exchange rate (average)	3.75	3.80	3.50	3.60	3.50	3.55

In the same period, the median of expectations for changes in regulated or contract monitored prices fell by 0.20 p.p. to 6.00% in 2016 and by 0.05 p.p. to 4.55% in 2018, while medians for 2017 and 2019 remained in 5.50% and 4.50%.

As projected by the market, the exchange rate medians for the end of 2016 and 2017 reached R$3.38/US$ and R$3.50/US$ on December 15 (R$3.25/US$ and R$3.40/US$, respectively, at the end of September). For 2018 and 2019, projected medians reached R$3.50/US$ and R$3.60/US$ (R$3.55/US$ and R$3.60/US$, respectively, at the end of September).

The median projections for 2016 and 2017 exchange rates averaged R$3.46/US$ and R$3.42/US$ (R$3.44/US$ and R$3.36/US$, respectively, on September 30). The medians of projections for the exchange rate of 2018 and 2019 averaged R$3.50/US$ and R$3.55/US$ (R$3.50/US$ and R$3.60/US$, respectively, on September 30).

Transition rates and the evolution of unemployment

The unemployment rate estimated by the Continuous National Household Sample Survey (PNADC) increased from 7.1% in September 2012 to 11.8% in September 2016, a period in which the employed population fell by 0.3% while the workforce and the working age population increased by 5.1% and 5.7%, respectively. In this context, this box analyzes the evolution of transition rates among the various population categories that contributed to the growth of the unemployment rate in Brazil[1]

Initially, a simplified transition probability model, common in the specialized literature, in which individuals can belong to only two categories (employed or unemployed), was used. In this model, the evolution of the unemployment rate is determined by the differential equation (1), which has an analytical solution for the case where the transition rates remain constant between two consecutive periods (2).

Model:

$$(1) \quad \frac{du}{dt} = f_{e,u} \cdot (1 - u) + f_{u,e} \cdot u$$

u = unemployment rate

$f_{e,u}$ = transition rate from employment to unemployment

$f_{u,e}$ = transition rate from unemployment to employment

Analytical solution:

$$(2) \quad u(t) = \beta(t) \cdot u^* + (1 - \beta(t)) \cdot u(t = 0)$$

$$u^* = \frac{f_{e,u}}{f_{e,u} + f_{u,e}}$$

$$\beta(t) = 1 - e^{-t(f_{e,u} + f_{u,e})}$$

1/ This type of analysis based on population flows is common in the labor market literature and is usually referred to as "flow approach" or "the ins and outs of unemployment".

Using (2), the unemployment rate in the following quarter (T + 1) is calculated from the unemployment rate in the current quarter (T) and the transition rates from employment to unemployment and vice versa. Transition rates were obtained with the pairing technique (using PNADC microdata), which allows the tracking of the same set of individuals at two points in time[2]. Although this simplified representation of the labor market captured the direction of the changes in the unemployment rate, it underestimated its magnitude in most of the quarters analyzed (Figure 1), suggesting that relevant labor market features had been suppressed.

Seeking a better fit to the observed data, an alternative, more complete model, was proposed. In this model, the population was divided into four categories:

1 – Not in the working age (PNWA)[3];

2 – Not in the workforce (PNWF);

3 – Unemployed (PU); and

4 – Employed (PE).

The evolution of the quantity of individuals in these categories can be represented by a set of differential equations (3) which, although having no analytical solution, can be solved numerically accoding to the set of equations in (4).

Model:

$$(3)\quad \frac{dPOP_j}{dt} = \sum_{\substack{i=1 \\ i\neq j}}^{4} f_{i,j} \cdot POP_i - \sum_{\substack{i=1 \\ i\neq j}}^{4} f_{j,i} \cdot POP_j$$

POP_j = number of people in category j, with j from 1 to 4

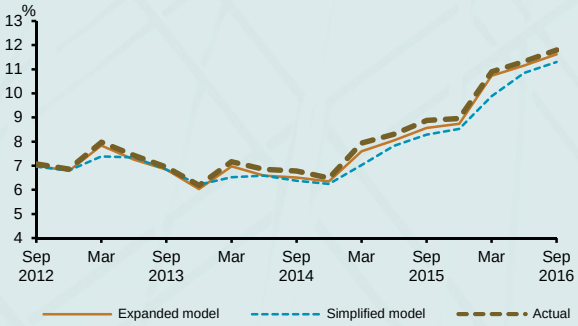
$f_{i,j}$ = transition rate from category i to category j

2/ For more details, see box "Labor market flows in the Brazilian labor market", published in the September 2016 Inflation Report.
3/ Persons under the age of 14 at the date of the survey.

Numerical solution[4]:

$$(4)\ POP_j(t+\Delta t) = POP_j(t) + \Delta t \cdot \left[\sum_{\substack{i=1 \\ i \neq j}}^{4} f_{i,j} \cdot POP_i - \sum_{\substack{i=1 \\ i \neq j}}^{4} f_{j,i} \cdot POP_j \right]$$

Figure 1 - One quarter ahead unemployment rate forecasts

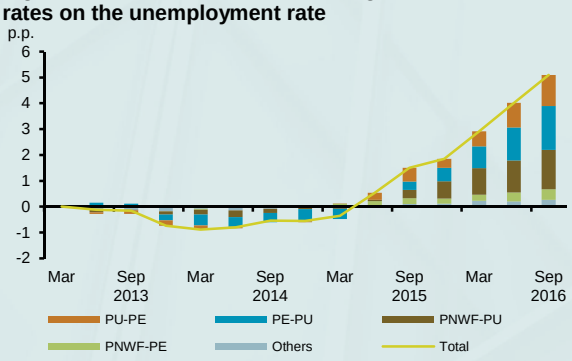


Source: PNADC/IBG.

Unemployment rates obtained by calculating the number of individuals in each category in the T + 1 quarter, from the amounts in the quarter T and the transition rates among the four categories[5] of this methodology, were very close to the observed unemployment rates (Figure 1), confirming that the expanded model would be a more adequate representation of the Brazilian case.

The expanded model was then used for sequential calculations of unemployment rate trajectories, maintaining one of the transition rates as observed in the first year of the PNADC series (2012) and varying the others as they occurred. The differences between the observed unemployment rate and those calculated in this way represent the effect of the deviation of each transition rate from that observed in the first year of the series. By adding these partial effects, we have obtained the combined effect of the deviations of all transition rates in relation to those of 2012.

Figure 2 - Cumulative effect of changes in transition rates on the unemployment rate



Source: PNADC/IBGE.

Figure 2 shows the evolution of the accumulated effect of the deviations of the transitions rates in relation to those of 2012 on the unemployment rate of subsequent periods. The unemployment rate observed in September 2016 was 5.1 pp higher than the one that would have occurred had the transition rates among the various population categories remained unchanged.

As shown in Table 1, most of the growth in the unemployment rate was due to deviations in the transition rates from PE to PU, from PU to PE, and from PNWF to PU and to PE in relation to the first year of the series. The greater difficulty for the unemployed individuals to find a job and for those who were employed to remain in this condition (translated into a reduction of the transition rate from unemployment to employment and

4/ Each quarter was divided into n equal intervals (Δt = 1 / n). We observed that the results do not change significantly for n higher than 10.

5/ Again, the transition rates were obtained through the PNADC microdata pairing technique.

Table 1 – Effect of transition rates trajectories on the unemployment rate

	Transition rates (% p.q.)		Impact on unemployment
	2012	2016[1/]	rate (p.p.)
PU-PE	35.2	29.6	1.2
PE-PU	2.5	3.4	1.7
PNWF-PU	3.5	5.0	1.5
PNWF-PE	10.4	9.4	0.4
Others	--	--	0.3
Total	--	--	5.1

Source: PNADC/IBGE

1/ Average of four quarters up to September 2016.

into an increase in the probability of employed individuals becoming unemployed) resulted in increases of 1.2 pp and 1.7 pp in the unemployment rate, respectively. In addition, the increase in the transition rates of individuals out of the workforce to unemployment and the reduction of their insertion in the employment produced together a 1.9 pp growth in the unemployment rate, representing about 38% of the total increase.

In summary, the flow approach was used to assess the contributions of changes in transition rates for the unemployment rate increase observed between 2012 and 2016. From this perspective, the increase in the unemployment rate was related to the growth in the flow of individuals from outside the workforce who could not find a job, to the increase in the flow of workers who could not reposition themselves in the labor market, and to the reduction in the flow of unemployed people who could find a job in the subsequent quarter.

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Revision of GDP forecasts for 2016 and 2017

This box updates the Central Bank's forecasts for GDP growth in 2016 and 2017.

GDP forecast for 2016

The projection for 2016 GDP growth was revised to -3.4%, from -3.3% in the previous report, incorporating the results of the third quarter of the year, released by the Brazilian Institute of Geography and Statistics (IBGE), the revision in the historical data of the national accounts, and the available statistics for the fourth quarter.

Crop and livestock sector is expected to fall 5.9%, compared with a previous forecasted decline of 2.2%, consistent with the worsening of estimates of grain harvest for this year by the IBGE's Systematic Agricultural Survey (LSPA), as well as a worse than expected result in the third quarter. The projection for industrial output was revised from -3.3% to -3.5%, reflecting the worsening in the forecast of civil construction, from -3.6% to -4.5%, and production and distribution of electricity, water and gas, from +5.8% to +4.5% and the improvement in the forecast of manufacturing, from -5.0% to -4.8%, and mining, from -4.6% to -3.1%.

Services are expected to decrease 2.5%, compared with a previously forecasted decline of 2.7%, with emphasis on the upward revision in public administration, health and education, from -0,9% to -0,1%, other services, from -3.0% to -2.8%, and financial intermediation and related services, from -2.9% to -2.5%.

On the domestic components of the demand-side, it is worth mentioning the downward revision, from -8.7% to -10.1%, in the forecast of Gross Fixed Capital Formation (GFCF), consistent with the negative results in capital goods' absorption and civil construction. The forecast of household

consumption was revised from -4.4% to -4.2%, in line with a smaller than expected decline in the third quarter.

Regarding the external component of the aggregate demand, the annual variation of exports was revised by -1.6 p.p. to 3.1%, and that of imports, by -0.3 p.p. to -10.5%.

The contribution of domestic demand to the 2016 GDP growth is estimated at -5.3 p.p., and that of the external sector, at 1.9 p.p.

GDP forecast for 2017

GDP is expected to grow 0.8% in 2017 (1.3% in the September report), consistent with the higher probability that the recovery of the economic activity will be slower and more gradual than previously expected.

On the supply side, it is worth highlighting the expected growth of 4.0% in crop and livestock sector, consistent with the first harvest prognosis released by IBGE in November.

The industrial sector is expected to grow 0.6%, envisaging growth of 1.0% in manufacturing, consistent with a scenario of improving industrial confidence and decreasing inventories; and of 2.0% in production and distribution of electricity, water and gas, in line with the expected increase in the electricity consumption. It also reflects the projection of -0.5% in civil construction, compatible with the negative dynamics of the residential segment and the decline in infrastructure expenditures, in an environment of fiscal adjustment at both national and state level governments. The forecast for mining production considers stability for 2017, in line with the production target of oil and iron ore announced by the leading companies in each sector.

Services are expected to grow 0.4%, consistent with a positive performance of the sectors more related to industry, such as transportion, storage and mailing and other services.

On the demand-side, the forecast envisages a modest recovery on household consumption (0.4%),

Table 1 – Gross Domestic Product
Accumulated in 4 quarters

% growth

	2016		2017
	III Q	IV Q[1/]	IV Q[1/]
Crop and livestock	-5.6	-5.9	4.0
Industry	-5.4	-3.5	0.6
Mining	-4.8	-3.1	0.0
Manufacturing	-8.0	-4.8	1.0
Construction	-4.6	-4.5	-0.5
Public utilities	4.4	4.5	2.0
Services	-3.2	-2.5	0.4
Commerce	-8.5	-6.0	0.8
Transportation	-7.5	-6.4	0.4
Communications	-3.2	-2.5	0.7
Financial institutions	-2.1	-2.5	0.6
Other services	-3.4	-2.8	0.5
Rents	0.0	0.2	0.3
Public administration	0.2	-0.1	0.1
Value added at basic prices	-3.8	-2.9	0.7
Taxes on products	-8.3	-6.3	1.3
GDP at market prices	**-4.4**	**-3.4**	**0.8**
Households consumption	-5.2	-4.2	0.4
Government consumption	-0.9	-0.5	0.5
Gross fixed capital formation	-13.5	-10.1	0.5
Exports	6.8	3.1	2.2
Imports	-14.8	-10.5	4.1

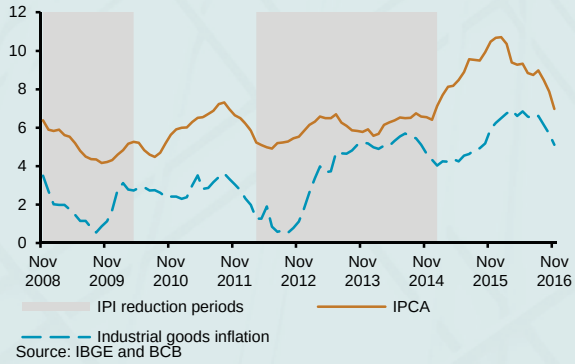
Source: IBGE
1/ Estimated

considering the effects of a more favorable behavior of the overall earnings (that include job wages and social benefits received by households), that shall be positively affected by the increase in minimum wage and the more benign behavior of inflation. It also envisages modest growth for GFCF (+0.5%), consistent with the improvement of financial variables that is likely to generate positive impacts for investment in 2017.

Exports and imports of goods and services are expected to grow 2.2% and 4.1%, respectively, in 2017, due to a more favorable outlook for the industrial and agricultural sectors in the case of exports, and to the expansion of domestic demand and the exchange rate appreciationin the case of imports. The contribution of domestic demand to 2017 GDP growth is estimated at 1.1 p.p., and that of the external sector, at -0.3 p.p.

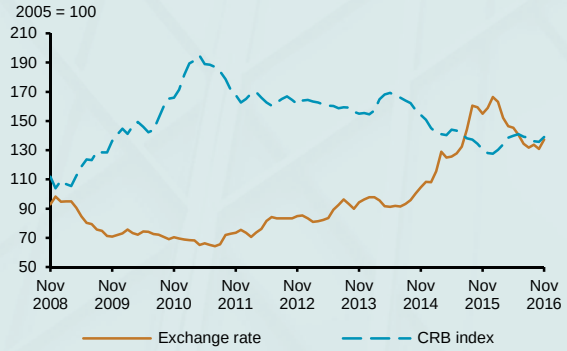
What determines the behavior of industrial goods inflation?

Figure 1 - IPCA and industrial goods inflation
% change in 12 Months



Source: IBGE and BCB

Figure 2 - Excahnge rates and CRB commodity index
2005 = 100



Source: BCB and Commodity Research Bureau

This box analyzes the main determinants of the evolution of industrial goods prices[1]. Among the factors that have influenced the dynamics of these prices, we highlight the behavior of domestic and imported inflation, agents' expectations for future inflation and the level of industrial activity.

Inflation as measured by the Brazilian CPI (IPCA) is relevant to explain the recent movement of industrial goods prices, either through the inertial mechanisms of pricing or through the formation of expectations. In this sense, the 12-month change of industrial goods prices showed a similar path to the IPCA (Figure 1), although changes in the industrial products tax (IPI) rates from December 2008 to March 2010 and from April 2012 to December 2014 have produced some detachment in these series.

Recent volatility of the exchange rate and of commodity prices[2] (Figure 2), as well as the contraction of activity in the industrial sector over the last quarters[3] (Figure 3), may have also influenced the recent dynamics of industrial goods prices.

To empirically assess the effects of these factors on industrial goods inflation, the following equation was estimated:

$$\pi_t^G = \alpha_1 \pi_{t-1} + \alpha_2 E_t \pi_{t+1} + (1-\alpha_1-\alpha_2)\Delta e_{t-m}^f + \alpha_3 h_{t-j} + \sum_{k=1}^{4} \varphi_k d_k + \varepsilon_t \quad (1)$$

Where,

- π_t^G is the inflation rate of industrial goods;

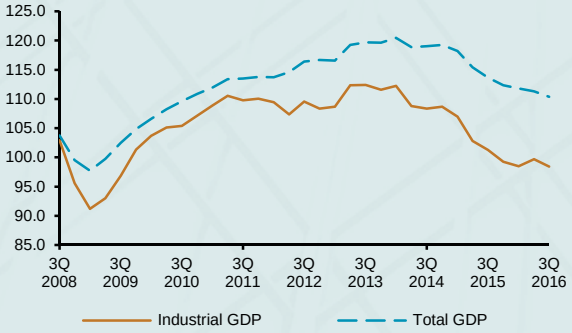
- π_t is the inflation rate;

- E_t is the expectations operator;

1/ In November 2016, the weight of the industrial goods subgroup in Brazilian CPI (IPCA) was 23.6%.
2/ The transmission of imported inflation typically occurs in two stages: in the first, exchange rate movements are transmitted to the prices of imported goods; In the second, changes in the prices of imported goods are transmitted to retail and consumer prices..
3/ The smaller the production in the industrial sector in relation to the potential production, the greater the expected deceleration of industrial goods inflation.

Figure 3 - Total and Industrial GDP

fixed base index 1Q2008=100



Source: IBGE

- Δe_t^f is the imported goods inflation rate (changes in the exchange rate and of foreign goods prices);

- h_t is a measure of the output gap (obtained using the capacity utilization index published by CNI);

- d_k are seasonal *dummies*; and

- ε_t represents an unmodeled supply shock[4].

The model above, which can be seen as a sectoral Phillips curve, was estimated using percentage changes in quarterly data, from the third quarter of 1999 to the third quarter of 2016, by Ordinary Least Squares (OLS). Additionally the evolution of the parameters of the model over time was evaluated through rolling regressions.

To represent the inertia of industrial goods inflation, IPCA inflation was used with the premise that price makers consider the headline index, that is, IPCA, when pricing their products. In all the alternatives tested, this term proved to affect the prices of industrial goods.

The expectations term was also significant to explain variations in industrial goods inflation. In order to mitigate problems of endogeneity in the estimation by OLS, the median inflation expectations of the Focus-Market Readout for the subsequent quarter was used.

Different proxies were tested for imported goods inflation and the output gap. For foreign inflation, a measure that showed good performance was the change in the Commodity Research Bureau (CRB) index expressed in the national currency.

For the output gap measure, the difference between the level of industrial capacity utilization (UCI) published by the National Confederation of Industry (CNI) and its trend, extracted using the Hodrick-Prescott (HP) filter, was chosen. As expected,

4/ A variable controlling for the dynamics of IPI rates was also tested, but no statistical significance was found. This result is possibly related to the fact that the impacts of changes in the IPI rates are restricted to a few months and to some products of the industrial goods basket..

Figure 4 - Percentage change of inertial and expectations coefficient in relation to 2011

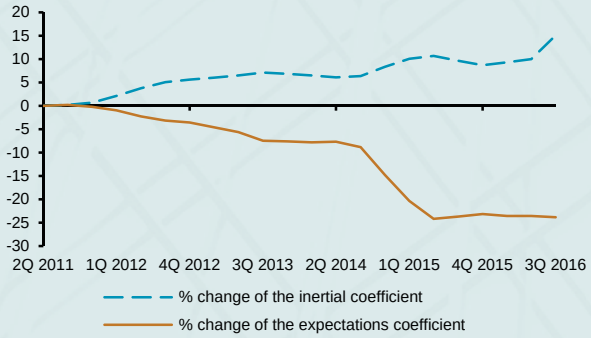
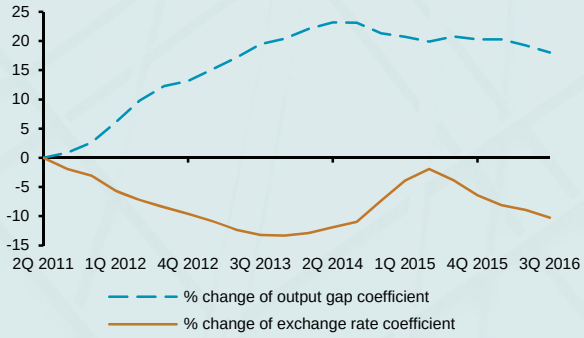


Figure 5 - Percentage change of output gap and exchange rate coefficients



industrial goods inflation responded positively and significantly to deviations of potential output in the industry sector.

The rolling regression analysis showed evidence that the inertial coefficient increased over time, contrasting to the expectations coefficient (Figure 4)[5]. These results indicate that the ongoing disinflation process in the Brazilian economy will probably contribute to the deceleration of industrial goods inflation in the coming quarters.

During the same period, there was also a reduction in the pass-through coefficient of imported goods prices to industrial prices and an increase in the coefficient of the output gap[6] (Figure 5).

Summarizing, the exercise presented in this box indicates that there was an increase in the inertial coefficient, a reduction in the pass-through coefficient of imported goods inflation and an increase in the coefficient of the output gap in recent years. These results suggest that the ongoing disinflationary dynamics in the Brazilian economy should also be observed in industrial goods inflation[7].

References

ALBUQUERQUE, C. e PORTUGAL, M. (2005). "Pass-Through from Exchange *Rate* to Prices in Brazil: An Analysis using Time-Varying Parameters for the 1980-2002 Period". Revista de Economia, Montevideo, nº 12(1), p. 17-73.

NOGUEIRA JR, R. (2010). "Inflation Environment and Lower Exchange Rate Pass-Through in Brazil: Is There a Relationship?" Revista Brasileira de Economia, vol. 64(1), p. 49-56.

5/ It is important to note that the coefficients presented here are average values obtained from a set of models with different specifications. We opted for an agnostic approach to the best model, mitigating the uncertainty problem in modeling.

6/ It should be noted that, in fact, the effects of exchange rate tend to be lower when the economy is sluggish. For more details on the non-linear mechanisms of the exchange rate pass-through, see Boxe "Repasse Cambial para Preços" (Relatório de Inflação for March 2015).

7/ A simple forecasting exercise with the estimated model suggests a decline in industrial goods inflation in 12 months in the coming quarters. It should be noted, however, that, as the Boxe "Inércia Inflacionária e Determinantes das Expectativas de Inflação" (Relatório de Inflação of September 2015) has shown, short-term inflation surprises tend to significantly affect short- and medium-term expectations, and in turn, the dynamics of industrial prices.

Balance of Payments projections for 2016 and 2017

This box reviews the projections for the balance of payments in 2016 and presents forecasts for 2017. Reviews took into account new data released since the September's Inflation Report, updates in the international and domestic economic scenarios, as well as recent statistics regarding external indebtedness and debt service.

The forecast for the current account deficit in 2016 increased to US$22 billion (1.22% of GDP). This revision reflected the trade balance surplus decline from US$49 billion to US$44.5 billion, with exports at US$184 billion and imports at US$139.5 billion (reductions of US$6 billion and US$1.5 billion, compared to the previous forecast).

Compared to the previous Inflation Report, the estimate for the deficit in the services account in 2016 increased from US$29.9 billion to US$29.3 billion, with a US$1.0 billion increase in net travel expenditures and a US$900 million reduction in operating leasing services as highlights.

Net expenditures on primary income in 2016 are forecast at US$40.2 billion. Net expenditures on interests are estimated at US$21 billion, considering the schedule of the new debt position of September 2016. Net remittances of profits and dividends are estimated at US$19.5 billion in 2016, including reinvested earnings, in line with the contracting impact of the domestic activity on profits generation.

The forecast for the net inflow of secondary income increased from US$2.8 billion in the previous Inflation Report to US$3.0 billion. From January to November, net inflows of secondary income totaled US$2.7 billion.

As for the financial account, net incurrence of liabilities are expected to surpass net acquisition of financial assets by US$21.7 billion. Estimations for net outflows of direct investments abroad and net inflows of direct investments in Brazil were estimated at US$9 billion and US$70 billion (3.88% of GDP) respectively. Therefore, direct investments abroad is expected to easily surpass the deficit projected for the current account in 2016.

Table 1 – Balance of payments forecasts

US$ billion

Itemization	2015			2016			2017
	Nov	Jan-Nov	Ano	Nov	Jan-Nov	Year[1/]	Year[1/]
Current account	-2.9	-56.4	-58.9	-0.9	-17.8	-22.0	-28.0
Trade balance	0.9	11.6	17.7	4.5	40.8	44.5	44.0
Exports	13.7	173.4	190.1	16.1	168.6	184.0	195.0
Imports	12.8	161.8	172.4	11.6	127.7	139.5	151.0
Services	-2.3	-34.4	-36.9	-2.3	-27.1	-29.3	-31.2
Travel	-0.5	-10.9	-11.5	-0.7	-7.5	-8.5	-10.5
Others	-1.8	-23.5	-25.4	-1.6	-19.5	-20.8	-20.7
Primary income	-1.7	-35.9	-42.4	-3.3	-34.3	-40.2	-44.1
Interest	-0.9	-19.4	-21.9	-1.4	-18.8	-21.0	-20.9
Dividends	-0.9	-16.8	-20.8	-2.0	-15.7	-19.5	-23.5
Others	0.0	0.3	0.3	0.0	0.3	0.3	0.3
Secondary income	0.2	2.3	2.7	0.3	2.7	3.0	3.3
Capital account	-0.0	0.3	0.4	0.0	0.2	0.3	0.4
Financial account	-3.0	-54.3	-54.7	-0.7	-11.3	-21.7	-27.6
Investment assets[2/]	5.6	45.7	54.0	7.5	45.1	46.8	54.2
DI assets	-1.0	10.8	13.5	0.2	7.9	9.0	18.0
Banks' assets	3.4	-1.5	-1.1	3.5	6.5	5.8	6.2
Other assets	3.2	36.4	41.5	3.8	30.7	32.0	30.0
Investment liabilities	6.4	104.8	113.7	9.2	64.0	76.6	92.4
DI liabilities	4.9	59.9	75.1	8.8	63.7	70.0	75.0
Total shares	0.9	11.4	10.0	0.2	9.3	9.0	10.0
Debt sec. in Brazil	4.7	17.5	16.3	-3.1	-24.6	-24.5	-10.0
Loans and debt sec. abroad long term	-2.6	-3.2	-3.6	1.8	-18.1	-20.4	-8.5
Debt sec. public	-0.0	-3.3	-3.4	-0.0	1.9	1.8	-2.4
Debt sec. private	0.8	-2.9	-4.7	2.1	-5.2	-6.2	-1.5
Direct loans	-2.2	4.6	5.3	-0.2	-11.7	-11.9	-5.8
Others[4/]	-1.1	-1.6	-0.8	-0.2	-3.1	-4.1	1.2
Loans and debt sec. abroad short term	-3.2	-4.3	-6.8	-0.1	14.3	15.0	-
Other liabilities[5/]	1.6	23.6	22.7	1.7	19.4	27.5	25.8
Financial derivative	-0.3	3.2	3.4	0.3	-1.1	-	-
Reserve assets	-1.9	1.6	1.6	0.8	8.6	8.1	10.5
Errors and omission	-0.0	1.9	3.7	0.2	6.3	-	-
Memo:							
Current account/GDP (%)		-3.4	-3.3		-1.1	-1.2	-1.4
FDI / GDP (%)		3.6	4.2		3.8	3.9	3.8

1/ Forecast.
2/ Includes direct investment, portfolio investment and other investments.
3/ Includes equities traded in stock exchanges in Brazil and abroad.
4/ Includes banks', buyers', bilateral and multilateral loans
5/ Includes trade credit liabilities and other liabilities.

Concerning portfolio investment liabilities, the forecast for net inflows of equities and investment funds remained the same of the previous Inflation Report at US 9 billion. However, projections for net outflows of debt securities traded in the domestic market rose from US$18 billion to US$24.5 billion, in line with the evolution of the flows of this account since the sovereign rating downgrade. The forecast for rollover rates of loans and fixed-income securities traded abroad increased from 60% to 65%, due to rolling averages higher than 100% since August 2016.

Taking into account the estimate of US$10.9 billion surplus for the balance of payments' financial gap, assets held abroad by resident banks in Brazil should increase to US$5.8 billion. The remaining US$5.1 billion are repo credit lines, operations that allow banks to settle obligations in foreign currency at the Central Bank.

Based on a scenario of gradual and steady recovery of the domestic economy, the estimate for the current account deficit in 2017 is US$28 billion (1.43% of GDP). A US$44 billion trade surplus is expected, supported by an increase of 6.0% in exports and 8.2% in imports, which should reach US$195 billion and US$151 billion respectively.

The deficit in the services account is expected to reach US$31.2 billion, featuring projections for net expenditures of operating leasing services (US$17.5 billion), travel (US$10.5 billion) and transport (US$4 billion). Net remittances of profits and dividends were estimated at US$23.5 billion; net expenses of interests at US$20.9 billion; and net inflows of secondary income at US$3.3 billion.

Net inflows of direct investments in the country were estimated at US$75 billion, fully financing the estimated current account deficit. Besides, net outflows of direct investments abroad are expected to reach US$18 billion. Concerning portfolio investment liabilities, net inflows of equities and investment funds are forecast at US$10 billion and net outflows of debt securities traded in the domestic market at US$10 billion. The estimate for the rollover rate is 80%.

Regarding repo credit lines, US$7.2 billion are already negotiated to be paid back to the Central Bank in 2017, while for the balance of payments' financial gap a US$13.5 billion surplus is expected. In this scenario, banks operating in the Brazilian exchange rate market are expected to increase by US$6.2 billion the balance of their deposits abroad.

Table 2 – Balance of payments – Financial gap[1/]

US$ billion

Itemization	2015*			2016*			2017*
	Nov	Jan-Nov	Year	Nov	Jan-Nov	Year2/	Year[2/]
Current account	-2.9	-56.4	-58.9	-0.9	-17.8	-22.0	-28.0
Interest on debt securities issued in the country - expenses	-0.1	-6.9	-6.9	-0.1	-6.0	-6.0	-6.2
Interest on international reserves - receipts	0.2	2.3	2.6	0.2	2.7	3.0	3.3
Reinvested earnings – receipts	0.3	4.3	4.5	0.1	1.2	2.0	3.0
Reinvested earnings – expenses	-	-5.7	-7.1	-0.6	-8.8	-9.0	-7.0
Current account – financial gap	-3.4	-50.4	-51.9	-0.5	-7.0	-12.0	-21.1
Financial account	-4.6	-47.5	-49.1	-4.6	-18.6	-22.9	-34.6
Assets	1.9	42.9	50.2	3.9	37.4	39.0	45.0
Direct investment assets, except reinvested dividends	-1.3	6.5	9.0	0.1	6.7	7.0	15.0
Portfolio investment, except banks	0.2	0.4	-0.4	-0.7	-0.8	-	-
Other investment, except banks	3.1	36.0	41.6	4.6	31.5	32.0	30.0
Liabilities	6.2	92.2	99.7	8.5	49.3	61.6	79.2
Direct investment liabilities, except reinvested dividends	5.0	54.1	67.9	8.1	54.9	61.0	68.0
Portfolio investment, except reinvested interest	6.1	16.0	11.6	-1.0	-24.5	-25.9	-10.1
Other investment	-4.8	22.1	20.1	1.3	18.9	26.5	21.2
Others	-0.2	1.8	0.3	-0.1	-6.8	-0.3	-0.4
Financial gap[3/]	1.2	-3.0	-2.8	4.2	11.6	10.9	13.5
Net Banco Central interventions[4/]	-2.2	-1.5	-1.8	0.7	5.1	5.1	7.2
Banks: asset changes[5/]	3.4	-1.5	-1.1	3.5	6.5	5.8	6.2

1/ Excludes all transactions settled through international reserves or in domestic currency, except for foreign exchange market internventions, and domestic transaction settled in reais.

2/ Forecast.

3/ + = surplus in the foreign exchange market; - = deficit in the foreign exchange market.

4/ + = increase of international reserves; - = decrease of international reserves.

5/ + = increase in the assets owned by banks; - = decrease in the assets owned by banks.

* Preliminary data.

Recent behavior of market expectations for GDP growth

Figure 1 – 2016 and 2017 GDP growth - recent evolution of market expectations medians (in %)

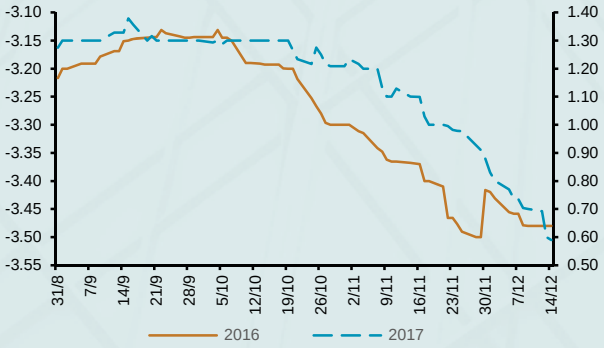
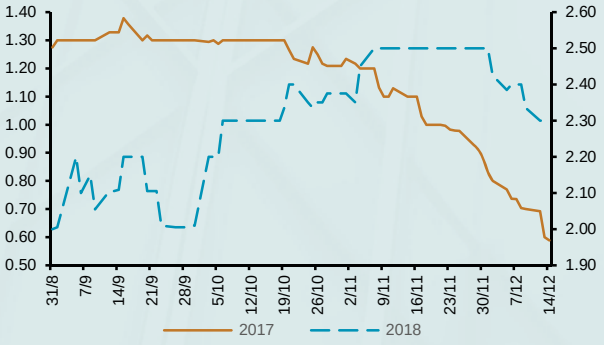


Figure 2 – 2017 and 2018 GDP growth - recent evolution of market expectations medians (in %)



This box presents the analysis of the recent behavior of market expectations for Gross Domestic Product (GDP) growth, as systematically measured by the Focus survey. The analysis is based on about 80 institutions that have projections for this variable among the participants of the Market Expectations System.

Figure 1 presents the evolution of the medians of market expectations for GDP growth in 2016 and 2017, from the date of the release of 2Q16 GDP, August 31st, until December 14th. The decline in median expectations for 2017 GDP growth has intensified since mid-October, following the stronger deterioration in the expectations for 2016 GDP growth.

Figure 2 presents the medians of the expectations for GDP growth in 2017 and 2018, through the same period. The projected 2018 GDP growth, in turn, remained for some time at the level reached on November 7th, deteriorating only after the release of 3Q16 GDP.

GDP growth in a given year y is calculated by the ratio of the sum of the index numbers of the four quarterly GDP figures for that year and the sum of the index numbers of the four quarterly GDP figures for the previous year, transformed into percentage variation:

$$\text{GDP Growth}_{y} = \left(\frac{\sum_{t=1Q}^{t=4Q} GDP_{t,y}}{\sum_{t=1Q}^{t=4Q} GDP_{t,y-1}} - 1\right)*100\%.$$

Thus, taking 2017 as an example,

$$\text{GDP Growth}_{2017} = \left(\frac{\sum_{t=1Q}^{t=4Q} GDP_{t,2017}}{\sum_{t=1Q}^{t=4Q} GDP_{t,2016}} - 1\right)*100\%.$$

This growth can be decomposed into two factors: the first, called carry-over, inherits what occurred in 2016. If 2017 quarterly GDP figures remain at the same level of 4Q16 GDP, the resulting growth for 2017 is this inheritance, mechanically dependent on what happened during the previous year. The difference is what can be considered growth purely attributed to 2017 (or 2017 "ex-carry"). This decomposition can be formalized, as follows:

$$\text{GDP Growth}_{2017} = \left(\frac{\sum_{t=1Q}^{t=4Q} GDP_{t,2017}}{\sum_{t=1Q}^{t=4Q} GDP_{t,2016}} - 1\right)*100\%$$

$$= \left(\frac{4*GDP_{4Q2016}}{\sum_{t=1Q}^{t=4Q} GDP_{t,2016}} - 1\right)*100\% + \frac{\sum_{t=1Q}^{t=4Q} (GDP_{t,2017} - GDP_{4Q2016})}{\sum_{t=1Q}^{t=4Q} GDP_{t,2016}}*100\%$$

$$= \text{Carry-over GDP}_{2017} + \text{GDP Growth}_{2017} \text{ ex-carry,}$$

where:

$$\text{Carry-over GDP}_{2017} = \left(\frac{4*GDP_{4Q2016}}{\sum_{t=1Q}^{t=4Q} GDP_{t,2016}} - 1\right)*100\%$$

and

$$\text{GDP Growth}_{2017} \text{ ex-carry} =$$

$$= \text{GDP Growth}_{2017} - \text{Carry-over GDP}_{2017} =$$

$$= \frac{\sum_{t=1Q}^{t=4Q} (GDP_{t,2017} - GDP_{4Q2016})}{\sum_{t=1Q}^{t=4Q} GDP_{t,2016}}*100\%.$$

Observing these formulas, one may note that the reduction in the projections for 2017 GDP growth could be mechanically caused by the carry-over effect of what happened in 2016. This effect should, then, be considered when we analyze the growth projected for 2017. Looking at Figure 3, one may note that most of the changes for 2016 and 2017 fall in the third quadrant, which corresponds to reductions for both years. This may indicate that the statistical carry-over contributed significantly for the reductions in the projections for the 2017 growth.

This possibility may be analyzed based on Focus's microdata.

The 2017 GDP growth decomposition mentioned above was applied for each institution of the Market Expectations System that had valid projections for 3Q16, 4Q16 and 2017 GDP growth. Both 2017 GDP growth carry-over and 2017 GDP growth ex-carry were calculated for each institution, according to the aforementioned formulas. Daily medians were then computed, from August 31st to December 14th.

The results are shown in Figure 4. If the carry-over effect is taken out of the 2017 GDP growth projections, the reduction in the growth estimates is very modest. Out of the approximately 0.7 percentage point reduction observed in the analyzed period, almost everything comes from a carry-over worsening. Indeed, after a first period when the median of the projections for 2017 GDP growth ex-carry showed an increase as the carry-over itself became more negative, this measure returned essentially to the

Figure 3 – GDP Growth in 2016 and 2017 – Changes in individual market projections between 8/31 and 12/14/16 (in percentage points)

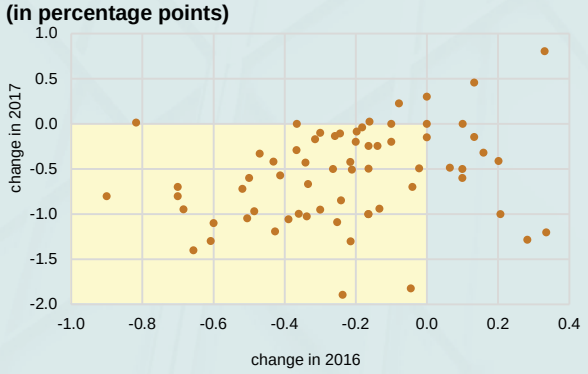


Figure 4 – Medians of market expectations for the carry-over for the 2017 GDP growth and for the 2017 GDP growth ex-carry (obtained from the Focus's microdata) (in percentage points)

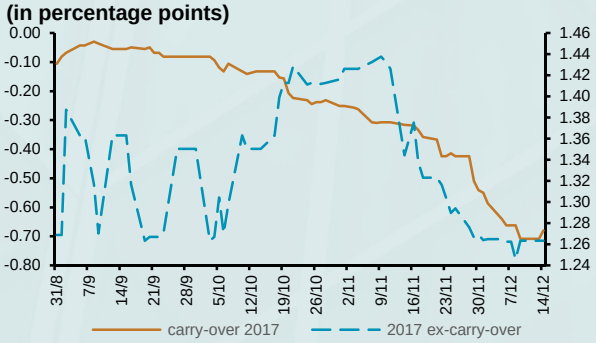


Figure 5 – 2016 GDP growth – Individual market expectations on 8/31 and 12/14/16

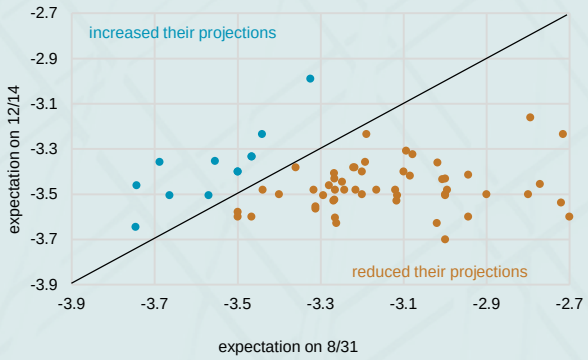


Figure 6 – 2017 GDP growth – Individual market expectations on 8/31 and 12/14/16

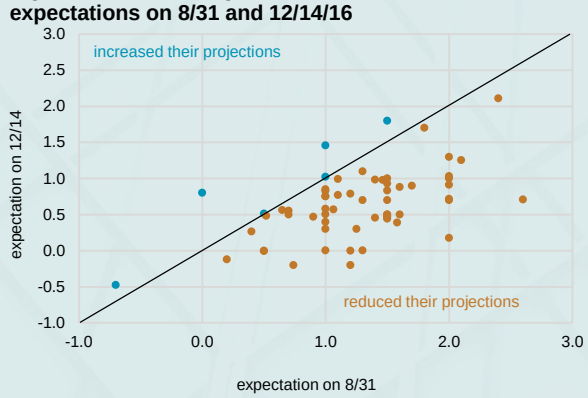
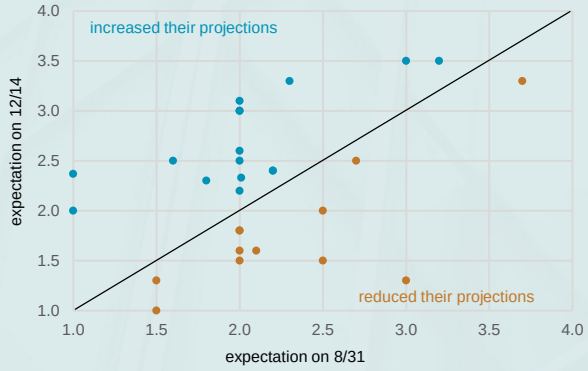


Figure 7 – 2018 GDP growth – Individual market expectations on 8/31 and 12/14/16



same level at which it was at the beginning of the window of analysis.

Complementing the analysis based on the Focus survey microdata, Figures 5, 6 and 7 show scatterplots of the individual projections on August 31st and on December 14th for GDP growth in 2016, 2017 and 2018, respectively, for the institutions that changed their projections between these two dates.

For 2016, the institutions that reduced their projections were typically those which were the most optimistic in the beginning of the period, the reverse occurring for the most pessimistic. For the current year, it is natural that the institutions converge in their projections as time passes by and more information becomes available.

This pattern is less visible for 2017 —perhaps marginally noticeable for the institutions that reduced their projections, which were slightly more optimistic in the beginning of the period. For 2018, however, there is no noticeable pattern. Furthemore, in this case, just about 54% of the institutions that had valid projections in the period revised their expectations for 2018.

Inflation outlook

2

This chapter of the Inflation Report presents an analysis of inflation prospects up to the fourth quarter of 2018, hence covering all the calendar years for which inflation targets have already been defined by the National Monetary Council.

Conditional inflation projections are presented under two major scenarios. The first scenario, called the reference scenario, assumes that the Selic rate and the exchange rate will remain unchanged over the forecast horizon. The second scenario, named the market scenario, employs the paths for the policy interest rate and for the exchange rate corresponding to the median of the expectations compiled by the Focus survey, carried out by the Banco Central among independent analysts.

Additionally, this Report presents two hybrid scenarios that combine assumptions from the reference and market scenarios. The first hybrid scenario assumes that the exchange rate will remain unchanged over the forecast horizon and that the Selic rate will evolve according to the path reported in the Focus survey ("hybrid scenario – constant exchange rate"). The second hybrid scenario assumes that the Selic rate will remain unchanged over the forecast horizon and that the exchange rate will evolve according to the path reported in the Focus survey ("hybrid scenario – constant interest rate"). All inflation projections released here are based on the information set available up to the cutoff date of December 9, 2016, unless otherwise indicated.

It is important to highlight that the conditional inflation projections released in this Report are not point estimates. They consist of probability intervals that embody the existing degree of uncertainty at the aforementioned cutoff date. The projections depend not only on assumptions about the interest and exchange rates, but also on a set of assumptions about the behavior of exogenous variables.

In its decision-making process, the Copom analyses a wide range of variables and models[9], for which it makes assessments based on the available information set. In exposing some scenarios that inform its deliberations, the Copom seeks to foster transparency to monetary policy decisions, thereby contributing to the effectiveness in controlling inflation, which is its primary objective.

2.1 Revisions and short-term projections

Since the release of the previous Report in September 2016, the reversal of food price increases and the dissemination of the disinflation process favored a more benign evolution of consumer price indexes than anticipated. Consumer inflation, measured by the IPCA, accumulated in the quarter ending in November, was 0.52 p.p. below the Copom's baseline scenario as of the September Inflation Report (Table 2.1), with transportation being the only group registering higher rates than projected.

Table 2.1 – IPCA – Inflationary surprise

% change

	2016				
	Sep	Oct	Nov	In the quarter	12 months up to Nov
Copom forecast[1/]	0.19	0.40	0.45	1.04	7.54
Realized IPCA	0.08	0.26	0.18	0.52	6.99
Surprise	-0.11	-0.14	-0.27	-0.52	-0.55

Source: IBGE and BC
1/ Forecast as of the cut-off date of the September 2016 Inflation Report

In September, the 0.08% increase in the IPCA was 0.11 p.p. below the previous Report's forecast, reflecting surprises in food prices (at home and away from home) and in cigarette prices. In October, the intensification of price drops in dairy products, recreation and cigarettes more than offset the rises in fuel prices, accounting for a significant share of the -0.14 p.p. surprise in the monthly reading of the IPCA (0.26% increase). The drop in food prices continued to surprise in the following month (particularly in prices of milk, beans and tomato). This fact, combined with the unusually low changes in the prices of clothing and food away from home for November figures, produced a -0.27 p.p. surprise in the IPCA projection for the month, which printed at 0.18%.

Short-term projections

The short-term projections in the Copom's baseline scenario for the IPCA of December 2016 to February

9/ The parameters of the small-sized, semi-structural benchmark model were re-estimated using the sample period ranging from the first quarter of 2001 to the third quarter of 2016, with no changes in the model structure. In line with the procedure adopted in recent years, and in order to maintain the high level of transparency of monetary policy actions, the Committee will continue to provide updates on any relevant changes to the models.

Table 2.2 – IPCA – Short-term forecasts

% change

	2016	2017			
	Dec	Jan	Feb	In the quarter	12 months up to Feb
Copom forecast[1/]	0.48	0.61	0.55	1.65	5.42

Source: IBGE and BC
1/ Forecast as of the cut-off date

2017 are 0.48%, 0.61% and 0.55%, respectively. This would lead twelve-month inflation to 5.42% at the end of the period (from 6.99% in November) – Table 2.2.

Despite the effects from the activation of the green flag for electricity tariffs, monthly IPCA should accelerate in December, reflecting a return of food-price inflation to positive rates, seasonal rises in airfares, the increase in fuel prices and the effects of higher taxes (IPI) on cigarettes. In January, seasonal hikes in food prices, additional fuel-price rises and urban-bus fare increases in several capital cities should result in further acceleration of the monthly inflation rate. However, the dissipation of these factors in February should offset the effects of price adjustments in the education group, resulting in some inflation cooling.

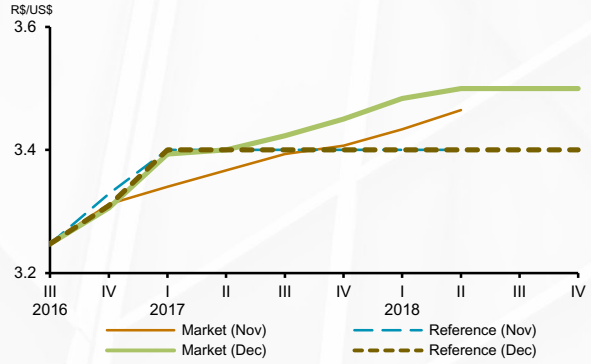
Inflation in the quarter ending in February (projected at 1.65%) tends to be significantly below the recorded rate in the same period of the previous year (3.16%), ensuring the fall of the twelve-month inflation rate.

2.2 Conditional projections

The reference scenario assumes a constant exchange rate over the forecast horizon at R$3.40/US$ and the target for the Selic rate at 13.75% p.a. – the level set at the November 2016 Copom meeting – compared to R$3.40/US$ and 14.00% p.a. considered at the November Copom meeting.

The market scenario, in turn, incorporates the expectations from the Focus survey of the Banco Central do Brasil for the exchange rate[10], which increased for 2016 and 2017, and remained unchanged for 2018 when compared to the values used at the November Copom meeting. For the end of 2016, the rate changed from R$3.35/US$ to R$3.39/US$. For the end of 2017, the rate moved from R$3.40/US$ to R$3.45/US$. For the end of 2018, market participants projected the exchange rate at R$3.50/US$. Figure 2.1 compares the exchange rate trajectories underlying the scenarios

Figure 2.1 – Exchange rate: reference and market scenarios



10/ Note that the small sized semi-structural models use quarterly averages of the exchange rate.

Figure 2.2 – Selic: reference and market scenarios

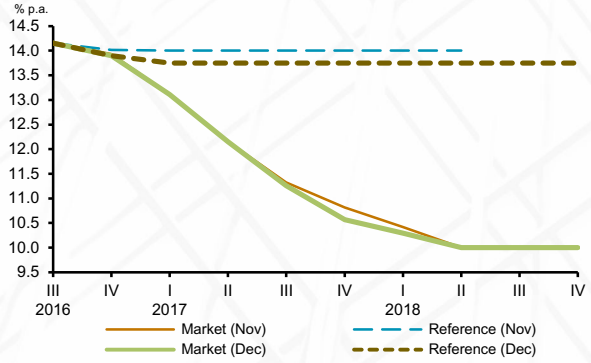
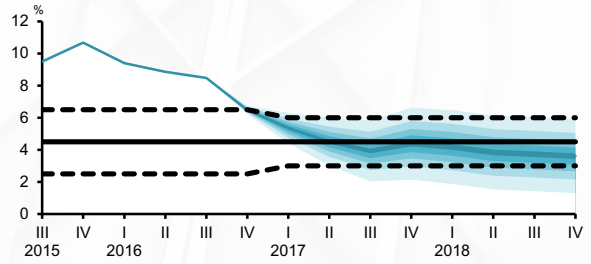


Figure 2.3 – Projected IPCA-inflation with constant exchange and interest rates (Reference scenario)

Inflation fan chart



Note: 12-month accumulated inflation (% p.a.).

Table 2.3 – Projected IPCA-inflation with constant exchange and interest rates (Reference scenario)

Year Q	Probability Interval						Central projection
	50%						
		30%					
			10%				
2016 4	6.4	6.4	6.5	6.5	6.5	6.6	6.5
2017 1	5.0	5.1	5.3	5.4	5.6	5.7	5.4
2017 2	3.9	4.2	4.4	4.6	4.8	5.1	4.5
2017 3	3.1	3.5	3.8	4.1	4.4	4.7	3.9
2017 4	3.5	3.8	4.2	4.5	4.9	5.3	4.4
2018 1	3.2	3.6	4.0	4.3	4.7	5.1	4.2
2018 2	2.9	3.3	3.7	4.0	4.4	4.8	3.8
2018 3	2.8	3.2	3.5	3.9	4.3	4.7	3.7
2018 4	2.7	3.1	3.4	3.8	4.1	4.5	3.6

Note: 12-month accumulated inflation (% p.a.).

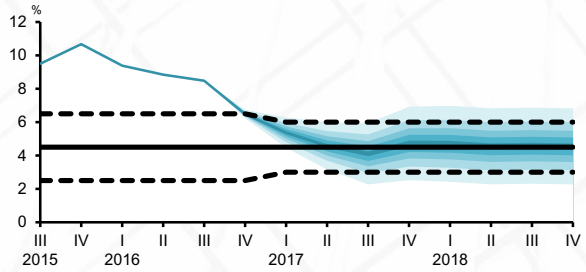
in this Report with those used at the November Copom meeting.

Regarding the evolution of the Selic rate, expectations for the end of 2017 decreased from 10.75% p.a. to 10.50% p.a. For the end of 2018, expectations remained at 10.00% p.a. This trajectory for the Selic rate is consistent with 360 days pre-DI swap spreads of -264 b.p. and -314 b.p., relative to the current target for the Selic rate (13.75% p.a.), in the fourth quarter of 2017 and 2018, respectively. Figure 2.2 compares the interest rate trajectories underlying the scenarios in this Report with those used at the November Copom meeting.

The projection for the change in the set of regulated prices, in all scenarios, is 5.6% for 2016, against 5.5% considered at the November Copom meeting. Among other factors, this projection for 2016 considers an average increase of 9.4% in urban bus fares and a reduction of 10.4% in electricity tariffs. For 2017, a 6.0% variation is considered, against 5.9% projected at the November Copom meeting. Among other factors, this projection considers an average increase of 4.8% in urban bus fares and of 6.9% in electricity tariffs. For 2018, a 5.2% variation is considered against a variation of 5.3% at the November Copom meeting. It should be highlighted that, in the case of items for which more information is available, projections are individualized; for the remaining items, projections are based on models of endogenous determination of regulated prices, which consider, among other variables, seasonal components, market price inflation and inflation measured by the General Price Index (IGP).

The projections presented here also depend on considerations about the evolution of fiscal policy. At the current juncture, the main effects of this policy are associated with the adjustment process of the economy, which involves the submission of important reforms proposed by the Government for consideration by the National Congress. The approval of a measure to curb the real expansion of fiscal expenses is a contribution towards this goal. These effects can be captured by the projection models to the extent that they influence asset prices and the inflation expectations compiled by the Focus survey. In addition to these effects, fiscal policy influences the conditional inflation projections through impacts of short-term measures on aggregate demand.

Figure 2.4 – Projected IPCA-inflation with market expectations for the exchange and interest rates
Inflation fan chart



Note: 12-month accumulated inflation (% p.a.).

Table 2.4 – Projected IPCA-inflation with market expectations for the exchange and interest rates [1/]

Year Q	Probability Interval 50%		30%		10%		Central projection
2016 4	6.4	6.4	6.5	6.5	6.5	6.6	6.5
2017 1	5.0	5.2	5.3	5.4	5.6	5.7	5.4
2017 2	4.0	4.2	4.5	4.7	4.9	5.2	4.6
2017 3	3.3	3.7	4.0	4.2	4.5	4.9	4.1
2017 4	3.8	4.2	4.6	4.9	5.2	5.6	4.7
2018 1	3.8	4.2	4.5	4.9	5.2	5.6	4.7
2018 2	3.6	4.0	4.4	4.7	5.1	5.5	4.6
2018 3	3.7	4.1	4.4	4.8	5.1	5.5	4.6
2018 4	3.6	4.0	4.4	4.7	5.1	5.5	4.5

Note: 12-month accumulated inflation (% p.a.).
1/ Source: Focus survey.

Table 2.5 – November 2016 Copom projections

Period	Reference scenario	Market scenario
2016 IV	6.6	6.6
2017 I	5.5	5.5
2017 II	4.6	4.7
2017 III	4.0	4.2
2017 IV	4.4	4.7
2018 I	4.2	4.7
2018 II	3.9	4.6
2018 III	3.7	4.6
2018 IV	3.6	4.6

Based on the above assumptions and using the available information set, projections for four-quarter IPCA inflation were produced, consistent with the interest rate and exchange rate paths that characterize the different scenarios.

The central projection associated with the reference scenario indicates inflation of 6.5% in 2016, 0.1 p.p. below the projection considered at the November Copom meeting. In 2017, as can be seen in Figure 2.3 and Table 2.3, the projection for the first quarter is at 5.4%, shifts to 4.5% and 3.9% in the second and third quarters, respectively, and ends the year at 4.4%. In 2018, the projection for the first quarter is at 4.2%, shifting to 3.8% and 3.7% in the second and third quarters, respectively, and ending the year at 3.6%.

Still in the reference scenario, the estimated probability that inflation will breach the upper tolerance level of the target in 2016 stays at around 45% and, in 2017, around 12%. For 2018, the probability stays at around 4%.

In the market scenario, as shown in Figure 2.4 and Table 2.4, the projection indicates inflation of 5.4% in the first quarter of 2017, shifting to 4.6% and 4.1% in the second and third quarters, respectively, ending the year at 4.7%. In 2018, the projection for the first quarter is at 4.7%, reduces to 4.6% in the second and third quarters, ending the year at 4.5%.

In the market scenario, the estimated probability that inflation will breach the upper tolerance level of the target in 2016 is around 45% and, in 2017, around 17%. For 2018, the probability stays at around 15%.

The comparison of the trajectories presented in this Report with those released at the November Copom meeting – the latter shown in Table 2.5 –, in the reference scenario, shows a decrease in inflation projection from the third quarter of 2016 to the third quarter of 2017. This is due to lower readings of actual inflation in the period compared to those projected in the last Copom meeting, in addition to decreases in projected inflation for the short term. The projection remains at the same levels from the fourth quarter of 2017 to the fourth quarter of 2018 – except in the second quarter of 2018, which shows a reduction resulting from the negative contribution of the administrated-prices projections, compared to the values presented

Figure 2.5 – Projections and target path for twelve-month cummulative inflation

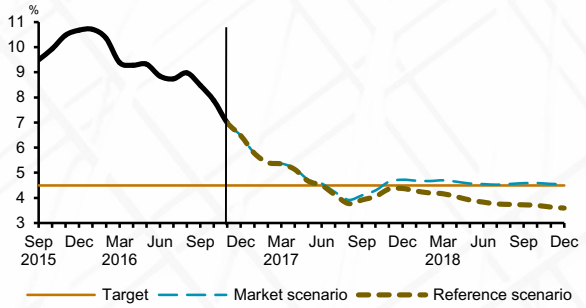
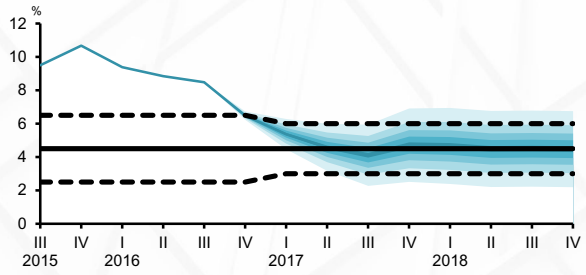


Figure 2.6 – Projected IPCA-inflation with constant exchange rate and market expectations for the interest rate

Inflation fan chart



Note: 12-month accumulated inflation (% p.a.).

Table 2.6 – Projected IPCA-inflation with constant exchange rate and market expectations for the interest rate [1/]

Year	Q	Probability Interval 50% 30% 10%						Central projection
2016	4	6.4	6.4	6.5	6.5	6.5	6.6	6.5
2017	1	5.0	5.2	5.3	5.4	5.6	5.7	5.4
2017	2	4.0	4.2	4.5	4.7	4.9	5.2	4.6
2017	3	3.4	3.7	4.0	4.2	4.5	4.9	4.1
2017	4	3.8	4.2	4.5	4.9	5.2	5.6	4.7
2018	1	3.7	4.1	4.5	4.8	5.2	5.6	4.7
2018	2	3.5	3.9	4.3	4.7	5.0	5.4	4.5
2018	3	3.6	4.0	4.3	4.7	5.0	5.4	4.5
2018	4	3.5	3.9	4.3	4.6	5.0	5.4	4.5

Note: 12-month accumulated inflation (% p.a.).

1/ Source: Focus survey.

at the November Copom meeting. In the market scenario, the comparison of the trajectories shows a similar dynamics to the one observed in the reference scenario, except for the reduction in 2018, which occurs only in the fourth quarter, but under the same influences indicated in the reference scenario.

Figure 2.5 shows the path of the twelve-month inflation, according to the reference and market scenarios, up to the fourth quarter of 2018, as well as the inflation target path. The values refer to actual inflation up to November 2016 and, from then on, the trajectories consider projections associated with the respective scenarios for the construction of accumulated values. In both scenarios, projections indicate that twelve-month inflation should continue declining until the third quarter of 2017, staying relatively stable through the rest of the projection horizon.

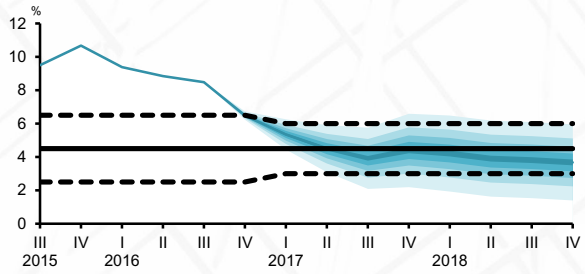
Two additional scenarios combine the assumptions of the reference and market scenarios. The hybrid scenario with constant exchange rate assumes that the exchange rate stays at R$3.40/US$ throughout the forecast horizon, and that the path for the Selic rate follows the trajectory given by the Focus survey. According to Figure 2.6 and Table 2.6, inflation projection decreases to 5.4% in the first quarter of 2017, shifting to 4.6% and 4.1% in the second and third quarters, respectively, ending the year at 4.7%. In 2018, inflation projection is at 4.7% in the first quarter, decreases to 4.5% and remains at this level until the last quarter of the year.

Still in the hybrid scenario with constant exchange rate, the estimated probability that inflation will breach the upper tolerance level of the target in 2016 stays at around 45% and, in 2017, at around 17%. For 2018, the probability stays at around 13%.

The hybrid scenario with constant interest rates assumes that the Selic rate will remain unchanged throughout the forecast horizon, at 13.75% p.a., and that the exchange rate will evolve according to the path reported in the Focus survey. According to Graph 2.7 and Table 2.7, the inflation forecast falls to 5.3% in the first quarter of 2017, shifts to 4.5% and 3.9% in the second and third quarters, respectively, and closes the year at 4.4%. In 2018, the inflation forecast stands at 4.2% in the first quarter, drops to 3.9% and 3.8% in the second and third quarters, respectively, ending the year at 3.7%.

Figure 2.7 – Projected IPCA-inflation with constant interest rate and market expectations for the exchange rate

Inflation fan chart



Note: 12-month accumulated inflation (% p.a.).

Table 2.7 – Projected IPCA-inflation with constant interest rate and market expectations for the exchange rate[1/]

Year	Q	Probability Interval 50%		30%		10%		Central projection
2016	4	6.4	6.4	6.5	6.5	6.5	6.6	6.5
2017	1	5.0	5.1	5.3	5.4	5.6	5.7	5.3
2017	2	3.9	4.2	4.4	4.6	4.8	5.1	4.5
2017	3	3.2	3.5	3.8	4.1	4.3	4.7	3.9
2017	4	3.5	3.9	4.2	4.6	4.9	5.3	4.4
2018	1	3.3	3.7	4.0	4.4	4.7	5.1	4.2
2018	2	3.0	3.4	3.7	4.1	4.4	4.8	3.9
2018	3	2.9	3.3	3.6	4.0	4.3	4.7	3.8
2018	4	2.7	3.1	3.5	3.8	4.2	4.6	3.7

Note: 12-month accumulated inflation (% p.a.).

1/ Source: Focus survey.

In the hybrid scenario with constant interest rates, the estimated probability that inflation will breach the upper tolerance level of the target stays at around 45% in 2016, and at around 11% in 2017. For 2018, the probability is at around 5%.

2.3 Conducting monetary policy and balance of risks[11]

The Copom's baseline scenario envisages economic activity below expectations, with higher probability of a more delayed and more gradual recovery. The level of economy slack remains high. There is an ongoing disinflationary process and some evidence that it has become more widespread. The Copom's projections support the continuity of the disinflationary process over the next years.

Inflation expectations reported in the Focus survey stand at around 4.9% for 2017 and at around the 4.5% target for 2018. For 2019 and more distant horizons, expectations remain at around 4.5%.

On the external front, the scenario is particularly uncertain, with the possible end of the benign environment for emerging economies. The process of normalization of monetary policy in the United States resumed and the outlook for advanced economies is uncertain.

In the last meeting, the Copom unanimously decided to reduce the Selic rate to 13.75% p.a., without bias. At that time, the Committee identified the following risks to the baseline scenario for inflation:

On the one hand, (i) the possible end to the benign environment for emerging economies might make disinflation more difficult; (ii) signs of pause in the process of disinflation of some IPCA components that are most sensitive to monetary policy and economic slack persist, what may point to slower convergence of inflation to target; (iii) the process of approval and implementation of the necessary reforms and adjustments in the economy is lengthy, and carries uncertainty.

11/ In this section, the inflation report considers the information available until December 15, 2016.

On the other hand, (iv) weaker economic activity and a high level of economic slack may produce disinflation at a faster pace than the one embedded in the Copom's conditional forecasts; (v) short-run inflation behavior has been more favorable, which may signal lower inflation persistence; and (vi) the process of approval and implementation of the necessary reforms and adjustments in the economy may be faster than anticipated.

In this context, taking into account the baseline scenario, the current balance of risks, and the wide array of available information, the Copom assessed that the convergence of inflation to the 4.5% target at the relevant horizon for the conduct of monetary policy, which covers the calendar years of 2017 and 2018, is compatible with a gradual process of monetary easing.

Regarding inflation dynamics, recent releases indicate that the disinflation process may have become more widespread. This reading comes from signs that the more favorable prints stem from factors beyond the reversal process of food prices. Signs of pause, at the margin, in the process of disinflation of some IPCA components that are most sensitive to the business cycle and monetary policy have persisted over the latest releases. However, it is reasonable to expect softer economic activity to lead to a faster resumption of the disinflation process, at the margin, of those components whose pause the Copom has referred to.

The Copom assesses that the intensification of the ongoing disinflation process in the Brazilian economy depends on an adequate global environment. However, the Committee emphasizes that there is no mechanical relationship between the global outlook and the conduct of monetary policy. It is possible that the effects of a more restrictive monetary policy in the United States be mitigated by favorable movements in commodity prices that are relevant to the country's terms of trade, which would have a stabilizing effect. Moreover, more restrictive external financial conditions may add a disinflationary component to this scenario.

The Committee emphasizes that in the event of a change in the global outlook that affects relative prices, its impact on monetary policy will be limited by its second-round effects on inflation. This principle

also applies to changes in monitored prices. An environment with anchored inflation expectations allows the Committee to focus on avoiding such second-round effects.

An environment with anchored inflation expectations also allows the Committee to follow a principle that gives flexibility to inflation targeting regimes, which applies to Brazil. In such an environment, this flexibility allows disinflation costs to be taken into account in monetary policy decisions.

The Copom emphasizes that the approval of the constitutional amendment that limits the real expansion of the public expenses is an important contribution for the Brazilian economy. The Copom emphasizes the relevance of other fiscal reforms, but also those of microeconomic nature, aiming at greater flexibility of the economy, efficiency gains, increase in productivity, and improvement of the business environment. These efforts are fundamental for the stabilization and resumption of economic activity, and of the trajectory of sustainable development of the Brazilian economy.

The magnitude of monetary easing and the speeding up of its pace will depend on inflation forecasts and expectations, and on the evolution of the aforementioned risk factors. In that respect, the Copom emphasizes that the pace of disinflation in its forecasts might intensify if the economic recovery is delayed further, and occurs more gradually than anticipated. This intensification of the disinflation process relies on an adequate global environment. There is no mechanical relationship, however, between the global outlook and monetary policy.

Appendix

Banco Central do Brasil Management

Members of the Monetary Policy Committee

Banco Central do Brasil Management

Board of Governors

Ilan Goldfajn
Governor

Anthero de Moraes Meirelles
Deputy Governor

Carlos Viana de Carvalho
Deputy Governor

Isaac Sidney Menezes Ferreira
Deputy Governor

Luiz Edson Feltrim
Deputy Governor

Otávio Ribeiro Damaso
Deputy Governor

Reinaldo Le Grazie
Deputy Governor

Sidnei Corrêa Marques
Deputy Governor

Tiago Couto Berriel
Deputy Governor

Members of the Monetary Policy Committee

Members

Ilan Goldfajn
Governor

Anthero de Moraes Meirelles
Deputy Governor

Carlos Viana de Carvalho
Deputy Governor

Isaac Sidney Menezes Ferreira
Deputy Governor

Luiz Edson Feltrim
Deputy Governor

Otávio Ribeiro Damaso
Deputy Governor

Reinaldo Le Grazie
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Tiago Couto Berriel
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Acronyms

ANEEL	Brazilian Electricity Regulatory Agency
b.p.	Basis points
BCB	Central Bank of Brazil
BNDES	Brazilian Development Bank
Caged	General File of Employed and Unemployed Persons
CCI	Consumer Confidence Index
CDS	Credit Default Swap
CMN	National Monetary Council
CNI	National Confederation of Industry
Continuous PNAD	Continuous National Household Sample Survey
Copom	Monetary Policy Committee
CRB	Commodity Research Bureau
CSI	Current Situation Index
DAX	Deutscher Aktienindex
DIA	Direct Investment Abroad
EI	Expectations Index
Embi+	Emerging Markets Bond Index Plus
EP	Employed Population
FDI	Foreign Direct Investment
FGV	Getulio Vargas Foundation
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
HP	Hodrick e Prescott
IBC-Br	Central Bank Economic Activity Index – Brazil
IBGE	Brazilian Institute of Geography and Statistics
ICI	Industrial Confidence Index
ICS	Services Confidence Index
IGP	General Price Index
IGP-M	General Price Index – Market
Inec	National Consumer Expectations Index
IPA-DI	Broad Producer Price Index – Domestic Supply
IPCA	Extended National Consumer Price Index
IPI	Industrialized Products Tax
MTPS	Ministry of Labor and Social Security
NCM	Common Mercosur Nomenclature
Nuci	Installed Capacity Utilization Level
p.p.	Percentage points
p.y.	Per year
PEC	Constitutional Amendment Proposal
PIM-PF	Monthly Industrial Survey – Physical Production
PMC	Monthly Retail Trade Survey

PMS	Monthly Service Survey
PO	Employed Personnel
PPI	Broad Producer Price Index
S&P 500	Standard and Poor's 500
UCI	Installed Capacity Utilization
USA	United States of America
VIX	Chicago Board Options Exchange Volatility Index