Inflation outlook

6

This chapter of the Inflation Report presents the Monetary Policy Committee's (Copom) assessment of the behavior of the Brazilian economy and of the international scenario since the release of the previous Report in September 2014. The chapter also presents the analysis of the inflation prospects up to the fourth quarter of 2016 and of the Gross Domestic Product (GDP) growth up to the third quarter of 2015. Inflation projections are presented in two major scenarios. The first scenario, called the baseline scenario, assumes that the Selic rate will remain unchanged over the forecasting horizon at 11.75% per year, which is the level set by Copom at its most recent meeting on December 2 and 3, and that the exchange rate will remain at R$2.55 per US dollar. The second scenario, named the market scenario, is based on the expected paths for the policy interest rate and for the exchange rate drawn from the survey carried out by the Banco Central do Brasil's Investor Relations and Special Studies Department (Gerin) among independent analysts. It is important to stress that these scenarios are used only as support for monetary policy decisions and their assumptions should not be viewed as Copom forecasts of the future behavior of interest and exchange rates. The projections released here are based on the information set available up to the cutoff date of December 5, 2014.

The projections for inflation and for GDP growth released in this Report are not point estimates. They consist of probability intervals which embody the degree of uncertainty that was present at the above mentioned cutoff date. Inflation projections depend not only on assumptions about the interest and exchange rates, but also on a set of assumptions on the behavior of exogenous variables. The most likely set of assumptions considered by the Copom is used to build the scenarios to which the Committee attaches the greatest weight on making its interest rate decisions. On setting out these assumptions, the Copom seeks to foster transparency to the monetary policy, thereby contributing to the effectiveness of policy decisions in controlling inflation, which is its primary objective.

6.1 Inflation determinants

The twelve-month inflation measured by the change in the Broad National Consumer Price Index (IPCA) reached 6.56% in November, which is 0.79 percentage points higher than the value recorded until November 2013. On one hand, there was a slight moderation in market prices, which in twelve months accumulated a change of 6.76% (7.31% until November 2013); on the other hand, there was a significant acceleration of regulated and monitored prices, ranging 5.83% (0.95% until November 2013). Within the set of market prices, the increase of non-tradable goods reached 7.45% in twelve months (8.29% until November 2013), and tradable goods amounted to 6.02% (6.20% until November 2013). Twelve-month accumulated inflation in the food and beverage group declined to 7.83% (8.63% until November 2013) and the services sector inflation – around one-third of the consumption basket of IPCA – has reached 8.29% (8.55% until November 2013), and remains in levels above the market prices inflation.

The average monthly change of the measures of underlying inflation calculated by the Central Bank shifted from 0.44% in October to 0.34% in November, reaching 6.42% in twelve months (0.20 p.p. higher than the rate recorded in November 2013). Specifically, the core that excludes the prices of monitored goods and food at home changed from 0.42% in October to 0.31% in November; the smoothed trimmed mean core changed from 0.51% to 0.38%; the non-smoothed trimmed mean core changed from 0.41% to 0.32%; the exclusion core – which excludes ten items from the groups food at home and fuels – changed from 0.41% to 0.33%; and the double weighted core changed from 0.44% to 0.38%. The IPCA diffusion index fell and reached 61.4% in November (6.8 p.p. lower than that of November 2013) and 62.5% on the three-month average (2.1 p.p. below the average observed from September to November 2013).

Broader inflation – measured by the General Price Index (IGP-DI) – which is characterized by higher volatility when compared to IPCA, increased 1.14% in November after a 0.59% increase in October. Therefore, the index cumulates change of 4.10% in twelve months to November (5.49% until November 2013). The major component of the IGP-DI, the IPA, changed 2.65% in the twelve months to November, due to the 4.05% inflation in the agricultural sector and to the 2.12% increase in the industrial sector. The IPC, the second most important component of the IGP-DI, reached 6.81% in the twelve months to November (5.59% up to November 2013). The INCC, the smallest weight component of the

IGP-DI, increased 6.97% in twelve months (8.16% up to November 2013), due to the change of 8.49% in the labor cost and of 5.32% in the cost of materials, equipment and services.

The high frequency coincident indicator of economic activity, IBC-Br, which provides monthly production estimates for the three sectors of the economy, increased 0.40% in September, compared to the previous month, according to the seasonally adjusted series. Therefore, the IBC-Br growth rate has shifted to 0.92% in the last twelve months. The PMI for Brazil shifted from 48.2 in October to 48.5 in November, which suggests a moderate contraction in the activity level.

The Consumer Confidence Index (ICC) and the Services Sector Confidence Index (ICS) computed by FGV, decreased in November. The ICC reached the lowest level since December 2008, decreasing 6.1%, while the ICS reached the lowest level of the historical series with a 2.1% fall. The Industry Confidence Index (ICI) increased 3.6% in November, influenced by the improvement in the perception of the business condition.

The industrial production showed stability in October, after decreasing 0.2% in September, according to the seasonally adjusted data of IBGE, accumulating variation of -3.0% in 2014. According to the non-seasonally adjusted series, the industrial production decreased 3.6% in October, relative to the same month of the previous year, with negative results in 23 of the 26 surveyed activities. Among the end-use categories and comparing the industrial production of October and September based on the seasonally adjusted series, intermediate goods and capital goods showed stability in production. On the other hand, durable consumer goods (-0.8%) and semi and non-durable consumer goods (-0.6%) registered a decline in production. Comparing the industrial production of October with the one for the same month of 2013, there was a decrease in the production of the four categories: capital goods (11.4%), consumer durables (9.4%), intermediate goods (2.8%) and of semi and non-durable goods (0.1%). According to seasonally adjusted data from the National Confederation of Industry (CNI), despite the stability of the production indicator, the real revenue of the manufacturing industry increased 3.1% from September to October and increased 1.3% compared to October 2013.

The Installed Capacity Utilization Level (Nuci) in the manufacturing sector, computed and seasonally adjusted by FGV, reached 82.7% in November. In terms of sectoral

distribution, capacity utilization appears more intense in the materials for construction sector (87.1% according to seasonally adjusted data), and less in non-durable consumer goods sector (77.8%). With regard to inventories, the indicator for the manufacturing sector, seasonally adjusted and calculated by FGV, recorded increase in inventories since the release of the previous Report. In November, 13.3% of the surveyed establishments had excessive inventories (14.1% in September), and 1.7%, had insufficient inventories (1.4% in September), according to the seasonally adjusted data. Still regarding the Manufacturing Industry Conjuncture Survey, conducted by FGV, inventories remain at high levels, in particular, in the capital goods and durable consumer goods sectors.

The retail volume for the restricted retail trade increased 0.5% in September, compared to September 2013, while the broader retail trade contracted 1.2% in the same basis of comparison (the monthly rates were 0.4% and 0.5%, respectively, according to seasonally adjusted series). The growth rate for the last 12 months was, therefore, 3.4% for the restricted retail trade and -0.1% for the broader retail trade. There was expansion of retail volume in five of the ten segments surveyed by IBGE, considering the seasonally adjusted index. In the next months, sales will continue to be influenced by government transfers, by payroll growth and by the moderate credit expansion.

The Brazilian GDP at market prices increased 0.1% in the third quarter of 2014, after decreasing 0.6% in the previous quarter, according to seasonally adjusted IBGE data. Compared to the same quarter of 2013, there was a change of -0.2% in the third quarter (-0.9% in the second quarter). Therefore, the Brazilian economy grew 0.7% in the last four quarters (expansion of 0.7% in the value added and of 0.6% in direct taxes). In terms of components, the production in the agricultural sector increased 1.1% in four quarters; in the services sector, 1.2%; and in the industrial sector, decreased 0.5%.

From a demand side perspective, household consumption – the largest component of aggregate demand – decreased 0.3% in the third quarter of 2014, in comparison to previous quarter, according to seasonally adjusted data, and increased 0.1% compared to the same quarter of 2013. In turn, government consumption increased 1.3% at the margin and 1.9% with respect to the same quarter of 2013. The Gross Fixed Capital Formation (GFCF) increased 1.3% when compared to the previous quarter and decreased 8.5% when compared to the same quarter of 2013. With respect to the

foreign trade sector, exports and imports increased 1.0% and 2.4%, respectively, in comparison to previous quarter, according to seasonally adjusted data. Comparing to the third quarter of 2013, the contribution was positive, with 3.8% growth of exports and 0.7% in imports.

The IBGE reported the results of the Monthly Labor Survey (PME) of October 2014 for the six metropolitan regions usually surveyed. According to seasonally adjusted data, the unemployment rate reached 4.7% in October, the lowest value for this month since 2002, 0.2 p.p. lower than previous month. Comparing to October 2013, this rate decreased 0.5 p.p. as a result of an increase in Porto Alegre (from 3.0% to 4.6%) and a decrease in São Paulo (from 5.6% to 4.4%), while remaining stable in the other regions. It is worth noting that the lesser expansion in the labor supply in recent years – as indicated by the lower growth rate of the working-age population (PIA) – has contributed significantly to keep the unemployment rates at historically lower levels. Still according to the PME, comparing to September, the average habitual real income of workers increased in Salvador, Belo Horizonte Rio de Janeiro e São Paulo, decreased in Porto Alegre and remained stable in Recife. In the yearly comparison, it increased in all regions. Formal employment remains expanding, albeit moderation in the job creation occurred. According to the data released by the Ministry of Labor and Employment (MTE), 298 thousand jobs were created in twelve months up to October 2014 (682 thousand up to October 2013).

In addition to rising payrolls, credit availability – largely determined by macroeconomic stability, improvement in financial system infrastructure and institutional reforms in recent years – was an important driving force behind growth of household consumption. Total credit to households reached R$1,377.2 billion in October, a 13.4% nominal growth relative to October 2013. In particular, housing loans for households, whose operations are mainly based on earmarked resources, grew by 27.6%, reaching R$416.6 billion, which corresponds to 8.2% of GDP. Delinquency rates have shown stability at the margin, at levels consistent with the phase of the cycle.

The volume of credit to corporations totaled R$1,549.0 billion in October (11.1% higher than in October 2013), with an average interest rate of 15.9% (1.1 p.p. higher than the average rate observed in October 2013). In particular, loans and financing to corporations with resources provided by the National Bank of Economic and Social Development (BNDES) reached R$565.7 billion – an increase of 16.1% in twelve months up to October.

Regarding the capital market, the volume of primary issues of shares registered in the Securities and Exchange Commission of Brazil (CVM) reached R$15.1 billion in 12 months up to October 2014 (R$10.4 billion up to October 2013). In turn, debenture issues, excluding the issuance of leasing companies, totaled R$63.5 billion in twelve months up to October 2014 (R$74.2 billion in the same period of the previous year). In total, firms financing from capital markets by issues of shares, debentures, commercial papers and receivables in credit rights reached R$108.2 billion in twelve months up to October 2014 (R$105.6 billion observed in the same period of 2013).

With regard to the trade balance, the twelve-month deficit reached US$1.6 billion in November (US$2.0 billion superavit in November 2013). This result stemmed from US$228.4 billion in exports and US$230.0 billion in imports, which represented decreases of 5.2% and 3.7%, respectively, compared to the twelve-month period ended in November 2013. Considering the twelve months ended in October, the exported volume increased 1.0% and the average price of exports decreased 3.9%, while the imported volume decreased 2.5% and the average price of imports diminished 1.4%.

The twelve-month current account deficit reached US$84.4 billion in October, equivalent to 3.7% of GDP. The remittances of profits and dividends totaled US$27.4 billion in liquid terms (US$24.8 billion in October 2013), and the expenses under the item called "operational leasing services" which are, in a great part, meant to oil and minerals exploitation, reached US$21.9 billion (US$19.1 billion up to October 2013). It is also worth noting that imports of oil and derivatives reached, during the same period, US$34.4 billion (US$37.2 billion up to October 2013), while exports revenue shifted from US$23.7 billion to US$26.7 billion.
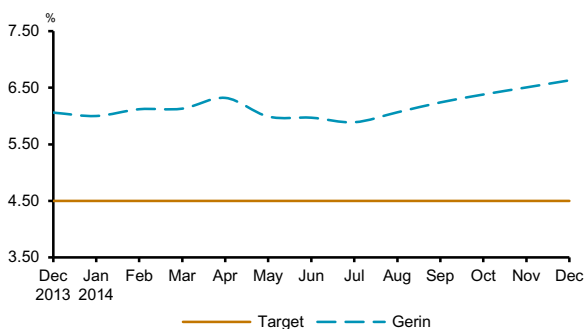
Foreign direct investments – which have been the main financing source of the balance of payments – totaled US$66.0 billion in the twelve months up to October, equivalent to 2.9% of GDP.

Regarding global activity, since the previous Report, leading indicators point to heterogeneous growth prospects in mature economies (below potential growth rates, considering the whole group). In Europe, despite recent improvements, high unemployment rates, along with fiscal consolidation and political uncertainties still constitute elements of investments and growth restraint. In the United States, there is a more consolidated view regarding the sustainability of the recovery

Figure 6.1 – Inflation target path and market expectations for twelve-month ahead inflation

Figure 6.2 – Dispersion of inflation expectations for 2015
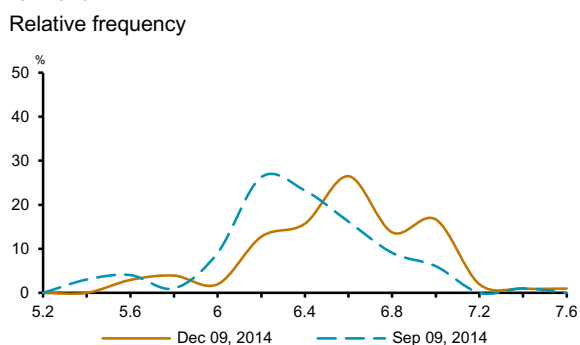Relative frequency

of the economy observed in the last quarters. In emerging economies, the pace of activity has not corresponded to expectations, despite the resilience of domestic demand.

Brent oil prices, since the release of the previous Report, decreased to a level close to US$70. The geopolitical complexity which surrounds the oil sector tends to boost the volatile behavior of prices, which also reflects the low predictability of some global demand and supply components. Regarding other commodities, there was a decrease of 7.9% in metal commodities prices and 9.3% in agricultural prices. At the cutoff date of December 5, the price index based on twenty two commodities, published by the Commodity Research Bureau (CRB), decreased 6.7% against the value registered at the cutoff date of the September 2014 Report.

The median of market expectations for the GDP growth rate for 2014 moved from 0,48% to 0.18%, between September 5, the cutoff date of the previous Report, and December 5. For 2015, the projected growth rate decreased from 1.10% to 0.73%. During this period, the median expectation for inflation, measured by the variation in IPCA, moved from 6.29% to 6.38% for 2014; from 6.29% to 6.50% for 2015; and from 5.50% to 5.70%, for 2016. The twelve-month ahead inflation expectations moved from 6.24% to 6.63%, as shown in Figure 6.1. Since the release of the September 2014 Report, there was an increase in the dispersion around the central tendency measures of inflation expectations for 2015, as illustrated in Figure 6.2. The standard deviation of these projections moved from 0.40% to 0.43%.

6.2 Associated risks and monetary policy implementation

The projections used by the Copom are based on a set of assumptions about the behavior of the main macroeconomic variables. This set of assumptions, as well as, the risks associated with them make up the main prospective scenario on which the Committee makes policy decisions.

On the external side, in general, since the last Report, the prospects of stronger pace of global activity have remained unchanged in the relevant horizon for monetary policy. In this respect, evidences still point to heterogeneous growth rates in mature economies, with low and below potential growth in some of them. In international markets, prospects

point to moderation in the dynamics of commodities' prices, as well as, the occurrence of tension and volatility spots in the currency markets. On the domestic side, the main scenario envisages a less intense pace of economic activity this year, when compared to 2013, but in a recovery path in the second semester of next year. Other important aspects of the domestic environment are the historically low levels of confidence of consumers and entrepreneurs, the labor market dynamics and two important ongoing processes of relative prices adjustments – the domestic prices realignment relative to the international ones and the realignment of regulated and monitored prices relative to market prices.

On the external front, despite remaining limited the space for monetary policy and prevailing, albeit with less intensity than in recent years, a scenario of fiscal restriction, the prospects indicate recovery of economic activity in some mature economies and strengthening in the pace of growth for others. In the United States, the trend for improvement in the labor market and for recovery in the real estate market continues, in an environment that combines moderate levels of inflation. In Japan, the central bank maintains the monetary stimulus program and signaled with the possibility of deepening the program. In the Euro area, uncertainties about the effectiveness of recent initiatives announced by the ECB, combined with a certain skepticism regarding the soundness of the banking system in some economies in the area, are still reflected in the fragility of credit market, employment and investments. Nonetheless, prospects point to moderate growth this year and the following one in the Euro area with asymmetric distribution among member countries. Regarding risks for global activity, it is worth mentioning the ones derived from geopolitical tensions and, perhaps more relevant, those deriving from the start of the normalization process of monetary conditions in important mature economies.

The Copom evaluates that the developments in mature economies are transmitted to emerging economies' aggregate demand at an intensity that is proportional to, among other factors, trade and capital flows. In this sense, recent events – on one hand, the improvement, even though gradual, in the activity pace of significant trade partners; and, on the other hand, changes in the slope of the yield curve in important financial centers and volatility spots in the international financial markets – are opposing forces. The Committee also highlights the importance of the transmission through the expectations channel, which affects investment, in the case of entrepreneurs, and consumption, in the case of households. In this context, the Committee notices that despite improvements in important mature economies, there

has been lower than expected growth in the main emerging market economies, in spite of the resilience of domestic demand. Recent indicators suggest that growth rates for the group of emerging economies tend to remain relatively high, though with different distribution and in lower levels than recorded in recent years.

In short, the Committee assesses that, in the relevant horizon, the scenario of higher global growth – despite the disparity of its distribution –, combined with the depreciation of the Real relative to important commercial partners' currencies, move toward making the external demand more favorable to the growth of the Brazilian economy.

The Copom considers that, since the last Report, risks for global financial stability remained high, in particular the ones derived from changes in the slope of the yield curve in important mature economies. These risks translate, for instance, into the partial reversion of the process of compression of risk premia and increase of asset prices. In fact, in the recent period, credit default swaps (CDS) of banks and sovereigns – in particular, of emerging and European periphery economies – raised and returned to the levels observed in the beginning of this year. In turn, stock markets of some emerging and mature economies have decreased in value since last Report. Despite identifying low probability of occurring extreme events in international financial markets, the Committee assesses that the external environment remains complex.

Aggregate commodity prices indexes measured in United States dollars have shown stability when comparing figures registered in September and November. Nevertheless, there was a significant decrease in the energy segment. In September, the Commodities Brazil Index (IC-Br) interrupted the decline started in March 2014 and since then has shown relative stability. In terms of its components, in September, both the IC-Br for metals and the IC-Br for agriculture interrupted the downward trend, although the same didn't occur with respect to the IC-Br for energy. The Committee highlights that, in spite of the volatility observed in the markets, perspectives indicate a moderate dynamics for commodities prices. Specifically regarding oil prices, the Committee stresses that their influence on domestic inflation does not materialize exclusively through the local price of gasoline, but also via the petrochemical production chain and the expectations channel of consumers and entrepreneurs.

The Copom considers that – apart the effects of exchange rate variations – purchases of external goods tend to contribute

to the weakening of domestic inflationary pressures through two channels. Firstly, these products compete with goods that are domestically produced, imposing greater discipline to the price setting process. Secondly, imports reduce the demand for domestic input, contributing to the weakening of cost pressures and, by consequence, of its eventual pass-through to consumer prices. In this respect, it is worth adding that factor cost pressures not offset by efficiency gains contribute to the reduction in the competitiveness of domestic firms in the international market for goods and services, in a global environment in which still prevails excess of spare capacity.

On the internal side, the Copom considers that the growth rates of domestic absorption and of the GDP have converged and that the pace of economic activity growth tends to be less strong this year, compared to 2013. Nonetheless, the Committee envisages the activity entering a recovery trajectory in the second semester of next year. In the medium-term, the Committee evaluates that significant changes should occur in the composition of aggregate demand and supply. The consumption tends to keep expanding at a moderate pace and the investments tend to gain momentum. Regarding the external component of aggregate demand, the scenario of higher global growth, combined with the depreciation of the Real, tends to benefit the Brazilian economy growth. On the supply side, the Committee evaluates that, in longer terms, more favorable prospects emerge for the competitiveness of those sectors more directly involved in commercial transactions with the rest of the world – i.e., industrial sector and agriculture and cattle raising sector. Meanwhile, the services sector tends to grow at lower rates than the ones registered in recent years.

According to the Copom's view, the changes mentioned in the previous paragraph anticipate a growth composition in the medium term more favorable to the potential growth. Also point in this direction, improvements in the workforce qualification and the program of public services concessions. In this context, in longer terms, the Committee understands that there would be ground for the expansion of the investment growth rates, for a more effective allocation of the factors of production and, consequently, for GDP growth rates to return to higher levels and even to potential growth increase. The Committee highlights, however, that the speed, with which the above mentioned changes and the gains derived from them will be achieved, depends, on the domestic side, on the confidence strengthening of firms and households and on the external side on the solutions of uncertainties that are now present, for instance in monetary policy of important mature economies.

In terms of factor markets, the Copom considers that an important source of risk to inflation comes from the labor market, which shows low idle margin, despite some signs of accommodation. The Committee reaffirms that a crucial aspect under these circumstances is the possibility of real wage increases not compatible with productivity growth, causing negative impacts on the inflation dynamics. At this point, it is worth noting that, according to the theory, which is endorsed by the international experience, wage moderation is a key element to the achievement of a macroeconomic environment with price stability.

Still regarding the labor market, the Copom understands that there are risks, due to the presence of mechanisms in the Brazilian economy that favor the persistence of inflation, derived from the possibility that wage bargaining gives excessive weight to past inflation at the expense of future inflation. In this context, despite the lower raise in the minimum wage this year than in previous years, as well as real wage gains in the last quarters near to the levels consistent with estimates of productivity gains, the Committee evaluates that the wage dynamics remains originating inflationary cost pressures.

Regarding the capital factor, the National Accounts data related to the third quarter show that the investment rate reduced for the fourth consecutive quarter, moving to 17.2% of the GDP in the 12-month rate. Specifically in the industrial sector, two factors could be associated with an unsatisfactory performance of fixed capital formation: the low confidence of entrepreneurs and the evidence of smaller income margins. Still about the capital factor, it can be seen that the capacity utilization has shown stabilization even if in lower levels, reducing the heterogeneity between sectors in comparison with what was observed in the previous Inflation Report.

In terms of idleness indicators for the whole economy, the Copom notes that, in general, conventional measures of output gap have moved toward the disinflationary direction. In fact, at the margin, the economic activity growth rates have been smaller than the estimates of the potential economic growth. Moreover, considering the growth prospects for the next quarters (according to Section 6.3), the Committee evaluates that the output gap measures tend to remain disinflationary.

Regarding fiscal policy, the Copom observes that its prospective scenario for inflation is conditioned on the materialization of the trajectories regarding fiscal variables. Accordingly, despite evidences of fiscal stimulus in the

composition of aggregate demand this year, the fiscal indicator used in the inflation forecasts (the structural primary surplus) tends to maintain some stability, therefore leading to fiscal impulses (the change in the structural primary surplus between two periods) of negligible size.

The Copom, however, ponders that it cannot discard the migration of fiscal policy to the contentious zone. As a matter of fact, the Copom understands that primary surpluses that increase the perception of sustainability of public accounts will contribute to a positive perception of the macroeconomic environment in the medium and long run, therefore, decreasing the cost of financing the public debt. Moreover, a more contained fiscal policy will have favorable implications for the cost of capital in general, what, on the other hand, would stimulate private investment in the medium and long run.

The Copom understands that a source of risk for inflation lies on the behavior of inflation expectations, negatively affected in the last months by the high level of current inflation, by the dispersion of price increases, by current relative price adjustment processes, among other factors. Moreover, it is worth noting that the systematic mismatch between wage and price increases, the high inflation diffusion and the increase in the prices of frequently bought goods – such as food and public service goods – constitute signs that perceived inflation may be higher than actual inflation.

The Copom highlights that the central scenario envisages moderate expansion of credit. In this regard, note that, after years of strong expansion – slowed down by the introduction of macroprudential measures in the end of 2010 – the credit market aimed to consumption showed moderation, leading, in the last quarters, on the one hand, to lesser exposure of banks, and, on the other hand, to household deleveraging. As a result, it follows that risks in the consumption credit market have been mitigated.

Still on the credit Market, the Copom considers timely initiatives towards moderating subsidies allowances via credit transactions. It is also worth highlighting that the Committee gives high probability that actions in this direction are implemented in the relevant horizon for monetary policy.

The Copom highlights that, since last Report, the prices of domestic assets have had an important correction, partly due to the increase in the risk aversion in international financial markets. Moreover, in the relevant horizon for monetary

policy, the Committee evaluates that the risk aversion and the international financial market volatility may react to the publication of new indicators and/or to the signaling made by authorities that suggest the beginning of the normalization process of the monetary conditions in big economic blocs, particularly in the United States. Another potential source of disturbance are geopolitical events. It is worth noting, additionally, that eventual rises in volatility and international markets risk aversion tend to be transmitted, yet partially, to domestic assets.

The Copom highlights that, in market economies and in the long run, prices tend to show relatively similar growth rates. In this sense, in line with projections reported in the next section, the Copom identifies a realignment process between regulated and market prices. From other point of view, the committee notes Real depreciated against currencies of important Brazilian trade partners and then, also identifies a realignment process between domestic and international prices. Prospectively, on the one hand the Committee anticipates the continuity of these price realignments in the next year, and, on the other hand, evaluates that their effects tend to be strongly mitigated in 2016.

From the view of the Copom, the fact that inflation currently stands in high levels partly reflects the two aforementioned relative price adjustment processes. In this context, as the projections presented in the next section show, the Committe does not discard increase of inflation in the short run and anticipates that inflation tends to remain high in 2015, however, still in the next year, tends to enter a long declining path.

The Copom highlights the intensification of these relative price adjustments since last Report, which combined with evidence of fiscal stimulus in the aggregate demand composition, has contributed to turn the inflation risk balance less favorable. Although it recognizes that the aforementioned relative price adjustments have a direct impact on inflation, the Committee reaffirms its view that monetary policy can and should restrain the second order effects that derive from them.

In this context, the Copom decided to increase the Selic rate to 11.25% p.a., without bias, for five votes in favor and three votes for the maintenance of the Selic rate in 11.00% p.a. in the October meeting; and, unanimously, to intensify the adjustment of the Selic rate by increasing it in 0.50 p.p., to 11.75%, without bias, in the December meeting.

The following members of the Committee voted for the decision of increasing the Selic rate at 11.25% p.a. in the October meeting: Alexandre Antonio Tombini (Governor), Aldo Luiz Mendes, Anthero de Moraes Meirelles, Carlos Hamilton Vasconcelos Araújo and Sidnei Corrêa Marques. The following members of the Committee voted for the decision of keeping the Selic rate at 11.00%: Altamir Lopes, Luiz Awazu Pereira da Silva and Luiz Edson Feltrim. In the December meeting, the following members of the Committee voted for the decision of increasing the Selic rate to 11.75% p.a.: Alexandre Antonio Tombini (Governor), Aldo Luiz Mendes, Altamir Lopes, Anthero de Moraes Meirelles, Carlos Hamilton Vasconcelos Araújo, Luiz Awazu Pereira da Silva, Luiz Edson Feltrim and Sidnei Corrêa Marques.

The Copom emphasizes that the international evidence, which is ratified by the Brazilian experience, shows that high inflation rates generate distortions that lead to higher risks and depress investments. These distortions are manifested, for example, in shortening the planning horizons of households, businesses and governments, as well as in the deterioration of the businessmen's confidence. The Committee also emphasizes that high inflation rates subtract the purchasing power of wages and transfers, with negative repercussions over households' confidence and consumption. Therefore, high inflation rates reduce the growth potential of the economy, as well as of jobs and income generation.

The Copom still highlights that, in moments such as the current one, the monetary policy should remain vigilant, in order to minimize risks that high inflation rates, such as the ones observed in the last twelve months, persist in the relevant horizon of monetary policy. In this sense, the Committee will do whatever it is needed to put inflation in a long declining path, which will take it to the target of 4.5% in 2016.

6.3 Assumptions and inflation forecast

According to traditional procedures, and taking into account the available information set, up to the cutoff date of December 5, 2014, the baseline scenario assumes that the exchange rate remains unchanged over the forecast horizon at R$2.55/US$, and the target for the Selic rate at 11.75% p.a. – the level set by the December 2014 Copom meeting – against R$2.25/US$ and 11.00% p.a. considered in the September 2014 Inflation Report.

The market scenario, in turn, incorporates data from the expectations survey carried out by Gerin with a representative group of institutions up to the cutoff date. In this scenario, average exchange rate expectations increased compared to the values released in the September 2014 Inflation Report. For the last quarter of 2014, the average rate moved from R$2.31/US$ to R$2.52/US$. For the fourth quarter of 2015, the average Exchange rate moved from R$2.48/US$ to R$2.68/US$. For 2016, market participants project an average exchange rate of R$2.70/US$.

Regarding the evolution of the average Selic rate, the expectations for the fourth quarter of 2014 increased from 11.00% p.a. to 11.25% p.a. and, for the fourth quarter of 2015, shifted from 11.65% p.a. to 12.50% p.a.. For 2016, the expected average Selic rate is 11.25% p.a. This trajectory of the Selic rate is consistent with twelve-month pre-DI swap spreads of 20 b.p., 79 b.p. and -26 p.b., with respect to the current target for the Selic rate (11.75% p.a.), in the fourth quarter of 2014, 2015 and 2016, respectively.

The projection for the change in the set of regulated and monitored prices, in both scenarios, is 5.3% for 2014, compared to 5.0% considered in the last Report. This projection is based on the variations occurred, up to November, in gasoline (2.3%) and bottled gas (4.3%) prices, as on the assumptions for the accumulated over 2014, of reduction of 6.4% in landline telephone rates and increase of 18.2% in electricity rates. For 2015, the projection for the change in the set of regulated and monitored prices, in both scenarios, is 6.2% and considers variations of 0.6% in landline telefone rates and 17.0% in electricity rates. Regarding items for which more information is available, price changes were estimated individually. For the remaining items, the projections are based on models of endogenous determination of regulated prices, which consider, among other variables, seasonal components, market price inflation and General Price Index (IGP) inflation. According to these models, the projected adjustment in the set of regulated and monitored prices in both scenarios is 5.2% in 2016, compared to 4.9% considered in the last Report.

The structural primary surplus that derives from the primary surplus trajectories for 2014 and 2015 is considered as the fiscal indicator, according to the parameters set out in the 2014 Budget Guidelines Law (LDO) and the 2015 Budget Guidelines Project Law (PLDO), respectively. As highlighted in previous Reports, for a certain period of time, the fiscal impulse is equivalent to the change of structural surplus, compared to the previous period.

Figure 6.3 – Projected IPCA-inflation with interest rate constant at 11.75% p.a. (Baseline scenario)
Inflation fan chart
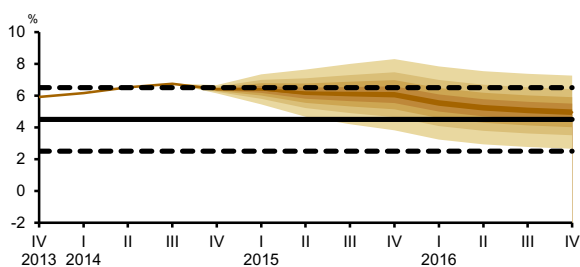
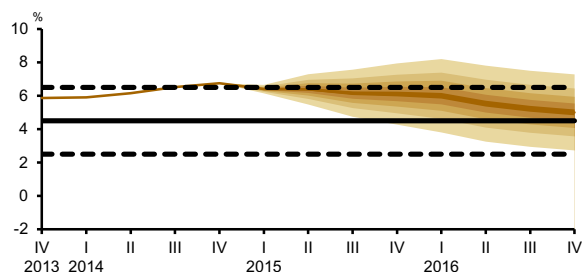Note: accumulated inflation in 12 months (% p.a.).

Table 6.1 – Projected IPCA-inflation with interest rate constant at 11.75% p.a.
(Baseline scenario)

Year	Q	Probability Interval						Central projection
		50%						
			30%					
				10%				
2014	4	6.3	6.3	6.4	6.4	6.5	6.5	6.4
2015	1	6.0	6.2	6.3	6.5	6.6	6.8	6.4
2015	2	5.5	5.8	6.0	6.3	6.5	6.8	6.1
2015	3	5.3	5.6	5.9	6.2	6.5	6.9	6.1
2015	4	5.1	5.5	5.9	6.2	6.6	7.0	6.1
2016	1	4.6	5.0	5.4	5.7	6.1	6.5	5.5
2016	2	4.3	4.7	5.1	5.4	5.8	6.2	5.2
2016	3	4.1	4.5	4.9	5.2	5.6	6.0	5.1
2016	4	4.0	4.4	4.8	5.1	5.5	5.9	5.0

Note: accumulated inflation in 12 months (% p.a.).

Figure 6.4 – Projected IPCA-inflation with market interest and exchange rates expectations

Inflation fan chart

Note: accumulated inflation in 12 months (% p.a.).

Table 6.2 – Projected IPCA-inflation with market interest and exchange rates expectations [1/]

Year	Q	Probability Interval						Central projection
			50%					
				30%				
					10%			
2014	4	6.3	6.3	6.4	6.4	6.5	6.5	6.4
2015	1	6.0	6.2	6.3	6.5	6.6	6.8	6.4
2015	2	5.6	5.8	6.0	6.3	6.5	6.7	6.2
2015	3	5.4	5.7	6.0	6.2	6.5	6.9	6.1
2015	4	5.1	5.5	5.8	6.2	6.5	6.9	6.0
2016	1	4.6	5.0	5.4	5.7	6.1	6.5	5.5
2016	2	4.3	4.7	5.0	5.4	5.8	6.2	5.2
2016	3	4.1	4.5	4.8	5.2	5.5	5.9	5.0
2016	4	4.0	4.4	4.7	5.1	5.4	5.8	4.9

Note: accumulated inflation in 12 months (% p.a.).
1/ According to Gerin.

Table 6.3 – September 2014 Inflation Report projections

Period	Baseline scenario	Market scenario
2014 III	6.6	6.6
2014 IV	6.3	6.3
2015 I	6.0	6.1
2015 II	5.6	5.8
2015 III	5.8	6.1
2015 IV	5.8	6.1
2016 I	5.6	5.9
2016 II	5.3	5.5
2016 III	5.0	5.2

Based on the above assumptions and using the information set available until the cutoff date, projections were constructed for the four-quarter IPCA inflation, consistent with the interest rate and exchange rate paths that characterize the baseline and market scenarios.

The central projection associated with the baseline scenario indicates inflation of 6.4% in 2014 and 6.1% in 2015, in both cases above the central target level of 4.5% determined by the National Monetary Council (CMN) and 0.1 p.p. and 0.3 p.p. higher than the projections presented in the last Report, respectively. For 2016, projection points to a 5.0% inflation rate. As can be seen in Figure 6.3 and in Table 6.1, in the baseline scenario the projection ends 2014 at 6.4%, remains at 6.4% in the first quarter of 2015 and decreases to 6.1 in the second quarter, remaining at this level until the fourth quarter and then decreasing to 5.5%, 5.2%, 5.1% and 5.0% in the four quarters of 2016.

Still in the baseline scenario, the estimated probability that inflation will breach the upper tolerance level of the target in 2015 stays around 37% and, in 2016, around 15%.

In the market scenario, the projection indicates inflation of 6.4% in 2014 and 6.0% in 2015, in both cases above the central target level of 4.5% determined by the CMN and 0.1 p.p. higher and 0.1 p.p. lower than the values presented in the last Report, respectively. For 2016, the inflation projection is 4.9%. As may be seen in Figure 6.4 and Table 6.2, the projection for the twelve-month inflation rate ends 2014 at 6.4%, remains at 6.4% in the first quarter of 2015, decreases to 6.2%, 6.1% and 6.0% in the second, third and fourth quarters of 2015, respectively, and declines to 5.5%, 5.2%, 5.0% and 4.9% in the four quarters of 2016.

In the market scenario, the estimated probability that inflation will breach the upper tolerance level of the target in 2015 stays around 35%, and in 2016, around 12%.

The comparison of the trajectories presented in this Report with those released in the previous one – the latter shown in Table 6.3 –, in the baseline scenario, shows increase in inflation projections between the fourth quarter of 2014 and the fourth quarter of 2015. The increase in projections between 2014 and 2015 is partly due to higher projections for regulated and monitored prices and to the increase in the exchange rate considered in the scenario. Projections for the first two quarters of 2016 decrease, and rise again in the third quarter of 2016. In the market scenario, the comparison of the trajectories presents similar movements to the baseline

Figure 6.5 – Projections and target path for twelve-month cummulative inflation

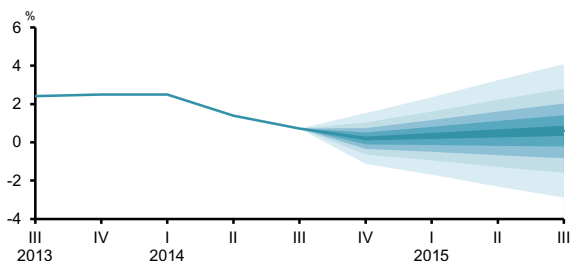Target — — — Market scenario — — — Baseline scenario
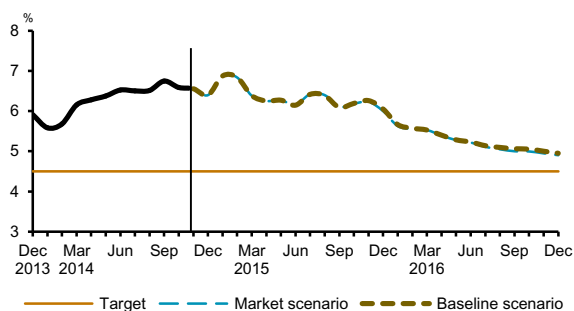
Figure 6.6 – Inflation forecast: VAR models
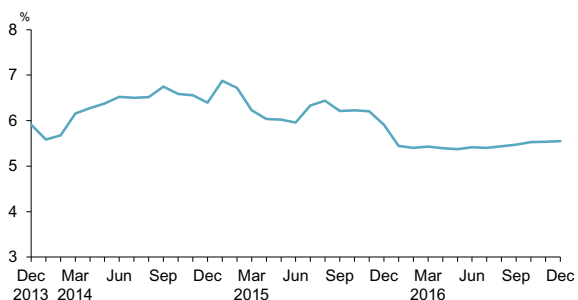
Note: Accumulated inflation in 12 months (% p.a.).
Average forecast generated by the VAR models.

Figure 6.7 – Projected GDP growth with interest rate constant at 11.75% p.a. (Baseline scenario)
Output fan chart

scenario until the second quarter of 2015, however shows decrease in inflation projections from the fourth quarter of 2015 to the third quarter of 2016.

Figure 6.5 shows the path of the twelve-month inflation, according to the baseline and the market scenarios, up to the fourth quarter of 2016, as well as the inflation target path. The figures are actual twelve-month inflation until November 2014 and, from then on, projections corresponding to the respective scenarios are used to compose the twelve-month values. In both scenarios, projections indicate that twelve-month inflation tends to remain high in 2015, but should enter a long declining path still in the next year.

The average forecast generated by the Vector Autoregressive (VAR) models, for the twelve-month inflation, is presented in Figure 6.6. Up to November 2014, the values refer to actual twelve-month inflation and, from then on, to forecasts. According to these models, the inflation projection presents a declining path up to June 2015, when it increases, converging then to the unconditional mean at the end of the forecast horizon.

Figure 6.7 illustrates the output growth fan chart built under baseline scenario assumptions. Considering that the GDP growth projection process uses two variables that are not directly observable – potential output and output gap –, the forecast errors associated with these projections are considerably higher than the errors related to inflation projections. According to this scenario, the projected four-quarter GDP growth is 0.2% in 2014 (0.5 p.p. lower than the one considered in the previous Report), and 0.6% in the four-quarter period ending in the third quarter of 2015.

Breaking the Break-even Inflation Rate[1]

The break-even inflation rate (BEIR) or implied inflation rate, is usually defined as the difference between nominal and real interest rates of securities with similar characteristics. Although it is commonly related to expected inflation – according to Fisher's hypothesis (1930) – BEIR is composed by other factors.

Among these factors, we have the uncertainty related to: (i) risk premium associated with inflation future path, which is equivalent to the additional remuneration that agents require to compensate for the risk of the realized inflation differ from the expected inflation; and (ii) liquidity premium, defined as the reward due to the difficulty to change a position in illiquidity securities (in the case at hand, real bonds). In addition to these risk premia, a third factor entails the difference between nominal and real interest rates, (iii) the convexity bias[2], which represents the difference between the implied inflation and inflation expectation in a risk neutral world.

Therefore, the difference between nominal and real interest rates can be decomposed from market price data – though its components are not observable – so that the implied inflation is given by:

Implied Inflation = Nominal rate - Real Rate = Inflation Expectation + Inflation Risk Premium - Liquidity Premium + Convexity.

Given the importance of the issue to understanding the evolution of expectations and price dynamics, this box uses a pricing model based on consumption that allows the decomposition of the difference between nominal and real interest rates on expectations and premia. Nominal rates are obtained from the National Treasury Bills
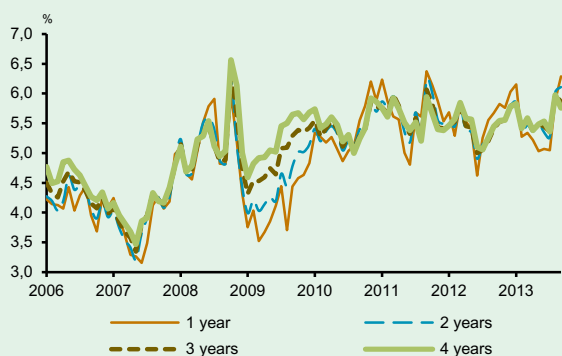

1/ This box is based on Vicente and Graminho (2014).

2/ The relation between bonds prices and rates is given by a convex function – the exponential relationship that connects bond prices with rates. Therefore, when taking the expected values of this function, we need to make a correction, due to the Jensen's inequality which may be stated as: let f be a convex function and X a random variable. Then $E[f(X)]>f(E[X])$, where $E[.]$ represents the expected value.

(LTN) and National Treasury Notes, Series F (NTN-F). Real rates are taken from the National Treasury Notes, Series B (NTN-B), which are securities indexed to the Broad National Consumer Price Index (IPCA). The sample covers the period between January 2006 and September 2013, and the rates are for the horizons of 1, 2, 3 and 4 years, interpolated via parametric model of Svensson (1994).
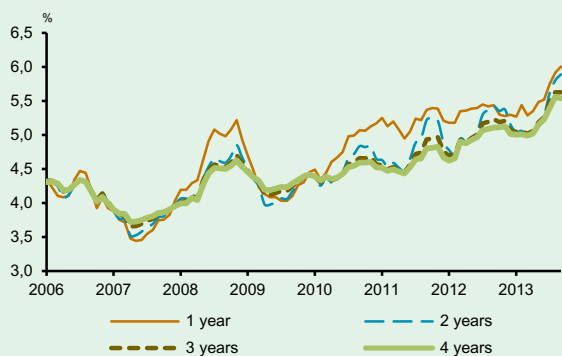
Figure 1 shows the daily evolution of the difference between nominal and real rates for horizons of 1, 2, 3 and 4 years between January 2006 and September 2013. During this period, the difference between the nominal and real interest rates orbited around an average of 5% p.a., with a minimum of 3% p.a. in July 2007 and maximum of more than 6% p.a. in the second half of 2008.

Inflation expectations shown in Figure 2 are obtained by the construction of the term structure via flat forward interpolation. The monthly inflation expectations are extracted from the Focus survey conducted by the Banco Central do Brasil's Investor Relations and Special Studies Department (Gerin). For horizons of 2, 3 and 4 years the expectations are calculated assuming constant inflation in months not informed.

The convexity bias, derived from the relationship between prices and bonds under certain hypothesis, is calculated as the variance of inflation[3], using an autoregressive process of order 1 (AR (1)) to model the monthly percentage change in the IPCA. As a result, we obtained values close to one basis point (b.p.) for the horizons 1-4 years, similar to the results found by Ang, Bekaert and Wei (2008) for the US market. Thus, the convexity bias presents little relevance when compared to the average bid-ask spread[4] of the NTN-F and LTN, which is close to 3 b.p., and NTN-B, which is about 10 b.p.

The liquidity premium is computed following Pflueger and Viceira (2013), who estimate a model of the difference between nominal and real interest rates on measures of bond liquidity, controlling for the Focus inflation expectation. We used three liquidity measures: the first is based on the average turnover of bonds and

Figure 1 – Break-even inflation rate

Figure 2 – Inflation expectations

3/ For this result, there must be no arbitrage and the real stochastic discount factor and the price index are conditionally lognormal variables. Without the assumption of log normality, this relationship is valid until the second order approximation. For details, see Vicente and Graminho (2014).

4/ Estimates of average spreads were obtained based on data provided by ANBIMA. ANBIMA collects every day at 11 AM buying and selling offers

consists on the difference between the turnover of real and nominal bonds, as a proportion of the negotiated bonds; the second captures differences between the buying and selling spreads of nominal and real bonds; and the third follows Hu, Pang and Wang (2013), who define illiquidity as the root mean squared error of bonds prices relative to an interpolated yield curve via the Svensson (1994) model. Evidences indicate that the liquidity difference between the assets is ignored by investors, that is, liquidity premium is not statistically different from zero[5].

The inflation risk premium (Figure 3) is obtained by simple difference, once the other implicit inflation components are estimated.

The inflation risk premium is positive in most of the sample, that is, nominal bonds positively covary with the economy. Therefore, investors require an additional premium in order to invest in nominal securities. For short horizons, the risk premium is negative in few months, being associated with times of increased volatility in financial markets, as in late 2008 and early 2009.

In order to capture the relative importance of components of the difference between nominal and real interest rates, we estimated a model of BEIR (minus the constant convexity) as a function of Focus inflation expectation; liquidity metrics mentioned above; the covariance of future inflation and changes in consumption; and the volatility of Ibovespa (proxy for uncertainty in the economy). Confirming the previous result, liquidity metrics do not show significant results and the variables that influence the inflation risk premium are significant only for the horizons of 3 and 4 years. The linear coefficient is not significant. On the other hand, the coefficient of inflation expectation is not statistically different from one in all regressions, which is an evidence that agents consider inflation forecasts close to Focus expectation when making their investment decisions.

Therefore, although the Fisher hypothesis is incomplete, by observing the difference between nominal and real

Figure 3 – Inflation risk premium
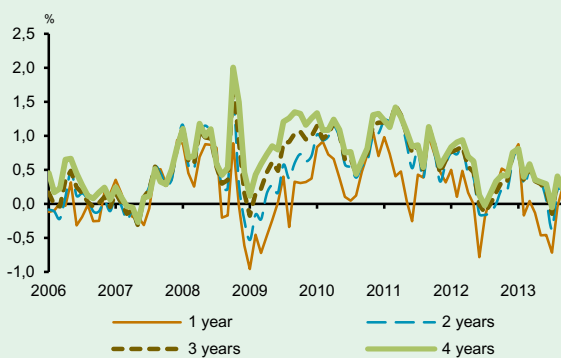
5/ Although apparently counterintuitive, this result may be explained by the prefereces of investor in the fixed income market. As Carvalho and Morais (2009) point, NTN-Bs are bonds which are strongly demanded by long term investor and who in general hold these bonds to maturity, which makes the uncertainty regarding lack of liquidity irrelevant.

interest rates is possible to extract information about the future price level, which is relevant input for the formulation and implementation of monetary policy.

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