Introduction

Despite the fact that the global financial markets evidenced marked instability in early 2016, the emerging markets, including those of Latin America, have moved on a favourable course since February. This trend has been characterised by a significant compression of risk premia, a considerable pick-up on stock markets and, on preliminary information for Q3, a return of capital flows as well. The main factor behind this change in sentiment was the fresh delay in the expected tightening of monetary policies in the main developed economies, a tendency which increased further to the United Kingdom's decision to abandon the European Union.

However, the GDP data for 2016 Q2 (the latest available) show a weaker performance in most Latin American countries than in previous quarters. Specifically, the weighted average of the GDP of the six main economies for which national accounts information is available showed a quarter-on-quarter decline in this period, leaving the year-on-year rate of change in 2016 H1 at -0.7%, following the stagnation (with an estimated rate of change of 0%) recorded in 2015. The loss of momentum in economic activity in Q2 was across the board, except in Brazil, where the decline in GDP eased.

It is still too early to conclude whether the high frequency indicators published as from Q3 – which point to an improvement in business and consumer confidence – augur, in combination with the recovery in capital flows towards the region in recent months, a turning point in terms of growth in Latin America. Indeed, the macroeconomic forecasts for the seven main economies (including Venezuela) as a whole point to growth of somewhat over 1.5% in 2017, after the decline of almost 1% estimated for 2016 (see Chart 1). However, this significant rise is due chiefly to the prospects of recovery in Brazil, which have been revised upwards by around 0.5 pp in the last six months, and which are associated with expectations of a change in economic policies that has yet to materialise. They also reflect the growth forecasts in Argentina, which show some downside risk.

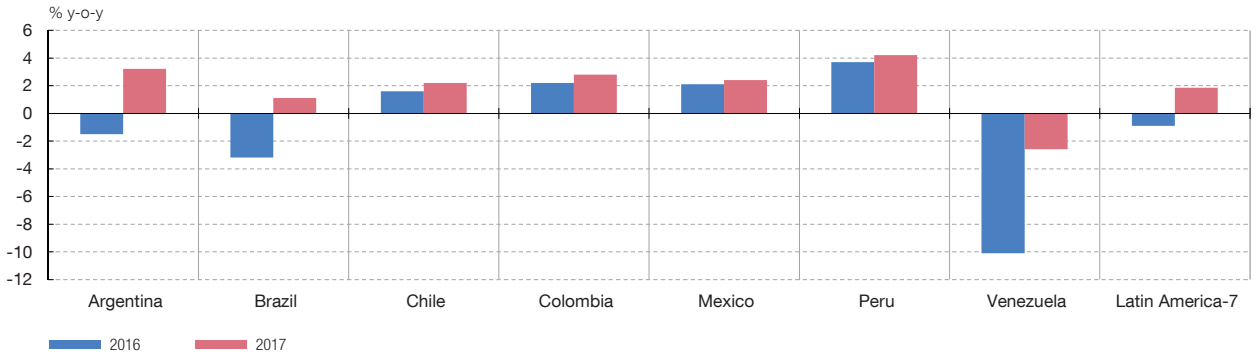
Several domestic factors support the prospect of recovery in the short term in the region. On one hand, the possible change of cycle of monetary policies owing to the decline in inflation and the appreciation of exchange rates. On the other, the correction of external imbalances in some countries, which should alleviate their vulnerability to changes in market sentiment. Both factors might further suggest a switch in the composition of growth in 2017 from net external demand – which has been underpinned by import substitution and by the moderate recovery in exports to date – towards investment. Conversely, among the factors posing downside risks to growth in the short term are the need for a fiscal adjustment, the decline in credit and the risk of capital flows being reversed, against the background of a change in sentiment on global financial markets.

On the external front, the risks stemming from China have eased in recent quarters, allowing some recovery in commodities prices (soya, copper and also oil) and an increase in the terms of trade in several countries in the region. Nonetheless, insofar as the stabilisation of growth in China has been largely based on greater credit stimulus, growth sustainability poses a latent risk. The ongoing normalisation of policy interest rates by the Federal Reserve adds a factor of risk on the markets, in addition to entailing a potential constraint on monetary policy measures in the region. Looking further ahead, fiscal consolidation in an

GROWTH PROJECTIONS IN LATIN AMERICA

CHART 1

2016 AND 2017 GROWTH PROJECTIONS IN LATIN AMERICA (a)



SOURCE: Latin American Consensus Forecasts.

a September 2016 Consensus Forecasts projections.

environment of lower commodities earnings remains fundamental, as does too the challenge of diversifying economies in order to attain improved productivity levels.

This "Report on the Latin American economy" retains the change in structure first introduced into the previous edition, with an initial section offering an overview of recent developments in the Latin American economy, and two theme-based sections that look in depth at specific features of the economies in the region. The first theme selected for this report involves an analysis of the outlook for and risks to the Brazilian economy drawing on a VAR model, which allows growth to be broken down into its main determinants. The second theme-based section analyses the historical pattern of total factor productivity in Latin America and its determinants.[1]

Recent developments in the Latin American economy

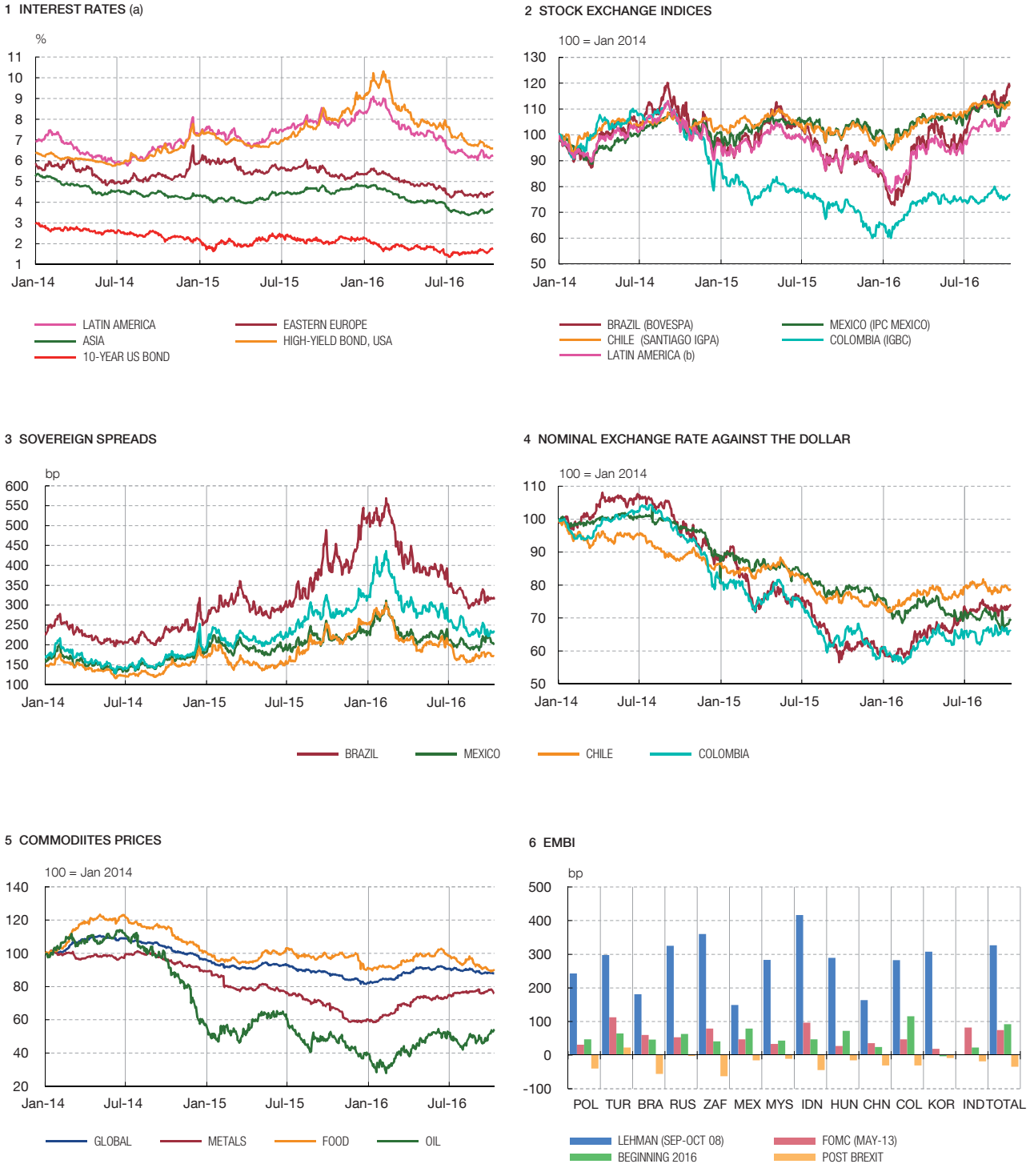
THE EXTERNAL ENVIRONMENT AND FINANCIAL MARKET DEVELOPMENTS

The world economy continued to show signs of weakness in the period in 2016 covered by this report, growing at historically low rates and with the latest indicators failing to signal a significant rise in activity in any of the main areas. Global trade slowed in Q2, weighed down once more by trade in the emerging economies. Among the main advanced areas, the weakness of activity in the United States was to the fore in Q2, with growth lower than expected, as was the downward revision of the forecasts for the United Kingdom (albeit to a lesser extent than initially expected in the short term), following the vote against the country remaining in the European Union. International financial markets performed favourably from February (see Chart 2), when some of the factors that had borne down on developments at the start of the year were diluted. In particular, the risks of financial instability in China lessened as its growth rate stabilised, oil prices held at around $40-50 per barrel and expectations of an imminent tightening in US monetary policy abated, adding to which was the further easing of the monetary policies of the ECB and the Bank of Japan.

The rise in financial asset prices on emerging and other high-risk market segments stepped up from end-June, following the rapid digestion by the markets of the unexpected UK vote

1 The vector autoregressive model used in the section on Brazil has been estimated in collaboration with the European Central Bank. The section on productivity includes the main results arrived at in a paper by I. Kataryniuk and J. Martínez-Martín (2016), *TFP growth and commodity prices in Emerging Economies,* forthcoming in the Banco de España Working Papers series.

INTEREST RATES, STOCK EXCHANGES, SPREADS, EXCHANGE RATES AND COMMODITY PRICES CHART 2
Percentage, indices and basis points



SOURCES: Datastream and JP Morgan.

a Latin American, Asian and Eastern European rates have been constructed by adding the US 10-year government bond yield and EMBI spreads.
b MSCI Latin America index in local currency.

in favour of Brexit. Although this event was of a sufficient scale as to generate a fresh bout of global instability, on this occasion, following the adverse initial response, the response of the emerging markets was to rise strongly (see Chart 2) and portfolio investment inflows towards these economies ultimately exceeded those posted following the first two rounds

of quantitative easing in the United States. In an environment of low inflation and low growth in the industrialised countries, Brexit increased the expected accommodative stance for monetary policies in the euro area and the United Kingdom, and once more delayed expectations of monetary normalisation in the United States, giving rise to a process of widespread yield-search. This new scenario provides greater scope for the emerging economies to reduce their vulnerabilities, but also entails a higher risk of a rapid reversal of flows in the event of a return to risk-aversion on international markets.

The Latin American markets were not immune to these trends; indeed, the improvement was more marked than in other regions. Sovereign spreads narrowed by over 280 bp from their highs in mid-February, and the regional EMBI held at 460 bp (a similar level to that in May 2015), compared with declines of 110-120 bp in Asia and in Eastern Europe. Stock markets climbed by almost 30% (against 22% for Asia and 15% for Eastern Europe), driven by commodities firms, which on average posted rises of up to 80%.

Country by country, the most notable development was the divergent path of the Brazilian and Mexican markets. Brazil has been one of the countries most to benefit from the context of risk-aversion on international markets, with a narrowing of 250 bp in its sovereign spread (from its high in February), stock market gains of 47% and a 25% appreciation in its currency against the dollar, the biggest among the emerging countries, ahead of Russia (20%) and Colombia (17%). In Mexico, by contrast, the sovereign spread narrowed by 85 bp, the stock market rose 11% and the peso depreciated by a further 4% against the dollar, to a historical low. This differentiated performance contrasts with the relative cyclical position of both economies, and with their fiscal situation. In Brazil, the expectation of a change in economic policy stance, the correction of the external imbalance and the recovery in confidence are playing a key role in shaping investor attitudes, while in Mexico's case doubts over medium-term growth, the external imbalance and, more recently, uncertainty over the results of the US presidential elections appear to have exerted a weightier influence.

In the other markets in the region, financial variables also performed positively and very similarly. The exception is Venezuela, where the sovereign spread continues to stand above its previous highs (2,200 bp), against the backdrop of a further worsening in activity, inflation and public finances, a fall in international currency reserves and an increase in social tensions, in light of the demand for a recall referendum against the presidency. Although the country has met payment of its external debt on schedule, in mid-September the State oil company PDVSA swapped debt maturing in 2017 ($7.1 billion dollars) for new bonds maturing in three years, collateralised by assets of the US company, in an operation rated by two agencies as a selective default.

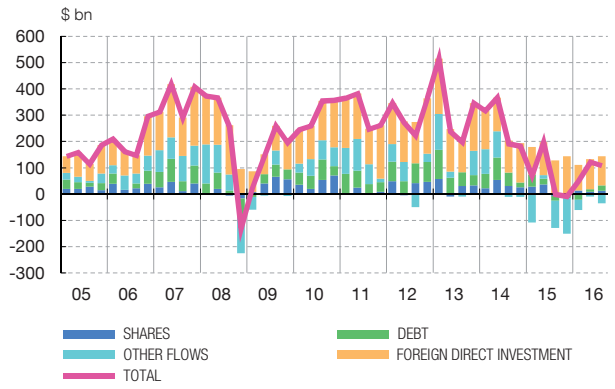
In step with the favourable performance of financial markets, capital flows towards emerging economies picked up in 2016 Q2 and Q3, as outflows under the portfolio investment and other flows headings (see Chart 3) came to a halt. Moreover, stock market inflows and debt outflows suggest a switch in composition towards higher-risk and less callable assets.

In Latin America, foreign direct investment inflows declined in the first half of the year to levels close to those in early 2010 (see Chart 3). Portfolio flows picked up strongly from Q2, as a result of the return of the Argentine government to the bond markets as from April. However, there were net outflows in both Brazil and Mexico, relating in both cases to non-resident public debt sales on local markets. On the first available estimates, capital flows

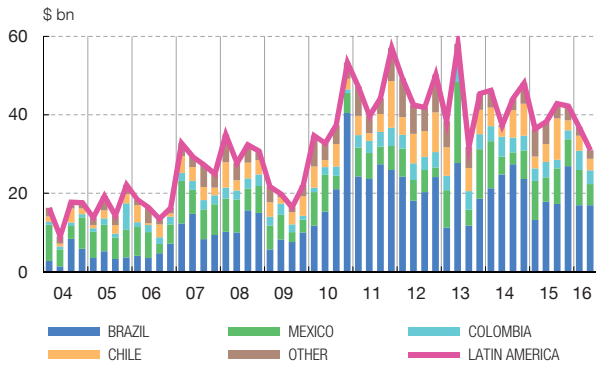
EXTERNAL CAPITAL FLOWS AND FINANCING
$ bn

CHART 3

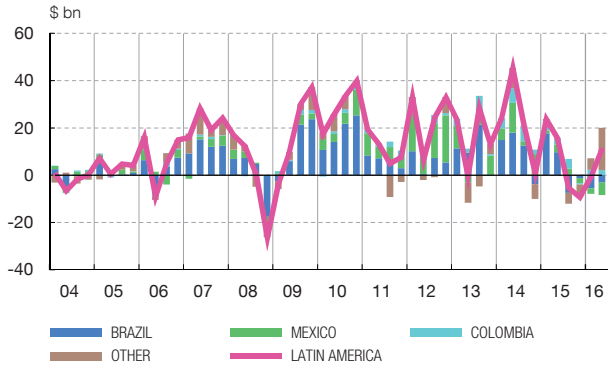
1 EMERGING MARKETS: CAPITAL INFLOWS



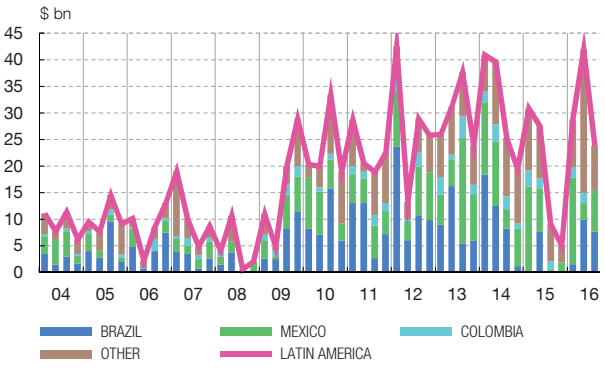
2 LATIN AMERICA: DIRECT INVESTMENT FLOWS



3 LATIN AMERICA: PORTFOLIO INVESTMENT FLOWS



4 LATIN AMERICA: INTERNATIONAL MARKETS' FIXED-INCOME ISSUES



SOURCES: Datastream, Dealogic, IIF, JP Morgan, IMF and national statistics.

towards the region recovered in the summer months, as reflected by bond issues (see Chart 3), which grew 163% in 2016 Q3 compared with the same quarter in 2015, with issues by Brazil – which have been absent from these markets since March 2016 – to the fore. Most issues in Q3 were by the region's State-owned oil companies (37%) and governments (38%); euro-denominated issues, accounting for 41% of the total in Q1, virtually disappeared in Q2 and Q3 (1.1% and 2.1%).

ACTIVITY AND DEMAND

The year-on-year rate of change of the aggregate GDP of the six Latin American countries[2] fell from -0.8% in Q1 to -0.7% in Q2 (see Table 1). Growth was generally lower than expected and with scant signs of recovery in activity up until the mid-point of the year. The stabilisation of the year-on-year rate in the first two quarters masks an easing of the decline in GDP in Brazil (from -5.4% year-on-year in Q1 to -3.8% in Q2), offset by the worsening of the recession in Argentina (from 0.4% to -3.4%). The remaining countries (Mexico, Chile, Colombia and Peru) also posted lower year-on-year growth in Q2. The seasonally adjusted quarterly change in GDP was negative in four of the countries analysed in Q2 – Argentina (-2.2%), Mexico (-0.2%), Chile (-0.4%) and Brazil (-0.6%) – and close to zero in Colombia and in Peru (see Chart 4).

2 The aggregate analysed, excluding Venezuela, includes six countries: Brazil, Mexico, Argentina, Colombia, Peru and Chile.

LATIN AMERICA: MAIN ECONOMIC INDICATORS

TABLE 1

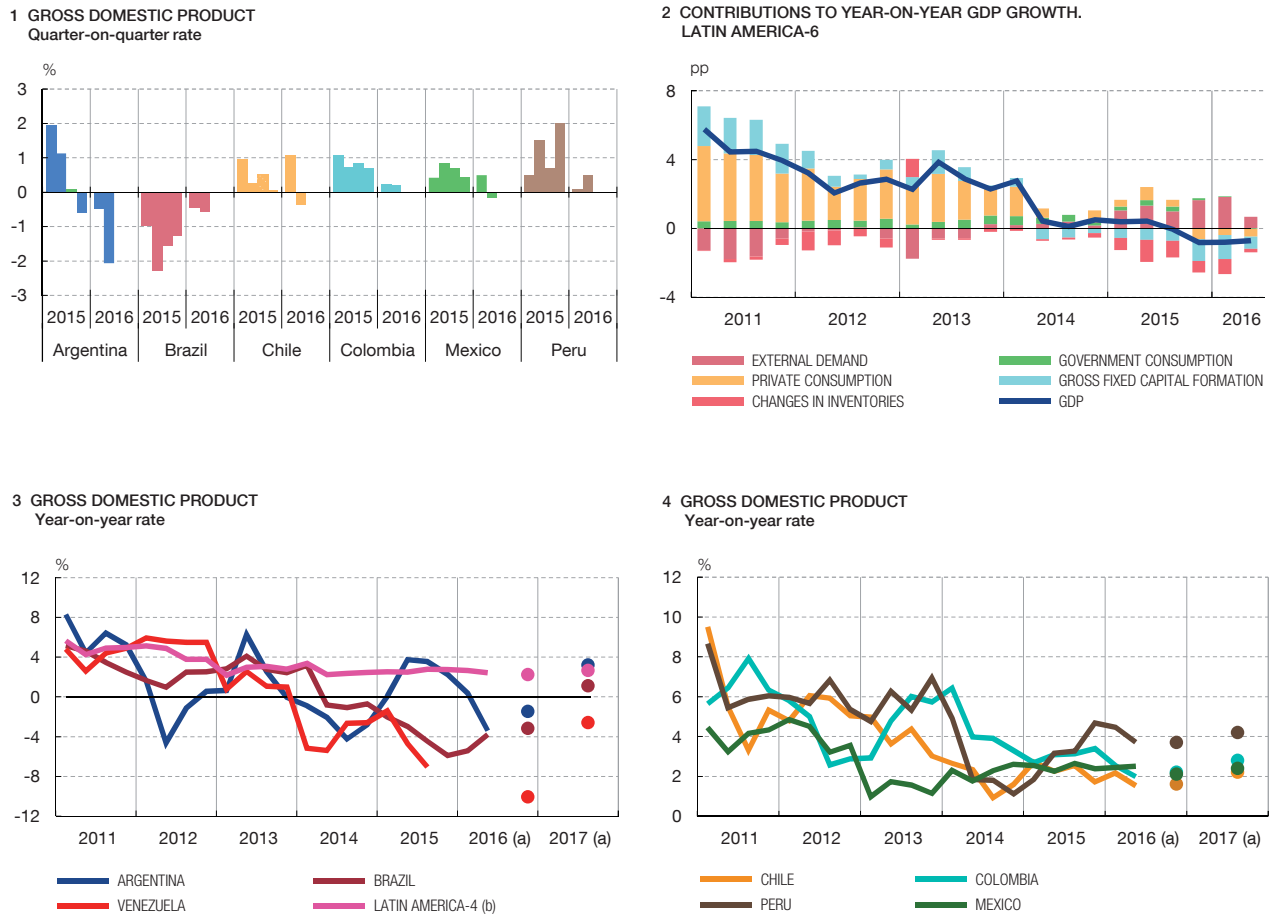
	2014	2015	2014		2015				2016		2016
			Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	September
GDP (year-on-year rate)											
Latin America-6 (a)	0.9	0.0	0.1	0.5	0.4	0.4	-0.1	-0.8	-0.8	-0.7	
Argentina	-2.5	2.5	-4.2	-2.8	0.1	3.8	3.6	2.3	0.4	-3.4	
Brazil	0.1	-3.8	-1.1	-0.7	-2.0	-3.0	-4.5	-5.9	-5.4	-3.8	
Mexico	2.3	2.5	2.3	2.6	2.6	2.3	2.7	2.4	2.5	2.5	
Chile	1.9	2.3	0.9	1.6	2.7	2.3	2.5	1.7	2.2	1.5	
Colombia (b)	4.4	3.1	3.9	3.3	2.7	3.1	3.1	3.4	2.5	2.0	
Venezuela	-3.9	—	-2.7	-2.6	-1.4	-4.7	-7.1	—	—	—	
Peru	2.4	3.3	1.8	1.2	1.9	3.2	3.3	4.7	4.5	3.7	
CPI (year-on-year rate)											
Latin America-5 (a)	5.0	6.0	5.2	5.2	5.4	5.8	6.2	6.6	6.7	6.2	5.9
Brazil	6.3	9.0	6.6	6.5	7.7	8.5	9.5	10.4	10.1	9.1	8.5
Mexico	4.0	2.7	4.1	4.2	3.1	2.9	2.6	2.3	2.7	2.6	3.0
Chile	4.4	4.3	4.7	5.3	4.4	4.2	4.8	4.1	4.6	4.2	3.1
Colombia	2.9	5.0	2.9	3.5	4.2	4.5	4.9	6.4	7.7	8.2	7.3
Venezuela	62.2	121.7	63.2	65.4	79.5	89.7	126.5	170.1	—	—	—
Peru	3.2	3.5	2.9	3.2	3.0	3.3	3.8	4.1	4.5	3.6	3.1
Budget balance (% of GDP) (c)											
Latin America-6 (a)	-4.0	-6.2	-3.4	-4.0	-4.8	-5.1	-5.5	-6.2	-5.7	-5.5	
Argentina	-2.4	-3.9	-2.3	-2.4	-3.1	-3.5	-3.6	-3.9	-3.2	-3.6	
Brazil	-6.0	-10.4	-4.5	-6.0	-7.6	-8.0	-9.2	-10.4	-9.7	-10.0	
Mexico	-3.2	-3.5	-3.4	-3.2	-3.3	-3.7	-3.3	-3.5	-3.2	-2.1	
Chile	-1.6	-2.2	-1.4	-1.6	-1.9	-2.0	-2.1	-2.2	-1.7	-1.8	
Colombia	-2.6	-3.1	-3.4	-2.6	-3.0	-2.5	-2.8	-3.1	-3.1	-3.2	
Peru	-0.5	-2.9	0.0	-0.5	-1.0	-1.5	-2.1	-2.9	-3.2	-3.2	
Public debt (% of GDP)											
Latin America-6 (a)	45.2	50.1	43.8	45.3	46.8	47.6	49.7	50.3	51.4	52.2	
Argentina	39.3	35.3	35.3	39.4	38.1	38.0	38.7	35.3	38.8	41.8	
Brazil	57.2	66.5	55.8	57.2	60.5	61.8	64.7	66.5	67.4	68.7	
Mexico	41.9	46.5	41.1	41.9	43.5	44.0	45.8	46.5	48.3	48.4	
Chile	15.1	17.5	14.5	15.1	15.7	16.3	16.9	17.5	18.7	19.1	
Colombia	37.7	41.3	35.6	37.7	39.6	40.3	43.1	41.3	42.3	41.8	
Peru	20.0	23.3	18.5	20.0	20.0	19.9	21.2	23.3	22.9	22.2	
Current account balance (% of GDP) (c)											
Latin America-6 (a)	-3.2	-3.4	-3.1	-3.2	-3.3	-3.3	-3.5	-3.3	-3.0	-2.7	
Argentina	-1.4	-2.5	-2.0	-1.4	-1.3	-1.8	-2.2	-2.5	-2.5	-2.6	
Brazil	-4.3	-3.3	-3.8	-4.3	-4.4	-4.2	-4.0	-3.3	-2.5	-1.8	
Mexico	-2.0	-2.9	-2.3	-2.0	-2.1	-2.1	-2.6	-2.9	-2.8	-2.9	
Chile	-1.3	-2.0	-1.7	-1.3	-0.9	-1.1	-1.5	-2.0	-2.0	-2.2	
Colombia	-5.1	-6.5	-4.2	-5.1	-5.7	-6.0	-6.7	-6.5	-6.1	-5.8	
Venezuela	0.6	—	1.4	0.6	-1.2	-1.7	-2.2	—	—	—	
Peru	-4.0	-4.8	-3.8	-4.0	-4.3	-4.0	-4.6	-4.8	-4.5	-4.3	
External debt (% of GDP)											
Latin America-6 (a)	22.1	26.5	21.2	22.1	22.8	23.8	25.3	26.4	28.7	—	
Argentina	25.7	24.2	25.3	25.7	25.4	25.7	25.4	24.2	26.9	32.1	
Brazil	14.6	18.9	13.9	14.6	14.9	16.0	17.5	18.7	20.0	20.6	
Mexico	22.1	26.1	21.4	22.1	22.5	23.8	25.0	26.0	28.7	29.8	
Chile	57.9	64.7	53.4	57.9	58.3	59.7	63.2	64.6	67.2	—	
Colombia	26.8	37.9	25.5	26.8	29.1	31.2	34.7	37.8	40.9	42.8	
Venezuela	19.5	—	22.7	19.5	16.9	14.9	13.6	—	—	—	
Peru	31.8	35.5	31.1	31.8	32.4	32.2	34.5	35.5	36.9	36.4	

SOURCE: National statistics.

a Latin America-6: all the countries represented, except Venezuela. Latin America-5: all the countries represented, except Argentina and Venezuela.
b Seasonally adjusted.
c Four-quarter moving average.

LATIN AMERICAN GDP
Year-on-year and quarter-on-quarter rates

CHART 4



SOURCE: Datastream and national statistics.

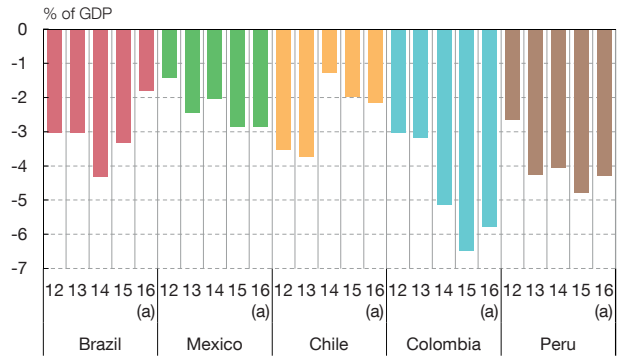
a Dots represent September 2016 forecast of the Latin American Consensus Forecasts for 2016 and 2017.
b Mexico, Chile, Colombia and Peru.

Several factors explain the underlying weakness in the region during the first half of 2016 (see below the section on Brazil for a more detailed analysis of this country's case). As regards Mexico, the loss of momentum of GDP in terms of its seasonally adjusted rate[3] was chiefly the outcome of the poor behaviour of the industrial sector, associated in turn with the sluggishness of US demand in the first half of the year. In Colombia, activity slowed to 2% year-on-year, 1 pp down on 2015 H2, showing the materialisation of the income effect associated with the strong decline in the terms of trade at end 2014, following a year of unexpectedly robust growth. In Chile, the fall-off in growth to 1.5% year-on-year is due above all to the natural resources sector, since the other sectors continued to grow at rates of 2.5%. Finally, the new GDP series for Argentina confirmed that the country has been in recession since late 2015, weighed down by the fall in investment and modest growth in private consumption.[4]

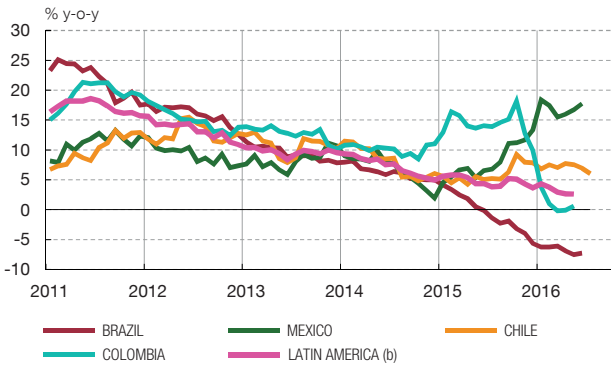
3 The 2.5% year-on-year growth in Mexican GDP in Q2 translates into 1.5% in terms of the seasonally adjusted series, after adjusting for the Easter week calendar effect.
4 The revision of the national accounts series from 2004 has meant real cumulative growth in the economy that is 17 pp down on that estimated previously over the past 10 years, offset, in nominal terms, by an upward adjustment of the deflator.

EXTERNAL SECTOR, EMPLOYMENT AND CONFIDENCE INDICATORS CHART 5

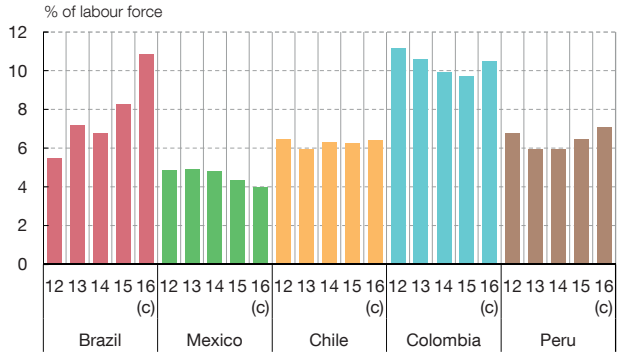
1 CURRENT ACCOUNT BALANCE



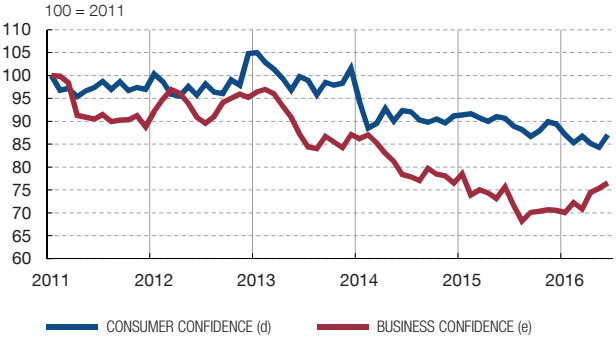
2 REAL CHANGE IN CREDIT TO THE PRIVATE SECTOR



3 UNEMPLOYMENT RATE



4 CONSUMER AND BUSINESS CONFIDENCE INDICES



SOURCE: Datastream.

a Sum of four quarters to 2016 Q2
b Brazil, Chile, Colombia, Mexico and Peru.
c 2016 January-July average.
d Argentina, Brazil, Chile, Mexico and Peru.
e Brazil, Chile, Mexico and Peru.

Notable in the composition of regional growth in 2016 H1 is the role of external demand as the chief underpinning of growth (see Chart 4); that said, this was due above all to the decline in imports (-3.9% year-on-year), which fell for the third year running, and not so much to exports, the increase in which tended to ease (2.4% year-on-year), against the backdrop of appreciating currencies. Mexico, Chile and Colombia stood apart from this pattern, since the contribution of domestic demand to growth eased, but continued to outpace that of external demand.

From the standpoint of the domestic demand components, the fall in private consumption held at the regional average (-0.8% year-on-year in Q1 and Q2); however, this result was much influenced by the sharp adjustment in Brazil (where consumption fell by -5% year-on-year in Q2) and, to a lesser extent, in Argentina (-0.1% year-on-year), since in the remaining countries consumption increased, albeit more moderately so than in 2015 (Chile 1.7%, Mexico and Colombia 2.6%). The weakness of the labour market, which has been particularly marked in Brazil in the past two years, appears to have spread to some extent to other countries, as shown by the increase in the unemployment rate in Chile (to 7.1% of the labour force), Colombia (close to 10%) and Peru (7%) (see Chart 5).

In terms of the regional average, investment continued to decline (-4.1% year-on-year in Q2), the main cause being the weakness of domestic demand in the region. However, the less adverse performance in Brazil and the stabilisation in Mexico and in Chile might be signalling a turning point in Q2 which, along with the latest confidence indicators (see Chart 5), would suggest a more positive outlook ahead of 2017, albeit still with major risks. Domestic credit to the private sector trended unevenly from country to country, with a decline of over 5% in real terms in Brazil, a very strong slowdown in Colombia and, by contrast, very high growth of over 10% in Mexico, where the substitution of domestic for foreign financing appears to be combining with the effect of the financial liberalisation agenda.

On the external front, the current account deficit of the region as a whole continued to decline, to stand below 2.7% of GDP (see Chart 5). This was the outcome, above all, of the reduction in imports associated with the adjustment of domestic demand and with the currency depreciation. The recovery in exports was, as earlier indicated, much more modest, against a rather unfavourable international background, which poses certain doubts about the sustainability of the external adjustment if a recovery in domestic demand takes place. The adjustment of the external balance in Brazil was particularly significant (to -1.8% of GDP), while in Chile it remained relatively under control (at around -2.1%), with a slight deterioration in recent months. In Colombia the current deficit fell to -4.8% in 2016 Q2, after having drawn close to -7% of GDP at end-2015, and to -4.3% in Peru. In Mexico the current deficit held at 3% of GDP, after widening by 1 pp in 2015 as a result of the decline in oil exports.

Short-term forecasting models point to a mixed picture for Q3. Activity in Mexico is expected to pick up somewhat; yet this does not avert a downward revision of forecasts for the year as a whole. In Argentina, the figures would suggest flat GDP, whereby the forecast for the year as a whole would move clearly into negative territory. Weak growth is expected for Chile in Q3, strengthening towards the end of the year, and in Brazil activity will tend to stabilise, after the decline in the first half of the year, but the pick-up in activity is expected to be delayed to Q4.

POLICIES AND OUTLOOK

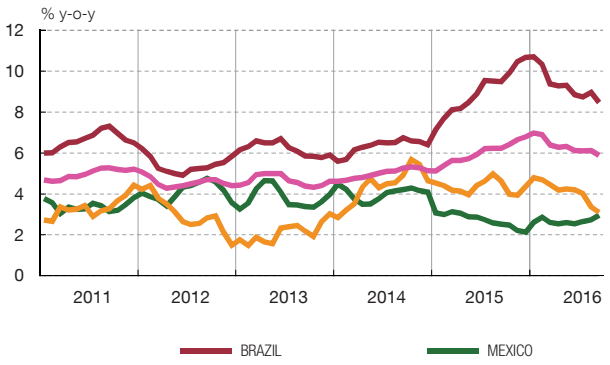
Inflation in the region in the past six months has been moving on a downward trend, albeit at a slower-than-expected pace. The weighted average of inflation in the five countries pursuing inflation targeting stood in September at 5.9% year-on-year, 0.8 pp less than at the start of the year, with significant differences from country to country (see Chart 6). Brazil and Colombia posted respective rates of 8.5% and 7.3% in September, still far above their central banks' targets, while in Mexico, Peru and Chile inflation stood at 3%, 3.1% and 3.1% year-on-year, respectively, within the target ranges in all cases. In Argentina, the new official price index, first published in June, posted monthly inflation of 2% that month, although it has since eased temporarily (1.1% month-on-month in September), as a result of the suspended rise in certain regulated prices.

Monetary policies have reacted in a differentiated manner. In Brazil, despite the gradual easing in inflation expectations since early 2016, the need to reinforce the credibility of the 4.5% target led the central bank to delay until mid-October the cut to its policy interest rate, which has dipped to 14% from 14.25% (see Chart 6). The market continues to discount a cut to official policy rates, and more markedly so next year, as inflation expectations return to target (see Table 2). The situation in Mexico is, to some extent, the opposite; despite the stability of below-target inflation during the past six months and the anchoring of expectations, the Mexican central bank raised interest rates by 50 bp at end-July, immediately after Brexit, and by a further 50 bp in September, to 4.75%. The sharp depreciation of the Mexican peso, the failure to correct the current deficit and, more recently, the perception of greater risk associated

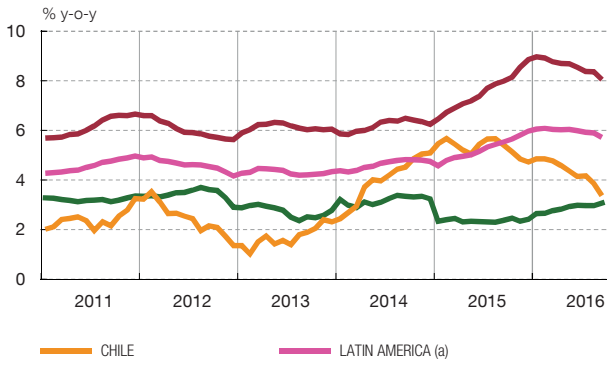
INFLATION AND OFFICIAL INTEREST RATES
Year-on-year rates of change and percentage

CHART 6

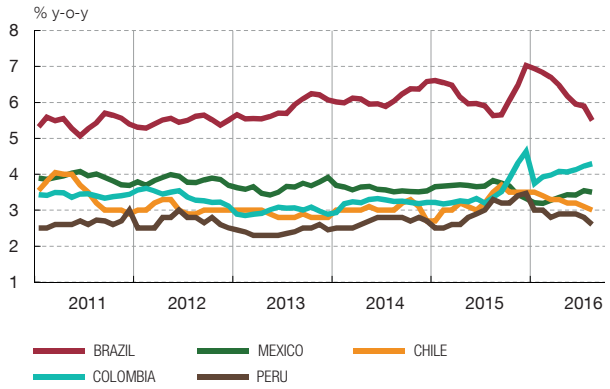
1 INFLATION RATE



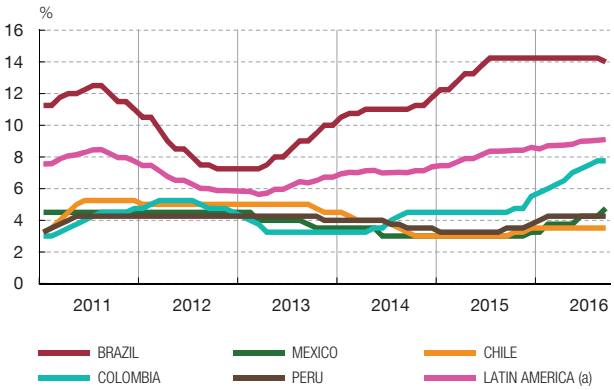
2 CORE INFLATION RATE



3 12-MONTH INFLATION EXPECTATIONS



4 OFFICIAL INTEREST RATES



SOURCES: Datastream.

a Aggregate of Brazil, Chile, Colombia, Mexico and Peru.

INFLATION
Year-on-year rates of change

TABLE 2

	2015			2016		2017
Country	Target	December	Fulfillment	September	Expectations (a)	Expectations (a)
Brazil	4.5 ± 2	10.7	No	8.5	7.3	5.3
Mexico	3 ± 1	2.1	Yes	3.0	3.2	3.4
Chile	3 ± 1	4.4	No	3.1	3.4	3.0
Colombia	3 ± 1	6.8	No	7.3	6.5	4.1
Peru	2 ± 1	4.4	No	3.1	3.0	2.8

SOURCES: National statistics and Consensus Forecasts.

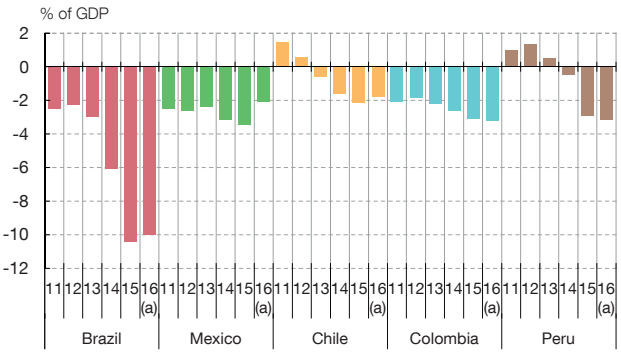
a September 2016 Consensus Forecast for the end of the year.

with the possible outcome of the US presidential elections have tilted the balance in favour of a preventive tightening of monetary policy. The Colombian central bank sharply raised its policy interest rate (350 bp in two years, to 7.75% at end-July), until inflation reached a turning point; however, headline inflation (and core inflation) is still far above the target range, owing to the influence of adverse climate-related factors and to the depreciation of the currency. Finally, interest rates in Chile and in Peru have not been altered in the past six months.

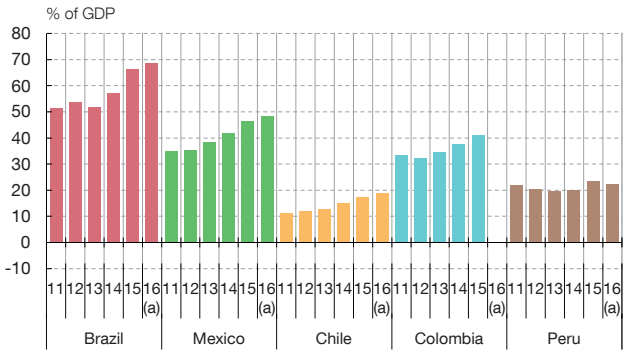
MAIN PUBLIC SECTOR FIGURES
Percentage of GDP and year-on-year change

CHART 7

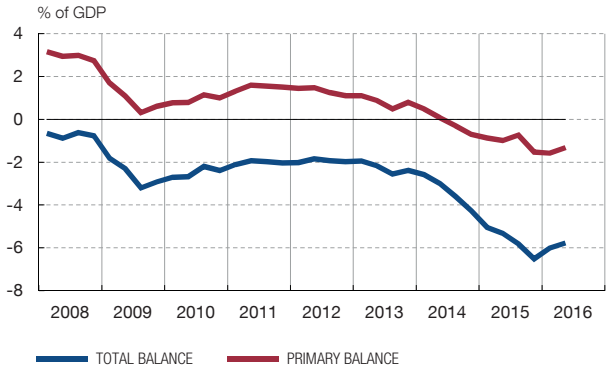
1 GOVERNMENT SURPLUS (+) OR DEFICIT (–)



2 PUBLIC DEBT



3 BUDGET SURPLUS (+) OR DEFICIT (–) IN LATIN AMERICA (b)



4 REAL PRIMARY REVENUE AND EXPENDITURE IN LATIN AMERICA (b)

SOURCE: Datastream.

a Four-quarter cumulative data to 2016 Q2.
b Aggregate of Brazil, Chile, Colombia, Mexico and Peru.

In Argentina, monetary policy has eased in line with the improvement in inflation expectations, and its policy interest rates have fallen from 38% in May to 26.75% in September. The introduction of inflation targeting is scheduled for early 2017, with a range between 12% and 17% for this year, which seems fairly demanding; hereafter, there is expected to be a period of progressive reduction in targets, converging on figures of around 5% in 2019.

In the fiscal policy realm, both the cyclical situation and the lack of decisive measures for consolidation or the preference for a gradual fiscal adjustment have led to fiscal deficits being redressed only very moderately during 2016 (see Chart 7). Indeed, leaving aside Brazil's situation, which is addressed in greater depth in the following section, only in Mexico was there a very significant reduction in the budget deficit in the first half of 2016. In the region on average, public revenue continued to decline, although the rate appears to be stabilising, following the strong fall in 2015, and the growth of expenditure has eased. Against this background, and following Brazil's downgrading by one of the agencies in May (to BB), Brazil's credit rating, and that of Colombia and Mexico, have been placed on negative watch by the rating agencies. Budget plans confirm a maintenance of the gradual consolidation effort in 2017.

Country by country, the fiscal consolidation strategy in Argentina, which envisaged a gradual adjustment (primary deficit of 4.8% of GDP in 2016), is encountering difficulties, including most notably the courts' decision to suspend the increases in gas tariffs, which will temporarily reduce revenues; further, the commitments to revalue pensions and establish a minimum non-contributory pension will have permanent effects on spending which, it is forecast, will be offset by a programme of incentives to disclose wealth abroad. For these reasons, the primary deficit target for 2017 has been revised upwards in September, to 4.2% of GDP. Mexico has submitted to Congress a budget for 2017 with a primary surplus of 0.4%, higher than initially announced, which would be the first positive balance since 2008. Should the target be met, it would enable the budget deficit to be reduced from the expected figure of 3% in 2016 to 2.4% in 2017, with an expenditure cut falling on PEMEX, and provide for the stabilisation of public debt, whose weight in GDP has increased significantly in recent years.

In Colombia, the deficit has widened in recent years to the figure of 3.9% forecast for 2016 as a result of the fall in oil prices. While the mechanistic application of the fiscal rule would allow a deficit of 4% in 2017 and 3.2% in 2018, the Consultative Committee for the fiscal rule limited the deficit for these same years to 3.3% and 2.7%, with a 6.6% increase in spending in 2017. The Government intends to offset the decline in oil revenues by increasing other taxes, probably VAT, although these measures are pending approval. The Chilean government will unveil its 2017 budget in the coming weeks, influenced by the end-2016 deficit of around 3.2% (which entails a deterioration of over 3 pp in three years), maintaining the commitment to progressively reduce the structural deficit by 0.25% each year (1.4% in 2017). Accordingly, the budget for 2017 is expected to be relatively restrictive, with spending growth below 3% in real terms. Finally, the fiscal targets in Peru for 2016 (3%) and 2017 (2.2%) have been eased somewhat, and the budget for the coming year envisages a nominal increase in spending of 4.7%.

The outlook for the region points to a very moderate recovery in growth, with most considerable cross-country heterogeneity. In Venezuela, the recession will deepen and in Brazil very low growth is expected, while in Mexico, Chile, Colombia and Peru growth rates above 2.5% are forecast. Inflation is broadly projected to decline to target range levels. The balance of risks appears tilted to the downside regarding both the external and domestic outlook. External risks notably include the possibility of a reversal in capital inflows, in a context of changing market sentiment. New stresses may also emerge in China's rebalancing process, posing difficulties owing to the systemic nature of this economy. Domestically, the main risks involve the greater-than-expected impact of fiscal consolidation measures on economic growth and of the slowdown in credit.

Brazil: recent developments and change in economic policies

This section analyses the outlook and risks facing the Brazilian economy following the recent change in government, focusing particularly on the fiscal situation, which is the main short-term challenge.

From 2004 to 2008, Brazil's economic growth far outpaced its historical average. At the same time, its social indicators improved significantly[5], as a result of the application of social inclusion policies. This growth was decisively underpinned by a favourable external environment, including the upward cycle of commodities, and by better macroeconomic policy management. This latter factor meant that, following the outbreak of the global

5 From 2004 to 2008, GDP growth averaged 5%, meaning per capita GDP increased by 20%. During this period the poverty rate fell by half, the weight of the middle classes increased by 15 pp and the Gini index fell by over 6 pp.

financial crisis, Brazil had for the first time sufficient fiscal room to pursue a countercyclical policy, leading to a swift recovery in activity in 2010.

However, during the boom period the economy's structural weaknesses were not addressed (the obsolescence of labour market laws, tariffs, high start-up costs for new businesses and an overly complex tax system), which prompted low productivity growth; moreover, a series of fiscal rules were introduced that made it very difficult to adjust public spending. Compounding this were the expansionary economic policy responses from late 2011, which served only to exacerbate the imbalances[6], without managing to boost growth, in a setting in which financial markets also failed to exert any disciplining effect.[7]

The change in expectations about US monetary policy in May 2013 singularly affected the Brazilian markets, highlighting the external and fiscal vulnerabilities that had built up previously (see Box 1 on the financial stress index depicted in Chart 8). The change in economic policy stance after the presidential elections in late 2014, with a more restrictive bias, led to a strong contraction in activity that worsened the country's situation and exacerbated the tensions on Brazilian markets. These tensions peaked in early 2016, against the background of the deepening political crisis which culminated with the president's removal from office at the end of August. However, since April expectations of a change in government and in the economic policies applied, along with an external environment of widespread yield-search, have provided for a strong recovery in confidence indicators and in the Brazilian financial markets.

In the first two quarters of 2016, GDP fell once more (-0.4% and -0.6% quarter-on-quarter, respectively), confirming that in 2015-2016 Brazil will post the worst recession since 1980 (see Chart 8). Activity has been weighed down above all by private consumption (with quarterly declines of -1.3% and -0.7% in the first half of 2016), offset in part by an acceptable export performance and, more recently, by the incipient pick-up in investment, which increased in Q2 for the first time since 2013 (0.4%). High-frequency indicators for Q3 are in general favourable, although most of them are qualitative. Indeed, the labour market situation has continued to worsen, with year-on-year declines in employment of 1.5% since the start of the year and increases in the unemployment rate to 11.8% in August (a 12-year high). Likewise, lending to firms declined – even in nominal terms – in Q2, and Brazilian companies reduced their debt issues on international markets, while Petrobras announced new divestments and expenditure cuts.

Inflation has fallen from its end-2015 high – when it rose to 10.7% – to around 8.5% year-on-year, but it has done so at a slower-than-expected pace, which has delayed the easing of monetary policy until October. The downward stickiness is centred on tradable goods prices, driven by the depreciation of the real until January 2016, and on a lower-than-forecast decline in regulated prices. Finally, the adjustment of the current account deficit is proving very swift (from a high of -4.5% of GDP in 2015 to -1.8% in mid-2016), owing to the improvement in the trade balance (which has moved from a deficit of 0.2% to a surplus of 2.5%).

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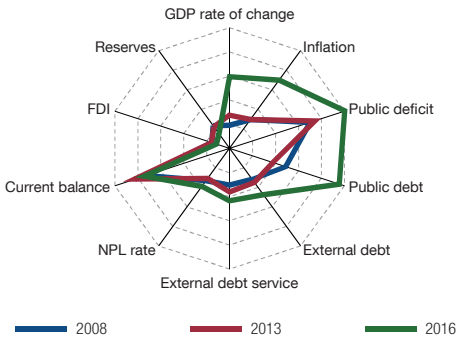
6 These measures included aggressive cuts to the policy interest rate, corporate income tax exemptions and a 3 pp rise in permanent expenditure; and an expansion of BNDES-subsidised loans.

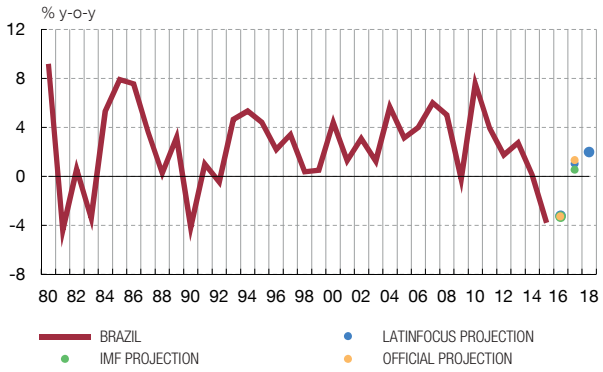
7 Brazil had capital inflows totalling 9% of GDP annually, which fuelled a strong appreciation of the currency that reduced external competitiveness. Industrial production flattened and consumption surged, meaning that the current account deficit widened from 1.7% of GDP in 2009 to 4.5% in 2015.

1 VULNERABILITY

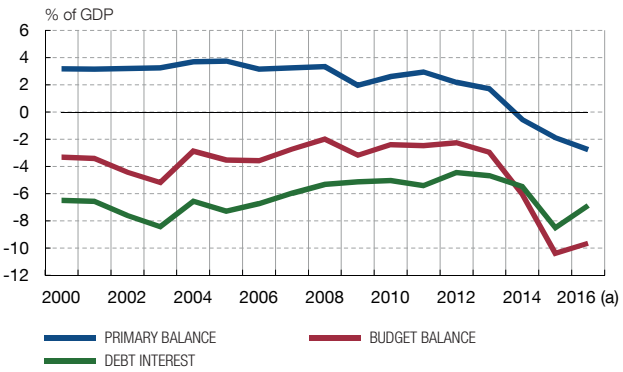


2 FINANCIAL STRESS INDICATOR

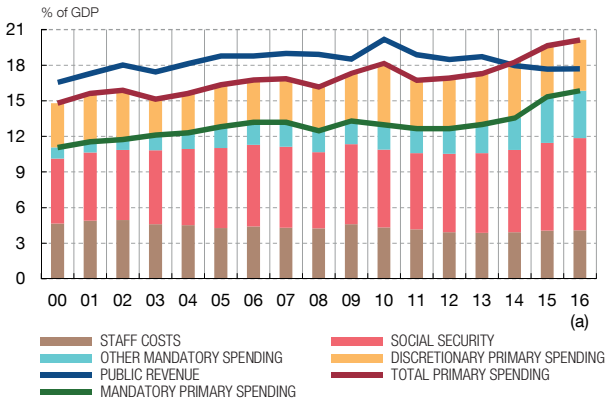
3 LONG-TERM GROWTH



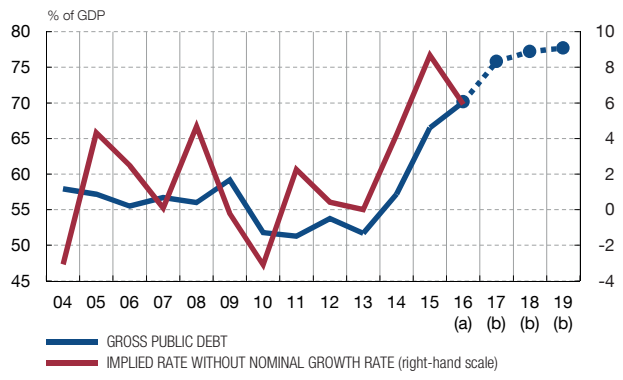
4 GOVERNMENT BALANCE



5 PUBLIC REVENUE AND SPENDING



6 GROSS PUBLIC DEBT



SOURCES: Datastream, IMF (WEO), JP Morgan, Latinfocus and national statistics.

a Accumulated up to August 2016.
b Estimates.

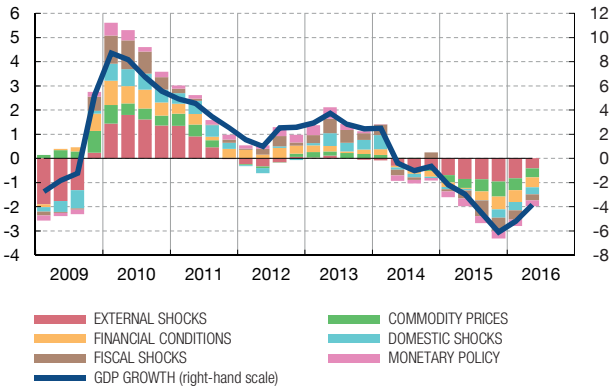
The decomposition of the Brazilian economy's growth determinants with the help of a BVAR[8] econometric model enables these effects to be quantified (see Chart 9). As can be seen, the expansionary policy contributed substantially to the exit from the crisis as from

8 The model, estimated in collaboration with the ECB, includes seven variables (external demand, non-energy commodities prices, the financial stress index described in Box 1, GDP, public spending and revenue as a percentage of GDP, the inflation rate and the policy interest rate); the first two variables are considered to be exogenous. The effect of the segmentation of the credit market is not included for the moment. The model has been estimated with quarterly data since 2002 Q1 and includes sign restrictions so as to be able to identify structural shocks.

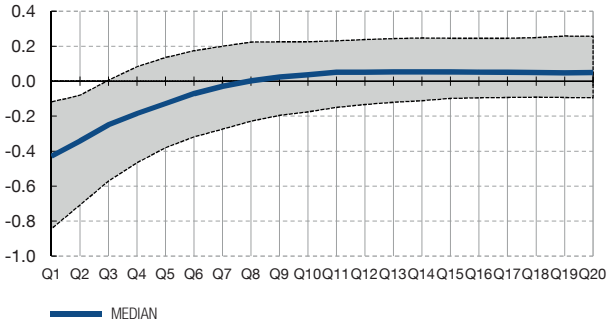
BRAZIL

CHART 9

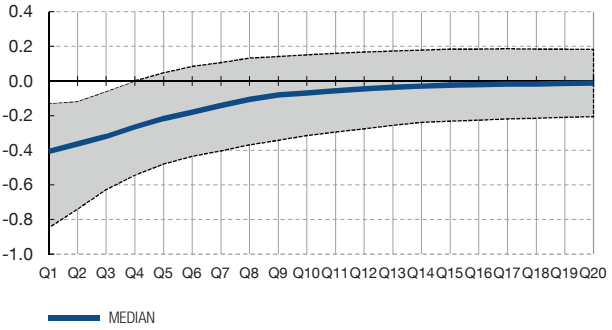
1 HISTORICAL BREAKDOWN OF GROWTH



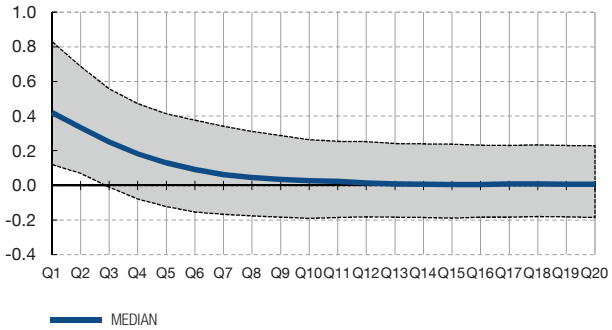
2 REACTION OF GDP TO A CUT IN PUBLIC SPENDING (a)



3 REACTION OF GDP TO AN INCREASE IN PUBLIC REVENUE (a)



4 REACTION OF GDP TO A CUT IN OFFICIAL RATES (a)



SOURCES: ECB and national statistics.

a Reaction of the year-on-year rate of change in GDP to a one unit shock in each variable (one point of GDP for public revenue and spending, 1% for the interest rate).

2009, with the favourable external conditions playing an equally significant role.[9] According to this analysis, the slowdown in activity from 2011 was the outcome of the collapse of the contribution of external demand and of commodities prices, while the economic policy response scarcely impacted growth. The current recession might be explained to a greater extent by external factors (commodities prices and other shocks), along with the rise in the cost of external financing conditions, although also by domestic factors, including the tightening of monetary policy.

THE FISCAL PROBLEM AND THE NEW GOVERNMENT'S CHANGE IN STRATEGY

In 2016 to date, public finances have further worsened, meaning that the primary deficit stood at 2.8% of GDP in August (compared with the surplus of 3% of GDP in 2008), although the total deficit dipped from 11% to 9.6% of GDP from January to August, thanks to lower debt servicing payments (see Chart 8). The pattern of public revenue and spending has remained unchanged, with revenue falling almost 5% in real terms and expenditure outpacing inflation, owing above all to compulsory expenditure[10], and despite the contraction in investment expenditure.

9 The effect of commodities prices is limited, given that Brazil is a relatively closed economy (exports account for only 11.3% of GDP), and where soya and iron ore (its main commodities exports) represent only 20% of the export basket.

10 This heading includes Social Security (including pensions), civil servants' wages, unemployment benefits and non-contributory pensions.

Brazil's fiscal problem, at the root of which are budgeting rules for many expenditure items that give rise to a clear bias towards inflexibility irrespective of the cycle[11], has been exacerbated by the strong cyclical decline in revenue, owing to the recession (see Chart 8). Most of the increase in primary expenditure between 2011 and 2015 (2.9 pp of GDP) was concentrated in so-called "compulsory expenditure" (2.7 pp of GDP[12]; see Chart 5) and demographic factors (an increase in the population aged over 65, reduction in thresholds for income to gain access to social programmes, etc.), but also the relaxing of eligibility criteria and the increase in the amounts for programmes. The indexing of some programmes to the minimum wage (pensions and non-contributory pensions) or to fiscal revenues (education and health) has been particularly significant in this respect.[13] Indexing to the minimum wage has added strongly upward inertia to these expenditure items, given that the increase therein is governed by 2011 legislation aimed at raising the purchasing power of the minimum wage, and not only at compensating for inflation erosion of such power.[14]

Given the negative trend of activity and of the primary balance in recent years, gross public debt has increased to a historical high (70.1% in August). Despite its composition (in the main fixed-rate or inflation-linked) and attendant maturities (which have been lengthened compared with those of the past), the proportion of floating-interest-rate or short-term debt meant that the interest burden surged in 2014 and 2015 as a result of the tightening of monetary policy and that the deficit rose above 9% of GDP at the start of 2016. This, along with the recession, raised doubts about fiscal sustainability (see Chart 8).

Against this backdrop, the new Government appointed in May 2016 opted for a change in fiscal management, acknowledging firstly the structural source of the problem. It duly proposed a constitutional amendment (PEC 241) to limit the growth of nominal primary expenditure to that of the previous year's inflation (entailing zero real growth) for 20 years, revisable after 10 years.[15] In addition, Congress was persuaded to approve the release of 30% of tax revenue whose end-use had been predetermined in order to increase budgetary flexibility. Secondly, the new expenditure-containment policy was extended to the regions, through a law that imposes a spending freeze in real terms in exchange for debt relief.[16] Thirdly, priority has been given to a gradual adjustment of the fiscal balance, so that a primary deficit of 2% of GDP has been budgeted for 2017, 0.5 pp down on 2016. The 2017 figure would be achieved by means of the disposal of State assets, the granting of concessions for new infrastructure[17] and higher growth in activity (1.6%, compared

11 It was estimated that around 85% of the primary expenditure budget was inflexible in 2015.

12 Of this figure, 0.7 pp relate to the recognition of obligations that were on the balance sheets of State-owned banks and which were consolidated in 2015, at the root of the political trial of President Rouseff.

13 Since 2011 a minimum of 10% of Treasury revenue, 12% of regional funds and a further 15% of local municipal funds have been earmarked for health spending, while the funding of the education system is regulated by the Constitution, which stipulates that a minimum of 18% of federal revenue and 25% of regional and local funds be assigned to education.

14 The increase in the minimum wage is calculated on the basis of the previous year's inflation and the GDP growth of two years earlier.

15 The Ministry of Finance has stated that the application of the cap to health and education expenditure will be postponed until 2018. Certain strategic expenditure items, such as regional and local transfers and the contributions to the Basic Education Development Fund, are excluded.

16 The regional and local governments show balanced accounts, although these have worsened greatly since the surpluses of close to 0.4% of GDP in 2013-2014. Certain regions are in a very delicate financial position, such as Río de Janeiro, which was declared to be in selective default after failing to meet a payment of $46 million to the IDB. Other regions have stopped paying their civil servants owing to a lack of revenue.

17 In mid-September the government unveiled its *Crecer* (Growth) programme, which amends the rules governing concessions for infrastructure, public services and mining operations, eliminating the need for the public corporation of each sector to have a minimum share in the concession. Consideration is also being given to the sale of lotteries, public energy utilities and sanitation corporations in certain cities.

with the previously estimated figure of 1.2%); in 2018, the primary deficit would be 0.9% of GDP and only in 2019 would a primary surplus be attained (0.2%). Increasing taxes is considered only as a last resort, since taxation is already fairly high for a country of Brazil's characteristics (34.4% compared with 32.5% in Turkey or 26.8% in Korea).

This new strategy has been well received by both international and local investors. Indicators of credit risk and stock market indices recovered proportionately more than in the rest of Latin America, and financial tensions moved on a declining trend from mid-April 2016, which quickened as from August, reaching a 10-year low (see Chart 8).

Nonetheless, the strategy is not free from risks. First, if the freeze on spending in real terms were not to obtain parliamentary support beyond the 2017 budget, there would be a loss of credibility in the proposed economic programme.[18] Second, the adjustment largely rests on a forecast pick-up in activity and in tax revenue-raising in 2017 which might not materialise, and on a programme of privatisations and concessions that calls for continuing favourable market conditions. Third, public debt dynamics remain a concern and, according to the draft budget submitted to Congress, in the best of cases it would stabilise at around 80% of GDP around 2021, which shows the Government's limited room for manoeuvre in the face of potential shocks (see Chart 8). Lastly, one of the key reforms for stabilising public finances in the long term, namely the reform of the public pensions system, the text for which will not be discussed in Congress until 2017, is politically very sensitive. Without reform, the official projections show that Social Security spending would rise from 8% to 17.2% in the next 50 years, making funding thereof impossible. The first necessary step would involve setting a minimum retirement age; currently, the average effective retirement age is around 52 years. Decoupling from the minimum wage would be made easier if Congress were finally to approve PEC 241.

Lastly, given the fragile support in Parliament and the context of raised social militancy, the government has postponed the consideration of other necessary structural reforms to raise medium-term productivity, in areas such as the labour market, tariffs, business start-up costs and the reform of the tax system.

What effects will the fiscal adjustment designed have on activity? The impulse-response functions derived from the previously presented model (depicted in Chart 9) show that a reduction in spending of approximately 1 pp of GDP would reduce growth in a range of 0.2 to 0.5 pp in the initial years, thereby indicating a low fiscal multiplier. If, simultaneously, the government were to find itself obliged to raise revenue by 1 pp of GDP, the additional effect would be a fall of between 0.3 and 0.5 pp in the growth rate. However, the estimated effect of this fiscal adjustment would be small if monetary policy were more expansionary and the monetary authorities were to cut the policy interest rate more aggressively, moves which, according to the model, could raise the growth rate by between 0.2 and 0.5 pp in the first two years; likewise, an improvement in external funding conditions would also ease the effects of a more contractionary fiscal policy. In sum, the adjustment strategy chosen by the Government (a reduction in spending as a proportion of GDP of 0.4 pp for 2017 and, in the medium term, by means of a constitutional amendment) would have moderate unfavourable effects on GDP which, moreover, might be offset if domestic and external financial conditions improve in the coming months.

18 In this connection, the first Congress vote on PEC 241 had been approved in mid-October.

Productivity in Latin America following the end of the commodities "super cycle"

In recent years, many emerging economies have seen a downward revision in their potential growth. The adjustment is proving particularly significant in commodities-exporting economies, whose dynamism has been dented not only by the weakness of the world economy and, in some cases, by growing financing costs, but also by the sizeable fall in commodities prices since 2011. This situation has resulted in a decline in investment in these economies and, therefore, in a slower pace of capital accumulation. Against this background, the economic literature has shown how, once the growth associated with factor accumulation (the labour and capital factors alike) reaches its limit, the main engine of economic growth lies in productivity gains.[19]

In the past 30 years, the Latin American economies have broadly maintained moderate growth rates, associated more with capital or labour accumulation than with productivity gains, which has restricted the region's capacity to converge towards higher living standards. As part of this general pattern, the period of strong increases in commodities prices in the first decade of this century was an exception, since during these years the pace of growth in the region rose significantly – as did the speed of convergence – without a correlative increase in the pace of factor accumulation.[20] Subsequently, total factor productivity (TFP) has returned to a flat line in certain Latin American countries (see Chart 10), this being the main cause underlying the downward revision of the region's growth.[21]

This section analyses productivity in Latin America, with the aim of explaining the causes behind recent developments, quantitatively identifying the contribution of temporary and permanent factors. The country-by-country breakdown in Chart 10.1 shows that, despite the different levels of development in the region (suggesting divergences in productivity growth from country to country would be expected), the average increase in productivity has been relatively low in all of them, compared, for example, with emerging Asia. Conversely, the increase in productivity from 2003 to 2008 was on average higher, but also more uneven from country to country; particularly of note is Mexico's flatness. Given that this behaviour coincides with different commodities price phases, with commodities being one of the main exports in many of these countries, it is worth considering whether there is a relationship between both phenomena.

Traditionally, the effect on potential growth of a greater dependence on natural resources has been deemed negative[22] (an effect known as "Dutch disease"[23]). However, recent studies have called this view into question[24], highlighting the fact that under certain circumstances – especially better institutional quality – the positive effects may prevail over the adverse ones, especially in the short run. In this respect, the short-term correlation between productivity growth and commodities prices has proven particularly high in Latin

19 W. Easterly and R. Levine (2001), "What have we learned from a decade of empirical research on growth? It's Not Factor Accumulation: Stylized Facts and Growth Models", *World Bank Economic Review,* 15 (2), pp. 177-219.

20 See Banco de España (2016), "Situación y perspectivas de la economía mundial a principios de 2016", *Boletín Económico,* March.

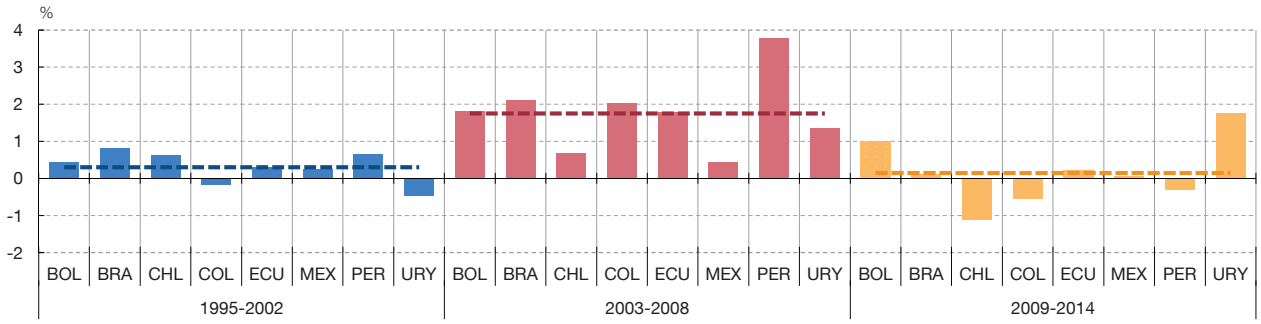
21 See S. Sosa, E. Tsounta and Hye Sun Kim (2013), *Is the growth momentum in Latin America sustainable?,* IMF Working Paper 13/109.

22 J. D. Sachs and A. M. Warner (2001), "The Curse of Natural Resources", *European Economic Review*, 45, pp. 827838.

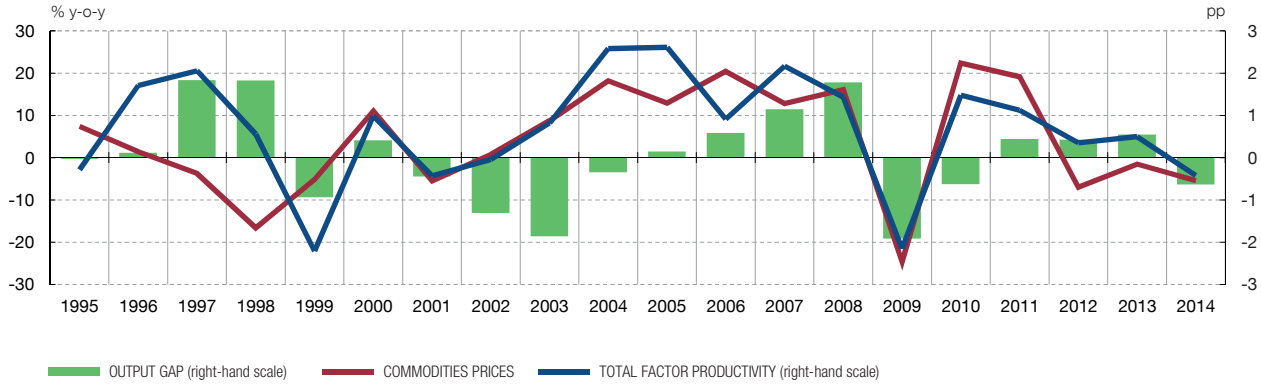
23 This is the name commonly used to describe a situation in which, following a commodities price boom, productive resources tend to be reallocated from the manufacturing sector to the commodities and non-tradables sector. Currency inflows relating to commodities exports appreciate the real exchange rate and eliminate the competitiveness of the other sectors in the medium term.

24 See, for example, C. N. Brunnschweiler and E. H. Bulte (2008), "The Resource Curse Revisited and Revised: A Tale of Paradoxes and Red Herrings", *Journal of Environmental Economics and Management,* 55 (3), pp. 248264, or H. Alcott and D. Kenniston (2014), *Dutch Disease or Agglomeration? The Local Economic Effects of Natural Resource Booms in Modern America,* NBER Working Paper no. 20508, among others.

1 TOTAL FACTOR PRODUCTIVITY GROWTH BY COUNTRY AND PERIOD (a)



2 CORRELATION BETWEEN GROWTH OF COMMODITIES PRICES, OUTPUT GAP AND PRODUCTIVITY GROWTH



SOURCES: Banco de España, Conference Board, national statistics and World Bank.

a Dotted line shows average for each period.

America in recent years (see Chart 10.2). Thus, the strong growth phase in commodities prices since the start of the last decade – the so-called commodities "super cycle" – coincided with a period of productivity gains, whereas after the crisis both variables have remained weak. Mexico's zero productivity growth in this period would, with the Mexican economy being geared towards manufacturing exports, be consistent with lower dependence on commodities than the other countries analysed.

Among the possible causes of this positive correlation, some structural and other conjunctural reasons have been cited. Among the former, an increase in commodities prices might ease financing conditions, allowing fresh investment in innovation or human capital, which enable the diversification of the economy to be increased and citizens' level of educational attainment to be raised. Further, enhanced institutions and the stabilisation of the economies in the past twenty years — through, for example, the adoption of fiscal rules, the introduction of inflation-targeting and the creation of sovereign funds – may have been instrumental in mitigating the adverse effects of "Dutch disease".[25] Among the conjunctural reasons, the possible complementary effects of commodities production on other sectors of the economy have been cited[26], whereby an increase in commodities prices might mean greater use in the

25 J. Frankel (2012), "The natural resource curse: A survey of diagnoses and some prescriptions», in R. Arezki, C. Pattillo, M. Quintyn and. M. Zhu (eds.), *Commodity Price Volatility and Inclusive Growth in Low-Income Countries,* International Monetary Fund.

26 D. Ferraro and P. F. Peretto (2014), *Commodity Prices and Growth.* For an approach to this hypothesis in Chile's case, see C. de la Huerta and J. García Cicco (2016), *Commodity Prices, Growth and Productivity: a Sectoral View,* Documentos de Trabajo, Banco de Chile, no. 777.

short term of the factors of production. Moreover, another possible cause involves a question of measurement; if the production function considered to estimate productivity does not include the endowment of natural resources, a greater use of the latter would be reflected in higher TFP, as the factor is obtained residually.

To analyse these matters, an empirical model has been estimated for TFP. It includes, in addition to commodities prices, other more traditional explanatory factors using data from 43 economies over the 1993-2014 period. Included among these determinants are structural aspects of economies (technological innovation, institutional quality, trade openness and technological absorption, which depends on the level of educational attainment) and temporary aspects (the output gap and capacity utilisation of economies).

The main conclusion of this exercise is that the positive impact of the changes in commodities prices on productivity is robust to different econometric specifications and to the presence of country-specific effects. Conversely, the level of commodities prices does not prove significant. Therefore, in the short run, changes in commodities prices play a key role in the economies that export these products, which adds to the habitual procyclical behaviour of productivity. The temporary nature of the effect of commodities prices appears to support the presence of agglomeration effects in the short term that involve a greater use of factors of production or the use of factors of production not included in the measurement of productivity, such as natural resources.

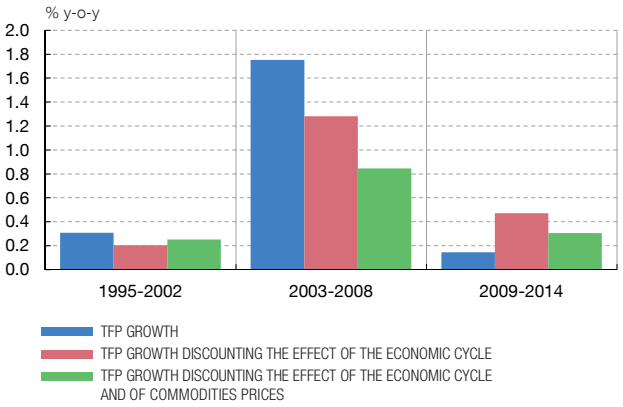
It is worth noting that, although the effect of commodities prices on productivity is confined to changes in the short term, the lasting nature of commodities price cycles means that the effect relates to relatively long periods of productivity growth in Latin America. Chart 11.1 shows the average growth of TFP in Latin America once the temporary factors of the economic cycle and commodities prices are stripped out, or, otherwise expressed, what TFP growth would have been in a scenario involving the long-term stability of these variables.[27] It can be seen in the chart that over half of the increase in TFP in Latin America in the 2003-2008 period was attributable to the sustained increase in commodities prices and a favourable economic cycle which, at least in part, was the outcome of the behaviour of the prices of these products.

In the present circumstances, the challenge for Latin America lies in improving those structural aspects that may boost its competitiveness and, thereby, raise the level of productivity against a background of lower commodities prices than in recent years. The exercise performed shows that, in the long term, productivity growth will be determined by economies' capacity to incorporate new technologies into capital and by the speed of convergence towards the knowledge frontier. For improvement in these areas, two avenues must be pursued. First, an improvement in the level of educational attainment is related to a swift pace of technological absorption. Hence, simulating a counterfactual scenario, Latin America could raise annual productivity growth by around 0.4 pp if its working population were to achieve the percentage of secondary education completion posted in China. In this connection, secondary education must be extended to more layers of society. In addition, the region must improve its quality in view of the results obtained in the programme for international student assessment (PISA) report (see Chart 11.2).[28]

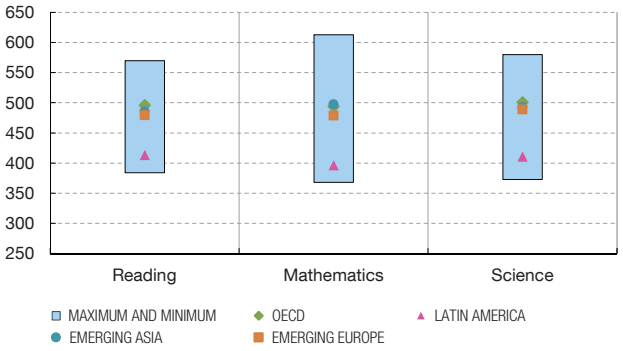
27 For further details see I. Kataryniuk and J. Martínez-Martín (2016), *TFP growth and commodity prices in Emerging Economies*, Documentos de Trabajo, Banco de España (forthcoming).

28 For further details see "Bridging the Skills and Innovation Gap to Boost Productivity in Latin America. The Competitiveness Lab: A World Economic Forum Initiative", *World Economic Forum* (2015).

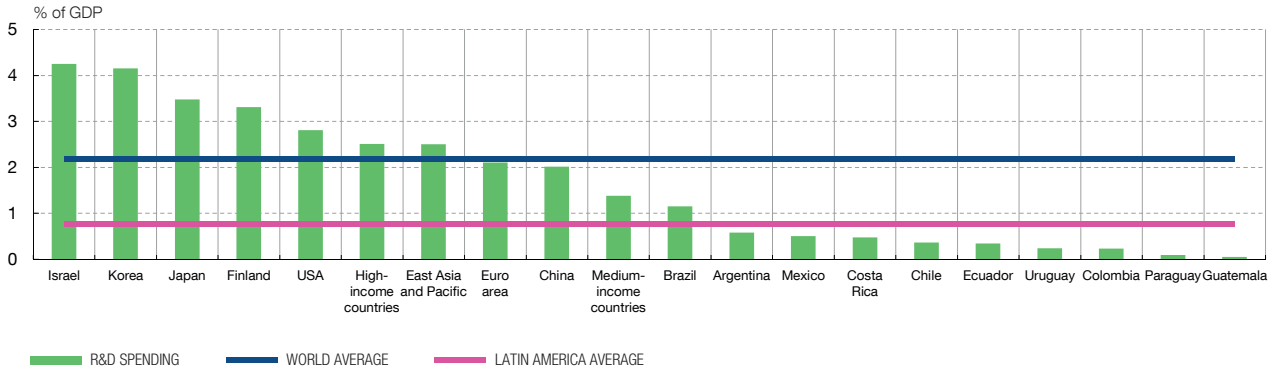
1 TOTAL FACTOR PRODUCTIVITY



2 RESULTS OF PISA REPORT 2012 (SECONDARY SCHOOL PUPILS)



3 RESEARCH AND DEVELOPMENT EXPENDITURE. 2013



SOURCES: Banco de España, OECD and World Bank.

Investment in research and development (R+D) and the incorporation of new technologies are vital factors for increasing the complexity of manufacturing products and thus obtaining substantial returns in terms of productivity growth. In this respect, average investment in innovation in Latin America continues to be far below the global average (see Chart 11.3), meaning there is more than ample scope for improving on current levels. According to the results of the exercise, if investment in innovation in the region were to increase by 1 pp, drawing closer to the global average, there would be a 0.3 pp increase in productivity growth.

20.10.2016.

When analysing financial tensions faced by a country, the individual indicators usually used relate to specific markets or funding sources that do not always behave in the same manner, making it difficult to arrive at a common diagnosis. To avoid this, financial stress indices (FSIs) that seek to group the signals from a broad set of market variables into a single indicator have recently become popular.[1] This box shows an FSI for Brazil, based on 18 indicators of 6 market segments (stock exchange, public and private debt, banks, money markets, exchange rates and commodities prices) deemed significant for the Brazilian economy. The index aggregates these indicators taking into account cross-correlations between them.[2] The 18 variables used in the Brazilian FSI are listed in the table below.

As Chart 8.2 shows, the FSI for Brazil increased substantially both in the summer of 2002 (market turmoil following the first victory of the PT party) and in September 2008, the two documented crises Brazil underwent. More recently the Brazilian FSI shows, after the peak recorded when political problems were rampant, a clear decline in tensions commencing early 2016 and becoming more marked after the country's political crisis was resolved, to lows not seen since 2006.

1 See D. Hollo, M. Kremer and M. Lo Duca (2012), CISS - A composite indicator of systemic stress in the financial system, ECB Working Papers 1426.

2 This correction takes into account the fact that in periods of tension the sub-indices are highly correlated, whereas in periods of calm the correlation would be lower; accordingly, an unadjusted FSI could overestimate stress during calm times.

Table
BRAZIL. INDICATORS USED TO PREPARE THE FSI

1	Equities
	Historical volatility of the Sâo Paulo stock exchange
	C-MAX (stock market index's maximum accumulate loss over two years)
	Stock-market price-earnings ratio (PER)
2	Government and corporate bonds
	Sovereign spread (EMBI)
	Corporate spread (CEMBI)
	Foreign government bond interest rate bid-ask spread
3	Banks
	Standard deviation of daily variation in banks' stock market indices
	Banking sector CDS (Banco Bradesco)
	PER of bank stock-market index
4	Money market
	Standard deviation of daily variation in short-term interest rates
	Spread between short-term interbank rate and official rate
	Spread between nine-month interbank rate and nine-month treasury bills
5	Exchange rate
	Historical volatility of the real/dollar exchange rate
	Historical volatility of the real/euro exchange rate
	Spread between (short term) forward exchange rate and spot exchange rate of real against the dollar
6	Commodities
	Historical volatility of oil prices
	Historical volatility of soya prices
	CDS Petrobras

SOURCE: Banco de España.