Economic Outlook

Global

Third Quarter 2013
Economic Analysis

- **Global growth slows down** and resets between different areas.

- **Financial markets react to FOMC's communication** and the slowdown in emerging economies.

- **Future potential growth** rests on current real growth.

Index

Closing date: August 2, 2013

1. The recovery slows down

In the first half of 2013 world growth has remained at around 3%, near the level registered in 2012. In the second quarter of the year the indicators released have continued to moderate and point to quarterly growth around 0.6%. **This moderation is partly due to increased volatility and recent tensions in financial conditions,** which have been far more moderate by the lack of disruptive events seen in recent years (the collapse of Lehman Brothers, institutional problems in Europe, restructuring of Greek debt, etc). Now, these tensions are the result of the uncertainty **of "nearly normal times".** Firstly, the **Fed's announcement** explaining the strategy for reversing the expansion of its balance sheet, against a backdrop of gradual economic recovery. The markets reacted with a **strong increase in long-term rates in the U.S.** which at the end of July and for a 10-year term stand at between 70 and 80 basis points above the levels reported for the first half of May. Secondly, **the tensions registered in the interbank lending market in China** are a warning signal of the Chinese central bank's concern over the strong growth in lending and in "shadow banking". In addition, the **risk indicators in the euro zone** once again deteriorated to levels near those reached during the banking crisis in Cyprus due to the lack of significant progress in building a banking union, and to the political uncertainty in some peripheral economies, particularly Portugal. Lastly, the evident slowdown in major emerging markets exacerbated the capital outflows and the risk aversion derived from a less favourable global liquidity. **Faced with all these events, investors have incorporated an environment of lower growth in emerging markets and gradual normalization of the monetary policy in the U.S.**

Thus, the prospects for the near future point to a gradual global recovery to near 4% in 2014, with an improvement even in the second half of 2013 in some economies. **The most developed economies will continue to be supported by their central banks and, in the case of the euro zone, will benefit from a fiscal consolidation effort less intense** than the one registered in 2012. In the emerging markets the slowdown underway will be halted, helped by **improved conditions in the developed economies, and also by the prudent use of the room for manoeuvre afforded by domestic economic policies in some countries.** The recovery will be stronger in Latin American economies, while the improvement in Asia will be slowed down by the **downturn in China, which until now is narrow but has continued almost uninterruptedly since 2008 and will remain at least in 2014.** This moderation is related to the gradual weakening of a credit- and investment-intensive growth model which should evolve to more weight to consumption.

Such highly likely global baseline scenario still faces some **uncertainty ranges somewhat more tilted to the downside than to the upside, but with no high probability of disruptive events** that would prevent an outlook of, at least, sustained global growth in 2013 and 2014 near 2012 levels.

The downside risks that could once again delay global recovery (relatively less likely than on other occasions) would basically be the persistence of events that complicated the outlook last quarter to the point of generating additional tensions in the conditions for accessing finance and a decline in the confidence of the economic agents. This could be: i) a new, intense and continued fall in the price of risk-free assets like the U.S. Treasury bond as a result of a market less compliant with the wishes of the Federal Reserve; ii) a **resurgence of doubts about the progress towards the banking union and the "exceptional nature" of Greek debt restructuring**; and iii) a sharper downturn in the **Chinese** economy in its necessary process of economic rebalancing while it **gradually adapts the adjustment to the size of its financial system.** Although it is true that the authorities have room for manoeuvre to prevent "tail" events, the process of change faced by China is notable and requires extensive, ongoing and decisive reforms.

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2. Global growth: no improvements until 2014, diversified risks

The global economy is showing cyclical weakness, above all in emerging markets, and is facing more difficult financial conditions

The global economic situation is less favorable than it was three months ago, when we issued our previous growth forecasts. We have therefore revised down our global GDP growth outlook to 3.1% in 2013, 0.2 percentage points below the forecasts three months ago. For 2014, we maintain our expectations of continued expansion, in this case at 3.8%, 0.2 pp below the figure we forecast in the last quarter. At least two reasons lie behind this deterioration and the resulting revision of our forecasts. First, **the emerging markets are experiencing a sharper slowdown than expected** (Chart 1); above all, they include more moderate growth in China, which has a global impact beyond Asia, for example on the South American economies. Second, there has been an unexpected event, at least at the time when it occurred: **the tightening of financial conditions at global level.** This increased stress has basically been the result of market reaction to the communication of the details given by the Fed of its steady reduction and subsequent reversion of the third round of its quantitative easing program.

Chart 1
**Emerging markets, GDP growth
(% q/q, seasonally corrected)**
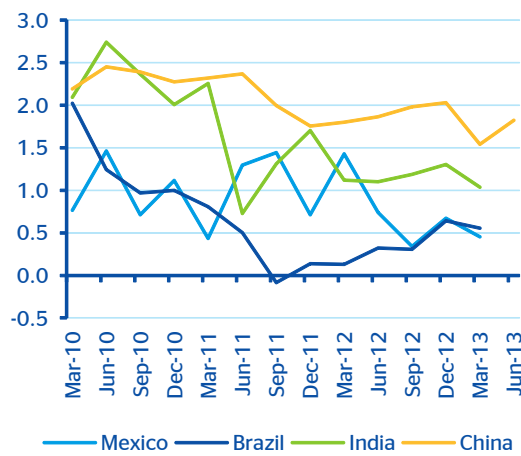
Source: Haver

Chart 2
**Growth of global GDP according to the
BBVA-GAIN (% q/q)**
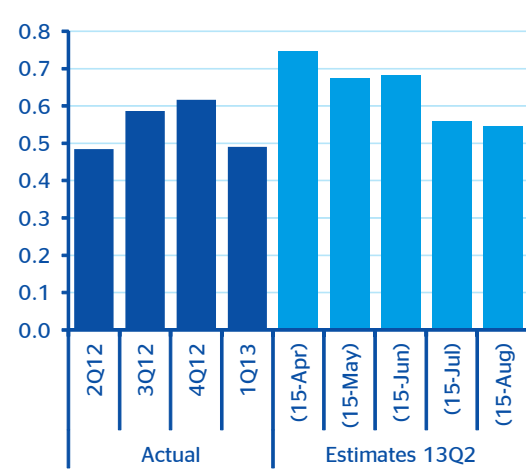
Source: BBVA Research

Growth is still not convincing in advanced economies and has deteriorated in emerging markets

In recent quarters, macroeconomic data have surprisingly not been positive, and have even generated major concern, at least in some geographical areas. Thus the steady stream of new data has gradually reduced the estimates for quarterly global GDP growth (Chart 2).

On the one hand, the advanced economies have performed in very different ways, but in general growth continues far from robust, except in the case of Japan. **Growth in the U.S., while not dramatic** (the economy has not grown above 2% since 3Q12), **has been in line with expectations.** Even so, although these growth rates are poor in comparison with other recoveries in the past, they are particularly significant given the drag on GDP of the fiscal consolidation measures implemented as a result of the partial entry into force of the public-spending sequestration and the tax rises agreed at the start of the year.

There was a disappointing start to the year in Europe, with contraction for the sixth successive quarter. However, the most recent data are more favorable, and in the second quarter the euro zone will probably have avoided another fall in GDP. Meanwhile, in the first quarter Japan experienced an upturn in its GDP and the most recent data suggest that it is maintaining its strength, supported by the monetary stimuli and fiscal measures adopted by the new government. Overall, the advanced economies have improved their cyclical behavior over recent months, but not sufficiently to modify the perception of their situation and their prospects in the most likely scenario.

In contrast, the macroeconomic situation of the emerging markets has weakened significantly. In the two main emerging markets in Latin America, there is particular concern in Brazil, which appears incapable of a significant upturn from its slump in 2011-2012, and with additional uncertainty due to social tension. Its growth model based on debt-driven consumption - under a framework of extremely limited political reform initiatives- and productive investments appear to be drying up. In addition, the need for monetary policy to control inflation has led to an increase in interest rates, which will make recovery harder in the short term. Mexico has lost momentum in the first half of 2013, due to lower foreign demand along with the impact on public expenditure of the change in government. Overall, there has been modest growth compared with its potential capacity.

Meanwhile two of the major emerging markets in Asia have weakened in recent quarters (Chart 1). Domestic demand, and in particular investment, has weakened in India, with external conditions also becoming less favorable. In China, a slowdown trend has continued, putting downward pressure on growth in other emerging markets, especially those dependent on demand for commodities and also affecting economies exporting investment goods. The slowdown in China is a result of a combination of sluggish external demand, policies aimed at curtailing domestic financial fragilities at the expense of new stimulus measures (as analyzed in more detail below) and a structural decline in potential growth. In addition, recent data raise doubts about how fast consumption can take over from investment as a driver of medium-term growth as rebalancing of the economy unfolds.

Markets have to evolve with lower liquidity support from central banks

The second factor limiting optimism regarding the global economic outlook is tightening financial conditions at a global level. Although the reasons for this may be varied, most of the shift in financing conditions at global level took place in mid-May, with the details announced by the Fed of its plans to limit and then put an end to its program of monetary expansion. The Fed had in recent months already advanced its intention of beginning a process of tapering the extraordinary liquidity measures that it had adopted in recent years as a response to the crisis. These plans have recently taken shape, so the market has interpreted that in September the Fed will begin to reduce the rate of its asset purchases (from 85 billion dollars per month) and when the unemployment rate reaches 7% (expected for the second quarter of 2014) the Fed will stop buying assets. In addition, the Fed maintains unaltered conditions that could justify interest-rate rises. According to our forecasts, rises will begin some way into the second half of 2015, while the normalization (reduction) of the Fed's balance sheet will not begin until well into 2016.

Chart 3
Non-farm payroll growth in the private sector (changes in thousands, 3-month moving average)

QE1:
600 bln

QE1 extensión
1.25 Trl

Hints of QE2
(Jackson Hole)

Operation
twist

QE3
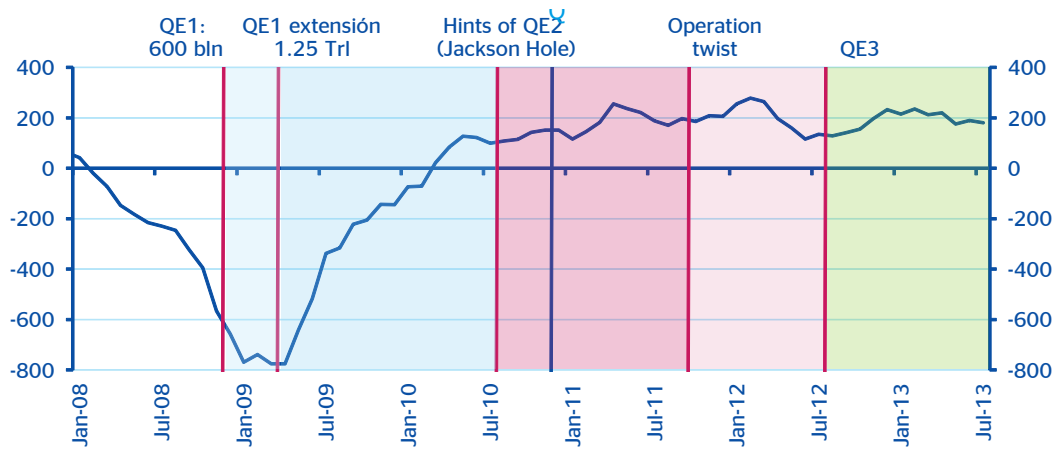
Source: BBVA Research, Haver

The Fed has based the implementation of this plan on the U.S. emerging in improved shape. In addition, other factors have also probably played a role in this decision, such as fears of generating bubbles in some markets after years of very low interest rates and abundant liquidity, or doubts over the effectiveness of successive rounds of monetary expansion in providing an additional boost to activity. The fact is that there are still **doubts about the real strength of the recovery underway in the U.S.** Fiscal consolidation is restricting growth (and the process will continue for the immediate future) and the U.S. economy is not finding it easy to grow at an acceptable rate in historical terms (at least 2%), while recently sectors such as manufacturing have shown signs of weakness. **The residential construction sector is showing great strength, though in part this has been supported very favorable financial conditions that are beginning to reverse.** Consumption remains stable, but this is due to factors such as the reduction in the rate of savings and the positive wealth effect, as well as increased employment and disposable income. What is more, employment is not showing signs of particularly robust growth. The last round of stimuli helped boost job creation again to around 200,000 new jobs per month (Chart 3), not much more than in previous periods in which a new round of fiscal stimuli was eventually necessary.
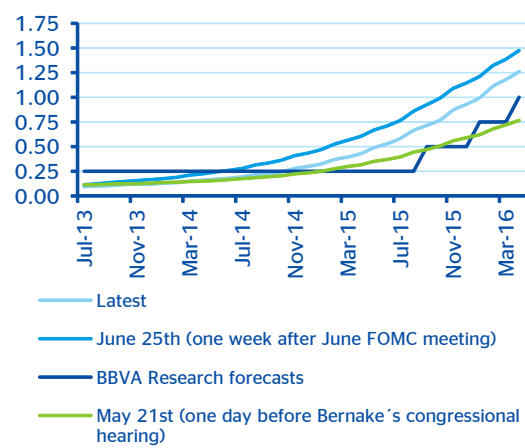
In any event, the Fed's plan has been characterized by high level of transparency and prudence. It is notable that asset purchases are not being interrupted immediately, but are being extended for a protracted period of time (the Fed will probably continue to extend its balance sheet for almost another year). The Fed has also reaffirmed its commitment to maintaining interest rates very low for an extended period and, perhaps more importantly, the whole process is conditional on the progress of the economy, i.e. on the economy continuing at "cruising speed".

Chart 4
Yield on 10-year U.S. public debt (%)

Source: Bloomberg

Chart 5
Futures on Fed Fund rates

Latest
June 25th (one week after June FOMC meeting)
BBVA Research forecasts
May 21st (one day before Bernake´s congressional hearing)
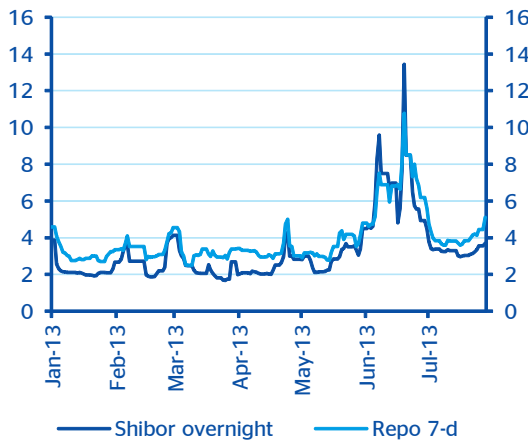
Source: Bloomberg, BBVA Research

However, **market reaction to this plan (even after being clarified in all its details) has been stronger than (probably) desired by the Fed.** As can be seen in Charts 4 and 5, long-term interest rates increased by more than 100 basis points, while futures now discount the first rise in rates for the start of 2015, practically one year before expected two months ago. In our opinion, **what is being seen on the financial markets is probably partly an over-reaction,** as shown by recent downward moves in both long-term rates and expectations of shorter-term rates. Even so, **the implementation of the mechanism has generated a process of restructuring of portfolios in the face of the end of abundant liquidity,** and thus of extra demand for bonds that kept interest rates at exceptionally low levels. In our opinion, therefore, **we are being faced with the start of a cycle of normalization of financial conditions, with higher interest rates and lower demand for risk assets.**

Slowdown in China: sluggish external demand and steps to limit indebtedness and the scope of shadow banking

A recent tightening of the Chinese interbank lending market (Chart 6) is an example of the side-effects of the a**uthorities' efforts to limit financial risks associated with rapid credit growth and a buildup in debt** (Chart 7). In addition to rapid credit growth in the formal banking system, flows from the unregulated shadow banking system, have led to a buildup in total debt already around 200 percent of GDP. Over the last year, **the authorities have adopted a variety of measures aimed at restricting the growth of credit and curtailing shadow banking activities.**

While tensions in the interbank system were temporary, it has given a signal regarding the firm will of the authorities and has revealed underlying fragilities and vulnerabilities of the financial system. Credit has not only grown at a faster pace than the economy over recent years, but has financed local government projects of dubious profitability, which were part of the stimulus measures implemented at the end of 2008 and in 2009 to counter the global post-Lehman Brothers recession. The result has been increased doubts about the capacity of the country's economy to continue to grow at recent rates in a very tight global environment.

Chart 6
Interbank market (7-day REPO and Shibor overnight rates)

Chart 7
Growth of credit and GDP (% y/y)

Shibor overnight ——— Repo 7-d

——— Nominal GDP
——— Loans, financial institutions

Source: Bloomberg, BBVA Research
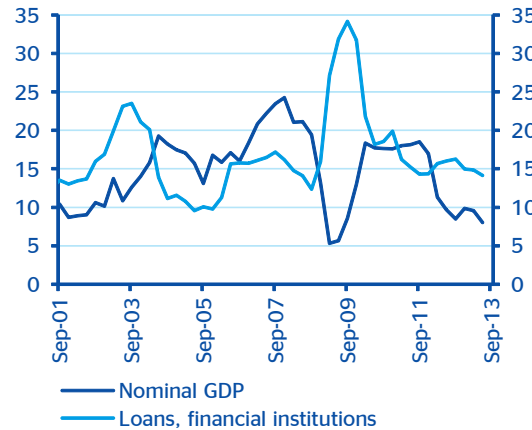
Source: Haver, BBVA Research

The baseline scenario continues to be one of a continued moderate slowdown relative to the rapid pace of recent years. The measures taken to limit credit growth will act as a constraint on the room for stimulus measures to support growth. In addition, the Chinese authorities appear more comfortable with the current rates of GDP growth as they focus more on the quality of growth and medium-term sustainability. Even so, we still consider that **the government has room for maneuver if the growth slips below the official targets.** Moreover, we believe the authorities have resources to prevent financial risks from generating a hard landing in the near term.

The beginning of the end of abundant liquidity has the biggest impact on emerging markets that need short-term finance most

The biggest emerging markets in Asia and Latin America are passing through a stage of weakened activity. It is less intense but more lasting in China, and more intense but probably less lasting in the rest. China could be having a significant effect of dragging down other emerging markets, in particular those that depend on demand from the large emerging markets, whether for final and intermediate goods (basically the Asian economies) or commodities (most of the economies in South America).

Emerging markets have been most affected by the recent upsurge of financial stress. So far, the monetary expansion policies implemented by the central banks in advanced economies (exceptionally low rates and increased balance sheets) have generated flows to assets with higher risk and higher return. Among them are the assets of emerging markets. At times these flows were so strong that some emerging markets adopted measures to limit them (in particular, Brazil). Currently the situation has clearly reversed, with capital outflows from emerging markets in the form of shares and bonds of close to 85 billion dollars between mid-May and mid-July[1]. The size of these outflows has been growing in the most liquid markets (Poland, Turkey, Mexico and Brazil), through portfolio adjustments made by the most important investors, which are those with the longest-term investment horizon. As well as falls in the stock markets and bond prices, there has also been a general depreciation in their currencies. Capital outflows and depreciation in some countries have been so intense that their central banks have had to raise interest rates (Indonesia and Turkey), or eliminate the barriers to the entry of capital flows (also the case of Brazil).

There are various factors behind these major capital outflows (Chart 8). As well as an **immediate anticipation of the new liquidity scenario through a restructuring of portfolios,** the cyclical weakness of some large emerging markets and the growing risk of a steeper slowdown in China

1: For more details, see BBVA Research's Economic Watch, "Behind the Emerging Market sell-off: some stylized facts", available from: www.bbvaresearch.com

are factors pointing in the same direction. Moreover, **monetary expansion in Japan has done little to generate capital flows to emerging markets in search of higher returns[2].**

Chart 8
Net flows to EM bond and equity funds (Mln USD per month, four-week average)
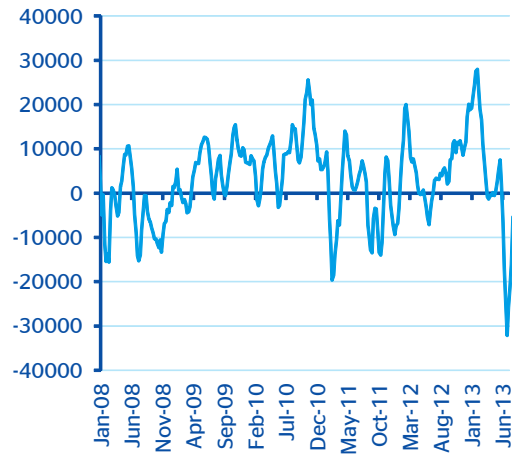
Chart 9
Japan's net purchases of foreign bonds (JPY bn, weekly data, 4-week average)

Source: Bloomberg, BBVA Research
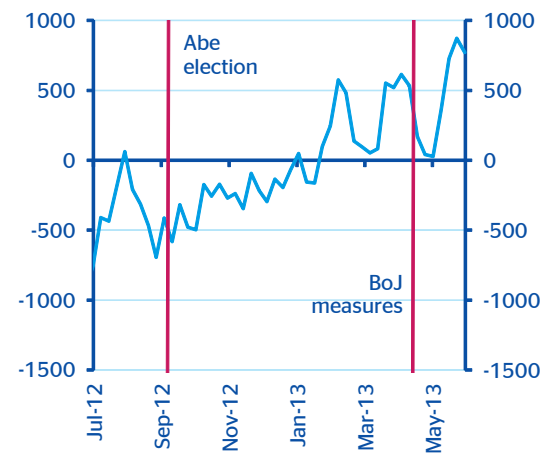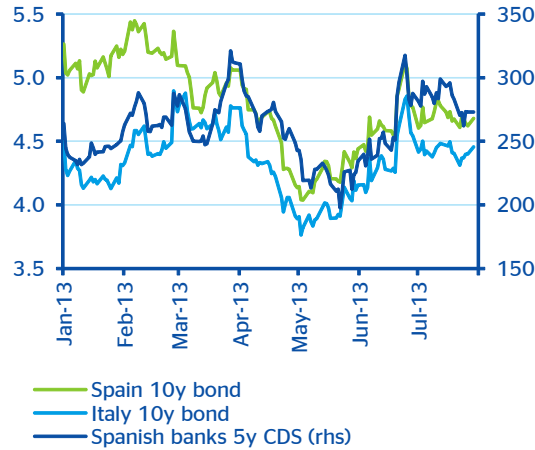
Source: Haver, BBVA Research

Although the rate of capital outflow from emerging markets is very high, there are reasons for optimism. First, the most recent data on capital flows show more moderate outflows over recent weeks. Second, the profile of investors who have headed up the outflows is of a shorter-term investment horizon, compared with institutional investors with longer-term horizons. Finally, the portfolio reorganization has to take into account that if we are moving towards an environment of lower central-bank support for liquidity, this is because the global economic cycle is tending to improve; and we should not forget the fundamentals that emerging markets have constructed in terms of their policy certainty and comparative advantages against the most developed countries with respect to their solvency ratios.

Europe: prospects for recovery remain, despite the downward revision of growth in 2013

In Europe financial tensions have once more increased in recent months, and undone the improvements made in the first part of the second quarter. Although no important risk event has materialized as in previous quarters, financial stress has at times reached similar levels to the time of the Cyprus bailout crisis (see Chart 10, where this is reflected through peripheral sovereign bonds), although the volatile tone of economic activity has improved in the light of the indicators that are being released. A number of reasons lie behind this situation. First, Europe has probably also been affected by the process of portfolio restructuring following the Fed's announcement. Second, the countries of southern Europe have been affected at the same time by political stability problems. Particularly noteworthy in this respect is the case of Portugal. The financial markets perception is that political tensions makes plans of Portugal return to sovereign market very dificult and the likelihood that additional help could be needed from mid-2014 increases. Higher financial stress reflects markets fear about some kind of debt restructuring in the future. Third, some doubts may have arisen regarding the capacity of the ECB's OMT program to contain financial tension as a result of the judicial scrutiny it is being subjected to in Germany. Finally, the process of constructing banking union continues slowly, subject to the needs dictated by economic policy at domestic level.

2: The additional monetary expansion, fiscal and structural reform measures planned by the new Japanese government were successful in weakening the yen, increasing the price of bonds and reducing their yields. This had the desired effect of boosting economic activity and increasing inflation expectations in Japan. The indirect effect that this situation could generate lies in Japanese capital flows moving to other economies in search of greater returns. However, the Japanese Government's economic policy measures have partly disappointed the markets, and some of the yen's depreciation combined with the fall of interest rates has also affected capital outflows

Chart 10
Europe: Yields on 10-year public debt and 5 year CDS

- Spain 10y bond
- Italy 10y bond
- Spanish banks 5y CDS (rhs)

Source: Bloomberg, BBVA Research

Chart 11
GDP growth

■ August-13 — May-13
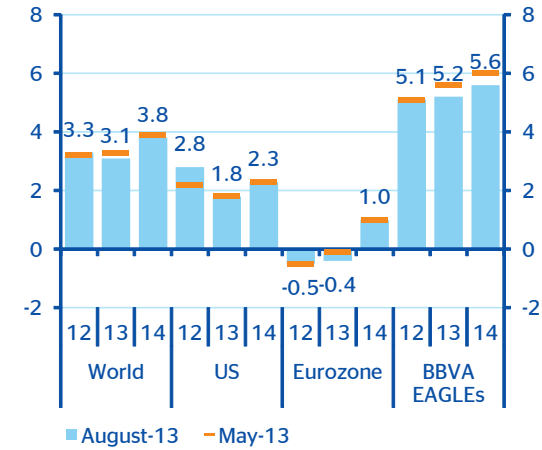
Source: Haver, BBVA Research

Overall, the prospects for the economy in the euro zone remain basically unaltered. The reforms designed to improve governance in the zone will probably be boosted following the elections in Germany. However, with the external situation weaker than it has been, it will not be offer greater support than previously expected; quite the reverse. Economic policy appears to have taken a more flexible turn. There has been confirmation of the relaxation of the European Union's fiscal targets for various countries in the zone (not only the periphery). This will make fiscal policy less restrictive in 2013 and 2014. The ECB has taken additional steps to support the economy: first, in May it lowered interest rates; and second, in what is an unusual step, it showed its commitment to the maintenance of benchmark interest rates at current levels or below for a prolonged period of time, in what is a kind of weak version of forward guidance. This move probably aims to differentiate the monetary policy cycle in Europe from the cycle that has just begun in the U.S. In any event, **the macroeconomic situation in the zone remains subject to downward risks, so the time for tightening monetary policy appears far off.**

More diversified global risk events, but with lower potential impact

The global economic outlook has therefore been modified by two factors. First, by a weaker macroeconomic tone, with the improvement in advanced economies not offsetting the loss of strength of emerging markets, particularly as structural weaknesses have been heightened in some of the latter; so they cannot be expected to have the capacity to boost global demand as they did in the past, at least in the short term. Second, the global situation is already characterized by a process of less abundant liquidity, which is reflected in tighter financial conditions. This scenario has a particular impact on emerging markets, so the global growth forecast for 2013 has been revised down by 0.2 percentage points to 3.1%. In 2014 growth is now expected to be 3.8% (Chart 11).

With respect to risk factors, it is worth noting that **the scenario is no longer dominated by a single risk factor with globally disruptive potential.** However, some risk factors remain, and others have been added, so risks are more diversified, although their potential impact on the global economy is lower than those defined in previous quarters. First of all, it is worth mentioning **the possibility that the exit process announced by the Fed from its expansive monetary policies will be disorderly.** If this did occur, and if the rates of risk-free assets rose beyond what is wanted by the Fed and we entered a process of high financial volatility, the impact on global growth through deteriorating confidence and the effect of negative wealth would not be negligible. In any event, **lower global liquidity particularly affects those economies, not only emerging, with imbalances in their balance sheets that depend most on external and short-term finance.**

A second risk factor, perhaps not imminent but to be taken into account in the short term, relates to possible unexpected events in the long reform process in China, which has to combine a variety of objectives: reduce the obvious fragility of the country's financial sector; and favor change in the growth model from credit-intensive to one more supported by consumption; and all this without a steep reduction in the rate of growth. The measures already adopted to limit credit growth in themselves represent some limit to expansion in a country where part of the growth of recent years has been supported by a high level of debt. The authorities have wide room to deal with these risk events, but in any event if this situation occurred, it could generate a more abrupt adjustment in the flow of credit to the economy and force a major slowdown in China's growth. The impact would spread beyond China and probably affect the economies dependent on Chinese demand, not only demand in the real economy but also for financial assets of the most developed economies.

Finally, **the most likely among possible risk events continues to be a worsening of the crisis in the euro area.** The situation is improving gradually, but it is still very vulnerable. The recent political instability in some southern European countries, and the slow pace of the process of constructing banking union, continue to be elements that could generate financial stress and thus tension in the real economy.

3. Estimating Potential GDP in BBVA Research

1. Considerations relating to potential GDP

Introduction

Potential gross domestic product (potential GDP) is the highest level of output an economy can achieve without arising inflationary pressures, given the available factors of production and current technology. In other words, it is not a technical ceiling: quite the opposite; it is a level that can be exceeded, but not without undermining price stability. Therefore, as this is a **variable that cannot be observed, we need to estimate it.**

In general, **potential GDP is associated with the long-term trend actually recorded in economic activity,** such that the difference between the two (the output gap) is considered to be representative of the phase in the economic cycle, the result of temporary shocks, to the relative prices of the factors of production, foreign demand and purely random shocks. During expansionary phases of the cycle, economic activity can remain above potential (a positive output gap); this is associated with inflationary pressures. During contractionary phases (a negative output gap, falling GDP or recession), economic activity drops below its potential level, and inflationary pressures tend to ease.

Potential GDP is therefore a useful indicator for economic policy decisions. When faced with a negative (positive) output gap, policies to support (lessen) economic activity can be pursued through fiscal, monetary or macro-prudential policy. Likewise, what are known as supply-side policies -seeking to permanently change the regulatory framework and markets for the allocation of factors of production- can be applied to try to increase potential GDP. However, **the difficulties involved in improving potential GDP or modulating fluctuations in the cycle as objectives of economic policy are well known, as these variables cannot be observed and are subject to uncertainty** from: i) the arrival of new data; ii) changes in economic forecasts; and iii) the method used to estimate the cycle and potential GDP, as we describe in the next point.

Alternative methods for calculating potential GDP

Potential GDP can be estimated in a number of ways, but most of these fall within two large methodological groups that make use of statistics and, in some cases, econometrics:

1. Extraction of statistical trends
2. Estimation following the economic theory

The first group uses a statistical approximation by **applying statistical filters to observed GDP data.** This method enables the data to be separated into two components: the permanent and the cyclical. The most widely used calculation methods include the Hodrick and Prescott (HP) and the Beveridge and Nelson filters. The main characteristic of this method is that it does not specify any economic relationships to identify the behavior of the series analyzed.

The second group makes **use of economic theory to establish relationships between GDP and the macroeconomic variables considered relevant,** so as to separate the structural from the cyclical[3].

3: Examples of this methodology include SVAR (structural VAR), estimates based on production functions, the demand model and multivariate systems.

Irrespective of the method used in calculating potential GDP, it should be noted that **any estimate will be subject to limitations in addition to those of the selected methodology itself.** Firstly, economic data is subject to revision; this is particularly true for the most recent figures, which are usually those of greatest interest. Secondly, the use of statistical and econometric techniques and relationships involves the existence of a random component. In addition, and as we discuss in more detail below, every calculation method involving statistical filters[4] is limited by the scarcity of information at the end of the sample (the end point problem), meaning that the estimates of most interest are also the ones subject to most uncertainty.

2. BBVA Research's estimation method

In the estimates of potential GDP shown in the next section, we used a calculation method based on the production function. This method derives from the work of Solow[5], whose objective was to measure the sources of economic growth in the United States based on estimation of a Cobb-Douglas (CD) production function.

This assumes that recorded GDP is a function of the quantities of capital (K) and labor (L) employed[6] and the combined productivity (total factor productivity, TFP) with which these factors of production are used (A). Note that, unlike capital and labor, TFP cannot be observed directly.

$$GDP = Y = A.L^{(alpha)}.K^{(1-alpha)}$$

The definition of the complementary elasticities of K and L assumes that the factors of production have constant returns to scale. These returns can be calibrated according to the weight of returns to capital and labor in GDP, or they can be estimated econometrically. Once we obtain the alpha parameter for the production function, we also get the residual[7] of this estimation; this is known as the Solow residual. This gives us a breakdown of recorded GDP based on the contributions of capital, labor and productivity.

In order to estimate the potential GDP, "potential" values are required for the factors of production (capital and labor) and for productivity. The potential value of productivity is associated with the trend in the Solow residual, an estimate that can also be used to obtain the potential level of the factors of production. Note that by following this procedure the potential GDP can be estimated only up to the date for which figures are available for capital and labor. **Therefore, if we want to forecast potential GDP, we must forecast these factors of production and productivity. We will deal with this issue and its implications later in this work.**

3. Results of new estimates of potential GDP

Table 1 shows the results obtained from using the methodology described in the previous section with the information available in the first quarter of 2013. The results are presented as ten-year averages to avoid the volatility of annual estimates. This adjustment is reasonable considering the growth capacity of the economy which, being linked to the accumulation and efficient use of the factors of production, should not be very erratic over time, and therefore should match a relatively long average of annual periods.

4: In practice, statistical filters are a sophisticated form of rolling averages.
5: A contribution to the theory of economic growth", *Quarterly Journal of Economics* No. 70, 1956.
6: In turn, labor can be measured as the result of the accounting identity that states that it is equal to the working age population multiplied by the participation rate (the active population over the working age population) multiplied by the unemployment rate as a fraction of one. This accounting identity can be refined with the number of hours worked per worker..
7: As the production function is estimated using logarithms of the variables, the combined productivity of the factors of production is cumulative: the difference between the logarithms of the level of GDP and the contributions of capital and labor. In other words, the estimation error of the production function defined.

Table 1
Potential GDP growth

	2013 estimation (%)			2013 vs 2011 (pp)		
	91-00	01-10	11-20	91-00	01-10	11-20
US	3.3	1.9	2.1	0.0	-0.2	-0.1
EZ	2.2	1.4	1.2	-0.1	-0.4	-0.3
China	8.7	9.3	7.9	0.1	0.2	-0.6
LatAm-7*	2.7	3.2	3.6	0.0	-0.2	-0.1

* LatAm7: Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela
Source: BBVA Research

Chart 12
Contribution of TFP to potential growth, %
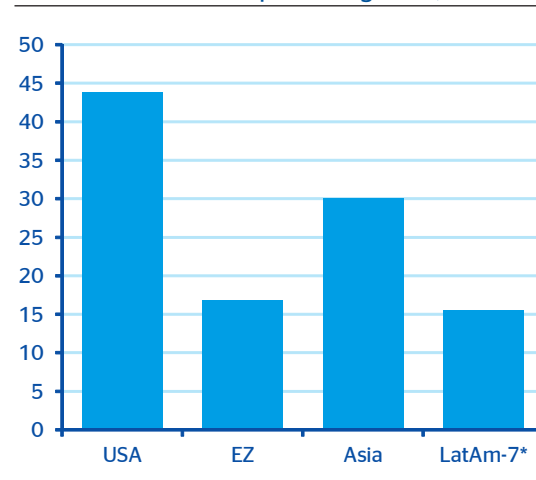
* LatAm7: Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela
Source: BBVA Research and IMF

We can draw a number of conclusions from the results shown in the table. Firstly, in a decade characterized first by the "great moderation" and then the "great recession", **potential growth behaved very differently from region to region**[8]. In advanced economies, the USA and Europe, the pace of growth in potential GDP slowed significantly: in the USA from 3.3% in the previous decade to 1.9%, and in the Eurozone to a mere 1.4% from 2.2% in the previous decade. On the contrary potential growth increased over the same period in emerging economies: by a few tenths of a pp in China to a noteworthy 9.3%, and up to -a still a modest- 3.3% in Latin America.

It is also important to note that inclusion of the latest figures (i.e. figures for the last two years including the sluggish post-recession recovery) has resulted in **a downwards revision of all estimates of potential growth, except for China.** The downward revision for the Eurozone is particularly significant: with potential growth now estimated at 1.4%, 0.4 pp down on the estimate two years ago.

Two aspects should be borne in mind when forecasting potential growth for the current decade. Firstly, **the major recession of 2008-2009 and the subsequent slow recovery have reduced earlier estimates of potential growth. Some tenths of a pp have been wiped off previous estimates of potential growth for all regions.** This downward revision has particularly affected China (down six tenths of a pp) and the Eurozone (down three tenths of a pp). As a result, we forecast that potential growth will accelerate in the USA by a couple of tenths of a pp (to 2.1%) and in Latin America by three tenths of a pp (to 3.6%). In Latin America, this acceleration would be led by those economies that are most liberalized, most open to foreign trade and that have implemented more orthodox economic policies over the last two decades. However, we should not overlook the possibility of external demand shocks, which are partly exogenous to the economies in the region, such as increasing demand for raw materials in Asia (see the box at the end of this section). Lastly, with regard to China, potential growth will fall by over one pp compared to the past decade to slightly under 8%; this is still two or three times the growth rate of the most developed economies and Latin America as a whole.

With regard to the drivers of potential growth, in general **we expect the accumulation of factors of production to contribute relatively less than increased efficiency in their use.** This result should not be surprising considering that: i) demographic trends -the key to estimating the contribution of labor- will be less dynamic, due to slowing population growth and aging of the population, particularly in more developed economies; ii) investor expectations will have to take into consideration a context in which funding costs for productive capital will be less favorable than they were prior to the (financial) crisis that began in 2007. This factor will a priori have a greater impact on the most developed economies, with higher levels of capital and higher debts to reduce.

8: By grouping by calendar decades, the "great recession" of 2009 and the subsequent rebound in 2010 are included in the average for the decade 2001-10.

The scope for improving economic growth capacity in the long run will become ever more dependent on the efficient use of the factors of production; i.e. higher total factor productivity (TFP). These gains are produced by sustained reform policies in the markets for factors of production, favoring their assignment based on market criteria, and in general by a reliable institutional environment that distorts the decision-making of economic agents as little as possible.

4. The importance of the available information and forecasts for observed variables in the diagnosis of potential growth

Taking into account these considerations relating to estimating potential GDP, two aspects are noteworthy. First, **the importance of the available information for extracting the potential GDP trend.** Secondly, **the high dependency of potential GDP forecasts on observed variables, in particular actual GDP, rather than just the estimation method used.**

With regard to the first point, we should point out that conventional filters[9] (e.g. the HP filter), also referred to as univariate, only use the information provided by observed GDP to extract the trend, and this is associated with potential GDP. These filters, ignore the "noise" that can be associated with the cycle[10]. However, **the use of univariate filters to extract the potential GDP trend may be biased.** This is due to the limited robustness often displayed by such estimates to new data for the variables considered, sometimes even leading to their revision: this problem is known as the end point[11].

We can illustrate this point by considering GDP data for a developed economy from 1980 to 2012, and by generating forecasts to 2022. Our economy grew very rapidly -well above its historical average rate- to 2007, but from 2008 GDP weakened until going into recession. With regard to the forecast period, in a positive scenario, we would expect to emerge from the recession with acceptable recovery in the medium term. Thus, we assume that the recession will continue until 2014, time at which the economy will start to grow, slowly at first before accelerating and stabilizing, with moderate growth from 2020 around one point below the historical average. We have also built a more adverse scenario in which a new negative shock emerges over the coming quarters. However, we expect growth rates in both scenarios to converge from 2018.

Firstly, we will try to illustrate the end point problem. We can do this simply by filtering the GDP series with information to 2012 and alternatively the same GDP series assuming we know both forecast periods[12] (the positive and negative scenarios). As we can see in figure 13, even though growth in the filtered series does not differ throughout most of the sample period, there are differences in recent quarters: that amount to 5 tenths of a pp for the positive scenario and 7 tenths of a pp for the negative scenario. These differences arise as a result of the additional information included in the filter. In conclusion, **even if the economy considered should actually follow the forecasted path in the scenario, we would be making a mistake in the diagnosis by basing our judgment solely on data available to date. This is why assumptions about the future situation are so important when diagnosing the current situation.**

Secondly, we will focus on the forecast period to illustrate the dependency of potential GDP forecasts on the "actual" GDP scenarios defined. If we look again at figure 13, in the first 5 years of the forecast period the filtered GDP series for the positive scenario differs significantly (1.7 pp at the peak) from the negative scenario. However, from mid-2019, just a year and a half after the expected convergence in observed GDP growth in both scenarios, the potential growth rate in both scenarios is similar. **In the mesure that we have convergence of actual GDP, then will we meet the convergence of estimated potencial.**

9: Remember that our estimation method uses this type of filter on both the Solow residual and on the factors of production.
10: This association is correct to the extent that it is based on seasonally-adjusted GDP figures, as variations are offset over the year by the residual, and the most irregular component, which is exhausted in the very short term.
11: The problem of extracting the signal, and more precisely the end point problem, has been studied in economic analysis. In order to make the analysis more sophisticated, bivariate models have historically been used including a further indicator in addition to the observed GDP series. A classic example of this latter type of model is the Phillips curve, where potential GDP is estimated taking into account not just observed GDP but also inflation, which serves as an indicator, enabling simultaneous coherence with price pressures and the economic cycle.
12: In other words, we assume that the forecasts made today will match the reality of coming years.

## Recent literature on extracting potential GDP as a non-observable signal

A number of works have recently been published pointing out that the difficulties of extracting the signal could be reduced by incorporating more information, i.e. including more leading indicators of the economic cycle. In particular, such new indicators should, as far as possible, be advance signals for the economic cycle. For example, Borio et al. (2013)[13] suggest the inclusion of financial indicators in the (multivariate) filter applied to observed GDP, concluding that this would significantly decrease judgment errors resulting from temporary bias in estimates of potential GDP.

A further work in a similar vein[14] agrees with the need to include further information. However, in this case the authors consider using a wider set of indicators, not just financial indicators, in order to identify both domestic and external imbalances[15] (e.g. current account, private-sector budget restriction and public-sector deficit indicators).

In order to highlight the **differences of judgment that can arise from the various methods for estimating potential GDP,** let us return to the data for the economy considered previously. In this exercise, we again propose the same HP filter as in the previous exercise as an initial method for estimating potential GDP. Meanwhile, as an alternative methodology, we will use that suggested by Borio, incorporating indicators for interest rate, credit growth and housing prices, all in real terms.

As we can see from figure 14, whilst the results of the HP filter lead us to think that over the last decade we have not demonstrated any considerable deviation from the average -over the period as a whole at least- Borio's methodology clearly suggests that over the last decade the reference economy has experienced a significant positive gap, and therefore lower levels of potential growth than the ones estimated by the HP filter. It should be noted **that the act of simply choosing the additional variables to include involves making decisions, formulating assumptions about which variables are most relevant in explaining the factors that determine an economy's GDP cycle and deviations from its trend or potential level.** Including financial variables, such as credit to the private sector, interest rates and housing prices, involve wagering for an explanation of the economic cycle over the last decade based on "excesses" in the accumulation of debt, falling interest rates and rising house prices, with the well-known effects of these on household spending.

Chart 13
Potential GDP growth obtained using HP filter: current and forecast
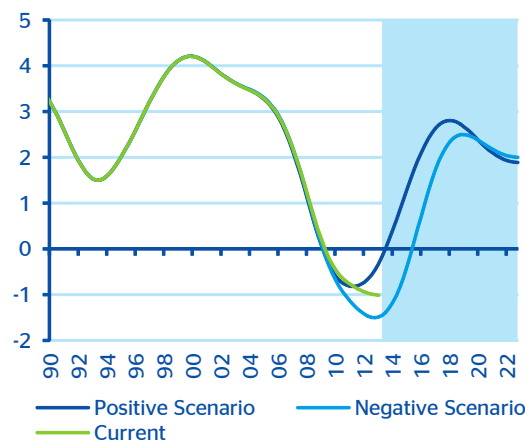
Source: BBVA Research

Chart 14
Output gap: HP filter and Borio methodology
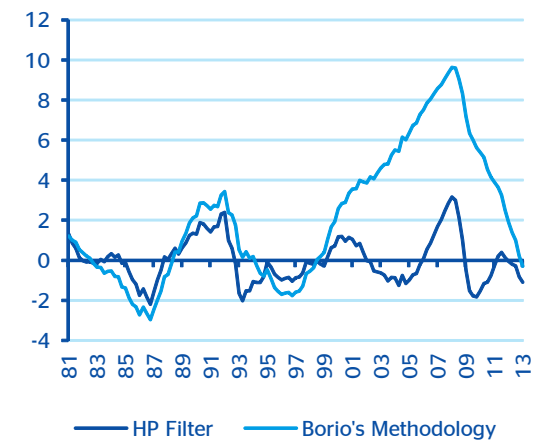
Source: BBVA Research

13: Borio, Disyatat and Juselius, "Rethinking potential output", BIS, February 2013
14: Alberola, Estrada and Santabarbara, "Growth beyond imbalances", April 2013
15: This introduces an alternative concept to potential GDP, which the authors name sustainable GDP, which they claim can significantly reduce the estimation bias.

The conclusion would therefore seem to be that the calculation method chosen for estimating potential GDP is important in diagnosing the economy's current phase in the cycle. However, this choice appears less important when we try to forecast potential GDP over longer periods (e.g. 10 years), where potential GDP solely responds to the assumptions used in the estimation methods.

Chart figure 15 compares the levels of potential growth obtained using a univariate HP filter and using Borio's methodology, which requires forecasts of GDP, real credit growth, interest rates and housing prices to 2020. As can be seen from the chart, the potential GDP levels obtained under the two methodologies converge on similar estimates as the forecast period moves further into the future. In summary, **when we consider the longer term, estimates of potential GDP become ever more determined by the analyst's scenario rather than the model used for extracting the trend.**

Chart 15
Forecast potential GDP: HP filter and Borio methodology

Source: BBVA Research

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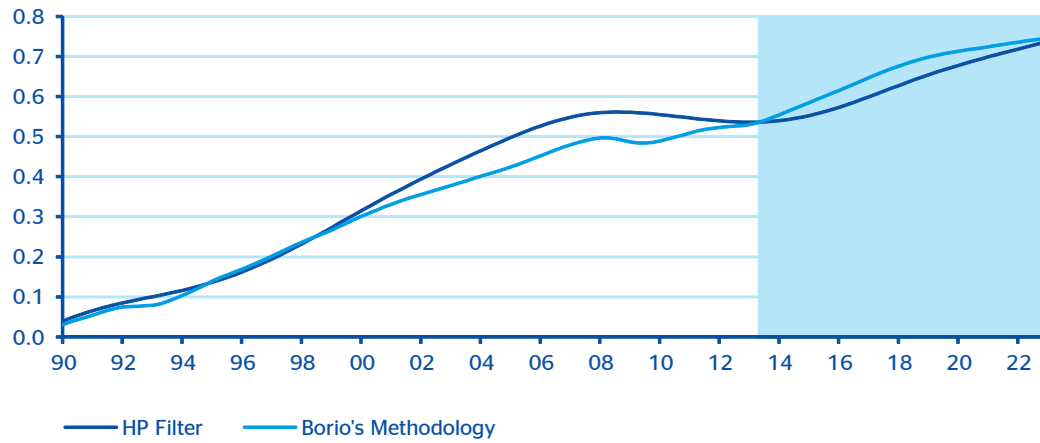
Box 1. Growth potential in Latin America: momentum has to be regained

During the last decades the region has shown significant and undeniably advances in terms of macroeconomic indicators, poverty and inequality gap reduction. **Although sustained productivity growth is the means to ensure long-term growth of per capita income, attention should continue to be focused on the issue of structural reforms in the region.** There is still ample room for increasing productivity. Not doing so could risk stagnating growth and, ultimately, maintaining wide gaps in living standards compared with developed economies.

There is a strong momentum in the region. Latin America has benefited from positive external shocks and has shown greater resistance than in the past to external slowdown. Prudence in implementing economic policies in most countries in the region has created room for countercyclical fiscal and monetary policies, helping to reduce vulnerability to the external environment. The greater resistance shown in Latin America should be taken as an advantage in order to rethink the issue of structural reforms pending in the region.

The region's economies are in widely heterogeneous, both in terms of the degree to which reforms have already been made and the room and willingness in each country to implement additional reforms. Thus, **progress in the structural reform agenda is uneven among countries, although most of them are moving in the right direction,** i.e. creating incentives to increase potential through increased productivity (Chart 16). However, although some level of macroeconomic stability has been achieved, the right incentives should be created to ensure long-term growth. In fact, although the process of structural reforms in Latin America began over 20 years ago, these reforms were more intense in the early 1990s (Chart 17).
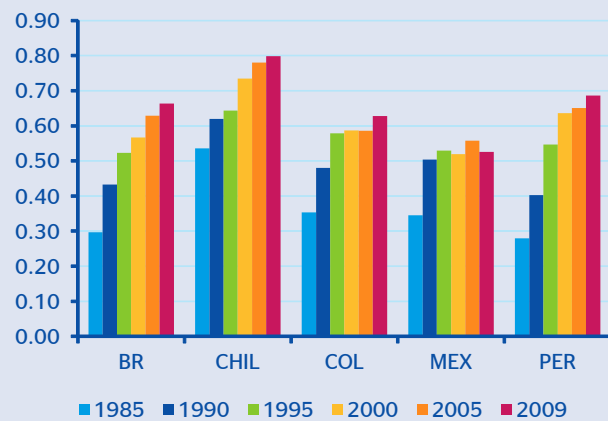
Chart 16
**Latin America:
productivity and structural reforms, 1985-2009**
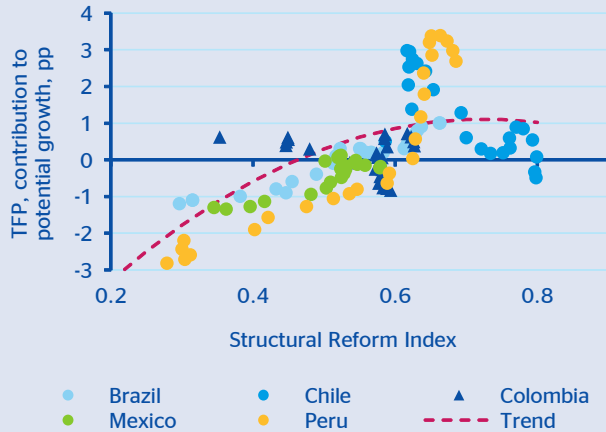
Source: Bloomberg and BBVA Research

Chart 17
**Latin America:
structural reform index**

* Higher levels are associated with more neutral economic policies in terms of distribution of resources.
Source: BBVA Research for TFP contributions, and Eduardo Lora (2012) for the structural reform index

Our estimates result in **higher growth[16] in the region during the 2011-2020 decade** in comparison with the previous. The estimated figure for the region will increase from 3.2% to 3.6% (Chart 3). This increase will result principally from the higher expected contribution of capital, followed by an improved contribution from TFP. This is a point worth noting, because during the past decade growth in the region was strongly driven by the contribution of labor and capital, influenced by the demographic dividend in several countries. In fact, **in the last decade growth was driven by the accumulated factors of capital and labor (85%), while the contribution of TFP to growth was only 15%,** well below the contribution of TFP in other regions, particularly Asia (30%) and the United States (44%). For the current decade, the estimated contribution of TFP reaches 20%, as the aggregate contribution of other factors, particularly employment, will be less.

16: See point 3 of this chapter "Results of new estimates of potential GDP".

Chart 18
Latin America: growth potential by contribution of factors, 2001-2010 vs 2011-2020
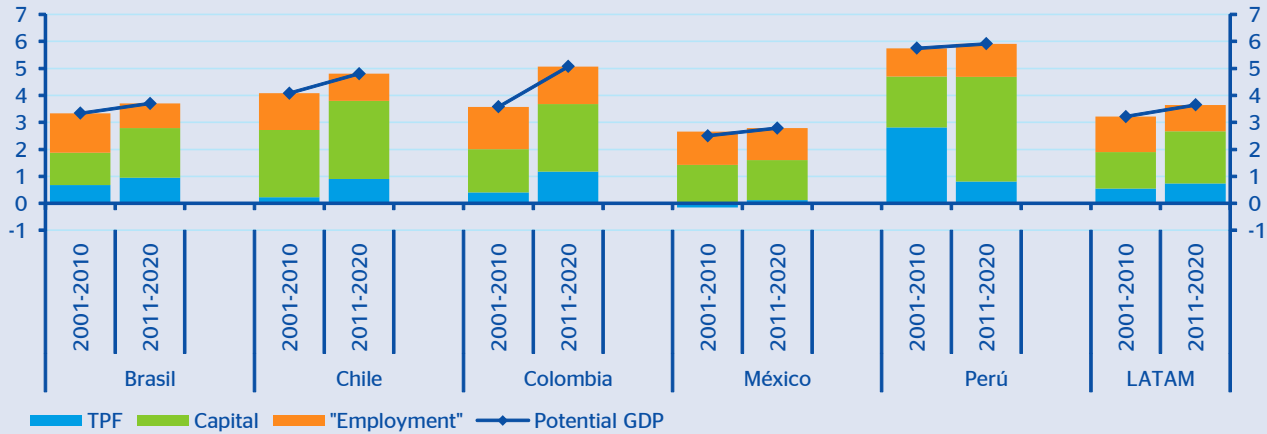
Source: BBVA Research

The great heterogeneity in the region has to be taken into account, both in terms of room to implement reforms and growth prospects. In this regard, external influences, such as Asian growth in the last decade and the rise in commodity prices (see section 3 of this issue), have had varied effects in the different countries, depending on their productive structure. It should be noted that increases in commodity prices over the last decade, while they benefit growth in the countries in the region (especially in South America), should not to be confused with structural drivers, given that they are probably temporary[17].

The region's heterogeneity involves significant expected growth in the Andean countries. The average growth expected in Chile, Colombia and Peru in the 2011-2020 decade is around 5%[18]. This is supported in part by higher demographic dividends, prudent economic policies and increasing trade openness. However, at the same time, these countries face the challenge of their close links to Asia and, in particular, the concentration of their productive structure in natural resources, involving both an opportunity and a risk for the future.

Meanwhile, an economy as large as Brazil's requires a rethink to what has been a growth strategy based on consumption and credit, and reforms need to be adopted to raise productivity and investment. If this is not done, growth in the next decade could be lower than forecast (ranging from 3.0% to 4.0%). Mexico faces key challenges in the next decade, including, crucially, the need to foster increased competition in key areas. In the absence of structural reforms, expansion expected is slightly below 3%.

Thus, the case of Latin America is a good example of how low unemployment rates and high investment rates in the economy are not enough to stimulate growth. Besides, an efficient combination of these factors (increases in TFP) is needed to reactivate the virtuous circle. An efficient combination in this respect requires institutional changes, including increased competitiveness in the product and factor markets and reforms that result in an improvement in the quality of human capital, which in turn will result in lower rates of informality in the economy, as well as investments in highly profitable areas, for which infrastructure investment is essential.

17: For an overview of reforms needed in the region, see LatAm Economic Outlook 2Q13, "Latin America must not lose sight of the long-term picture" http://www.bbvaresearch.com/KETD/fbin/mult/1305_Situacionlatam_tcm346-386502.pdf?ts=2472013
18: For more information on growth in Andean countries, see the presentation "Las economías andinas, dinamismo y retos" (Andean economies, dynamism and challenges) from 2012. http://www.bbvaresearch.com/KETD/fbin/mult/121115_Andinos_Latibex_2012_tcm346-361818.pdf?ts=2472013

4. Tables

Table 2
Macroeconomic Forecasts: Gross Domestic Product

(YoY growth rate)	2010	2011	2012	2013	2014
United States	2.5	1.8	2.8	1.8	2.3
Eurozone	1.9	1.5	-0.5	-0.4	1.0
Germany	4.0	3.1	0.9	0.5	1.8
France	1.6	2.0	0.0	-0.1	1.1
Italy	1.7	0.5	-2.4	-1.8	0.8
Spain	-0.3	0.4	-1.4	-1.4	0.9
UK	1.7	1.1	0.2	1.0	1.9
Latin America *	6.1	4.4	2.8	2.6	3.2
Mexico	5.3	3.9	3.9	2.7	3.2
Brazil	7.5	2.7	0.9	2.3	2.9
EAGLES **	8.4	6.6	5.1	5.2	5.6
Turkey	9.2	8.5	2.3	3.7	4.8
Asia Pacific	8.2	5.8	5.3	5.3	5.6
Japan	4.7	-0.6	2.1	1.7	1.5
China	10.4	9.3	7.8	7.6	7.6
Asia (exc. China)	6.8	3.5	3.6	3.7	4.1
World	5.1	3.9	3.2	3.1	3.8

* Argentina, Brazil, Chile, Colombia, Mexico, Peru, Venezuela.
** Brazil, China, India, Indonesia, Korea, Mexico, Russia, Taiwan, Turkey.
Forecast closing date: August 2, 2013.
Source: BBVA Research

Table 3
Macroeconomic Forecasts: Inflation (Avg.)

(YoY growth rate)	2010	2011	2012	2013	2014
United States	1.6	3.1	2.1	1.6	2.3
Eurozone	1.6	2.7	2.5	1.5	1.4
Germany	1.2	2.5	2.1	1.7	1.8
France	1.7	2.3	2.2	1.1	1.3
Italy	1.6	2.9	3.3	1.6	1.7
Spain	1.8	3.2	2.4	1.7	1.1
UK	3.3	4.5	2.8	2.7	2.2
Latin America *	6.4	8.0	7.5	8.7	8.7
Mexico	4.2	3.4	4.1	3.9	3.3
Brazil	5.0	6.6	5.4	6.3	5.9
EAGLES **	5.3	6.0	4.1	4.1	4.2
Turkey	8.6	6.2	8.5	7.2	6.0
Asia Pacific	3.6	4.7	3.0	2.8	3.3
Japan	-0.7	-0.3	0.0	-0.1	0.7
China	3.3	5.4	2.6	2.8	3.5
Asia (exc. China)	3.7	4.3	3.3	2.8	3.1
World	3.7	5.1	4.1	3.7	3.9

* Argentina, Brazil, Chile, Colombia, Mexico, Peru, Venezuela.
** Brazil, China, India, Indonesia, Korea, Mexico, Russia, Taiwan, Turkey.
Forecast closing date: August 2, 2013.
Source: BBVA Research

Table 4
Macroeconomic Forecasts: Current Account (% GDP)

	2010	2011	2012	2013	2014
United States	-3.1	-3.1	-3.1	-2.8	-3.4
Eurozone	0.0	0.1	1.3	2.0	2.1
Germany	6.3	6.2	7.0	7.0	6.5
France	-1.6	-1.9	-2.2	-2.2	-1.9
Italy	-3.5	-3.1	-0.7	0.8	1.0
Spain	-4.5	-3.7	-1.1	1.0	1.7
UK	-3.3	-1.3	-3.8	-3.1	-2.8
Latin America *	-0.7	-0.9	-1.6	-2.1	-2.0
Mexico	-0.2	-0.9	-1.2	-1.3	-1.4
Brazil	-2.2	-2.1	-2.4	-3.3	-3.1
EAGLES **	1.6	0.5	0.4	0.3	0.7
Turkey	-6.4	-9.9	-5.9	-6.8	-6.8
Asia Pacific	3.3	1.6	1.2	1.3	1.8
Japan	3.6	2.3	1.7	1.2	1.5
China	4.0	1.9	2.3	2.8	3.5
Asia (exc. China)	2.0	1.4	0.4	0.3	0.7

* Argentina, Brazil, Chile, Colombia, Mexico, Peru, Venezuela.
** Brazil, China, India, Indonesia, Korea, Mexico, Russia, Taiwan, Turkey.
Forecast closing date: August 2, 2013.
Source: BBVA Research

Table 5
Macroeconomic Forecasts: Government Deficit (% GDP)

	2010	2011	2012	2013	2014
United States	-8.9	-8.7	-7.0	-4.1	-3.5
EMU	-6.2	-4.2	-3.7	-2.8	-2.2
Germany	-4.1	-0.8	0.2	0.0	0.2
France	-7.1	-5.3	-4.8	-3.9	-3.3
Italy	-4.5	-3.8	-2.9	-3.1	-2.0
Spain *	-9.7	-9.0	-7.0	-6.5	-5.8
UK **	-10.2	-7.8	-6.3	-6.5	-5.5
Latin America ***	-2.5	-2.3	-2.6	-2.5	-2.6
Mexico	-3.4	-2.6	-3.1	-2.4	-2.3
Brasil	-2.5	-2.6	-3.0	-2.7	-3.6
EAGLES ****	-2.7	-1.8	-2.2	-2.2	-2.1
Turkey	-3.6	-1.4	-2.1	-2.3	-2.1
Asia Pacific	-3.6	-3.6	-3.6	-3.7	-3.1
Japan	-9.5	-10.0	-9.5	-10.0	-8.0
China	-2.5	-1.1	-2.1	-2.0	-1.8
Asia (exc. China)	-4.5	-5.3	-4.6	-4.8	-3.9

* Excluding aid to financial sector.
** Fiscal year from 1 April to 31 March.
*** Argentina, Brazil, Chile, Colombia, Mexico, Peru, Venezuela.
**** Brazil, China, India, Indonesia, Korea, Mexico, Russia, Taiwan, Turkey.
Forecast closing date: August 2, 2013.
Source: BBVA Research

Table 6
Macroeconomic Forecasts: 10-year Interest Rates (Avg.)

	2010	2011	2012	2013	2014
United States	3.2	2.8	1.8	2.3	3.0
Eurozone	2.8	2.6	1.6	1.6	2.2

Forecast closing date: August 2, 2013
.Source: BBVA Research

Table 7
Macroeconomic Forecasts: Exchange Rates (Avg.)

US Dollar per national currency	2010	2011	2012	2013	2014
United States (EUR per USD)	0.76	0.72	0.78	0.77	0.77
Eurozone	1.33	1.39	1.29	1.30	1.30
UK	0.65	0.62	0.63	0.67	0.68
Japan (JPY per USD)	87.8	79.7	79.8	100.1	115.2
China (RMB per USD)	6.77	6.46	6.31	6.18	6.02

Forecast closing date: August 2, 2013.
Source: BBVA Research

Table 8
Macroeconomic Forecasts: Official Interest Rates (End period)

	2010	2011	2012	2013	2014
United States	0.25	0.25	0.25	0.25	0.25
Eurozone	1.00	1.00	0.75	0.50	0.50
China	5.81	6.56	5.75	6.00	6.00

Forecast closing date: August 2, 2013.
Source: BBVA Research

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