BBVA | RESEARCH

Global Economic Outlook

First quarter 2015
Economic Scenarios Unit

- World growth: higher in 2015-16, but still moderate and uneven
- Oil prices, divergence in monetary policies and geopolitical risks: the keys to the scenario
- Does the middle-income trap compromise the outlook for world growth? Not according to the evidence
- Unconventional monetary policies and the deflation-debt spiral: where are we?

Index

Closing date: 6 February 2015

1 Editorial

2014 finished better than it began, with the world economy growing by more than 3%, driven by the US and the tailwind of the sharp drop in the oil price, particularly because it came with increased supply. **The improvement in world growth will continue in 2015 and 2016, exceeding 3.5% on average,** but there will also be a **significant differentiation** between geographies **given the asymmetric effects** of the fall in commodity prices and the divergence of monetary policies in the DMs, the two drivers that *a priori* determine the perspectives for the global economic scenario.

As a general rule, the **drop in the oil price** is positive for importer countries, as it boosts their economic activity and reduces inflationary pressures, and negative for the exporters, as it reduces their revenues; however, there are variations that depend on the specific characteristics of each economy. In the case of the **euro area** (importer) the downside pressure on already very low inflation increases the vulnerability to falling into a deflationary spiral (feedback loops between lower prices and aggregate demand). To avoid this risk, the ECB launched an asset purchase programme under which it will buy public- and private-sector assets from March and until inflation expectations are compatible with price stability. It is hoped that this measure will help boost growth via euro depreciation and the redirection of financial flows in a search for higher yields, thus helping to reactivate consumption and investment. The banking union should also favour the supply of credit, by reducing the cost of capital for some banks with sounder balance sheets, supervised and regulated by a single authority in that geography.

In the US, which is growing faster than the euro area and where inflation is not so uncomfortably low, the Fed will have more room for manoeuvre to implement the interest-rate hikes expected for 2015. Growth will be close to 3% in 2015-16, unemployment at 5% and inflation, helped by oil prices, will be below 2% on average. In this context of a dynamic economy and anchored inflationary expectations, the Fed's dilemma will be resolved by the start of a period of interest-rate hikes towards the middle of 2015, although at a slower rate than in other expansive cycles.

The **Fed's normalisation of monetary policy** is a symptom of the strengthening US economy, but also poses a **challenge to the EMs,** that will have to implement anti-cyclical policies to mitigate the effects of falling commodity prices and reduced domestic demand. Those more in need of external savings will have to test their capacity to decouple from the Fed and face currency depreciation, while maintaining macroeconomic stability. This is a difficult balancing act, particularly in a volatile global financial context, due to the uncertainties regarding the Fed's first interest-rate hike since 2006.

Altogether, **the global growth scenario is moderately positive.** The world is growing at more than 3% but the improvement is slow in the DMs and the EMs are having to deal with lower commodity prices and the change in China's growth model. At the same time, the **risks are still skewed to the downside.** Not only is there uncertainty as to whether the policies introduced will be as effective as expected (for example, in Europe the ECB's asset purchase programme and the so-called Juncker Plan to foster investment), but there are also uncertainties regarding the EMs' capacity to implement effective counter-cyclical policies. There are also the geopolitical risks, particularly if there is a negative feedback loop with oil prices. However, the risks are not only in the conflicts. In the euro area there is growing debate as to which is the most appropriate combination of supply-side reforms, pace of fiscal consolidation and ECB support to favour growth. If in addition, as in the case of Greece, we add to the discussion the payments on already restructured public debt mainly in the hands of other member states, the divergences of opinion turn into disagreements that have to be resolved sooner rather than later. The debate is evidence of the vulnerabilities of a monetary union with neither political nor fiscal union, neither of which are going to happen in the short term. Although in the most probable scenario we expect a negotiated settlement which does not lead to a systemic crisis in the euro area, if the period of uncertainty is prolonged it could weigh on the pace of recovery in Europe.

2 Moderate global growth with increasing divergence among economic areas

The world economy will have finished 2014 growing a similar pace to that in 3Q14[1], close to 0.8% QoQ, according to our estimates, and slightly stronger than in the first half of the year. A dynamic economic performance in the US has been offset by the weakness of the recovery in Japan and the euro area, and the progressive deceleration of China and other emerging economies.

In the EM block, the divergence between industrial activity and services indicators continues. The gradual improvement in private consumption, on the back of the stabilisation or increase in employment, has continued to feed through into the figures for retail sales and the confidence indices in the services sector. Meanwhile, the relative improvement in world trade in the first two months of 4Q14 has not yet translated into a substantial increase in industrial production. In general, the EMs are seeing the fall in commodity prices in a scenario where there is already a trend towards more moderate growth in China. Altogether, we estimate that global GDP will have grown 3.3% in 2014, 10bp more than in 2013, with a slight increase in the DMs' contribution vs. the three previous years, and the EMs continuing to decelerate.

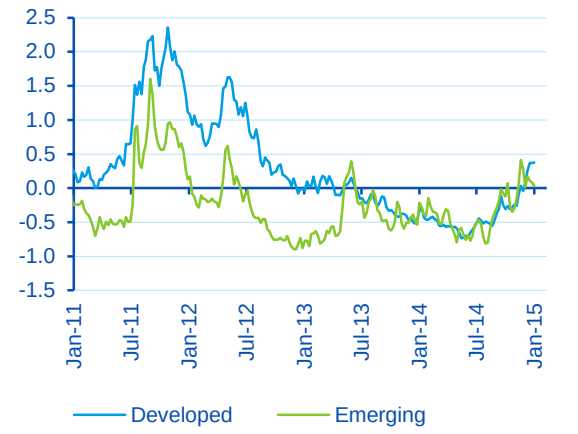
One of the novelties in the global economic scenario in recent months is the very sharp fall in the oil price and its uneven impact on different countries, depending on whether they are net importers or exporters. Overall, we think the global impact of cheaper oil should be positive in terms of growth, inasmuch as the reduced burden on household and corporate income in oil-importing countries (such as the US, the euro area and China) offsets the reduced activity in the principal producer countries. However, even lower prices or levels like those at present for Brent, around USD50/bbl, for an extended period could generate geopolitical and/or financial tensions that might compromise global stability.

In fact, **the increased volatility in financial markets, which has now reached the same level as in mid-2013 according to the BBVA Financial Tensions Index, is another of the highlights of the quarter,** and one the EMs and the DMs have in common as a consequence of two factors. First, the combination of the geopolitical crisis between Russia and Ukraine with the fall in commodity prices, which has raised doubts on the economic preformance of many EMs. Second, the uncertainty around the Fed's rate-hiking cycle, especially when the ECB is introducing QE measures and there is an increasing political debate on the most appropriate balance of policies to strengthen the region's recovery.

The correction in the oil price also accentuates the risks of a global scenario of too low inflation, at least until the second half of 2015. In addition to the recent general decrease in inflation, common to all the principal geographies (the average for the US, the euro area, Japan and China was 1% in 2014), there has been the steep fall in industrial production and import prices. Although so far the translation of the fall in energy prices to core inflation and salaries appears to be contained, the sharp adjustment in medium-term inflation expectations and the all-time lows in long-term interest rates reveal the degree of uncertainty that exists about the rate of recovery of the global cycle and the capacity of the central banks to restore inflation to levels compatible with their objectives.

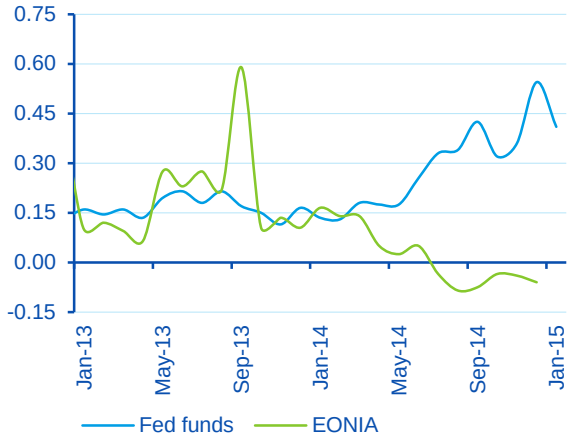
1: Estimate based on the BBVA Research GAIN indicator; for details of the methodology, see: http://bit.ly/1nl5RIn

Figure 2.1
BBVA Research Financial Tensions Index



Source: BBVA Research and Bloomberg

Figure 2.2
Monetary policy expectations: 12M forward interest rates (%)



Source: BBVA Research and Bloomberg

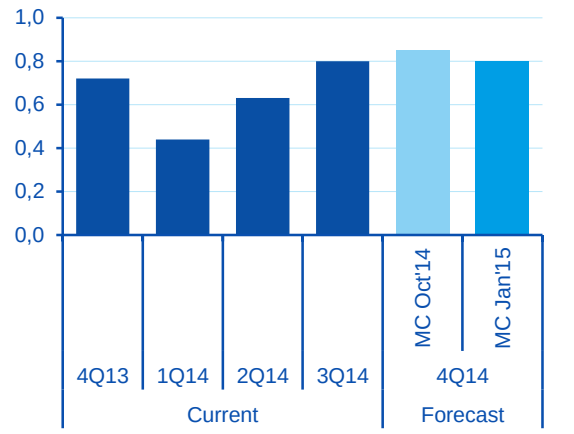
In this context of low inflation and moderate economic growth, **monetary policies remain accommodative in tone, although the biases differ (**with the Fed and the Bank of England on the one side, and the ECB and the PBoC on the other).

The new oil-price scenario gives the most important central banks room for manoeuvre to delay or reduce the intensity of the upward path of benchmark interest rates. In the case of the ECB, negative inflation prints have been the catalyst prompting the decision made in January to announce an expansion of the bank's asset purchase programme, this time to include purchases of public debt. The PBoC could introduce further cuts in the discount rates to cushion the deceleration of activity while tightening controls over private and local authority borrowings. In the EMs, those countries that are benefiting from cheaper commodity prices, reflected inter alia in an improvement in their external balances (for example India or Turkey), are also opting for more lax monetary policies in spite of the Fed's potential interest-rate hike in 2015.

The convergence of US growth towards 3% over the course of 2015, together with the progressive normalisation of the Fed's monetary policy, should translate into a gradual increase in the yield on the long bond. We expect yields on German public debt to rise more slowly, as a reflection of our expectation of slower nominal growth in the euro area and the impact of the ECB's above-mentioned purchases of sovereign assets. **The different rates of growth anticipated for the US and the euro area and, above all, the change in expectations of monetary policy in the two areas, have been reflected in the evolution of EURUSD,** with a significant appreciation of the dollar in recent months. This has sent the pair back to around 1.15, and we think it could continue to trade around this level for the rest of this year, on average.

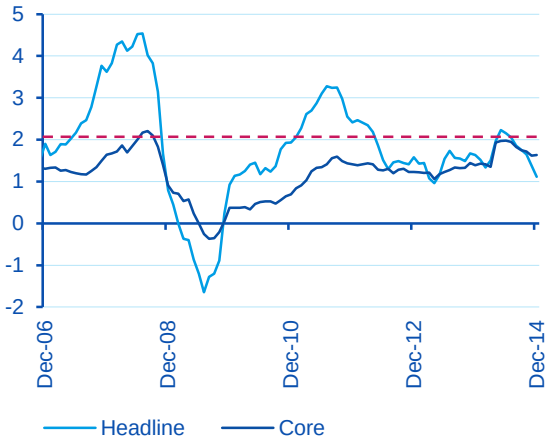
Altogether, and in spite of the support offered by economic policies and lower oil prices, the risks to world growth in 2015 remain to the downside. The risks presented by geopolitical tensions have been joined by risks associated with the effectiveness of the monetary policies introduced to increase inflation expectations and – in the case of the Fed in particular - to establish a strategy for withdrawing stimulus that does not erode the EMs' financing conditions to such an extent that this restricts their growth.

Figure 2.3
Global GDP based on BBVA-GAIN, %, QoQ



Source: BBVA

Figure 2.4
Global inflation, % (*)

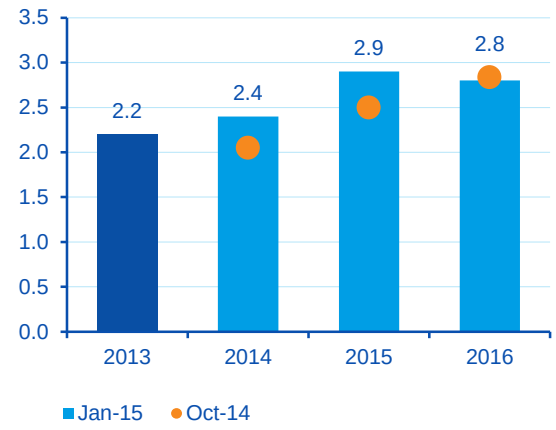


(*) Calculated as the simple average of inflation in the US, the euro area, Japan and China
Source: BBVA Research and Haver Analytics

Momentum in the US recovered over the course of 2014, and particularly in 2Q and 3Q, with QoQ GDP growth slightly above 1%. The strength of domestic demand and the stabilisation of residential construction are key to the US growth model. With net job creation of around 200k a month and an unemployment rate at year-end 2014 of 5.6%, wage increases will continue to support household consumption. The lower oil, and eventually, fuel prices are also helping to free-up disposable income for spending on other consumer goods.

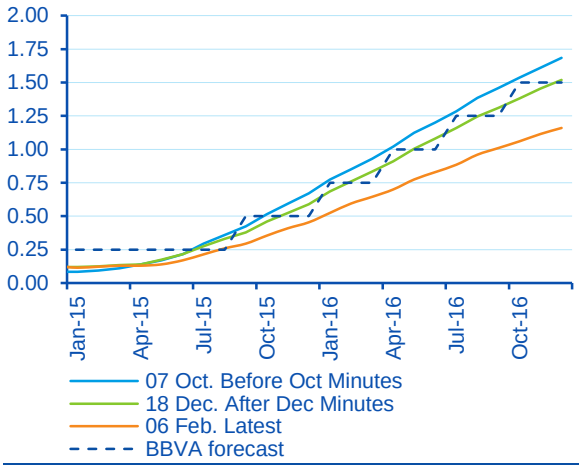
As a result of the good performance in previous quarters, and in spite of a more moderate figure for GDP growth in the fourth quarter, **US growth could reach 2.4% in 2014 and up to 2.9% in 2015, in both cases beating the mid-year targets.** The combination of stronger growth and lower inflation (the headline rate will be below 2% until 2016) will accentuate the **Fed's dilemma when it comes to start its monetary normalisation process,** in a context in which the global appreciation of the dollar favours more moderate inflation. Our forecast for the first increase in the fed funds rate remains in 3Q15.

Figure 2.5
US, economic growth (% YoY)



Source: BBVA Research

Figure 2.6
US, expectations for the Fed funds rate (%)

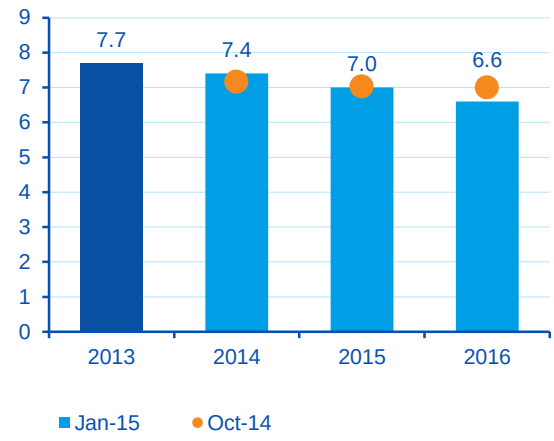


Source: BBVA Research and Bloomberg

In China, the slow deceleration in activity continued throughout 2014. The flash GDP estimate for 2014 as a whole puts it at 7.4%, which would imply the YoY rate for the fourth quarter at around 7.2%, the slowest since 2009. The macroeconomic dynamics in China are explained by the loss of momentum in fixed capital investment and the deterioration in external competitiveness which was driving yuan appreciation, together with the correction in the real estate sector.

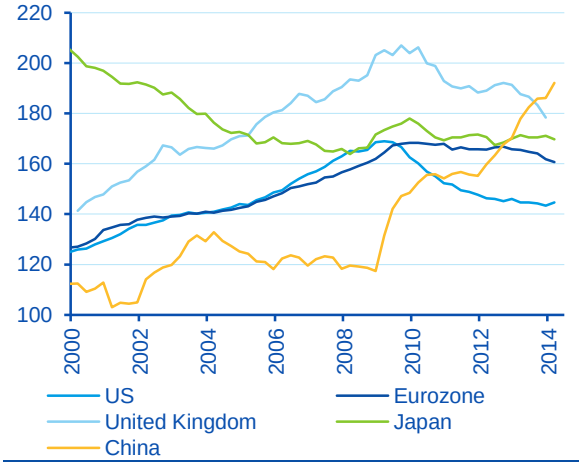
Although we have left our forecast for growth in 2015 unchanged at 7%, the risks are clearly biased to the downside as a reflection of the magnitude of accumulated financial imbalances, the uncertainty over the evolution of the real estate market and the uncertainties regarding the capacity for policies to achieve a correction in the present imbalances with economic liberalisation underway. The authorities have started to show more tolerance towards economic deceleration, as long as job-creation is consistent with the behaviour of the active population, while simultaneously betting on a redirection of the growth model towards less dependence on investment. This will allow them to combine an increase in monetary policy laxity with the adoption of fiscal control measures that contain debt, both at the private-sector and public administration levels (in the last decade, non-financial private-sector debt in China increased by 67bp of GDP).

Figure 2.7
China, economic growth (% YoY)



Source: BBVA Research

Figure 2.8
Private non-financial sector debt as % GDP



Source: BBVA Research and BIS

Of the large economic areas, the **eurozone** is the one which is most likely to have to deal with a scenario of inflation that is too low for too long. In addition to the negative surprises on consumer prices, the area has only a **moderate economic growth profile, in line with expectations.** Assuming GDP growth reaches around +0.2% in 4Q14, supported by a similar increase in activity in Germany and France and a better relative performance in Spain, our estimate for the eurozone is +0.8% YoY.

Altogether, we maintain our forecast for growth of 1.3% for 2015, supported by the fall in the price of oil, the accumulated depreciation of the euro in recent months and the relaxation of monetary conditions thanks to ECB actions. The less restrictive nature of fiscal policy in the peripheral countries is also an element to take into account, as well as the so-called “Juncker Plan”, designed to favour investment, and the first fruits of which are expected in the second half of this year.

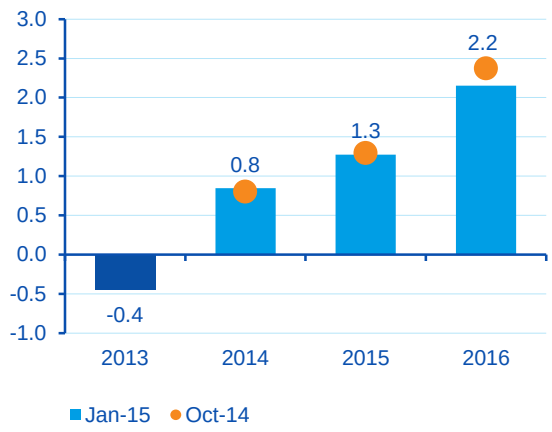
Some threats arise, including the potential impact of increased tensions in Russia’s sphere of influence, both in commercial and (more importantly) financial terms, given the heavy exposure of European banks to those countries. A second risk factor is the uncertainty generated by the divergences between some national authorities and the EU institutions as to the most appropriate supply-side reform, the pace of fiscal consolidation and the support of the ECB to foster growth. Finally, another risk is that **medium-term inflation expectations continue to fall, discouraging consumption, and leading to a negative feedback loop.**

To deal with the latter, **the ECB has extended its asset purchase programme to public debt and increased the monthly purchases to EUR60bn.** However, although a plan has been established for absorbing any losses (a high proportion of the risk of losses on the public bonds purchases is assumed by the national central banks), this does not resolve the problem of financial fragmentation in the bosom of the eurozone, the size of the programme or, above all, the commitment to leave it in place until the path of inflation converges with the ECB’s objectives, it does represent a significant step in that direction.

There are three main transmission channels to the economy of the recently announced QE. First, a reduction of the financial burden on both public and private sector, and thus more disposable income for consumption or investment; second, euro depreciation and support for exports; and, lastly, reducing risk aversion in a context of very low long-term interest rates. The eventual impact of all of these on the real economy and the

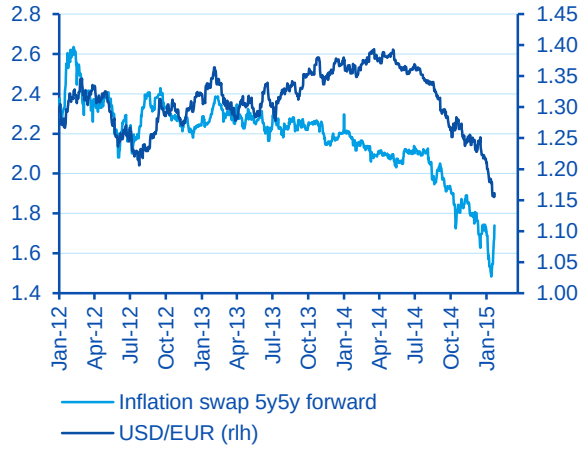
flow of credit will be key to the path of inflation expectations in the medium and long term, although not alone: the definition of credible fiscal consolidation strategies are also fundamental, given the scenario of low nominal growth and the maintenance of reform policies in sectors or markets important for the reactivation of potential growth.

Figure 2.9
Eurozone, economic growth (% YoY)



Source: BBVA Research

Figure 2.10
EURUSD and medium-term eurozone inflation expectations (5Y/5Y fwd inflation swap, %)



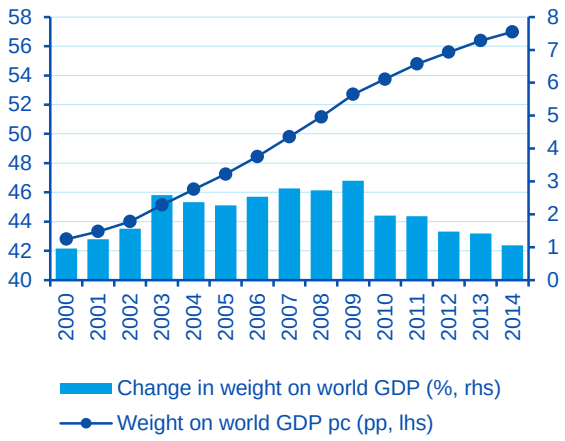
Source: BBVA Research and Bloomberg

3 GDP per capita and growth: the middle-income trap hypothesis

After the last economic crisis, the worst and longest-lasting since World War II[2], **the economic growth scenario is moderately favourable in the short term.** World growth is above 3%, close to its historical average since 1980 (3.5%), although still far from the average of the ten years prior to the 2008-09 crisis (4.2%). GDP recovery is still slow in the bulk of the DMs, which are still *deleveraging* after the sharp rises in debt registered in the previous expansion phase; and the EMs are having to deal with the change in China's growth model in a context of lower commodity prices.

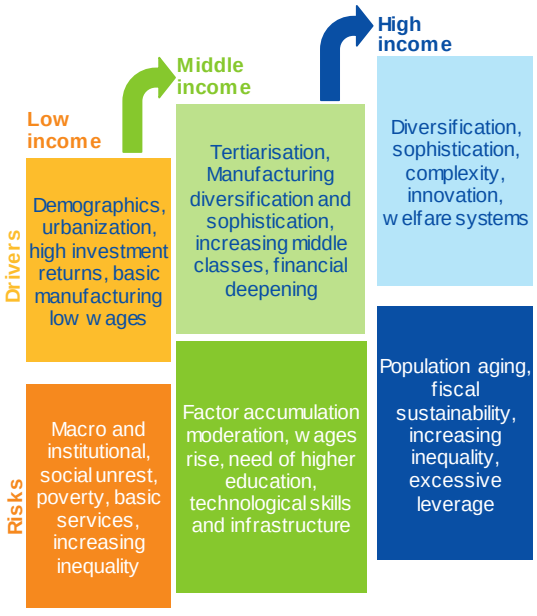
The correction in growth since 2008 has been both in the advanced economies[3], the focus of the crisis, and in the emerging and developing economies; although the latter represented more than half of global GDP in 2008, their weight has increased more slowly since then (Figure 3.1). Between 2000 and 2007, these countries were growing at an annual average rate of 6.6% (representing around 70% of global growth), while between 2008 and 2013 growth decelerated to an annual average of 5.4%. Given that, in general, it was not these economies that originated the financial crisis in 2008 and that they had registered more momentum in the previous years, it is **possible that the slowdown in growth is not only cyclical,** but that they have reached income levels that have put them in the so-called **middle-income trap.[4]**.

Figure 3.1
Emerging and developing countries: weight in world GDP



Source: BBVA Research & IMF

Figure 3.2
Stages in economic development by level of income



Source: BBVA Research & IMF

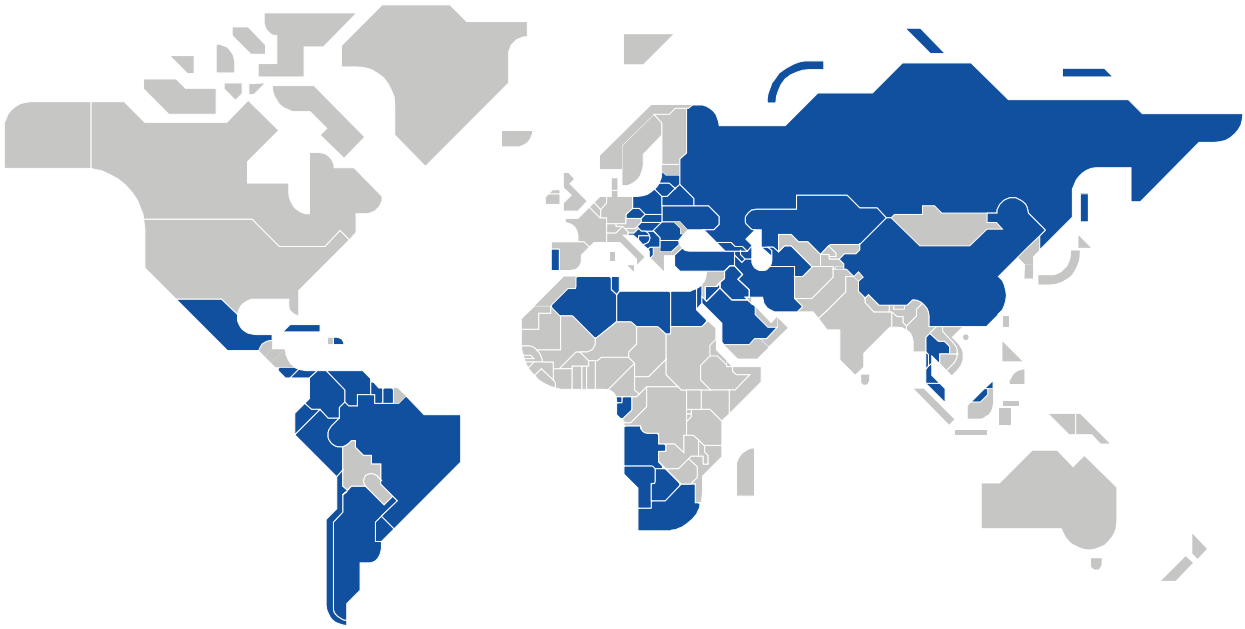
The middle-income trap is the idea that once economies have reached a certain level of development, they find it difficult to make any further progress. This is coherent with the existence of diminishing

2: For more detail, see BBVA Research Global. 4Q14 – Chapter 3: "This cycle is different". Available on: http://bit.ly/1zFhkyU
3: As per the IMF classification.
4: The middle-income trap was first mentioned in the World Bank report "An East Asian Renaissance: Ideas for Economic Growth".

marginal returns in terms of growth in the accumulation of productive factors, capital and labour; returns that thus have to come from efficiency improvements in the combination of resources, a process that takes a long time to complete and could lead to stagnation in the momentum of real convergence (Figure 3.2). If the middle-income trap idea is proved, it would affect the growth of these economies in the medium term, which would have negative implications for the outlook for global growth.

There is no single definition of middle-income countries. In our case, we have opted to use a relative reference. According to our classification[5], middle-income countries are those that have a certain per capita income (valued in terms of parity purchasing power) of between 10% and 50% of that of the US. According to this definition, in 2010 there were 73 countries considered as middle-income, comprising a diverse and unequal group, with Saudi Arabia at the top, with per capita income five times that of the poorest member of the group, Jordan (Figure 3.3).

Figure 3.3
Middle-income countries 2010 (per capita income = 10-50% that of the US)



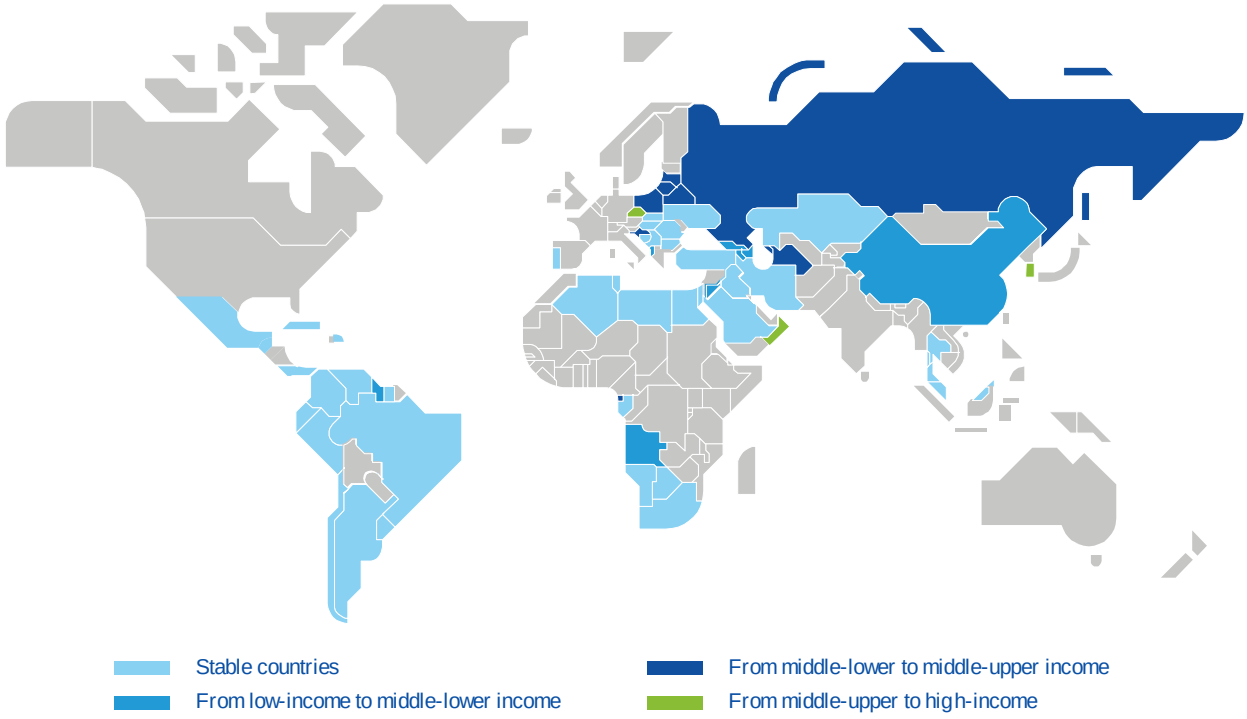
Source: BBVA Research based on Penn World Table

As can be seen in Figure 3.4, in the past decade there have been significant changes in the composition of the middle-income group of countries. The group now includes eight new entrants which in the 1990s were considered low-income (e.g. China), and four previously-included countries are now considered **high-income, including South Korea and the Czech Republic.** An additional aspect is the movements within the group, i.e. the countries that have progressed from middle-lower to middle-upper income[6]. There are eight countries in this category, including Russia, Poland, Croatia, Estonia and Lithuania.

The analysis of the shift in the components of this group thus leads us to conclude that in the past decade there have actually been countries that have moved onwards and upwards, which contradicts the middle-income trap hypothesis.

5: See Bulman, Eden, Nguyen, (2014), “Transitioning from Low-Income Growth to High-Income Growth”, Policy Research Working Paper, The World Bank Working.
6: According to our classification, middle-lower income countries are those with a per capita income of between 10% and 30% of that of the US, while middle-upper income countries are those with per capita income of 30% to 50% of that of the US.

Figure 3.4
Changes in the group of middle-income countries (countries with per capita income of 10-50% of that of the US) (2000-10)

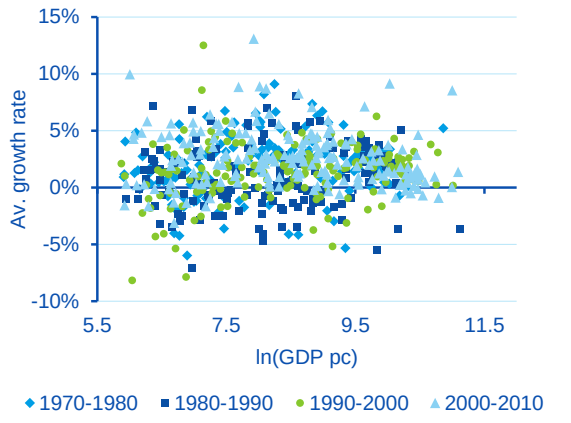


Source: BBVA Research Based on Penn World Table

To carry out a more general analysis of the relationship between the level of GDP and its growth, we constructed Figure 3.5, which shows the relationship between the level of GDP per capita at the beginning of a decade and its average growth over the course of the next ten years for a sample of 190 countries[7] since 1970. The countries with the higher per capita income (more to the right of the image) do not appear to present more moderate per capita GDP growth, i.e. that they are relatively lower, which should be the case in a middle-income trap. We reach a similar conclusion by making a decade-on-decade comparison, as shown in Figure 3.7. Thus the four quadrants of the above chart, which represent the detail by decade, infer no negative relationship between the level of income and growth, although the influence of the global cycle can be seen. **The average growth rates in each decade are different, while there are no significant differences between the growth rates of the economies in terms of their GDP per capita starting points.**

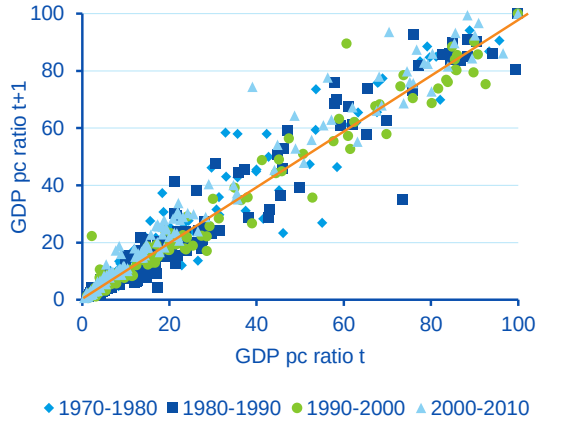
7: Due to the lack of availability of data at the beginning of the sample it is not possible to include all 190 countries. However, these have been included as data has become available.

Figure 3.5
GDP per capita, growth vs. initial level per decade
Sample of 190 countries, 1970-2010



Source: BBVA Research based on Penn World Table

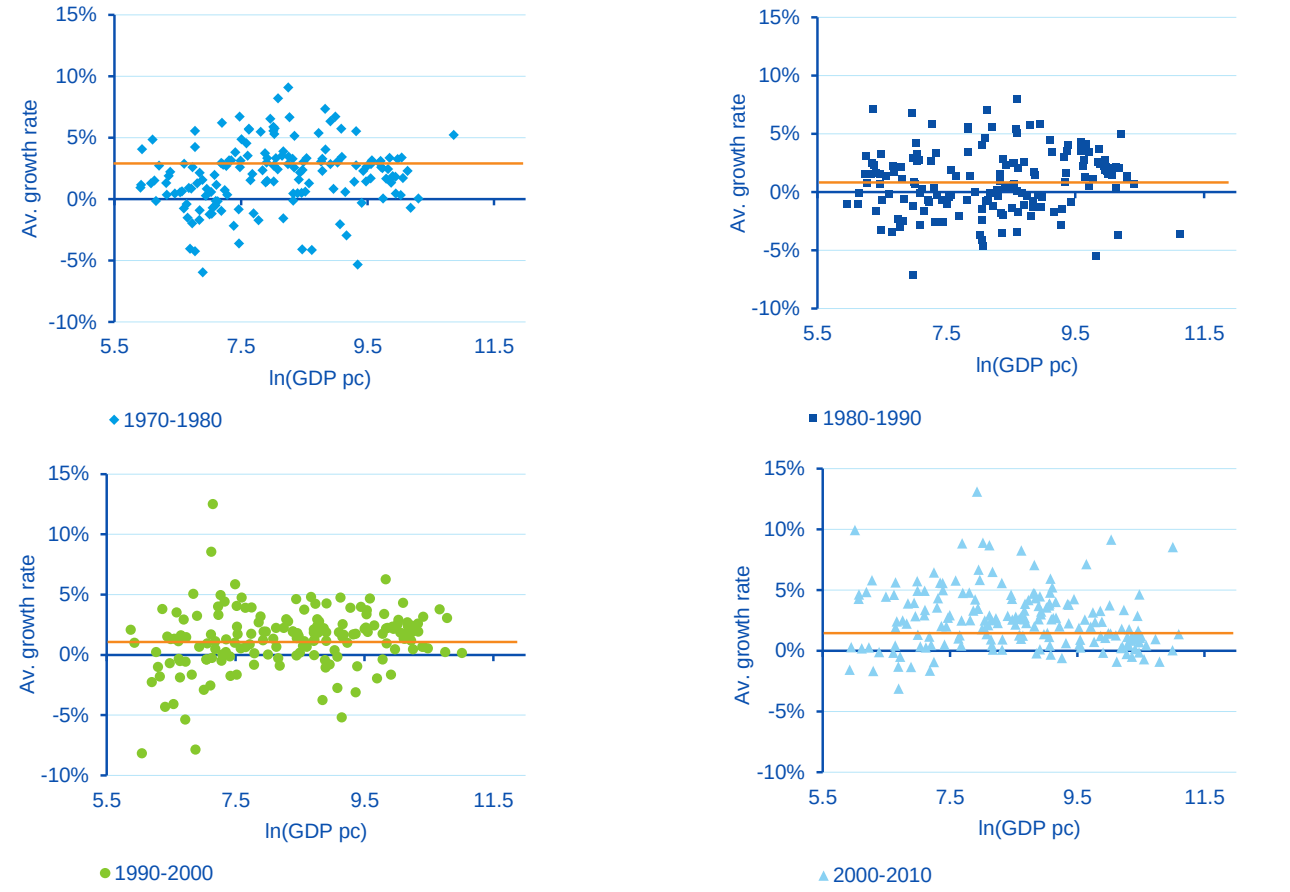
Figure 3.6
GDP per capita ratio vs. US.
Sample of 190 countries, 1970-2010



Source: BBVA Research based on Penn World Table

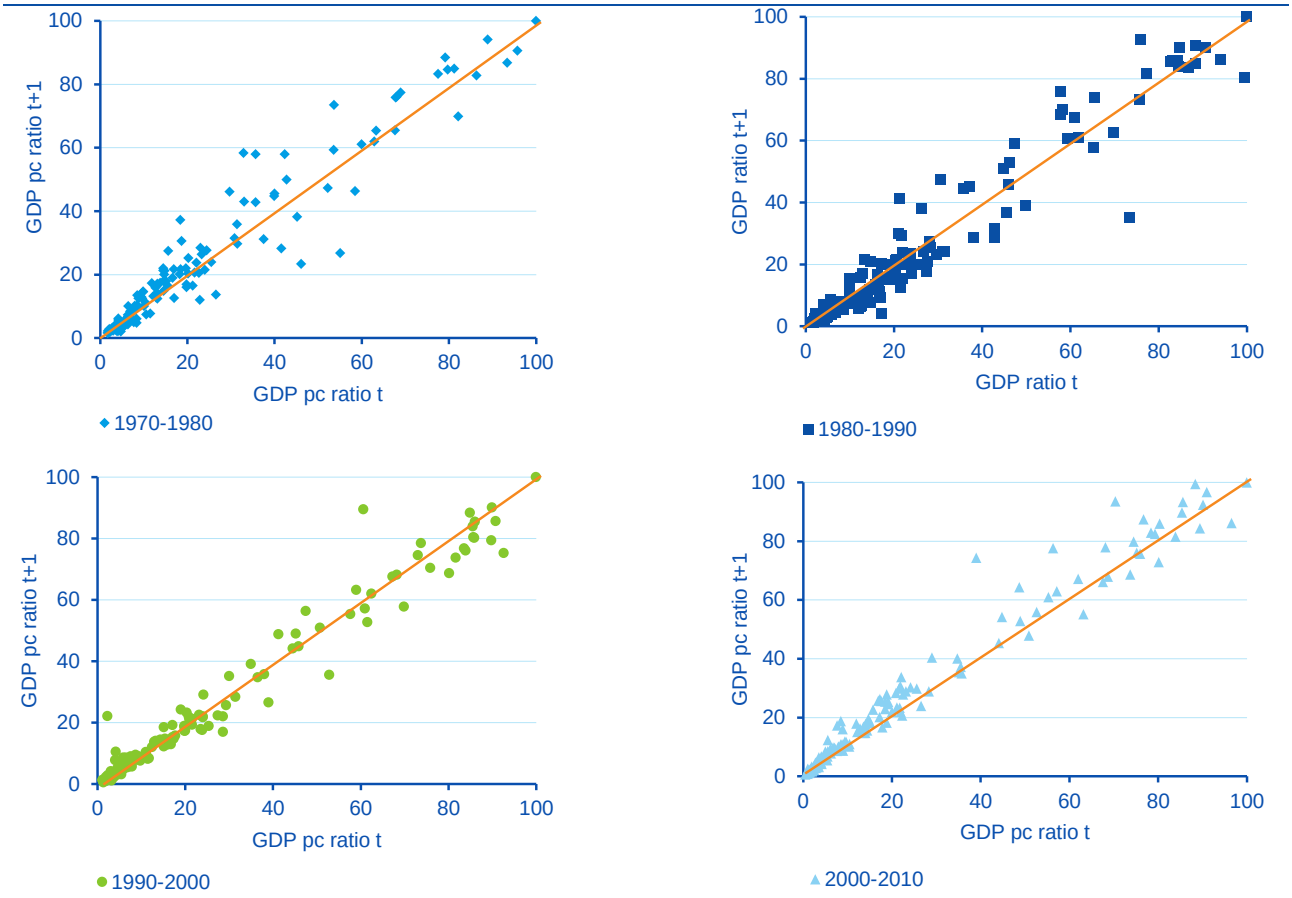
The conclusion that there is no middle-income trap and, in general, no trap at any level of income is sustained in an analysis of GDP per capita relative to the US. Figure 3.6 shows this ratio for each of the countries in the sample, both at the beginning of the decade (horizontal axis) and at the end (vertical axis). The distribution of the points around the bisector and at all levels of per capita GDP relative to the US shows that there is no in the process of convergence that is dependent on the point of departure. In the detail by decade (Figure 3.8), note the importance of the strength of the global cycle in the convergence of the economies.

Figure 3.7
GDP per capita, growth vs. initial level. Decade's evolution
Sample of 190 countries, 1970-2010



Source: BBVA Research based on Penn World Table

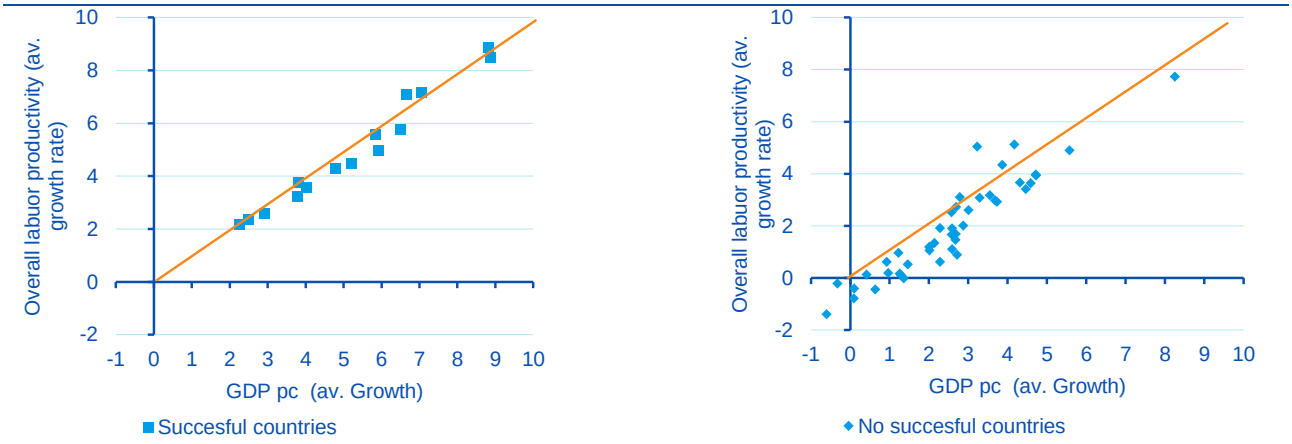
Figure 3.8
GDP per capita ratio vs. US detail per decade. Decade's evolution
Sample of 190 countries 1970-2010



Source: BBVA Research based on Penn World Table

The non-existence of "traps" or patterns common to all economies depending on their level of income does not mean that there are no common characteristics between those that have achieved more successful real convergence processes. Note that the countries that have achieved stronger growth in their per capita income are those that have performed better in relative terms regarding the increase in their overall labour productivity (Chart 3.9). Depending on the extent to which productivity is related to the institutional framework, the productive structure and current economic policies, it is discretionary decisions in each country that the capacity to grow and converge in a sustainable manner with higher-income countries.

Figure 3.9
Average per capita GDP growth vs. apparent labour productivity, 2000-10. Successful countries[8]



Source: BBVA Research based on Penn World Table

8: Defined as those that advanced towards the following group in relation to their per capita income at the beginning of the decade.

4 Risk of deflationary spiral and monetary policy

With the recent announcement of a programme of continuous and massive purchasing of public debt and corporate bonds (Quantitative Easing, hereinafter QE) that will continue until inflation is brought in line with the price stability target, the ECB has ended its resistance to what has been the common monetary policy response of the developed economies facing a **"debt-liquidity trap"**. That is, an economic context of **short-term interest rates very close to zero, depressed aggregate demand and excessive household, business and/or government debt**.

Situations of this kind have been very uncommon over the past century, but they have always brought highly negative consequences for the welfare of broad sectors of the population and, in all cases, they have exhibited characteristics that are difficult to understand in the conventional macroeconomic theoretical framework, making traditional economic policies inefficient in this context. Particularly before 2008, the only examples of the debt-liquidity trap were the "Great Depression" of the 1930s in the US and Europe and the "lost decade" that started in the early nineties in the Japanese economy. The 2008 financial crisis, caused by the bursting of the US real-estate bubble, once again have forced the US economy and the leading European economies to face a situation of this kind.

QE is an economic policy measure that, until a few years ago, was only a theoretical simulation exercise. It is specifically designed for debt-liquidity trap situations and its **aim is to contain its greatest risk, a deflationary spiral, i.e., a prolonged period of persistent, widespread deflation** (general fall in wages and prices of goods, services and assets**) and economic stagnation or slowdown**. **The need to experiment with unconventional monetary policy measures like QE arises from the fact that conventional demand policies lack effectiveness in these situations.** In monetary policy, it is impossible to reduce the benchmark interest rate as it is already close to the minimum, and the alternative of providing the banking system with unlimited liquidity is inefficient insofar as the banks use this liquidity to substitute other sources of funding, generally more costly, without easing the credit squeeze for the real economy. An expansive fiscal policy, in turn, usually exhausts its room for manoeuvre in the early phases of the debt-liquidity trap from injecting capital into the banking system and the deterioration of the fiscal balance due to the effect of the automatic stabilisers and the fall in revenues.

This article has two objectives; first, to introduce the concept of "deflationary spiral" and other closely related terms, such as "vicious circle of debt-deflation", and second, to introduce our debt-deflation tension indicator, which aims to assess the risk of "deflationary spiral"[9] and to use the estimated values of this index for Japan, the US and the European Monetary Union (EMU) in a comparative analysis of the debt-liquidity trap experiences of the three economies.

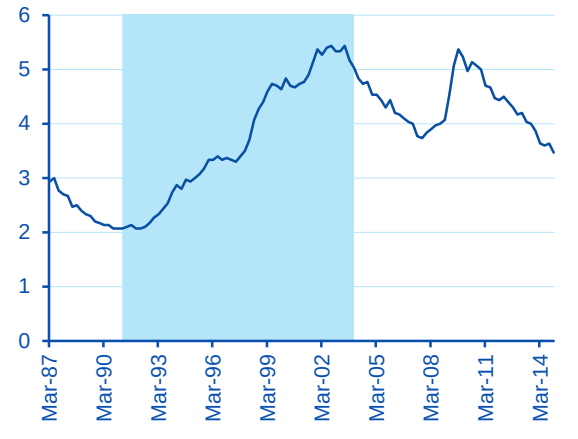
4.1 Deflationary spiral and vicious circle of debt-deflation

"Deflationary spiral" is a term coined in the 1930s by Irving Fisher, a US academic economist, to refer to the **persistent combination of deflation and stagnation in economic activity and employment** that characterised the US economy and the leading European economies in that decade (the Great Depression). It was triggered by the 1929 stock market crash and the consequent banking crisis. The contemporary example of this phenomenon is the "Lost Decade" of Japan, from 1991 to 2003[10], after the real estate and stock market bubble of the late 1980s burst.

9: For a more technical explanation of this indicator and its results, see Méndez-Marcano, Cubero and Buesa (2015).
10: Shaded area in the following figures.

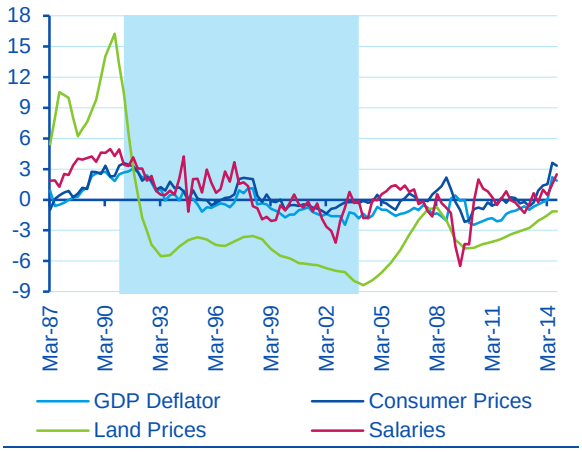
Figure 1 shows the prolonged and continual increase in Japanese unemployment during the "lost decade", before starting an erratic recovery that, even now, remains only partial[11]. Figure 2 reveals that this prolonged economic slowdown has been accompanied by an initial stage in which inflation has fallen almost continually to negative levels since the mid-nineties. The price correction not only affected consumer prices; it also, and mainly, affected the GDP deflator (a more broad measure of the prices of goods and services), wages and, above all and to a greater extent, the price of real estate. The latter is a distinctive feature of **deflationary spirals in Fisher's definition: the slow-down in prices is far more wide-spread than consumer prices would lead one to believe.** In fact, consumer prices fell less on average than other indicators during the "lost decade". The deflation of asset prices plays the predominant role in this: notice that in the case of Japan it was greater and started sooner than the fall in wages and the prices of goods and services.

Figure 4.1
Japan: Unemployment rate (%)



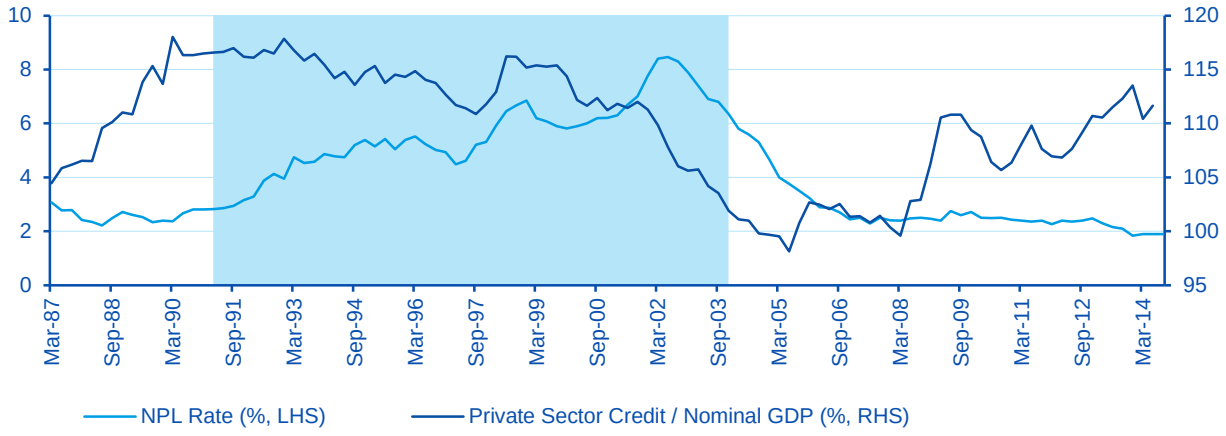
Source: BBVA Research

Figure 4.2
Japan: Prices (% yoy)



Source: BBVA Research

Figure 4.3
Japan: bank NPL ratio and private debt



Source: BBVA Research

11: Explaining why many prefer to talk about the two lost decades.

Finally, Figure 3 presents the third feature of a deflationary spiral: a **persistent banking credit squeeze** (in both outstanding level and new flows) and **deterioration in the debtor obligation compliance rate** (expressed as the increase in the non-performing loans ratio).

These characteristic traits led **Fisher to seek an explanation for the causes of deflationary spirals in the interaction between macroeconomic and financial variables**. The result of Fisher's analysis was his hypothesis of the "vicious circle of debt-deflation" [12] that has found ample support in subsequent empirical studies and theoretical development[13]. The latter attribute a leading role to the details of the interaction between the financial system and the dynamics of macroeconomic variables such as activity, employment and prices in explaining the phenomena of the debt-liquidity trap and the deflationary spiral.

In general, **the hypothesis of the vicious circle of debt-deflation posits that the simultaneous presence of a general fall in prices and lending are due to the causal feedback of both phenomena, propitiated by excessive net household and business debt** (normally the result of the growth and sudden bursting of an asset bubble). Specifically, **excessive private sector debt generates a slowdown in both the demand for and supply of bank lending**; in the former case because of a shift in resources from consumer spending and investment towards *deleveraging*, and in the latter because of greater provisions set aside by the banks to cover the increased risk of default. Altogether, this leads to a fall in bank lending and, in short, in the monetary multiplier. **The reduction in the monetary multiplier and aggregate demand generate general downward pressure on the price of goods and services, employment and assets** (in this latter case, reinforced by the asset selling off of businesses and households with difficulties in paying their debts). In turn, **this general fall in prices increases the net debt burden in real terms**, increasing the risk of default and forcing the private sector to rationalise its spending even further in an attempt to reduce its debt. The result is a new cycle of bank lending contraction and fall in prices, **and so on**.

Although the emphasis is laid on deflation in the original hypothesis, in modern approaches the vicious circle of debt-deflation is posited in the more general terms of the difference between expected and observed inflation. **The downward pressure on inflation arising from the vicious circle of debt-deflation generates a persistent inconsistency between current inflation and the greater inflation expected at the moment of contracting the debts**. This in turn produces an ever-increasing gap between the planned debt burden in real terms and the effective debt burden, causing defaults to spike and a greater *deleveraging* effort.

As suggested, Fisher's intuition that a mechanism of this kind was capable of generating a prolonged process of sustained deflationary spiral has been shown to be consistent with both the exploration and the theoretical simulation of debt-liquidity environments, including the most sophisticated modern exercises. The central principle of the policy recommendations that Fisher derived from his analysis has proved to be just as true: the need to drive a process of "reflation" (increase in inflation) to break the vicious circle of debt-deflation.

4.2 Debt-deflation tension indicator and the risk of deflationary spiral

Using the debt-deflation theory as a starting point, an assessment of the risk of deflationary spiral must be based on monitoring credit flows and the risk of default on the one hand, and inflation, from a general and pertinent point of view for debtors, on the other. Risk has not focused solely, or even mainly, on consumer prices (CPI), it focuses above all on what can be called "debtor prices", encompassing the price indicators that most directly affect the real severity of household and business debt burdens: the prices of the goods and services as a whole (both consumer and investment) produced within the economy

12: See Fisher (1933).
13: By way of example of the more classical and the most recent studies: in the empirical field, Bernanke (1995), Reinhart and Rogoff (2014) and Mian and Sufi (2014); in theoretical terrain: Fisher (1933), Bernanke (1983), Minsky (1986), Eggertsson and Krugman (2012), Geanakoplos (2010, 2014), and as an example of works in progress, Schorfheide, Arouba and Cuba-Borda (2015).

in question (the most general measure of which is the GDP deflator), average wages and asset prices. Thus, *ceteris paribus,* one would expect that **the lower the debtor inflation, bank lending and/or the risk of default, the more intense the vicious cycle of debt-deflation will be and, by extension, the greater the vulnerability to a deflationary spiral**.

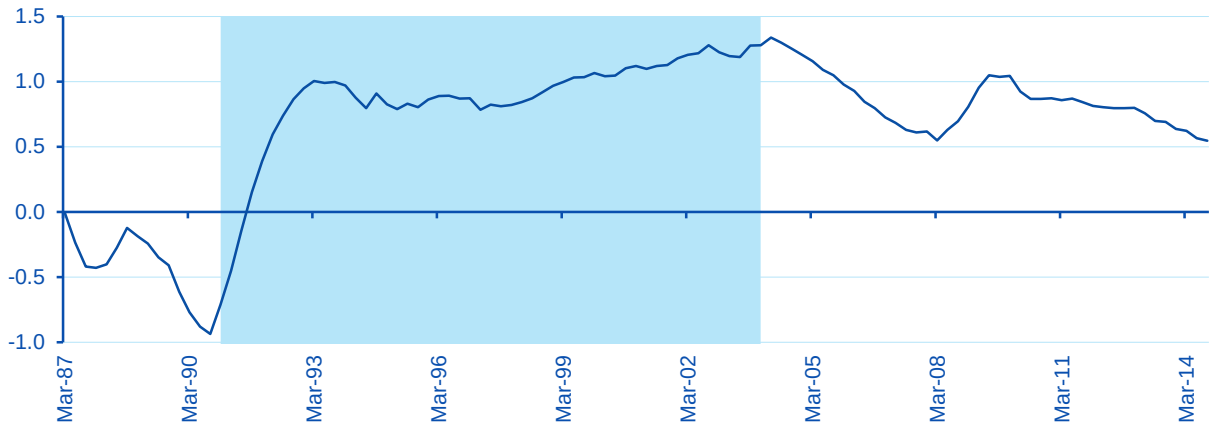
Our debt-deflation tension indicator (DDTI) is designed to do this monitoring in a simple and objective statistical way, and so helping to assess the risk of deflationary spiral in economies that find themselves in the debt-liquidity trap. If everything else remains constant, the indicator increases as debtor inflation and/or bank lending or the degree of debtor compliance falls, indicating the greater intensity of the vicious circle of debt-deflation that arises as a consequence, and the correspondingly greater vulnerability to a deflationary spiral[14].

The final appendix to this article explains how the index is constructed in detail, but the interpretation of the results shown below only requires readers to bear in mind that the DDTI is a combination of two other indicators: the "*debtor inflation index*" (DII), which captures the general change in wages, the prices of goods and services, and the price of assets, and the "*bank intermediation index"* (BII), which synthesises the evolution of credit flows and the probability that debtors will comply with their commitments approximated by the "compliance rate" (one minus the non-performing loans ratio). Hence, in line with the debt-deflation hypothesis, the **DDTI will increase, indicating greater vulnerability to a deflationary spiral, as the average of the DPI and BII falls.**

4.2.1 Japan's "Lost Decade"

Figure 4 shows the quarterly debt-deflation tension indicator for Japan, reflecting its consistency with a debt-deflation interpretation of its deflationary spiral. The index rises sharply when the asset bubble bursts and remains at historical highs throughout the entire "lost decade", that is, the period of deflationary spiral between 1991 and 2003. Although it starts to tail off, between fluctuations, after 2004, it still remains above pre-asset bubble levels. It should be pointed out that the index spiked between 1998 and 2003, insofar as it coincides with an accelerated deterioration in economic activity, unemployment and bank lending on the one hand and deflation on the other (Figures 1,2 and 3).

Figure 4.4
Japan: Debt-Deflation Tension Indicator

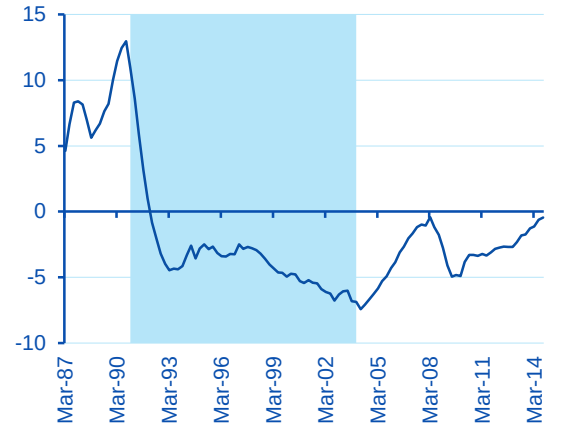


Deflationary spiral shaded area
Source: BBVA Research

14: It is worth noting that the relative level and time path of our indicator for the different countries is highly consistent with the International Monetary Fund "deflation vulnerability indicator" (see IMF, 2003), despite the *ad hoc* nature of the latter, which, in essence, synthesises the expert opinion of a group of specialists, and the difference in the variables used in constructing each of them.

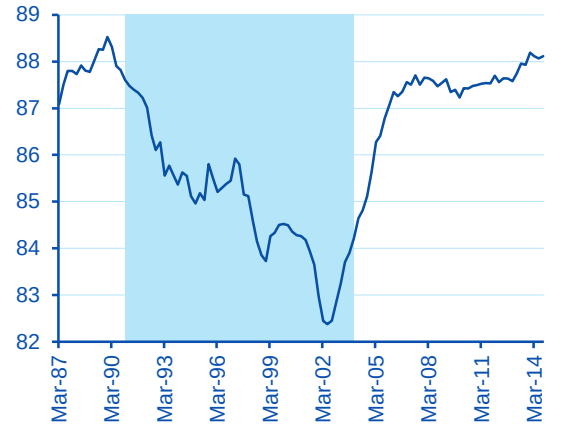
Figures 5 and 6 show the indicators that comprise the debt-deflation tension indicator for Japan. The substantial debtor deflation levels are clearly dominated by land prices (proxy for the price of assets in general), with general inflation of goods and services making a significantly smaller contribution and consumer deflation only making an even smaller one (see figure 2 again). One important fact is that while the deterioration of the debt-deflation tension indicator during the "lost decade" was the result of a similar fall in debtor inflation and bank intermediation, the recovery that started in 2004 has been driven more by the recovery of bank intermediation than by debtor inflation recovery.

Figure 4.5
Japan: Debtor Inflation Indicator



Source: BBVA Research

Figure 4.6
Japan: Bank Intermediation Indicator

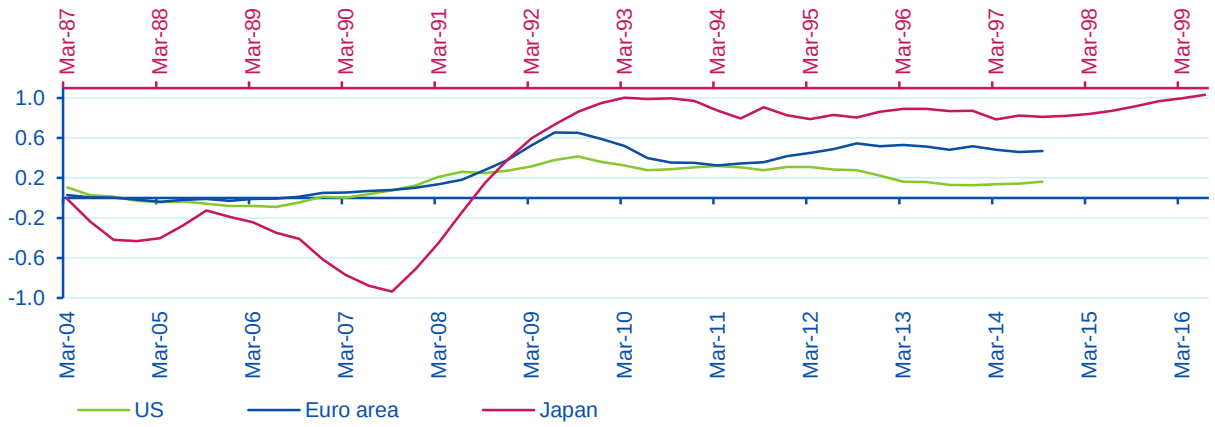


Source: BBVA Research

4.2.2 US and the EMU since 2008

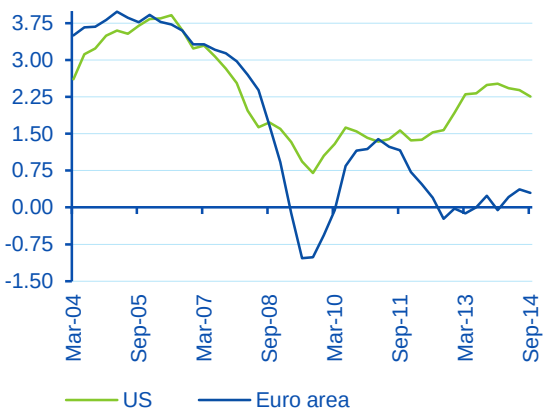
Using the results of the Japanese case as a reference, we now analyse the evolution of the indicator and its components for the US and the EMU, economies facing a debt-liquidity trap since the 2008 financial crisis. Figure 7 shows the quarterly debt-deflation tension indicator for the two regions since 2004. This is also compared with the same indicator for Japan for the lost-decade. Until 2010, DDTI evolution was comparable in the US and the EMU economies. After a slight fall prior to 2007, when the real-estate bubble formed in the US and some peripheral economies of the EMU, the index climbed more sharply after 2007, coinciding with the start of the turn-around in the real estate bubbles. This trend continued until the middle of 2009, when it entered a downward phase that ended in the convergence of the two indicators at the end of 2010. Year 2011 was a turning point, with the US' indicator taking a different path (descending) from the EMU's indicator (ascending), both of which eventually stabilised at very different levels.

Figure 4.7
Debt-Deflation Tension Indicator: Japan (upper axis), United States, EMU



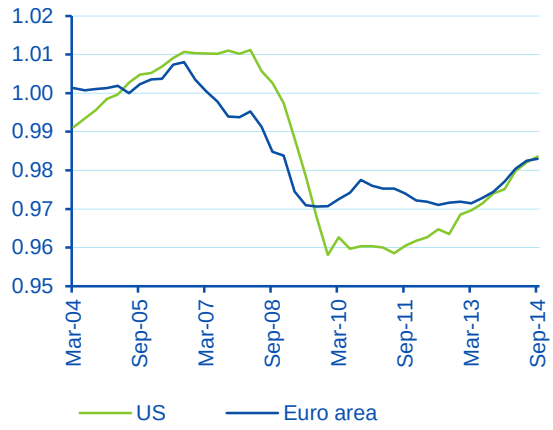
Source: BBVA Research

Figure 4.8
Debtor Inflation Indicator: United States, EMU



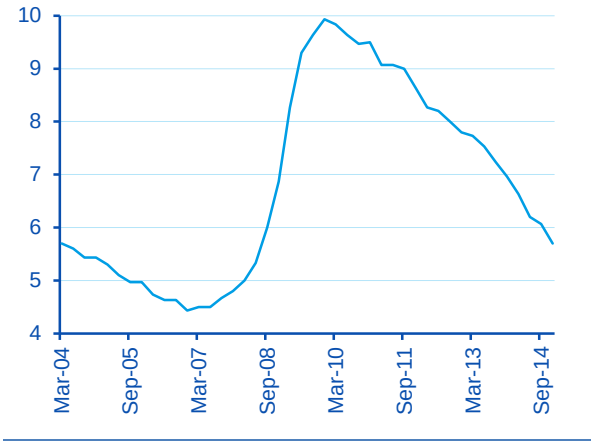
Source: BBVA Research

Figure 4.9
Bank Intermediation Indicator: United States, EMU



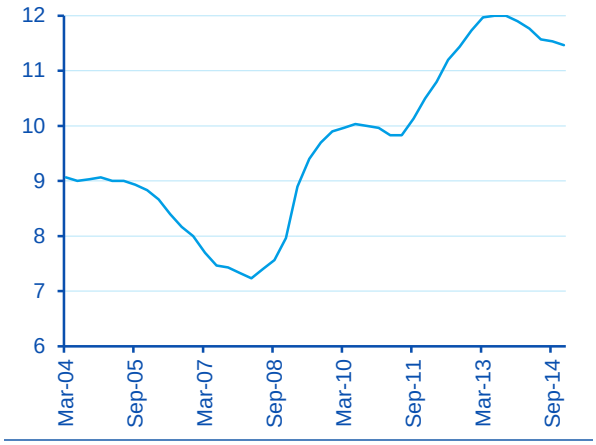
Source: BBVA Research

Figure 4.10
US: unemployment rate (%)



Source: BBVA Research

Figure 4.11
EMU: unemployment rate (%)



Source: BBVA Research

A comparison of the US and EMU debt-deflation tension indicators with Japan, for the period around their respective bubbles burst[15], shows remarkable quantitative differences given that the Japanese index is more volatile, but is also highlights noticeable qualitative similarities. Thus, as can be seen in figure 7, in all three cases, the fall in debt-deflation tension during the formation of the bubble was followed by a climb in the indicator after the bubble burst until it reached a ceiling and then started to fall. But after this (i.e. from 2011 in the case of the US and the EMU, and from 1997 in Japan), the qualitative similarity only continued in the case of the EMU, at least until half-way through 2012. In both cases, the indicator started to spike, coinciding furthermore with a spike in the unemployment rate in both cases (see figures 1 and 11). After the second half of 2012, the EMU indicator flattened off, albeit at relatively high levels.

Hence, **the comparison of the US, EMU and Japanese debt-deflation tension indicators is consistent with the perception that analysts and monetary authorities have of a greater risk of deflationary spiral in the EMU than in the US**.

4.2.3 Some Eurozone countries

An analysis of the Eurozone aggregate hides the pronounced differences between the different economies of the zone and, especially, between the two largest economies and the peripheral economies. The differences between the States that comprise the Union in the case of the US, or the Japanese Prefectures, have to be reduced as they form part of full-fledge monetary unions: with the same political unity and also with integrated economic demand policies and supply regulations. The situation is very different in the EMU, as seen from the difficulties they have had in managing the sovereign debt and banking crisis. It therefore seems important to analyse the different economies within the EMU.

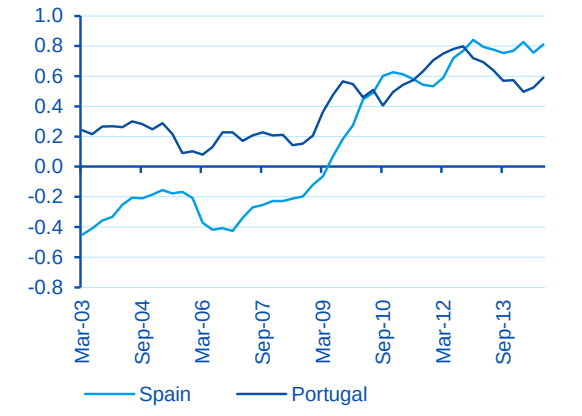
Figures 12 and 13 show the debt-deflation tension indicator for the five main EMU economies. A great variability can be observed both in the recent levels of the indicator and in its historical evolution. Stand out the high levels and volatility of the indicator for the "peripheral" economies, Spain and Portugal. In fact, they are not far below the Japanese indicator at the peak of its "lost decade" (1993-97). Also the low levels of France and Germany, to the point that, for Germany, the indicator has remained in negative territory in

15: The bubble started to burst around 1991 in Japan, and around 2007 in the cases of the United States and the peripheral economies of the EMU affected.

recent years. These are historically low levels that are comparable with the evolution of Japan's indicator during the formation of its real-estate and stock-market bubble.

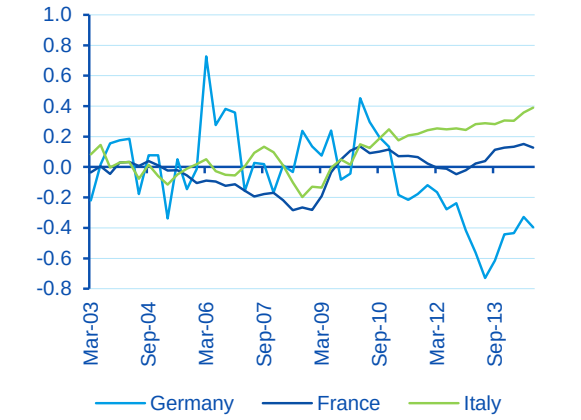
From this perspective it becomes clear that the focus of vulnerability to the risk of "deflationary spiral" in the EMU is concentrated in some of the "peripheral" economies"[16].

Figure 4.12
Debt-Deflation Tension Indicator: Spain and Portugal



Source: BBVA Research

Figure 4.13
Debt-Deflation Tension Indicator: Germany, France and Italy



Source: BBVA Research

4.3 Debt-Deflation Tension Indicator and Quantitative Easing (QE)

The differences in the EMU with respect to debt-deflation tension and the risk of deflationary spiral faced by the different member states, along with the institutional peculiarities of the EMU, help to explain the differences between the European Monetary Union and the US (or UK) with regard to their monetary and fiscal policy responses to the effects of the financial turbulence that they experienced in 2007-08 and the consequent debt-liquidity trap (close-to-zero interest rates, depressed demand and over indebtedness).

These differences include the role of Quantitative Easing (QE), understood as the purchase of both public and private-sector assets by central banks in secondary markets. Whereas QE has been used continually and massively in the US and the United Kingdom, since almost the beginning of the crisis, and always aimed at achieving monetary policy objectives, in the EMU its use has been more restricted and started later, with limited purchases of minimum-risk private sector assets with strong collateral guarantees or the acquisition, also limited, of peripheral public-sector debt at the times of maximum tension in the sovereign debt market. **The greater relative weight of the financial markets in the intermediation process in US and the UK compared with the EMU's high dependency on bank lending explains, to a certain extent, the differences in the ways the Fed and the Bank of England on the one hand, and the ECB on the other, acted**. The ECB preferred to focus on providing the banking sector with liquidity, sometimes on the condition that it eased the credit squeeze to the private sector, but always at low cost and in sufficient volumes to defray funding restrictions in other segments. But, this divergence of opinion has recently taken a new turn with the announcement made by the ECB in January 2015 of the start of a programme of massive purchases of both public and private-sector financial assets in the secondary markets oriented to bringing inflation to around 2%. Initially, the programme will run until 2016, but it has already been announced that it will be extended if the desired inflation target has not been met by then.

16 It should be taken into consideration that, even in the case of the Great Depression in US or the "lost decade" in Japan, there were significant regional differences in both prices and economic activity and employment. See for example, Rosenbloom and Sundstrom (1999) and Ishikawa and Tsutsui (2013).

This turnaround is understandable in the light of the positive performance of the debt-deflation indicator in the case of the US[17] in parallel with a rapid recovery of economic growth and employment, in contrast with the relatively high levels of the indicator in the EMU aggregate, especially in some peripheral economies, along with a very slow recovery of employment and aggregate economic activity and signs of recession or stagnation in large economies like Italy and France.

4.4 Conclusions

The intense financial turbulences experienced by US and Europe in 2007-08 led these economies into "debt-liquidity traps": the confluence of depressed demand, short term interest rates close to their lower limit of zero and excessive household, business and/or government debt. The only precedents for situations of this kind are the "Great Depression" of the 1930s in US and some European economies and the "Lost Decade" of Japan from the early 1990s to the early 2000s. **The greatest danger of the trap is a "deflationary spiral": a prolonged process of generalised deflation, deterioration of financial intermediation and economic stagnation**. The advances made in the study of the "debt-liquidity trap" and the associated phenomenon of "deflationary spiral" put the debt-deflation hypothesis at the centre of the explanations of both phenomena and thus as an essential component in designing efficient economic policy responses in this context.

This article has presented a new indicator aimed at assessing the risk of "deflationary spiral". The construction of the indicator is statistically objective and strictly grounded in the debt-deflation hypothesis. An analysis of the historic evolution of this indicator for Japan, US and some of the EMU economies shows that the debt-deflation hypothesis is a consistent explanation of the deflationary spiral that characterised the Japanese economy's "lost decade" and highlight the differences between the responses and evolution of the US and EMU economies after the 2008 crisis. In fact, it shed light on the recent turn-around in EMU monetary policy with the announcement in January 2015 of a massive, open-ended programme of public and private-sector asset buying by the ECB.

4.5 References

Bernanke, Ben (1983): "Non-monetary effects of the financial crisis in propagation of the Great Depression", *American Economic Review*, 73(3).

Bernanke, Ben (1995): "The macroeconomics of the Great Depression: A comparative approach", *Journal of Money, Credit, and Banking*, 27(1).

Eggertsson, Gauti and Paul Krugman (2012): "Debt, deleveraging, and the liquidity trap: A Fisher-Minsky-Koo approach", *Quarterly Journal of Economics*, 127(3).

Fisher, Irving (1933): "Debt-Deflation Theory of Great Depressions", *Econometrica*, 1(4).

Geanakoplos, John (2010): "The leverage cycle", published in NBER Macroeconomic Annual 2009, 24.

Geanakoplos, John (2014): "Leverage, default, and forgiveness: Lessons from the American and European Crises", *Journal of Macroeconomics*, 39(Part B).

IMF (2003): "Deflation: determinants, risks, and policy options—Findings of an inter-departmental task force." (approved by Kenneth Rogoff), International Monetary Fund, April 2003.

Ishikawa, Daisuke and Yoshiro Tsutsui (2013): "Credit crunch and its spatial differences in Japan's lost decade: What can we learn from it?", Japan and the World Economy, 2013, 28(Issue C).

17: Although they are not shown in the article, we have estimates of the indicator for the United Kingdom and other countries. As in the US case, the UK indicator shows a highly positive evolution after the financial crisis.

Kiyotaki, Nabuhiro and John Moore (1997): "Credit cycles", *Journal of Political Economy*, 105(2).

Méndez-Marcano, Rodolfo; Julian Cubero and Alejandro Buesa (2015): "Deflationary spiral and the debt-deflation vicious circle: A canonical correlation anualysis". Forthcoming in BBVA Research Working Papers Series.

Mian, Atif and Amir Sufi (2014): "HOUSE OF DEBT", The University of Chicago Press.

Minsky, Hyman (1986): "STABILIZING AN UNSTABLE ECONOMY", Yale University Press.

Reinhart, Carmen and Kenneth Rogoff (2014): "Financial and Sovereign Debt Crises: Some Lessons Learned and Those Forgotten", published in "Financial Crises: Causes, consequences and policy responses", edited by: S. Claessens, M.A. Kose, L. Laeven and F. Valencia.

Rosenbloom, Joshua and William Sundstrom (1999): "The sources of regional variation in the severity of the great depression: Evidence from U.S. manufacturing, 1919-1937", *Journal of Economic History*, 59(3).

Schorfheide, Frank; Boragan Arouba and Pablo Cuba-Borda (2014): "Macroeconomic Dynamics Near the ZLB: A tale of two countries", PIER Working Paper 14-035.

4.6 Appendix: Construction of the Debt-Deflation Tension Indicator

The debt-deflation tension indicator (DDTI) is designed to supplement the weighted average of the debtor inflation indicator (DII) and the bank intermediation indicator (BII), i.e.:

DDTI = 1 - (DII+BII) / 2,

So it rises as the debtor inflation indicator (DII) and/or the bank intermediation indicator (BII) falls.

The debtor inflation indicator (DII) is constructed from a weighted average of: the GDP deflator variation rate, average wage variation rate and the average real-estate price variation rate.

The bank intermediation indicator (BII) aims to capture the flow of lending and the degree of debtor compliance from a weighted average of certain financial indicators for which there is homogeneous and widely available information internationally. In accordance with this objective and these criteria, we decided to construct the BII as the weighted average of the following variables: flow of new bank credit to households and businesses (as a percentage of nominal GDP), directly associated with financial intermediation and the monetary multiplier, and the "punctuality rate" (PLR), which is merely the opposite supplement of the conventional NPL ratio (NPLR), an indicator associated with the probability of non-compliance, i.e., PLR = 1 – NPLR.

The weighting to be used in constructing the weighted averages that define the bank intermediation indicator (BII) and the debtor inflation indicator (DII) is of critical importance. First and foremost, three criteria must be met: i) the indicators have to be consistent with the debt-deflation theory, which requires a positive or direct correlation between the two indicators (a rise in one of them should be associated with an increase in the other); ii) they must be statistically objective; and iii) simple to calculate.

To meet the criteria, the weighting uses canonical correlation analysis (CCA). This technique enables us to analyse the relations between two sets of variables, in our case, the variables that comprise the debtor inflation indicator (DII) on the one hand, and the variables that comprise the bank intermediation indicator (BII) on the other. In particular, the technique enables us to find the weights or coefficients that combine each group of variables linearly but separately, in such a manner that the two linear combinations are as closely correlated as possible.

However, these weights or coefficients will act as the foundation for constructing our DPI and BII indicators only if they all bear the same signs, because this is the only way to guarantee that our interpretation of these indicators as proxies of debtor inflation and financial intermediation is valid. At the same time, if the weights do bear the same sign, this will be the first positive test of the debt-deflation theory.

Having met the condition of bearing the same sign, the coefficients, standardised in each case to add up to one, are used to calculate the weighted averages that define the DPI and BII. Finally, the resulting indicators are standardised by dividing them by their average prior to the debt-liquidity trap (and the preceding financial crisis or bubble). The DDTI is constructed by subtracting the weighted average of the DPI and BII from 1, where everything is standardised to the average value prior to the asset bubble and/or financial crisis that preceded the debt-liquidity trap, thus permitting a comparison of the values of the three indicators between countries.

5 Tables

Table 5.1
Macroeconomic Forecasts: Gross Domestic Product

Average, %	2012	2013	2014	2015	2016
United States	2.3	2.2	2.4	2.9	2.8
Eurozone	-0.7	-0.4	0.8	1.3	2.2
Germany	0.6	0.2	1.5	1.4	2.2
France	0.4	0.4	0.4	1.0	1.8
Italy	-2.3	-1.9	-0.4	0.6	1.3
Spain	-2.1	-1.2	1.4	2.7	2.7
UK	0.7	1.7	2.6	2.8	2.5
Latin America *	2.5	2.5	0.8	1.5	2.4
Mexico	3.8	1.7	2.1	3.5	3.4
Brazil	1.0	2.5	0.1	0.6	1.8
EAGLES **	5.5	5.4	5.1	5.0	5.2
Turkey	2.1	4.1	2.5	3.7	4.5
Asia Pacific	5.5	5.4	5.4	5.5	5.4
Japan	1.5	1.5	0.7	1.3	1.2
China	7.7	7.7	7.4	7.0	6.6
Asia (exc. China)	3.9	3.7	3.7	4.3	4.4
World	3.3	3.2	3.3	3.6	3.8

* Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela.
** Brazil, China, India, Indonesia, Mexico, Russia and Turkey.
Forecast closing date: 6 February 2015.
Source: BBVA Research and IMF

Table 5.2
Macroeconomic Forecasts: Inflation

Average, %	2012	2013	2014	2015	2016
United States	2.1	1.5	1.7	1.5	2.1
Eurozone	2.5	1.4	0.4	0.1	1.0
Germany	2.1	1.6	0.8	0.3	1.1
France	2.2	1.0	0.6	0.1	0.9
Italy	3.3	1.3	0.2	-0.2	0.6
Spain	2.4	1.4	-0.2	-0.4	1.4
UK	2.8	2.6	1.5	0.4	1.5
Latin America *	7.8	9.3	12.7	13.7	14.0
Mexico	4.2	3.8	4.0	3.4	3.5
Brazil	5.4	6.2	6.3	6.7	5.7
EAGLES **	5.0	5.3	4.6	4.3	4.1
Turkey	8.7	7.5	8.8	6.4	6.6
Asia Pacific	3.7	4.0	3.5	3.2	3.3
Japan	-0.1	1.6	3.0	1.3	1.6
China	2.7	2.6	2.1	2.2	2.5
Asia (exc. China)	4.5	5.1	4.5	4.0	4.0
World	2.1	1.5	1.7	1.5	2.1

* Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela.
** Brazil, China, India, Indonesia, Mexico, Russia and Turkey.
Forecast closing date: 6 February 2015.
Source: BBVA Research and IMF

Table 5.3
Macroeconomic Forecasts: Current Account

Average, % GDP	2012	2013	2014	2015	2016
United States	-2.8	-2.4	-2.6	-2.8	-2.8
Eurozone	1.4	2.4	2.5	2.7	2.7
Germany	7.1	6.7	7.1	7.2	6.9
France	-1.5	-1.4	-1.6	-1.5	-1.5
Italy	-0.5	1.0	1.1	1.3	1.9
Spain	-0.3	1.4	-0.2	0.9	1.0
UK	-3.7	-4.5	-4.5	-4.1	-3.8
Latin America *	-1.6	-2.5	-2.6	-2.7	-2.4
Mexico	-1.3	-2.1	-1.9	-1.8	-2.0
Brazil	-2.4	-3.7	-4.1	-3.9	-3.4
EAGLES **	-0.1	-0.3	0.4	0.4	0.2
Turkey	-6.1	-7.9	-5.7	-4.5	-4.9
Asia Pacific	1.0	1.3	1.8	1.6	1.4
Japan	1.0	0.7	0.8	1.4	1.5
China	2.6	2.0	3.0	2.8	2.5
Asia (exc. China)	-0.2	0.8	0.9	0.7	0.5

* Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela.
** Brazil, China, India, Indonesia, Mexico, Russia and Turkey.
Forecast closing date 6 February 2015.
Source: BBVA Research and IMF.

Table 5.4
Macroeconomic Forecasts: Government Balance

Average, % GDP	2012	2013	2014	2015	2016
United States	-6.8	-4.1	-3.1	-2.7	-3.0
EMU	-3.6	-2.9	-2.7	-2.5	-2.0
Germany	0.1	0.1	0.2	0.0	0.0
France	-4.9	-4.1	-4.4	-4.3	-3.7
Italy	-3.0	-2.8	-3.0	-2.7	-2.4
Spain *	-6.6	-6.3	-5.5	-4.2	-2.8
UK **	-8.3	-5.8	-5.6	-4.4	-3.4
Latin America ***	-2.3	-2.4	-4.1	-3.5	-3.1
Mexico	-2.6	-2.3	-3.5	-3.5	-3.0
Brasil	-2.5	-3.3	-5.7	-4.4	-3.6
EAGLES ****	-2.0	-2.3	-2.9	-2.9	-2.7
Turkey	-2.1	-1.2	-2.2	-1.5	-1.5
Asia Pacific	-2.7	-3.0	-3.2	-3.1	-2.9
Japan	-7.6	-9.2	-7.9	-7.0	-6.5
China	-1.1	-1.5	-2.1	-2.5	-2.5
Asia (exc. China)	-3.9	-4.2	-4.1	-3.6	-3.3

* Excluding aid to financial sector.
** Fiscal year from 1 April to 31 March.
*** Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela.
**** Brazil, China, India, Indonesia, Mexico, Russia and Turkey.
Forecast closing date: 6 February 2015.
Source: BBVA Research and IMF.

Table 5.5
Macroeconomic Forecasts: 10-year government bond yield

Average, %	2012	2013	2014	2015	2016
United States	1.8	2.3	2.5	2.2	2.9
Germany	1.6	1.6	1.2	0.6	1.2

Forecast closing date: 6 February 2015.
Source: BBVA Research and IMF

Table 5.6
Macroeconomic Forecasts: Exchange Rates

Average	2012	2013	2014	2015	2016
EUR-USD	0.78	0.75	0.75	0.90	0.85
USD-EUR	1.29	1.33	1.33	1.11	1.18
GBP-USD	1.58	1.56	1.65	1.48	1.60
JPY-USD	79.8	97.6	105.9	125.0	131.7
CNY-USD	6.31	6.20	6.14	6.17	6.04

Forecast closing date: 6 February 2015.
Source: BBVA Research and IMF

Table 5.7
Macroeconomic Forecasts: Official Interest Rates

End of period, %	2012	2013	2014	2015	2016
United States	0.25	0.25	0.25	0.50	1.50
Eurozone	0.75	0.25	0.05	0.05	0.05
China	6.00	6.00	5.60	5.10	5.10

Forecast closing date: 6 February 2015.
Source: BBVA Research and IMF

DISCLAIMER

This document has been prepared by BBVA Research Department, it is provided for information purposes only and expresses data, opinions or estimations regarding the date of issue of the report, prepared by BBVA or obtained from or based on sources we consider to be reliable, and have not been independently verified by BBVA. Therefore, BBVA offers no warranty, either express or implicit, regarding its accuracy, integrity or correctness.

Estimations this document may contain have been undertaken according to generally accepted methodologies and should be considered as forecasts or projections. Results obtained in the past, either positive or negative, are no guarantee of future performance.

This document and its contents are subject to changes without prior notice depending on variables such as the economic context or market fluctuations. BBVA is not responsible for updating these contents or for giving notice of such changes.

BBVA accepts no liability for any loss, direct or indirect, that may result from the use of this document or its contents.

This document and its contents do not constitute an offer, invitation or solicitation to purchase, divest or enter into any interest in financial assets or instruments. Neither shall this document nor its contents form the basis of any contract, commitment or decision of any kind.

In regard to investment in financial assets related to economic variables this document may cover, readers should be aware that under no circumstances should they base their investment decisions in the information contained in this document. Those persons or entities offering investment products to these potential investors are legally required to provide the information needed for them to take an appropriate investment decision.

This report has been produced by the Economic Scenarios Unit:

Chief Economist for Economic Scenarios
Julián Cubero
juan.cubero@bbva.com

Rodrigo Falbo
rodrigo.falbo@bbva.com

Rodolfo Mendez Marcano
rodolfo.mendez@bbva.com

Sara Baliña Vieites
mariasara.balina@bbva.com

Diana Posada Restrepo
diana.posada@bbva.com

Alejandro Buesa Olavarrieta
alejandro.buesa@bbva.com

Alberto Ranedo Blanco
alberto.ranedo@bbva.com

BBVA Research

Group Chief Economist
Jorge Sicilia Serrano

Developed Economies Area
Rafael Doménech Vilariño
r.domenech@bbva.com

Spain
Miguel Cardoso Lecourtois
miguel.cardoso@bbva.com

Europe
Miguel Jimenez González-Anleo
mjimenezg@bbva.com

US
Nathaniel Karp
Nathaniel.Karp@bbva.com

Emerging Markets Area
Alicia García-Herrero
alicia.garcia-herrero@bbva.com

Cross-Country Emerging Markets Analysis
Alvaro Ortiz Vidal-Abarca
alvaro.ortiz@bbva.com

Asia
Le Xia
le.xia@bbva.com

Mexico
Carlos Serrano Herrera
carlos.serranoh@bbva.com

LATAM Coordination
Juan Manuel Ruiz Pérez
juan.ruiz@bbva.com

Argentina
Gloria Sorensen
gsorensen@bbva.com

Chile
Jorge Selaive Carrasco
jselaive@bbva.com

Colombia
Juana Téllez Corredor
juana.tellez@bbva.com

Peru
Hugo Perea Flores
hperea@bbva.com

Venezuela
Oswaldo López Meza
oswaldo.lopez@bbva.com

Financial Systems and Regulation Area
Santiago Fernández de Lis
sfernandezdelis@bbva.com

Financial Systems
Ana Rubio
arubiog@bbva.com

Financial Inclusion
David Tuesta
david.tuesta@bbva.com

Regulation and Public Policy
María Abascal
maria.abascal@bbva.com

Recovery and Resolution Strategy
José Carlos Pardo
josecarlos.pardo@bbva.com

Global Coordination
Matías Viola
matias.viola@bbva.com

Global Areas

Economic Scenarios
Julián Cubero Calvo
juan.cubero@bbva.com

Financial Scenarios
Sonsoles Castillo Delgado
s.castillo@bbva.com

Innovation & Processes
Oscar de las Peñas Sánchez-Caro
oscar.delaspenas@bbva.com

Contact details:

BBVA Research
Paseo Castellana, 81 – 7th floor
28046 Madrid
Tel.: +34 91 374 60 00 y +34 91 537 70 00
Fax: +34 91 374 30 25
bbvaresearch@bbva.com
www.bbvaresearch.com
Legal Deposit: M-31256-2000