

# Spain Watch

Economic Research Department

November 2008



The global financial crisis is worsening and the situation in neighbouring economies is deteriorating

Economic activity in Spain will be sluggish in 2009, with significant downside risks

The government's economic policies and financial measures will limit the negative impact of this unfavourable environment

In the medium term: the intensity of economic recovery will depend upon the effect of the reforms to be undertaken in the near future



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Closing date: 7th November, 2008

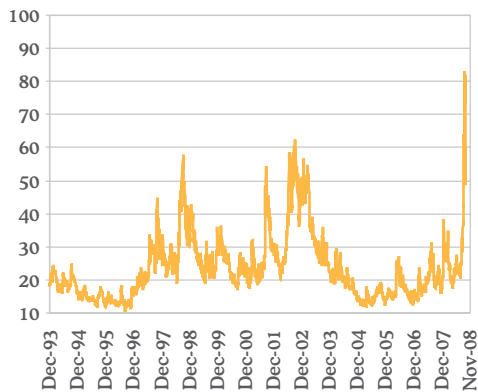
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## This publication has been written by:

J. Julián Cubero	34 91 537 36 72	jcubero@grupobbva.com
Pedro Pablo Álvarez Lois	34 91 374 43 32	pedro.a_lois@grupobbva.com
Mónica Correa López	34 91 374 64 01	monica.correa@grupobbva.com
Juan Ramón García	34 91 374 33 39	juanramon.gl@grupobbva.com
Virginia Pou	34 91 537 77 23	virginia.pou@grupobbva.com
Jorge Rodríguez-Vález	34 91 537 48 90	jorge.rv@grupobbva.com

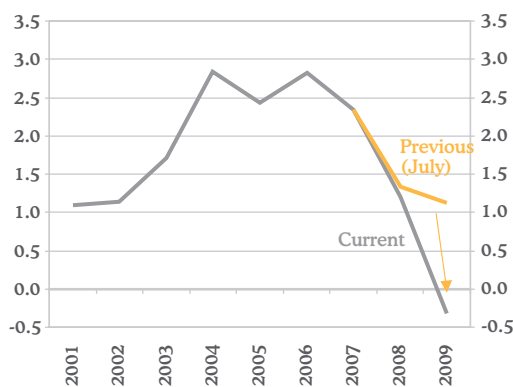
We would like to thank Rafael Doménech for his collaboration and comments.

**USA: Implicit volatility of Stock Market VIX (S&P500)**



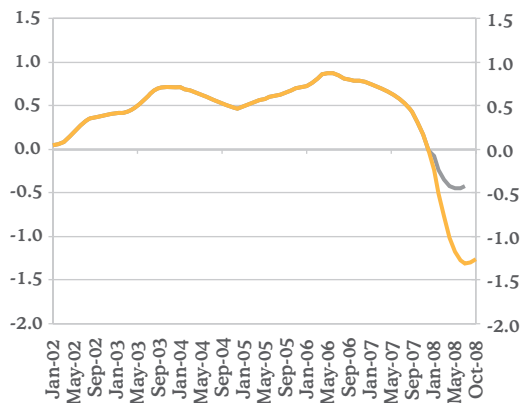
Source: BBVA ERD and Datastream

**G3\*, GDP (% YoY)**



\*USA, EU and Japan  
Source: BBVA ERD

**Spain, IA-BBVA activity indicator (Variations with respect to the trend)**



■ July-08 estimation  
■ Current estimation

Source: BBVA ERD

**1. Summary**

**The global economic environment is particularly adverse, with a worsening financial crisis that is spreading to previously-unaffected countries and areas of the economy.**

In the three months since the last edition of this publication, the economic scenario has deteriorated more rapidly and intensively than expected. The financial crisis has worsened and spread to previously unaffected countries and segments of the market. Governments and central banks have acted quickly, adopting measures to counteract the lack of liquidity and to reopen the interbank financing markets. In addition to rate cuts, central banks have increased their supply of liquidity and guarantees on deposits, injected public funds into banking institutions, approved new public money guarantees and created funds for the temporary acquisition of financial assets. Despite the speed with which these measures have been adopted and the significant amounts of public resources that are being committed, the uncertainty surrounding the intensity and duration of what has already been billed the sharpest economic crisis in the last decades, is enormous.

In this adverse and uncertain economic environment, the world economy is facing a lengthy adjustment and de-leveraging process that will be costly in terms of activity and employment. The complex situation in the financial markets is being tracked by a severe deterioration of the real economy, more marked than originally forecasted three months ago. As a result, growth forecasts have been significantly revised downwards. In particular, the advanced economies will register declines in GDP in 2009. The EMU will post negative growth of 0.5%, from estimated 2008 growth of 1%, which leads us to revise growth estimates for 2009 downwards by 1.5 pp. In the US, the decline is expected to be 0.2%, 1.2 pp lower than the forecast put forward in our last Spain Watch report.

**Growth forecasts for the Spanish economy are being revised downwards due to lower domestic demand and the impact of the financial crisis. Lower interest rates and declining energy prices will provide support.**

The Spanish economy is slowing rapidly. The negative GDP growth trend seen in the third quarter of 2008 is expected to continue throughout 2009, although the uncertain global scenario and the final impact of the measures proposed by the authorities prompt us to maintain wide room for manoeuvre in our forecasts, although the bias is always downward. Accordingly, GDP growth is expected to stand at -1.0% in 2009, and could be closer to zero (-0.1%) if the global crisis is resolved relatively quickly, but would reach -1.5% if the financial problems were to continue worsening, if external demand was greater than expected or if the measures implemented by authorities do not have the desired outcome of reactivating credit markets. Elements of support that could possibly sustain activity in 2009 with respect to 2008 are a more intense cycle of rate cuts as a result of the decline in the risk premium or, additionally, a drop in energy prices which would reduce the drain on available income exerted by higher fuel prices.

At any rate, the Spanish economy will be affected by the slowdown in global growth, which is especially severe in the most important markets for Spanish goods and service exports, such as the rest of the Euro area.

Interest rate expectations will partially absorb the impact of the global financial crisis on credit transactions in Spain, which are slowing significantly to rates approximating those of nominal GDP at the end of 2008 (unseen since the mid-1990s). This slowdown in credit is largely due to lower demand from companies and households, who have reacted consistently with the deterioration in expectations. However, the interbank financing markets are still essentially frozen, which makes it difficult to guarantee stable fund flows into banks, since both risk aversion, and the uncertainties surrounding the effectiveness of the measures being adopted, still prevail. This situation makes channelling credit to households and businesses a challenge, with businesses heavily penalised by the significant increase in corporate risk premiums. In this situation, the success of the measures approved by the Spanish government to improve liquidity for financial institutions will be one of the key factors that will determine the level of adjustment seen in the Spanish economy in the upcoming quarters.

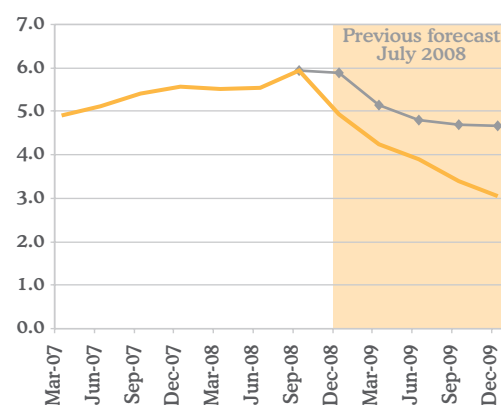
### Spain is facing the challenge of reducing its foreign trade deficit in an adverse financial environment, while improving its medium term growth outlook.

In these tight international financial market conditions, one of the weaknesses of the Spanish economy is its heightened need for foreign financing, as reflected by the high current account deficit. The sharp economic shift which began in mid-2007, with downgrades in activity forecasts, higher financing costs and less liquidity, will reduce the Spanish economy's need for foreign financing in the upcoming years. Households and businesses will reduce their investment in housing and equipment, while at the same time, increasing their savings. In contrast, government spending will increase and government savings will fall, partially offsetting the trend seen in the private sector.

However, our medium term consistency checks in connection with economic agents' savings and investment balances indicate that even reduced borrowing requirements on the part of the economy may still be difficult to sustain in a financial environment as tough as the current one. The correction in the current account deficit to around 5% of GDP nevertheless entails an increase in the accumulation of foreign financial obligations.

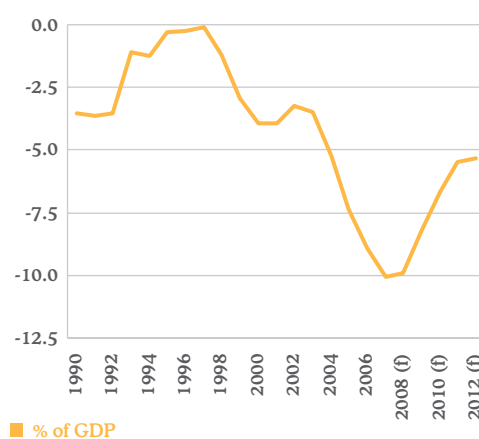
The correction of the trade balance is being addressed, for the first time, without the scope for adjusting the nominal exchange rate. This requires that the adjustment of the borrowing requirements to the new scenario rests on lower internal demand and higher international competitiveness via a more favourable trend in relative prices. In the short term, competitiveness on the global stage can be increased via lower increases in labour costs. For example, reductions in social security payments could be contemplated as a mean to stimulate economic activity and employment. These reductions could become permanent in nature if combined with increases in other tax concepts. In the longer term, however, it would be preferable to increase Spain's competitive position through higher productivity. The productivity gap between the Spanish economy as a whole and global leaders on this front remains wide. Given the demographic and convergence forecasts for activity and employment, the Spanish economy needs to drive productivity via the implementation of appropriate micro and macroeconomic policies. After the current economic crisis, the latter would help the Spanish economy returning to growth rates that would gradually reach levels of approximately 2.8%.

### Nominal mortgage interest rate



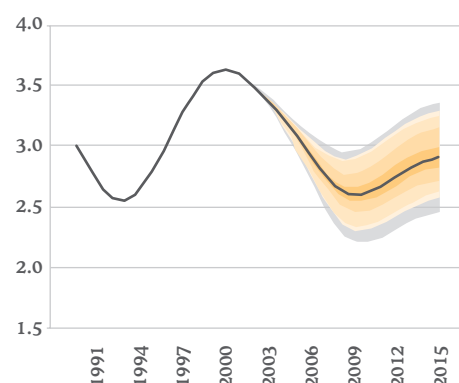
Source: BBVA ERD

### Spain, current account balance as percentage of GDP



Source: BBVA ERD based BoE data

### Potential GDP growth projections, Spain 1990-2015.



Source: BBVA ERD

Chart 2.1.  
Spain, 12M TED spread  
(Euribor- Treasury bonds)



Chart 2.2.  
USA: Commercial paper outstanding  
(in billions of dollars)

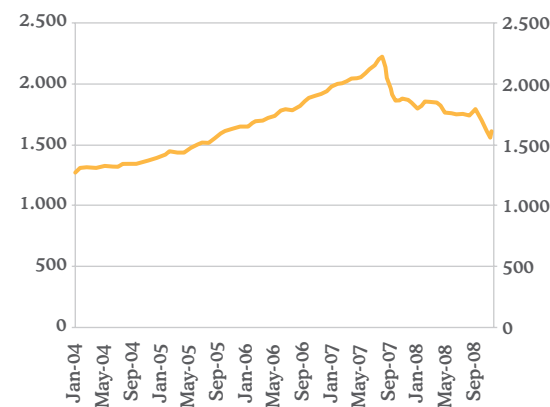


Table 2.1. Spain, GDP breakdown

Y/Y rates	1Q07	2Q07	3Q07	4Q07	1Q08	2Q08	3Q08	4Q08	1Q09	2Q09	3Q09	4Q09	2006	2007	2008	2009
Household consumption	3.8	4.1	3.0	2.9	2.2	1.2	0.8	0.1	-0.5	-1.0	-0.4	0.1	3.9	3.4	1.1	-0.5
Public sector consumption	5.3	5.0	4.8	4.4	3.6	3.8	3.8	4.0	3.7	3.3	3.8	3.2	4.6	4.9	3.8	3.5
FBCF	6.6	5.8	4.6	4.5	2.5	-0.2	-4.0	-6.3	-9.2	-10.3	-9.5	-7.3	7.1	5.3	-2.0	-9.1
Equipment and other	9.1	8.4	6.7	6.7	5.5	2.7	-1.9	-4.4	-7.0	-9.7	-9.8	-7.4	9.0	7.7	0.5	-8.5
Construction	5.1	4.2	3.3	2.9	0.3	-2.4	-5.9	-8.0	-11.3	-10.8	-9.2	-7.2	5.9	3.8	-4.0	-9.6
Housing	5.3	4.2	3.2	2.5	-1.1	-6.3	-13.5	-17.0	-22.1	-22.1	-20.4	-18.0	6.0	3.8	-9.5	-20.7
Rest	4.9	4.1	3.3	3.4	1.9	1.9	1.0	0.3	-1.5	-1.3	-0.4	0.9	5.7	3.9	1.3	-0.6
<b>National demand (*)</b>	<b>5.1</b>	<b>4.9</b>	<b>3.9</b>	<b>3.8</b>	<b>2.8</b>	<b>1.5</b>	<b>0.0</b>	<b>-1.1</b>	<b>-2.4</b>	<b>-3.0</b>	<b>-2.2</b>	<b>-1.4</b>	<b>5.3</b>	<b>4.4</b>	<b>0.8</b>	<b>-2.2</b>
Exports	3.3	3.9	8.2	4.0	4.3	4.1	2.7	1.2	-1.0	-2.2	-2.1	-1.2	6.7	4.9	3.1	-1.6
Imports	6.1	6.2	7.6	4.9	4.1	2.3	-0.2	-1.7	-4.5	-6.2	-4.3	-2.3	10.3	6.2	1.1	-4.3
<b>External balance (*)</b>	<b>-1.1</b>	<b>-1.0</b>	<b>-0.3</b>	<b>-0.5</b>	<b>-0.2</b>	<b>0.3</b>	<b>0.9</b>	<b>1.1</b>	<b>1.5</b>	<b>1.8</b>	<b>1.1</b>	<b>0.6</b>	<b>-1.5</b>	<b>-0.8</b>	<b>0.5</b>	<b>1.3</b>
<b>GDP</b>	<b>4.0</b>	<b>3.9</b>	<b>3.6</b>	<b>3.3</b>	<b>2.6</b>	<b>1.8</b>	<b>0.9</b>	<b>0.0</b>	<b>-0.8</b>	<b>-1.2</b>	<b>-1.1</b>	<b>-0.8</b>	<b>3.9</b>	<b>3.7</b>	<b>1.3</b>	<b>-1.0</b>
<b>quarterly rate</b>	<b>1.0</b>	<b>1.0</b>	<b>0.6</b>	<b>0.6</b>	<b>0.3</b>	<b>0.1</b>	<b>-0.2</b>	<b>-0.3</b>	<b>-0.5</b>	<b>-0.2</b>	<b>-0.2</b>	<b>0.0</b>				
<b>Addendum</b>																
<b>GDP without housing investment</b>	3.8	3.8	3.6	3.3	3.0	2.7	2.1	1.4	0.9	0.4	0.2	0.3	3.4	3.6	2.3	0.5
<b>GDP without construction</b>	3.7	3.8	3.6	3.3	3.1	2.7	2.2	1.5	1.1	0.6	0.3	0.3	3.2	3.6	2.4	0.6
<b>Total employment (LFS)</b>	3.4	3.4	3.1	2.4	1.7	0.3	-0.8	-1.9	-2.6	-3.1	-3.6	-3.8	4.1	3.1	-0.2	-3.2
<b>of which, in construction</b>	9.4	7.6	4.9	2.7	-1.7	-7.9	-13.0	-14.7	-15.6	-16.4	-17.3	-17.3	7.9	6.1	-9.4	-16.6
<b>in rest of sectors</b>	2.6	2.8	2.8	2.3	2.2	1.5	1.1	0.0	-0.7	-1.2	-1.8	-2.0	3.5	2.6	1.2	-1.4
<b>Total employment (Nat. Account)</b>	3.2	3.2	2.8	2.2	1.4	0.4	-0.9	-1.8	-2.3	-2.6	-3.0	-3.1	3.2	2.9	-0.2	-2.7
<b>Unemployment rate (% Active Pop.)</b>	8.5	8.0	8.0	8.6	9.6	10.4	11.3	12.6	13.9	14.9	15.8	16.8	8.5	8.3	11.0	15.4

(\*) contributions to growth  
Source: INE and BBVA forecast

## 2. From financial crisis to adjustment in the real economy

The worsening of the financial crisis in the past months is beginning to have a significant impact on the real economy. The deterioration of financing conditions increases the possibility of a credit crunch in 2009, whose intensity will, in turn, influence the length and severity of the recession into which the Spanish economy has entered at the end of 2008. Nonetheless, the worsening of the economic crisis has also led central banks and governments to adopt certain measures, thereby eliminating the risk of a systemic crisis and possibly facilitating the normalisation of credit markets in the medium term. The success of the measures already taken or the implementation of new initiatives limits the reach of the expected decline in growth. In addition, the change in monetary policy expectations, prompted in part by falling energy prices, signals an element of support in the cyclical downturn.

### The financial crisis is spreading to previously unaffected markets and countries.

In the three months since the last edition of this publication, the world economy has undergone an intense upheaval without any clear precedent in recent history. The catalyst for this upheaval towards another phase in the financial crisis which began in the summer of 2007 was the bankruptcy of the North American investment bank, Lehman Brothers, in September, which threatened to spark a systemic crisis and fuelled an increasing lack of confidence in the solvency of the global financial system.

As a result, the global economy has gone from experiencing some significant difficulties in institutional credit markets (such as commercial paper) to these markets being totally frozen, which

caused additional tightening in the interbank markets, even rendering liquidity injections by the central banks inefficient, along with those financial institutions most dependant on them.

As a result of all this, there has been an across-the-board deterioration in financial indicators, as seen in the attached Table: with increasing credit risk premiums and interbank liquidity, in both the short and long segments, declines in government bond yields and falls in the equity markets. In addition, flows towards government bonds and the US dollar are intensifying, causing the USD to appreciate significantly against most other currencies. Finally, the financial crisis is spreading and has touched not only the US and the EU, but also some emerging markets which had previously been unaffected but are now beginning to show signs of being dragged down, with declines in their currencies and withdrawals of investments. Financing problems have ultimately spread from the financial sector to the corporate sector, which has not only been affected by the credit crunch, but is also threatened by an increase in non-banking financing spreads.

### The global financial system is under enormous strain.

This financial situation accelerated the difficulties that part of the global banking system was already experiencing. Companies facing financing difficulties and with losses stemming from holding questionable and defaulting assets was increasing on both sides of the Atlantic. All things considered, the impact on the banking system was a relatively expected outcome in the situation, with institutional credit markets shutting down, low growth in household financial assets (higher unemployment rates and lower household income) and an increase in non-performing loan provisions for higher defaults. This required some countries to orchestrate the use of public funds to rescue financial institutions.

The financial system in Spain has demonstrated its strength in this adverse environment, since it has neither generated nor acquired difficult-to-value financial products, and has maintained its prudent risk management policy determined by a diversified business model of universal banking and a strict regulatory framework.

### The worsening of the financial crisis has also accelerated decision-making. This will not prevent the decline in GDP, but its success in normalising the credit markets will determine the severity and duration of this decline.

From its onset, authorities have been using different measures to confront the financial and economic crisis. Faced with the first signs of an impact on the real economy, some governments reacted with classical fiscal stimulus policies which, in the USA or Spain, have been substantial. Monetary policy measures were also employed in the initial phases of the financial crisis, although with differing intensity in Europe and the US (more decisively in the USA), with drastic interest rate cuts<sup>1</sup> and gradually increasing liquidity injections, extending to institutions not traditionally beneficiaries of liquidity from central banks. Progressively, liquidity injections included longer-term auctions and more recently, the ECB started a program to supply unlimited liquidity at a fixed rate while market conditions remain extreme. It also substantially reduced the collateral requirements to participate in liquidity auctions.

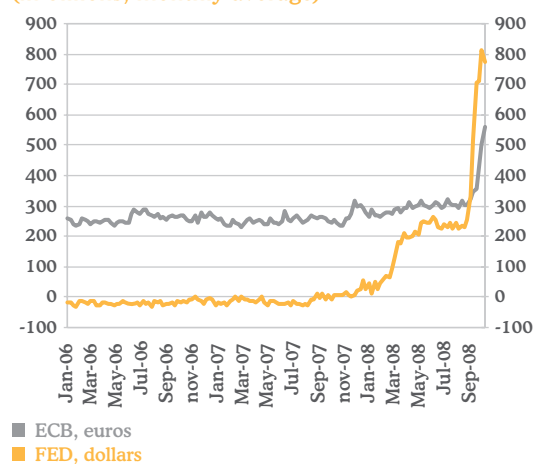
<sup>1</sup> Initially in Europe, measures were limited to a delay in rate increases, since inflation expectations were higher than ECB targets.

Table 2.2. Financial variables\*

	Level	Basis points change since...		
		Intensification of crisis (12-Sep.)	Previous Spain Watch (Jul-08)	Beginning of crisis (Jul-07)
<b>Interbank rates</b>				
3M Euribor	4.47	-48	-49	21
12M Euribor	4.59	-74	-77	5
<b>Liquidity squeeze</b>				
EU: OIS-spread 12M	213	102	118	205
Spain: Ted-spread 12M	213	111	118	197
<b>Country risk: 5y spread between Spain and Germany</b>				
Sovereign	48	23	30	39
Covered bonds	42	12	11	32

Source: Bloomberg  
\* All figures are in bps except the Euribor

Chart 2.3.  
ECB vs. Federal Reserve:  
Net lending to banks\*  
(in billions, monthly average)



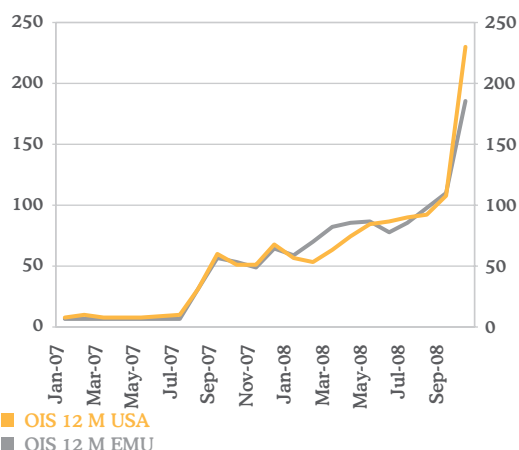
Source: BBVA, Federal Reserve and ECB. \* FED: Agreements to repurchase securities + loans to banks + TAF + AIG credit line + lending to monetary funds minus lending to Federal Reserve Banks. ECB: loans to lending institutions in the euro zone related to monetary policy minus deposits held by lending institutions in the euro zone related to monetary policy operations.

Chart 2.4.  
12M Euribor



Source: Datastream and BBVA ERD

Chart 2.5.  
USA vs. EU: Interbank liquidity tension indicator: 12M LIBOR - OIS spread



Source: BBVA ERD and Bloomberg

However, solutions based solely on liquidity injections from central banks have turned out to be inadequate to date, since their impact is strictly short term. In the current environment of extreme lack of confidence, the effectiveness of these injections in distributing liquidity via the financial system to the end credit market is limited. Central bank loans are relatively short-term instruments. As such, given the existing pressure on the interbank market, these liquidity injections have had a limited impact on interest rates, as shown in the attached Chart which illustrates the performance of the Euribor. In these conditions, the allocation of liquidity by central banks is not sufficient to guarantee the flow of credit to families and businesses, the ultimate goal if a significant impact on the real economy is to be avoided.

More recently, there have been numerous changes in monetary policy forecasts. Proof that US and European economies are on their way to a recession and the moderation in commodity prices, have fostered a significant easing of monetary policy expectations, which has led to coordinated decreases in official interest rates of 100 pp in the Euro zone (to 3.25%) and in the US (to 1%) since September. Albeit gradually, interest rate cuts have been reflected in decreases in interbank rates, and it is clear that financial pressure will remain exceptionally high, due to both the current environment and monetary policy expectations. This is reflected in the OIS spread, which estimates the availability of funds in the markets (see Chart attached).

Nevertheless, the real change, as far as measures taken to face the financial crisis are concerned, has come from the governments, who have already drawn up plans in coordination with other central banks to intervene in the financial system. Although measures differ notably from country to country<sup>2</sup>, and in fact have been gradually modified, overall, they address some general goals: 1) to eliminate uncertainty surrounding the possibility of systemic risk; 2) to bolster confidence in the system by increasing guarantees on deposits; 3) to provide short-term liquidity and to re-establish longer-term financing mechanisms through the purchase of bank assets and public guarantees for credit/debt. Some governments have adopted measures to guarantee the solvency of their financial systems via the recapitalisation of banks with the weakest capital positions.

Collectively, these plans may help in returning financial markets to normal and could shore up the system more rapidly, although probably not immediately. However, uncertainties surrounding the implementation of the measures announced still exist. Even so, these actions must be viewed positively as they have served to stave off systemic risk, and can help solve the current difficulties that banking institutions are facing to obtain medium and long term financing, and in turn, provide the stimulus to grant credit to other sectors of the economy.

**The availability of credit is one factor that will influence the severity of the decline in Spanish growth.**

Credit is the connection between the financial crisis underway and the real economy. As can be observed in the attached Chart, growth

<sup>2</sup> For an evaluation of the plan adopted by the Spanish Government under the Ecofin guidelines, see our Observatorio Económico from 9 October: "España adopta medidas preventivas para hacer frente a la crisis financiera internacional" (Spain adopts preventative measures to confront the international financial crisis) available at [http://serviciodeestudios.bbva.com/TLBB/fbin/EEUES\\_081009\\_observatorioeconomico\\_106\\_tcm268-174236.pdf](http://serviciodeestudios.bbva.com/TLBB/fbin/EEUES_081009_observatorioeconomico_106_tcm268-174236.pdf)



in consumer and business loans in Spain has been correcting significantly from the extraordinary trend seen during the years of economic expansion, low interest rates and abundant international liquidity. The credit crisis currently underway is closely linked to demand factors such as the deterioration in forecasts for activity, business and household employment, on top of rising market interest rates. In fact, according to the Bank of Spain Lending Survey (LS), financial market tightening has made the criteria for granting loans more stringent (more so to large businesses than to smaller ones or households). But it is also true that this change in loan approval criteria does not appear to be, in general terms, a reflection of any genuine incapacity to grant credit, but is rather associated with the deterioration of the cycle. According to the LS, an entity's liquidity conditions, or capacity to access financing, are less restrictive with regard to their capacity to grant loans to companies than they were in the period before the survey.

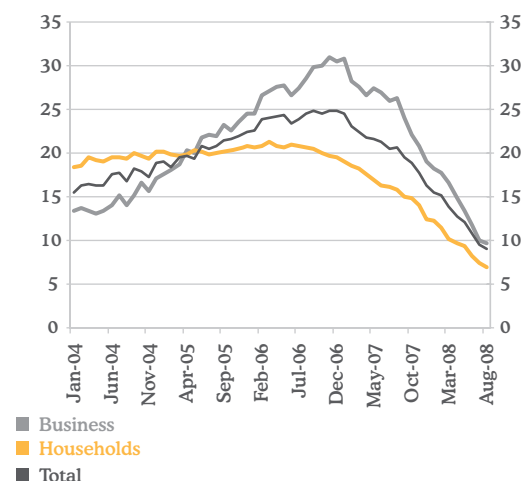
Overall, the persisting difficulty in accessing financing markets is increasing the risk of a credit crunch in 2009. This is already evident on a global institutional level and could further deteriorate credit growth. If this situation does develop, the plans adopted in Spain could smooth its effects or could even cause credit to gradually flow more naturally towards consumers and businesses, limiting the negative consequences on activity and employment. The measures adopted will probably not be sufficient to prevent a recession, but they will moderate its severity and bring the retail credit market back to normal sooner.

**The Spanish economy will adjust more rapidly in the last few months of 2008, especially in terms of consumption and non-residential investment. Industrial activity is slowing at approximately the same rate as construction.**

In this adverse global environment, the Spanish economy is entering a sharper phase of adjustment, as reflected by economic indicators in the second half of 2008. As a whole, household consumption indicators have been building up strong declines in line with the deterioration in fundamentals: job destruction, a decrease in the financial and property wealth components, and interest rates that did not begin to head south until the fourth quarter. On the other hand, housing activity indicators have been worse than expected which, in an environment where available household income is falling and financing remains difficult in the sector, leads us to revise new home starts and residential investment expectations downwards for 2009. Non-residential investment has declined further than expected in the second half of 2008. This component of GDP was fairly buoyant until mid-2008, but all new data released signal that the downturn will be sharp, as a result of the decline in activity and outlook for corporate earnings and the previously-mentioned tightening financial conditions.

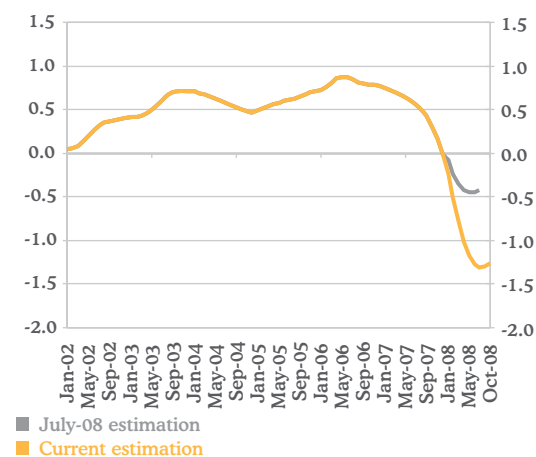
On a more positive note, based on data up to August, the Spanish economy continues to benefit from an unexpectedly strong export market. Especially worthy of mention is the strength in exports to countries outside the EU. Even exports to Europe have held at relatively robust levels, more so if we bear in mind the contraction that is underway in the Euro zone, the main immediate destination for Spanish exports. This, combined with the decrease in imports (in

Chart 2.6.  
Spain, credit growth  
(Annual growth rate)



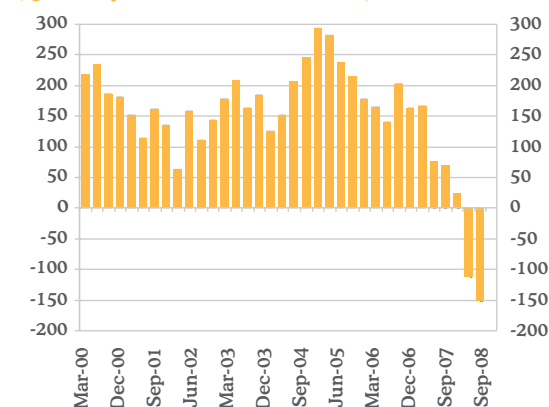
Source: BBVA ERD from Bank of Spain

Chart 2.7.  
Spain, IA-BBVA activity indicator  
(Variations with respect to the trend)



Source: BBVA ERD

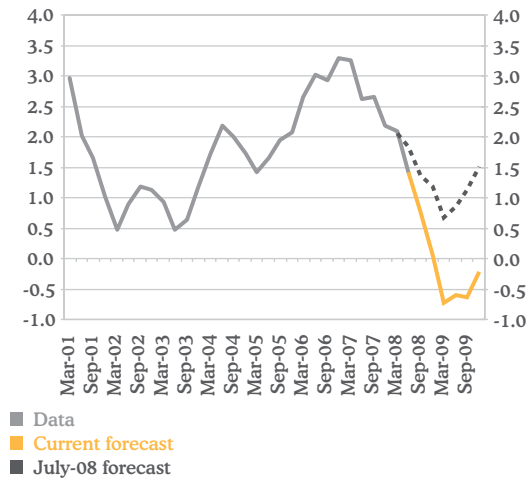
Chart 2.8.  
Spain, employment variation seasonally adjusted  
(Quarterly variation in thousands)



Source: INE and BBVA ERD

Chart 2.9.

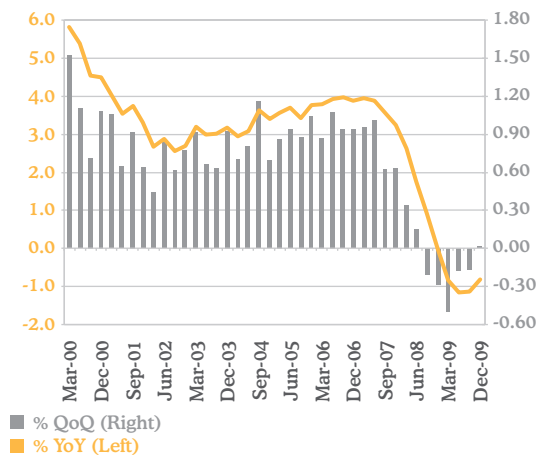
### EU economic growth (% YoY)



Source: Eurostat and BBVA ERD

Chart 2.10.

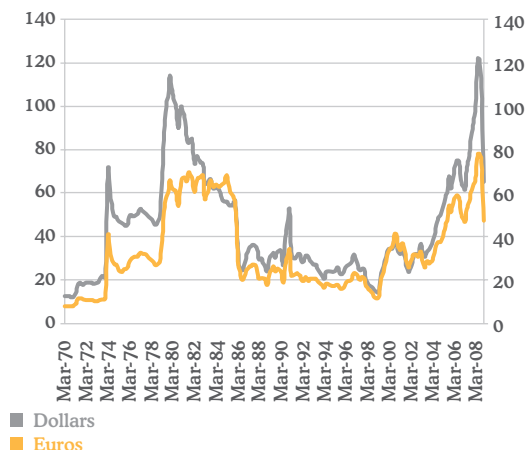
### Spain, GDP growth



Source: INE and BBVA ERD

Chart 2.11.

### Oil price (in constant 2008 dollars and euros)



Source: Datastream and BBVA ERD

terms of both value and volumes) should put a floor on the impact on GDP caused by the decline in domestic demand.

On the activity front, the most significant aspect is the rapid deterioration in industrial activity. Since mid-2008 this has been largely in line with the rate of decline seen in the construction sector, which has registered a more marked adjustment.

Overall, the Spanish economy is estimated to have contracted by 0.2% in the third quarter of 2008. On a year on year basis, the economy has slowed to 0.9% from 1.8% the previous quarter. At the closing date of this report, information on the fourth quarter economic situation is still relatively scarce, but figures that have been released up to this point signal further deterioration, consistent with our estimate of approximately a 0.3% quarterly decline, which would signal stagnation in year-on-year terms. 2008 is expected to end with average annual growth of 1.3%, precisely within the lower range of the forecasts presented in the previous edition of Spain Watch.

### The change in the global scenario is impacting the Spanish economy on several fronts; external demand and credit restrictions are having a negative effect...

The recession Spain will have entered into the second half of 2008 is set to continue well into 2009, and as a result, will cause GDP to fall by an average of 1.0%. This is due to the impact of the global scenario on the Spanish economy. In short, the downwards revision of our growth forecast for 2009 (-1.5bp) is a result of deterioration on several fronts. First, global economic weaknesses will curb the Spanish economy's export capacity and lead to less favourable conditions for capital expenditure. Thus, in 2009, both components will register declines. Second, less access to credit will affect both business investment and the financing of consumer and housing expenses.

### ...but the current decline in energy prices and the even more drastic interest rate cuts, will provide certain support for income and spending in the Spanish economy.

The new scenario also includes elements of a positive change and support for the Spanish economy. In our last Spain Watch report, we highlighted Spain's particular vulnerability to the increase in oil prices, and stated that when this trend reverses, it will become a support. Last July, oil prices reached historic highs, unseen even in the oil shocks of the 70s. Since then, there has been a change in trend, with prices coming more into line with our scenario. Although oil prices are expected to remain high for some time (our current outlook calls for an average price of USD74.3 in 2009), available income will probably not shrink like it did in 2008. The moderation in oil prices has caused inflation to fall significantly all over the world. In Spain, inflation has dropped 1.7 percentage points in only 3 months, and our forecasts call for a rate of below 3% in December and 2.3% on average in 2009.

The forecast for relatively stable inflation in the Euro zone, along with weakness in European growth, has led to dramatic changes in monetary policy forecasts for the region. In the last month and a half, there have been 2 cuts of 100 basis points (to 3.25%) and further reductions are expected until the rate reaches 1.5% in the first half

of 2009. As a result, current forecasts point to much lower interest rates than they did 3 months ago. An economy like Spain's, with higher corporate and household debt levels and a higher proportion of this debt bearing variable rates, should benefit from these cuts more than other areas of the Euro zone.

The Spanish economy will be further stimulated by the real exchange rate. Since last July the Euro has depreciated substantially against the Dollar, a process that should continue considering the expectations of further rate cuts in the Euro zone. This will offset the decline in exports caused by weak European economic growth.

**Although the decline in 2009 cannot be avoided, additional measures can limit the damage.**

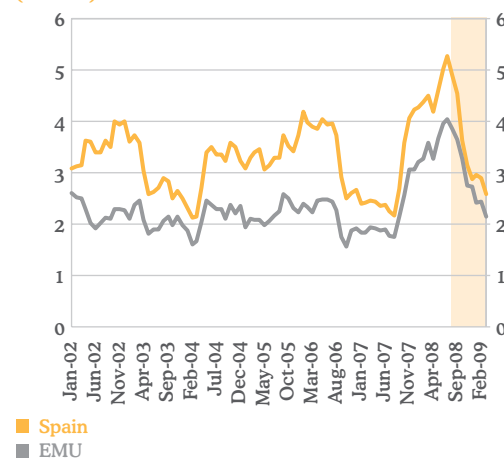
All these factors will lead the Spanish economy first into a period of recession and then, at the end of 2009, relative stagnation. The decline in GDP should be reflected in the far-reaching deterioration of the labour market, which will be shaped by 2 factors: 1) active population trends (although we are in the midst of a cycle contraction, the active population is expanding at rates more consistent with an expansion - see Box 1), and 2) job creation should perform in line with the adjustment affecting the Spanish economy, which according to the LFS will destroy more than 600 thousand jobs. Both factors combined will cause the unemployment rate to increase to an annual average of 15.4%, from the 11.0% forecast for 2008.

In conclusion, it is difficult to predict when the financial crisis will end or what effect government intervention will have. Economic growth in 2009 will depend on the effectiveness of the measures adopted. GDP growth is set to be close to zero (-0.1%) if the global crisis is resolved relatively quickly, but will be approximately -1.5% if the financial problems worsen, the deterioration in external demand is more far-reaching than expected, and if the measures taken by the government do not have the desired effect of reviving the credit markets.

Chart 2.12.

**Inflation**

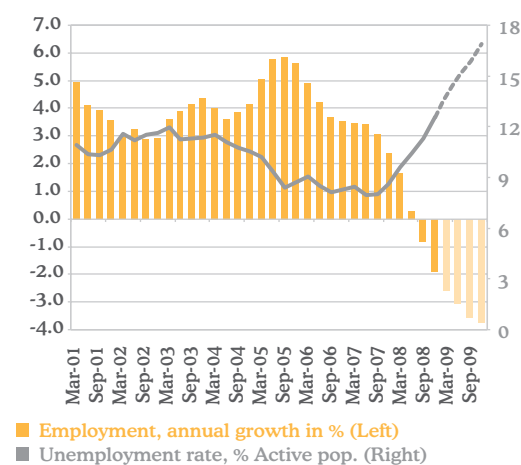
(% YoY)



Source: BBVA ERD

Chart 2.13.

**Employment and unemployment rate**



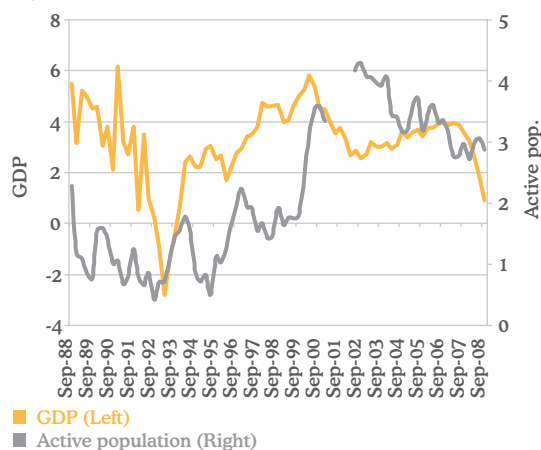
Source: INE and BBVA ERD

Note: 2005 bias derived from methodology change

## Box 1: Drivers of active population trends in Spain

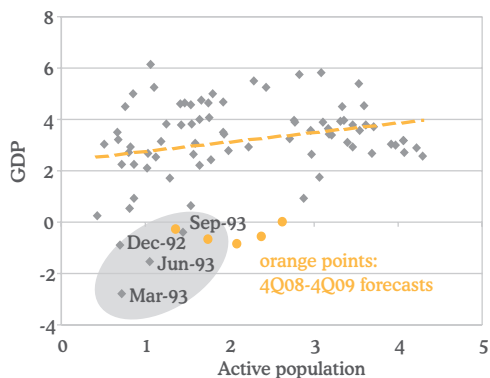
One of the aspects that distinguish the current economic situation from previous episodes of slowdown in Spanish economic growth is the dynamism of active population trends. As shown in Charts 1 and 2, if there is in fact a positive correlation between economic growth and changes in the active population, this correlation, in both contemporary and extemporary terms, is weak. Specifically, if we look at the economic recession at the beginning of the 90s, we can see that labour force growth slowed down in the initial quarters, then proceeded to return to levels seen prior to the start of the recession phase. However, in the current cycle, growth in the active population is not slowing: since the start of 2007, labour force trend growth in the Spanish labour market has accelerated slightly.

Chart 1.  
GDP and active population.  
(% YoY)



Source: INE and BBVA ERD.  
(2001: change in definition of unemployment)

Chart 2.  
GDP and active population.  
(% YoY from 2Q 1988 to 3Q 2008)



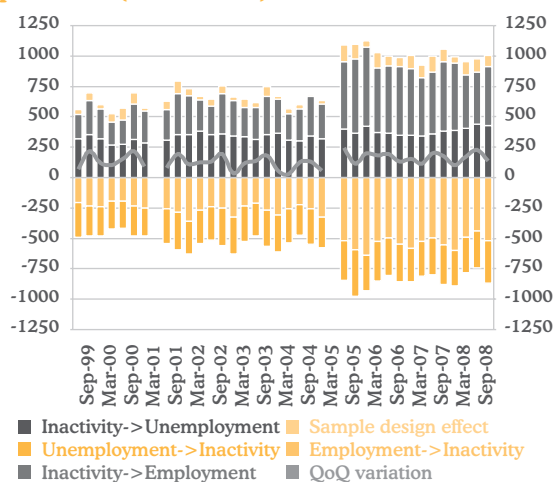
Source: INE and BBVA ERD.

The purpose of this section is to analyse the main drivers of the active population recent trends. To do this, we will examine the changes that have taken place between 2005 and 2008 in the inflows and outflows into the labour market. As shown below, **the recent growth in the active population is explained by the significant increase in the propensity of the working age population to participate in the labour market**, which is due to the decrease in the probability of withdrawing from the labour market, from both employment and unemployment, and to the increase in the transition probability from unemployment to inactivity. **Until now, there is no evidence to suggest a discouragement effect on the population arising from the slowdown in economic activity and employment.**

**The recent growth in the active population is explained by: (1) the probability of labour market withdrawal, after a spell of employment or unemployment, is lower and (2) the transition probability from inactivity to unemployment is higher.**

The active population can grow due to an increase in the inflow to employment or unemployment from inactivity, or as a result of lower outflows to inactivity, or a combination of the two effects<sup>2</sup>. Chart 3 shows the breakdown of the quarterly change in the active population. Results indicate that the recent growth in the

Chart 3.  
Breakdown of the quarterly change in the active population (thousands)



Source: INE and BBVA ERD.  
(Transitions between Dec-00 and Mar-01: affected by the change in the definition of unemployment; transitions between Dec-04 and Mar-05: affected by the LFS's change in methodology)

<sup>2</sup>A part of the increase in the active population is not explained by the difference between the entry flows from inactivity and exit flows from activity, but is instead due to the sample design used to produce the LFS. As such, given that it is a rotational survey, 1/6 of the sample is renewed each quarter. In addition, attrition in LFS requires that the missing observations be substituted by other similar ones to preserve representativeness. However, this design effect has traditionally contributed positively to active population growth. Despite the fact that the design effect is not examined in this study, note that the correlation between the quarterly variations observed in the active population and that explained by the inflows and outflows of the labour market is 0.95.

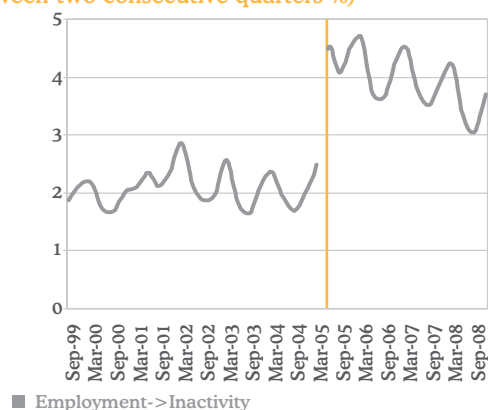
<sup>1</sup>We thank Cristina Fernández and Rafael Doménech for their comments and suggestions.

active population is due to: (i) the decreasing numbers of working and unemployed persons withdrawing from the labour market, and (ii) the increase in members of the inactive population transitioning to unemployment.

With the objective of analysing the main drivers of each of the labour flows responsible for the increase in the active population, we must first look at these in relative terms. Charts 4, 5, and 6 show the trend in transition probabilities that explains the changes seen in the active population. While the probabilities of transitioning from activity to inactivity have been showing a downward trend since 2005, the transition from inactivity to unemployment has been increasing slightly since the beginning of 2007, which is offset by the lower probability of accessing activity from inactivity.

Chart 4.

**Flow from employment to inactivity**  
(Transition probability from employment to inactivity between two consecutive quarters %)

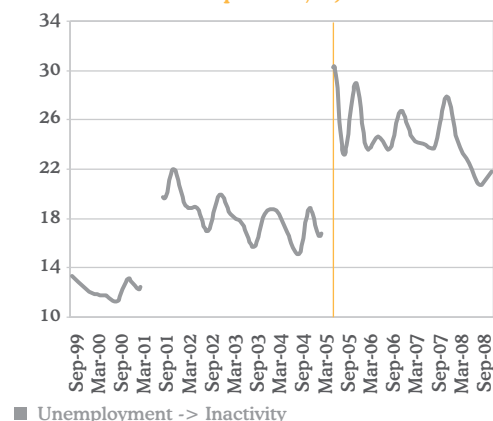


Source: BBVA ERD

(Transitions between Dec-00 and Mar-01: affected by the change in the definition of unemployment; transitions between Dec-04 and Mar-05: affected by the LFS's change in methodology)

Chart 5.

**Flow from unemployment to inactivity**  
(Transition probability from unemployment to inactivity between two consecutive quarters, %)

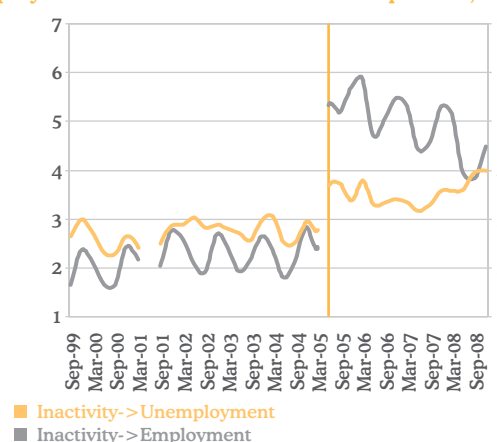


Source: BBVA ERD

(Transitions between Dec-00 and Mar-01: affected by the change in the definition of unemployment; transitions between Dec-04 and Mar-05: affected by the LFS's change in methodology)

Chart 6.

**Flows from inactivity**  
(Transition probabilities from inactivity to employment/unemployment between two consecutive quarters, %)



Source: BBVA ERD

(Transitions between Dec-00 and Mar-01: affected by the change in the definition of unemployment; transitions between Dec-04 and Mar-05: affected by the LFS's change in methodology)

**The main reason behind the recent changes in transition probabilities that shape active population growth is not so much a change in the composition of the Spanish population, but rather a significant increase in its propensity to participate in the labour market .**

Both the scope of the transition probabilities responsible for developments in the active population, and the changes seen over the years are determined by the structure of the population involved in each transition at any given time. Hence, if between two periods the weight of any one population group grows, showing a higher propensity to participate in the labour market (for example, young foreign men), the probability of transitioning to activity increases even though the propensity of each group to participate does not change. Furthermore, although the breakdown of the population is unchanged, the probability of transition may vary when the propensity of the population groups responsible for the transition to participate in the labour market changes.

We use a shift-share analysis to distinguish which part of the change in each transition probability is due to the variation in the structure of the population and which part comes from the change in the propensity of each group to participate. This methodology breaks down the difference of each transition probability between two periods into three components<sup>3</sup>:

1. The first quantifies the change in each respective transition probability caused by the variation in the structure of the population when the propensity of each population group

<sup>3</sup>In the section Annex you can consult the breakdown of the changes in each of the transition probabilities analysed.

to participate remains constant. As such, this component (the **composition effect**) is the purely demographic component of the variation in each transition probability.

- The second component indicates the degree of variation in the transition probability analysed when only the propensity of each population group to participate in the labour market changes, but not their relative (population) sizes. This component is called the **discouragement effect** and measures the variation in probability, exempt from demographic changes.
- The third is the **interaction** between the two previous points and registers the combined effect of the changes in the population structure and the propensity to participate in the labour market.

Hence, before breaking down the transition probabilities whose change explains the growth in the active population, we need to know which variables drive each of the transition probabilities. To that end, three discrete models are estimated, one for each of the transitions analysed. In each of these, the dependent variable<sup>4</sup> is a function of a group of socio-demographic variables, regional dummy variables (Comunidades Autónomas) and the unemployment rate in the quarters of origin and destination. The results of the estimates indicate that gender, age, level of education, nationality and the relationship with the Servicios Públicos de Empleo (Public Employment Services), PES, constitute the common subgroup of independent variables which best explains the developments in the three transition probabilities analysed<sup>5</sup>.

The five previously listed variables (gender, age, level of education, nationality and relationship with the PES) are used to create the population subgroups whose structure and propensity to participate are analysed. For that purpose, age is divided into three intervals (16-34, 35-54 and 55 and older), education in three levels (primary or less, secondary, and university), and the relationship with the SPE into two groups (individuals neither registered nor receiving benefits vs. the rest). The response categories for the five variables results in 72 mutually-exclusive population groups.

Charts 1, 2, and 3 show the break-down of the difference between early 2005 and early 2008 of each one of the quarterly transition probabilities responsible for growth in the active population<sup>6</sup>.

<sup>4</sup>The dependant variable in each equation takes the value of 1 when the individual transitions and 0 when he does not.

<sup>5</sup>Detailed results of the estimates are available to interested readers.

<sup>6</sup>The results are qualitatively equal if instead of analysing the differences in the transition probabilities between 1Q and 2Q of 2005 and 2008, the previous quarterly transition is analysed.

Table 1.

### Change in the transition probability from employment to inactivity.

Difference between 1Q 2005->2Q 2005 and 1Q 2008-> 2Q 2008 in percentage points

	Total effect	Composition effect	Discouragement effect	Interaction
<b>Total</b>	<b>-1.08</b>	<b>-0.19</b>	<b>-0.89</b>	<b>0.00</b>
Sex				
Female	-0.61	-0.04	-0.58	0.01
Male	-0.47	-0.15	-0.31	-0.01
Age				
16-34 years old	-0.55	-0.09	-0.42	-0.05
35-54 years old	-0.23	-0.07	-0.20	0.03
55 and older	-0.30	-0.03	-0.28	0.01
Educational level				
Primary or lower	-0.48	-0.26	-0.28	0.07
Secondary	-0.53	0.08	-0.54	-0.07
University	-0.08	-0.01	-0.07	0.00
Nationality				
Foreign	-0.01	0.22	-0.17	-0.07
Spanish	-1.07	-0.41	-0.72	0.06
Relationship with the PES				
Not signed up as beneficiary and not receiving benefits	-0.30	-0.25	-0.09	0.05
Other relationship	-0.78	0.06	-0.80	-0.05

Source: BBVA ERD

Table 2.

### Change in the transition probability from unemployment to inactivity

Difference between 1Q 2005->2Q 2005 and 1Q 2008->2Q 2008 in percentage points

	Total effect	Composition effect	Discouragement effect	Interaction
<b>Total</b>	<b>-2.51</b>	<b>-0.31</b>	<b>-2.77</b>	<b>0.57</b>
Sex				
Female	-2.45	-0.41	-2.42	0.37
Male	-0.06	0.10	-0.35	0.20
Age				
16-34 years old	-0.68	-0.83	-0.22	0.37
35-54 years old	-1.86	0.43	-2.37	0.08
55 and older	0.03	0.09	-0.18	0.13
Educational level				
Primary or lower	-0.73	0.09	-1.33	0.51
Secondary	-1.30	-0.06	-1.46	0.22
University	-0.47	-0.34	0.03	-0.16
Nationality				
Foreign	1.67	1.19	0.09	0.39
Spanish	-4.18	-1.50	-2.86	0.18
Relationship with the PES				
Not signed up as beneficiary and not receiving benefits	-2.98	-0.67	-2.40	0.09
Other relationship	0.47	0.36	-0.37	0.48

Source: BBVA ERD

**Table 3.**  
**Change in the transition probability from inactivity to employment.**

Difference between 1Q 2005->2Q 2005 and 1Q 2008-> 2Q 2008 in percentage points

	Total effect	Composition effect	Discouragement effect	Interaction
<b>Total</b>	<b>1.58</b>	<b>0.78</b>	<b>0.56</b>	<b>0.23</b>
Sex				
Female	0.99	0.47	0.37	0.15
Male	0.58	0.31	0.19	0.08
Age				
16-34 years old	0.77	0.45	0.24	0.08
35-54 years old	0.66	0.27	0.23	0.16
55 and older	0.14	0.06	0.09	0.00
Educational level				
Primary or lower	0.34	0.13	0.16	0.05
Secondary	0.95	0.50	0.32	0.13
University	0.28	0.15	0.08	0.05
Nationality				
Foreign	0.69	0.38	0.15	0.16
Spanish	0.89	0.40	0.42	0.07
Relationship with the PES				
Not signed up as beneficiary and not receiving benefits	0.50	0.25	0.19	0.06
Other relationship	1.08	0.53	0.38	0.17

Source: BBVA ERD

### The lower propensity to withdraw from the labour market (discouragement effect) explains more than 82% of the decline in the probability of transition from employment to inactivity...

Beginning with the **transition probability from employment to inactivity** (Chart 1), results indicate that 82.4% of the decline is due to a lower discouragement effect, in other words, if the composition of the population groups did not change between early 2005 and early 2008, the probability of transitioning from activity to inactivity would have been reduced by 0.89 percentage points (pp) due to the decline in the propensity to withdraw from the labour market.

Although both **sexes** contributed to the decrease in the probability of withdrawing from the labour market from employment, women were mainly responsible (-0.61 pp), due to a significantly higher discouragement effect.

By **age range**, people under 35 were the cause of the decrease in the probability of entering inactivity from employment (-0.55 pp). The reason is the sharp decline in their propensity to withdraw from the active population (-0.42 pp).

The decreased probability of transition to inactivity is caused - in practically equal parts - by the change in the transition probability of employed workers with primary and secondary **education**. However, the main factors driving these decreases differ. In the case of employees with primary education or lower, the reduction in the probability of

withdrawing from the labour market is due to declines in both the composition effect (-0.26 pp) and the discouragement effect (0.28 pp).

On the other hand, the decline in the probability of workers with a secondary education transitioning to inactivity is due solely to the discouragement effect (-0.54%). In fact, if the propensity to withdraw from the labour market for each active group with secondary education remained constant at its initial value (1Q05), a change in population composition would have caused an increase of 0.08 pp in the probability of transition to inactivity from employment. The breakdown of active participants with university educations remains unchanged between the two periods analysed and propensity to withdraw from the labour market decreases by only by 0.1 pp<sup>7</sup>.

Perhaps the greatest difference is obtained when breaking down the change in the transition probability according to the **nationality** of the worker. Table 1 shows that the lower transition probability of employment to inactivity is caused entirely by its decrease among Spanish workers<sup>8</sup>. Among foreign workers, the decline in the composition effect offsets the increase in the discouragement effect. In conclusion, the transition probability from employment to inactivity decreases despite the increase in the number of active immigrants withdrawing from the labour market.

Lastly, 72.4% of the decline in the probability of transitioning to inactivity is caused by the decrease in the discouragement effect on active members signed up with an employment office as searching for a (another) job. Even if the proportion of active members actively searching for alternative employment through the **employment office** were practically unchanged in the period analysed, the propensity to withdraw from the labour market would be significantly lower.

### ..., and the entire decrease in the probability of transition to inactivity from unemployment.

As in the previous case, the decrease in the discouragement effect is the main cause of the decline in the **transition probability from unemployment to inactivity** (Table 2). The composition effect acts in the same direction but with a significantly lower impact (-0.31 pp versus -2.77 pp), while the correlation between the two effects is both positive and significant<sup>9</sup>.

<sup>7</sup>The fact that university degree holders have less of an impact on the change in the transition probability of employment to inactivity does not mean that education level is an insignificant variable in this transition. Results of the previous estimates suggest the contrary: education has a negative and increasing effect on the probability of employed people withdrawing from the labour market. While workers with a secondary education have a 2.3 pp lower chance of withdrawing from the labour market versus those with primary education or less, this figure increases to 3.7 pp in the case of workers holding a university degree.

<sup>8</sup>These results are consistent with the evidence from the estimates of the transition probability from employment to inactivity. The same results indicate that, ceteris paribus, having Spanish nationality reduces the probability of withdrawing from the labour market by 0.8%.

<sup>9</sup>A positive relationship effect may mean there are groups of unemployed persons accounting for an increasing portion of the population who have increased their probability of withdrawing from the labour market (or vice versa) and that adding these mixed effects dominate the rest.

The decline in the probability of transition to inactivity from unemployment is caused by the fall among **women** (-2.45 pp), which in turn, is due to a lower discouragement effect.

By **age range**, the main factor behind the change in transition probability is the decrease in the probability of unemployed people aged between 35 and 44 withdrawing from the labour market, despite the positive sign from the composition effect: if the propensity of unemployed people aged between 35 and 44 to become inactive had not changed between 2005 and 2008, the probability of them withdrawing from the labour market would have increased by 0.43 pp due to the change in the structure of the groups.

The breakdown of the change in the transition probability from unemployment to inactivity indicates that all the **education levels** contribute to its decline. Likewise, it is the unemployed with secondary education who contribute most (-1.30 pp) to this decrease. As in the transition from employment, the discouragement effect dominates the composition effect at low education levels. On the other hand, the decrease in university-educated workers among the pool of the unemployed explains the decline in the probability of transition to inactivity.

Again, the change in the probability of withdrawing from the labour market differs according to the unemployed person's **nationality**. Foreign workers contributed positively (1.67 pp) mainly due to the composition effect, national workers make a negative and significant contribution (-4.18 pp). Therefore, Spanish workers are the sole cause of the decline in the probability of withdrawing from the labour market from unemployment.

Unemployed workers not signed up with an **employment office** as claimants and not receiving benefits are the cause of the decrease in the probability of transition from unemployment to inactivity. This is due to both the composition effect (their weight in the total unemployed population is now 0.67 pp less), and mainly, the discouragement effect (their propensity to withdraw from the labour market is 2.40 pp lower)<sup>10</sup>.

**In contrast, the increase in the transition probability from inactivity to unemployment is mainly due to the composition effect.**

The last of these transition **probabilities** driving an increase in the active members of the population relates to people **transitioning into unemployment from inactivity**. Table 3 shows that the probability of transitioning from inactivity to unemployment has increased by 1.58 pp between the two periods analysed. Unlike the preceding transition probabilities, in which the discouragement effect overruled the composition effect, the opposite occurred. As such, only 35.7% of the

increase in the probability of transition from inactivity to unemployment is due to the discouragement effect: if the structure of the population groups had not changed between 1Q05 and 1Q08, the transition probability from inactivity to unemployment would have increased by 0.56 pp.

As with inflows to inactivity, **women** contribute most to the increase in the probability of becoming unemployed (0.99 pp). For both women and men, the composition effect is significantly higher than the discouragement effect.

By **age range**, the three groups considered contributed positively to the increase in the transition probability to unemployment. The results obtained indicate that the contribution decreased with age and did so because both the composition and discouragement effects eased off.

When the population is broken down by **education levels**<sup>11</sup>, we can see that 60.4% of the increase in the transition probability to unemployment (0.95 pp) is again caused by the increase in the probability of transition from inactivity to unemployment in the inactive population with secondary education. The remaining growth is divided between those who have at least a primary education (0.34 pp) and those with a university education (0.28 pp).

Although results show that being **Spanish** reduces the probability of transition to unemployment from inactivity by 5.1%, it is the inactive Spanish worker who most contributes to the increase in the transition probability to unemployment (0.89 pp), due to both the discouragement (0.42 pp) and composition (0.40 pp) effects. Notwithstanding, foreign workers also contribute positively to the higher probability of entering into unemployment (0.69 pp), but in this case due mainly to their growing weight in inactivity figures as a whole.

Lastly, the **relationship with the employment office** is the variable which reflects a starker divergence between population groups. As such, 68.5% of the increase in the transition probability from inactivity to unemployment (1.08 pp) can be attributed to people registered as searching for work and/or receiving some type of benefit.

**The population groups who contribute most to the changes in probability transitions that drive growth in the active population are women, people aged below 55, those with a secondary education and, mainly, those of Spanish nationality.**

In **conclusion**, the recent growth in the active population is due to the decrease in the probability of withdrawing from the labour market, from both employment and unemployment, and to the increase in the transition probability from unemployment to inactivity.

<sup>10</sup>Note that neither being registered with an employment office nor receiving benefits reduces the probability of an unemployed worker transitioning to inactivity by 5.8 pp. This is mainly because people who are employed for a short period and with little work experience search for work actively when faced with the prospect of not receiving unemployment benefit.

<sup>11</sup>The results of the estimates indicate that, ceteris paribus, the probability of becoming unemployed is reduced with each level of education reached by the inactive individual. Education does not positively affect the probability of continuing to be inactive, but rather it increases the probability of transitioning to employment.



The main explanation for these changes in transition probabilities involves the growth in the active population, but is not so much due to a change in the structure of the Spanish population, but more a result of a significant increase in each population group's propensity to become or remain a part of

the labour market. Up to now, there is no evidence of a discouragement effect stemming from the slowdown in economic activity and employment among the population, in fact, just the opposite holds true.

## Annex. Break-down of the change in transition probability between activity and inactivity through shift-share analysis.

The variable which identifies each of the  $N$  mutually-exclusive population groups (in our case, 72) is  $x$  ( $x=1, \dots, N$ ), and  $P(I^{t+1} | E^t)$  is the transition probability from employment to inactivity between quarters  $t$  and  $t+1$ .

The change in the quarterly transition probability from employment to inactivity between quarters  $t \rightarrow t+1$  and  $s \rightarrow s+1$ ,  $P(I^{s+1} | E^s) - P(I^{t+1} | E^t)$  ( $s+1 > s > t+1 > t$ ), can be broken down as follows:

$$\begin{aligned} P(I^{s+1} | E^s) - P(I^{t+1} | E^t) &= \sum_{x=1}^N \alpha_x^s P_x(I^{s+1} | E^s) - \sum_{x=1}^N \alpha_x^t P_x(I^{t+1} | E^t) \\ &= \sum_{x=1}^N \left[ \alpha_x^s - \alpha_x^t \right] P_x(I^{s+1} | E^s) \\ &\quad \text{Composition effect} \\ &\quad + \sum_{x=1}^N \alpha_x^s \left[ P_x(I^{s+1} | E^s) - P_x(I^{t+1} | E^t) \right] \\ &\quad \text{Discouragement effect} \\ &\quad + \sum_{x=1}^N \left[ \alpha_x^s - \alpha_x^t \right] \left[ P_x(I^{s+1} | E^s) - P_x(I^{t+1} | E^t) \right], \\ &\quad \text{Interaction effect} \end{aligned}$$

where  $\alpha_x^p$  represents the share of employed group  $x$  in total employment in the economy in quarter  $p$  and  $P_x(I^{s+1} | E^s)$ , and is the transition probability of group  $x$  between employment in quarter  $s$  and inactivity in quarter  $s+1$ .

Likewise, the breakdown of the change in the quarterly transition probability of unemployment to inactivity between quarters  $t \rightarrow t+1$  and  $s \rightarrow s+1$ ,  $P(I^{s+1} | D^s) - P(I^{t+1} | D^t)$  is as follows:

$$\begin{aligned} P(I^{s+1} | D^s) - P(I^{t+1} | D^t) &= \sum_{x=1}^N \beta_x^s P_x(I^{s+1} | D^s) - \sum_{x=1}^N \beta_x^t P_x(I^{t+1} | D^t) \\ &= \sum_{x=1}^N \left[ \beta_x^s - \beta_x^t \right] P_x(I^{s+1} | D^s) \\ &\quad \text{Composition effect} \\ &\quad + \sum_{x=1}^N \beta_x^s \left[ P_x(I^{s+1} | D^s) - P_x(I^{t+1} | D^t) \right] \\ &\quad \text{Discouragement effect} \\ &\quad + \sum_{x=1}^N \left[ \beta_x^s - \beta_x^t \right] \left[ P_x(I^{s+1} | D^s) - P_x(I^{t+1} | D^t) \right], \\ &\quad \text{Interaction effect} \end{aligned}$$

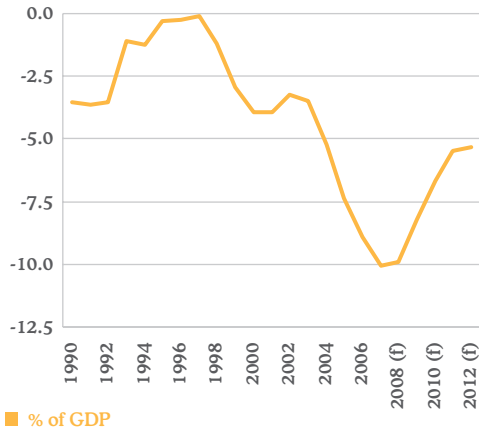
where  $\beta_x^p$  represents the participation of each group  $x$  in the total number of unemployed in quarter  $p$ .

In the quarterly transition probability of inactivity to unemployment,  $P(D^{s+1} | I^s) - P(D^{t+1} | I^t)$  the breakdown is as follows:

$$\begin{aligned} P(D^{s+1} | I^s) - P(D^{t+1} | I^t) &= \sum_{x=1}^N \gamma_x^s P_x(D^{s+1} | I^s) - \sum_{x=1}^N \gamma_x^t P_x(D^{t+1} | I^t) \\ &= \sum_{x=1}^N \left[ \gamma_x^s - \gamma_x^t \right] P_x(D^{s+1} | I^s) \\ &\quad \text{Composition effect} \\ &\quad + \sum_{x=1}^N \gamma_x^s \left[ P_x(D^{s+1} | I^s) - P_x(D^{t+1} | I^t) \right] \\ &\quad \text{Discouragement effect} \\ &\quad + \sum_{x=1}^N \left[ \gamma_x^s - \gamma_x^t \right] \left[ P_x(D^{s+1} | I^s) - P_x(D^{t+1} | I^t) \right], \\ &\quad \text{Interaction effect} \end{aligned}$$

where  $\gamma_x^p$  represents the share of each group  $x$  in inactive population in the  $p^{\text{th}}$  quarter.

Chart 3.1.  
Spain, current account balance  
as percentage of GDP



Source: BBVA ERD based on BoE data

### 3. Spain is facing the challenge of reducing its external trade deficit in an adverse financial environment.

The Spanish economy currently displays an elevated foreign funding needs, which has been growing since Spain joined the EU, as reflected in the widening of the current account deficit. The brusque change in the economic environment that began in mid-2007, with falling activity forecasts, higher financing costs and less abundant liquidity, will lead to a reduction in the Spanish economy's foreign financing needs in the upcoming years. For the first time, the Spanish economy will not have the option of adjusting the nominal exchange rate, which means that financing requirements in the new scenario will have to fall in with the decline in domestic spending and the correction in relative prices for foreign goods.

Finally, the level of adjustment in economic agents' savings and investment balances economy could turn out to be insufficient in a financial environment as tough as the current one.

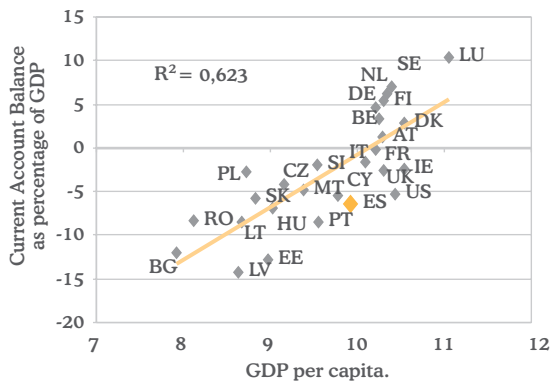
#### The Spanish economy is relatively more vulnerable to the financial crisis because of its foreign funding needs

The Spanish economy has demonstrated great vulnerability in the current global financial crisis which began in mid-2007 and which, as we have seen in the previous section of this report, impacts many aspects of the economy. A fundamental reason for this higher exposure to the effects of the financial crisis derives from the significant increase in the Spanish economy's funding needs. Although Spain has historically had a foreign trade deficit, this deteriorated quite significantly in the last growth cycle. The gap between the investments made in the Spanish economy and savings generated in the same period has been increasing, and with it, the foreign funding needs. In 1996, Spain had a small funding capacity relative to the rest of the world (c.EUR4bn). This increased to a need of EUR101.4bn by 2007, 9.6% of that year's GDP. Setting aside the capital balance, which in Spain makes a positive contribution, the changes in financing needs are driven by changes in the current account balance. This has deteriorated progressively since the end of the 1990s, particularly after 2002, to reach a deficit of EUR106bn in 2007, which represents 10.1% of GDP, almost 4 times the figure seen in 2003 (Chart 3.1)

Spain now has the second largest current account deficit in the world, second only to the USA (EUR540bn in 2007). If we compare this with the size of the economy, Spain's 10.1% is the seventh highest in the European Union, beaten only by some of the new EU members such as Lithuania, Bulgaria and Estonia and much higher than the US with 5.3%. Not only that, the pace of deterioration in the Spanish current account balance, which has increased by 6.8 percentage points of GDP since 2002, is also one of the highest in the EU-27.

If we compare the current account balance and income per capita of the EU countries and the USA, we can observe a positive and very significant correlation between the two variables. Accordingly, countries with lower income levels tend to use the deficit as a means

Chart 3.2.  
Current account balance and GDP per  
capita. EU-27 and USA  
2002-2007 average



Source: BBVA ERD

of financing convergence or transition processes with foreign savings. All in all, the dispersion is high and this argument does not completely explain the relatively higher deficit of more industrialised countries like the USA, the UK or Spain (as we can observe in Chart 3.2, it is much higher than the figures suggested by their income per capita in terms of purchasing power parity).

### The high current account deficit is a result of an intensive investment process and not a decline in the savings rate.

What is behind the elevated Spanish current account deficit? From a national accounting (Chart 3.3) perspective, the increase in the current account deficit owes more to the uninterrupted growth in the investment rate since 1996, than to the significant decline in the savings rate. Since 1996, gross savings have grown at an average rate of 7.2%, only 2 tenths of a percent below the nominal economic growth rate. However, since 1996, total investment in the economy has grown at a sharper pace of 10% annually (6% in real terms), that is, two and a half points above nominal GDP growth. As a result, savings have remained relatively constant since then, at around 21% of GDP, although declining since 2003, standing in 2007 at 21.3% of GDP, only two tenths less than in 1996. This stability in the savings rate came about because the increase in savings made by public administrations offset the decline in private savings. The weight of investment in GDP has been increasing constantly, standing at 31.1% in 2007, ten percentage points higher than in 1996.

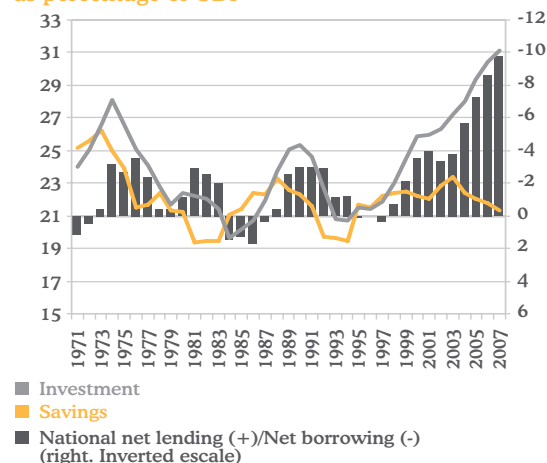
The extraordinary expansion in investment in this last decade has affected all components. Households and companies have noticeably increased their investment spend, in both housing and other construction and capital expenditure. However, investment in housing has been the most dynamic in the last decade, practically doubling to account for more than 9% of GDP in 2007, and registering an average annual growth of 14% since 1996 (8.5% for the rest of construction and 10.6% for equipment and other products). On the whole, investment spending in the Spanish economy is currently divided in practically equal parts among these three components (Chart 3.4).

### The deterioration in the current account balance has especially hit goods excluding energy and more recently, income.

The increase in the current account deficit has been a result of deterioration in all its components, a decline in the services' surplus, a transfer balance that has been negative since 2004 and above all, deterioration in the goods and income balance. Since 2006, the latter has made the largest negative contribution to the annual deterioration in the current account balance (Chart 3.5).

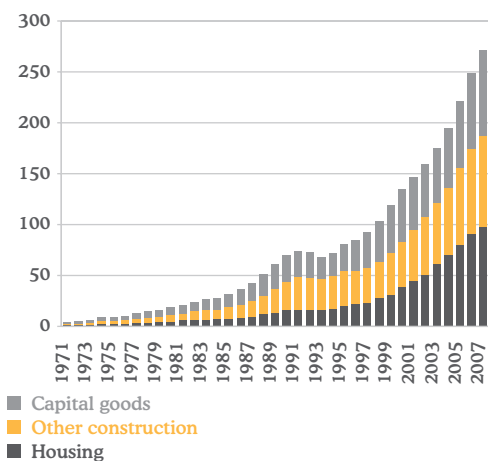
The goods imbalance increased to 8.5% of GDP in 2007, almost 6 percentage points above the figure registered in 1996. A significant part of the growth in goods imports relates to energy imports, which have tracked the increase in oil prices, as a result of the scarce price elasticity in the short term (Chart 3.6). Nonetheless, approximately 60% of the deterioration in the trade balance seen in the last few years owes to non-energy goods (Chart 3.7).

Chart 3.3.  
Saving and gross investment in Spain  
as percentage of GDP



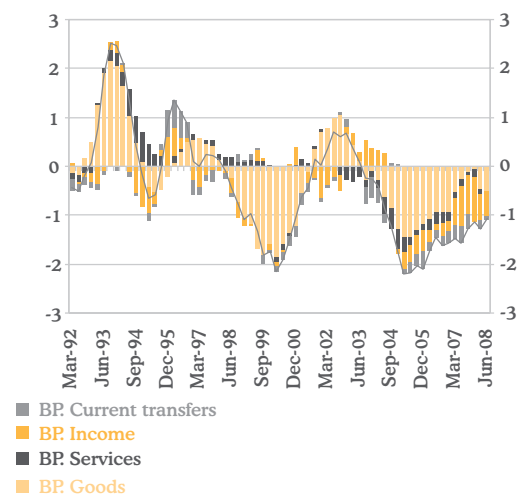
Source: BBVA ERD

Chart 3.4.  
Investment in Spain economy  
Billions of Euros



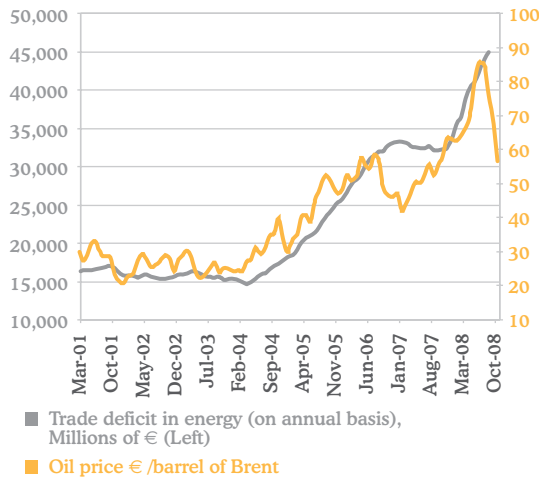
Source: Eurostat

Chart 3.5.  
Deterioration of the current account balance  
YoY difference. Percentage points of GDP



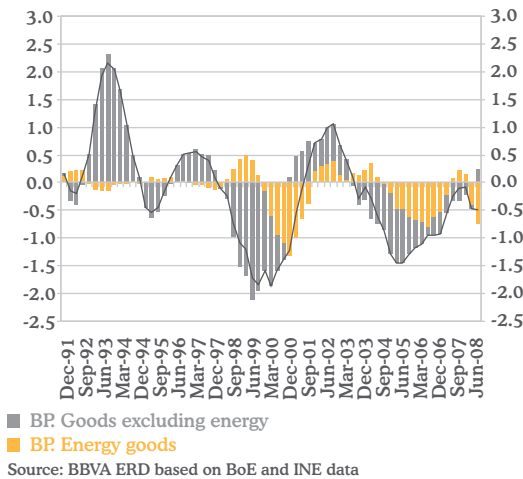
Source: BBVA ERD based on BoE data

Chart 3.6.  
Spain, energy bill



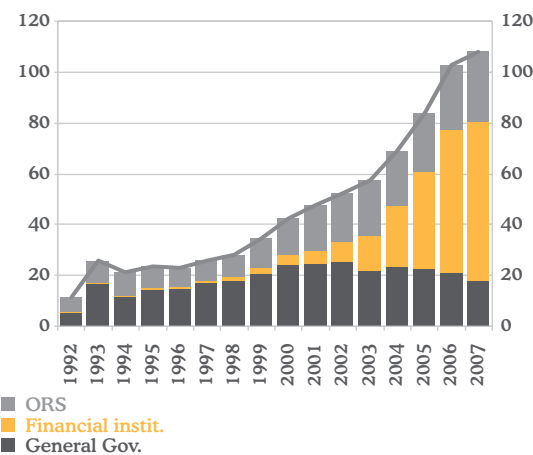
Source: BBVA ERD

Chart 3.7.  
Deterioration of balance of goods  
YoY difference. Percentage points of GDP



Source: BBVA ERD based on BoE and INE data

Chart 3.8.  
Foreign debt, in the form of securities  
other than shares and of loans  
as percentage of GDP



Source: BBVA ERD based on BoE data

The income deficit has been the main factor behind the increase in the current account deficit in the last two years, reaching 3% of GDP in 2007. This change in the income balance reflects both, the rapid growth in foreign debt levels in the Spanish economy and the rise in interest rates. The increase in the cost of financing is a result of the change in monetary policy expectations since 2005 and more recently and drastically, to the onset of the financial crisis.

By institutional sector (Chart 3.8), other resident sectors (ORS, households and non-financial corporation) and, above all, financial institutions have most increased their foreign debt levels. This increase in foreign debt, and in a context of rising interest rates, the fact that a large part of issues are indexed to short-term interest rates, explains why investment income payments are the main factor in the recent deterioration in the income balance, and, consequently, the current account balance.

### The current account deficit widened during the period of economic expansion and low interest rates which followed Spain's entry into European Monetary Union.

The above-mentioned trend in the current account deficit is the result of an exceptionally favourable period for growth in investment and consumer spending. The process of joining the monetary union gave rise to two phenomena consistent with a widening deficit. On one hand, a structural drop in interest rates, which in some years led to negative real rates (Chart 3.9), ceteris paribus, with falling interest rates prompting investment growth and fuelling consumer spending by making saving less attractive. Additionally, the period of far-reaching economic expansion which followed Spain's entry into EMU may have generated expectations that this trend would continue, further discouraging saving, and therefore, widening the gap. Falling interest rates, rising consumer spending, higher investment and a widening deficit were characteristics of the Spanish economy following EMU entry.

### The trade deficit is ultimately corrected when the economic scenario changes. In addition, Spain can no longer use exchange rates as a mechanism for adjustment.

Although there are elements that could explain the increase in the deficit, we might ask whether the severe deterioration seen in recent years is "appropriate" for Spanish economic conditions, or, in other words, whether it is consistent with its economic fundamentals. In the event that it is not appropriate, we would have to conclude that the deficit is excessive and must undergo a drastic correction in the future, stemming from an internal adjustment in either consumer spending or investment, or both. This raises an issue of vital importance at a time like the present.

Financing a high current account deficit like Spain's would not be a problem in a context of ample liquidity, lax financial conditions, an expansive economic cycle and membership in the European Monetary Union. However, it is worth asking what happens when, as now, international financial markets dry up, financing becomes more costly and terms are shortened.

In addition, the decrease in foreign financing requirements will not be able to be offset by using the traditional mechanism of adjusting nominal exchange rates. As seen in Chart 3.10, the two most important periods of current account deficit narrowing (post-1984 and post-1993), were characterised by two phenomena which are impossible in the current circumstances. First, the currency lost value, whether through depreciation or devaluation. Second, this occurred either during a growth phase underpinned by falling real interest rates (as in 1984), or just after a recession, likewise with dropping interest rates (as in 1993). Both phenomena led the current account deficit to narrow by 5.2 p.p. and of 4 p.p., respectively. In the current environment, shrinking the trade deficit will require a far-reaching internal adjustment, via lower investment and consumer spending or relative deflation, which will allow Spain to claw back some of its competitiveness vis-à-vis foreign economies.

### An intertemporal analysis of the current account model explains the recent performance of the trade deficit through growth expectations, interest rates and relative prices.

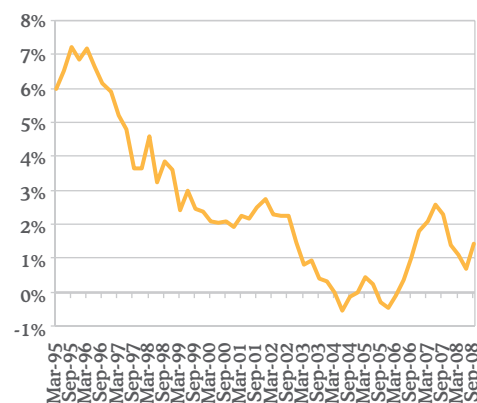
In order to analyse whether Spain's trade deficit matches its economic fundamentals, we have used an intertemporal approach to assess the current account balance<sup>1</sup>. Using this approach, the dynamics of the current account deficit reflects the optimum response by economic agents, particularly consumers, in the face of change in the economic climate. In this setting, expectation formation plays a key role. An initial mechanism acts on expectations for growth. Expectations of future higher income prompt consumers to bring forward part of their future spending, reducing the savings rate and, ceteris paribus, increasing the negative current account balance. This deficit is financed via consumers' current debt.

A second mechanism consists of expectations for real interest rates. For a small, open economy, inflation expectations which determine real interest rates are calculated using changes in relative prices vs. foreign markets. On one hand, an increase in the real interest rate as a result of a rising nominal interest rate will make current consumption more costly in terms of future consumption, meaning that agents will tend to replace their current spending with future spending. This greater savings rate improves the current account balance. On the other hand, changes in relative prices of domestic vs. foreign goods affect the current account balance because they have an intertemporal effect on agents' decisions. An increase in the price of imports vs. domestically-produced items would generate a higher real interest rate due to a drop in relative inflation, with a resulting reduction in real wealth, a drop in current consumption and, consequently, an improved current account balance.

From the above we conclude that the expectation formation for future growth, interest rates and inflation relative to foreign markets are key elements driving the performance of the current account balan-

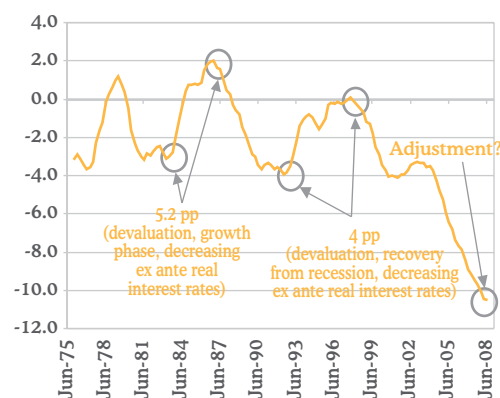
<sup>1</sup> The accompanying table provides a summary of the model's main analytical factors. See Obstfeld and Rogoff's (1996) summary of the literature on intertemporal modelling of the current account balance.

Chart 3.9.  
Real mortgage interest rate



Source: BBVA ERD

Chart 3.10.  
Spain, current account balance (% GDP)



Source: BBVA ERD

ce. One of the key aspects of this model is that a drastic change in economic agents' expectations would cause a severe adjustment in the trade deficit.

To analyse the relative importance of economic agents' expectations in determining the foreign trade deficit, we have used the approach outlined by Campa and Gavilán (2006), details of which are included in the accompanying box. Essentially, the current account balance may be defined by the following equation:

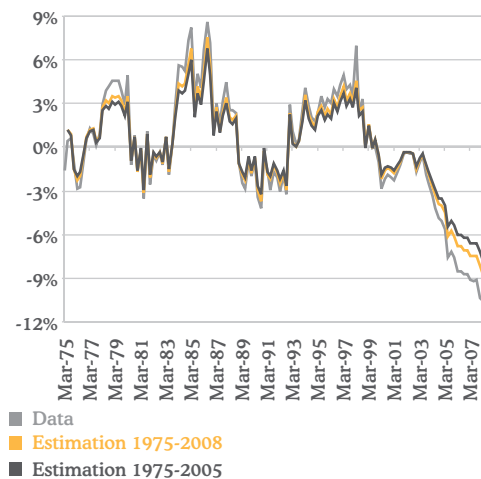
$$CA = EC + ER,$$

with CA the current account balance (specifically, the ratio of net exports to consumption). EC represents the current value of future expectations for production (net of investment and government spending). Finally, ER stands for the current value of expectations for future performance of the real interest rate, defined as the difference between the nominal three month interest rate and the growth rate of the real effective exchange rate of the Spanish economy, based on unit labour costs, giving a picture of relative inflation in Spain.

To draw up this model it is necessary to determine the expectation formation mechanism. This assumes that economic agents use a relatively unsophisticated econometric model when making their forecasts (specifically, vector autoregression). This model is calculated using quarterly data for the period 1975-2008. Estimates are carried out using two possible measures of the current account balance: the first includes the energy trade balance and the second excludes oil imports. The estimate of a deficit consistent with fundamentals allows us to quantify the foreign trade imbalance the Spanish economy currently faces.

**The non-energy trade balance has been entirely determined by expectations that, in the new environment, will encourage an adjustment of the deficit.**

Chart 3.11.  
Intertemporal Current Account Model  
Net exports/consumption (%)  
(deviation with respect to the historic average)



Source: BBVA ERD

Chart 3.11 illustrates the path in the trade balance in the sample period, as well as the trade balance consistent with the model's fundamentals and the mechanism for expectation formation. As may be seen, the model gives a relatively good explanation of past trends in the current account balance. The model can explain 90% of the variation in the trade balance. Nevertheless, it is worth noting that towards the latter end of the sample, specifically beginning in 2003, the adjustment significantly worsens. The deviation between observed and estimated values intensifies until 2005. From that year on, the deviation has remained relatively stable: the observed deficit between 2006 and 2008 is on average about 1.8 percentage points higher than that suggested by the model's fundamentals.

There are two possible explanations for this difference. First, it is possible that although the mechanism for expectation formation among economic agents is the one outlined in the model, it may be that it is not stable over time. The econometric model used here simply projects into the future historic trends in variables. Therefore, if the behaviour of the variables in recent years (characterised by significant deficit widening) is considered atypical, it would be more appropriate to estimate the model stripping out the past few years.

Chart 3.11 also illustrates the results of re-estimating the expectation formation model to exclude the final portion of the sample (specifically, the model stops after the fourth quarter of 2005). In this case, we see that the trade deficit consistent with the model is narrower than in the previous case in which we used the entire sample. In this case, the difference between the observed and estimated trade balance is on average 2.5% for the period 2005-2008.

The above exercise clearly shows that the mechanism for generating expectations among economic agents is crucial. Specifically, expectations for net output and expectations for real interest rates. Chart 3.12 illustrates the contribution over time of these two factors, from which two conclusions may be drawn. On one hand, net output plays a significant role (70% on average) in explaining the estimated behaviour in the trade deficit. Second, it is worth highlighting that in recent years the contribution of the real interest rate to the Spanish trade deficit has been significant, accounting for about half in recent quarters.

From the above analysis we conclude that an intense downward correction in expectations for net output, coupled with a spike in expectations for real interest rates, would spark a significant adjustment in the trade deficit.

Another important aspect of the model, which may assist in understanding the difference between the observed trade deficit and the deficit thrown up by the model, centres on how it is defined. Specifically, an important aspect for the Spanish economy is the impact of the energy component on the trade balance, for which consumers and companies, at least in the short term, make small intertemporal adjustments. It is therefore reasonable to assume that the model may better explain the current account balance if it excludes oil imports. Chart 3.13 illustrates the outcome of this exercise. Both when we use the entire sample and when we exclude the final portion of the sample (post-2005), we see that the intertemporal current account model provides an extremely precise explanation of current account performance. In this case, the adjustment is above 95%.

In consequence, we may conclude that the Spanish economy's non-energy deficit is fully explained by economic agents' expectations for future growth and real interest rates, while the part of the current account balance not explained by these expectations is determined by the short-term effects of oil price increases registered since early 2005.

### Correcting the trade deficit will be associated with faster growth so long as it is based on gains in competitiveness vis-à-vis other countries.

In this section we have argued that the non-energy current account deficit has been almost entirely determined by expectations for economic growth and real interest rates, while the energy component has been negatively affected in the short term by rising oil prices from 2005 to mid-2007.

Expectations for growth and interest rates have undergone significant change in recent months, which will prompt a correction in the trade deficit in coming quarters. The economic outlook for 2009 as outlined in Section 2 differs significantly from the optimistic growth expectations discussed in early 2007. As a result, it appears obvious that a more pessimistic outlook for growth will reduce the Spanish

Chart 3.12.

### Intertemporal Current Account Model Contributions (%) (1975-2005) (deviation with respect to the historic average)

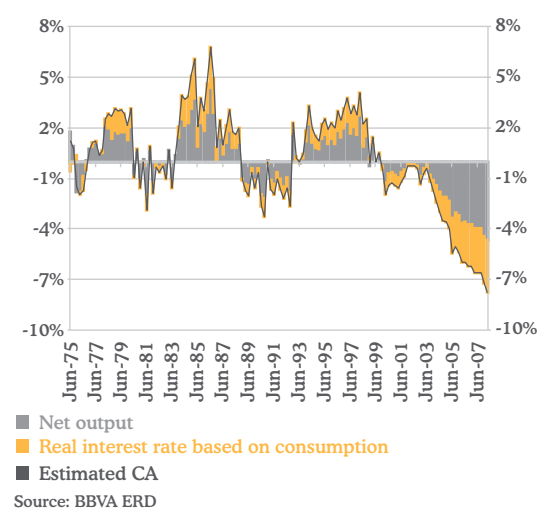
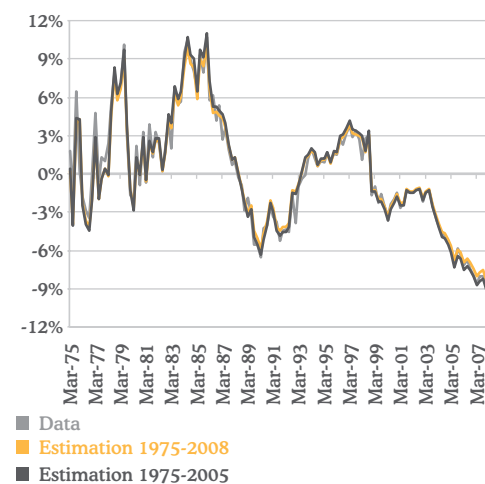


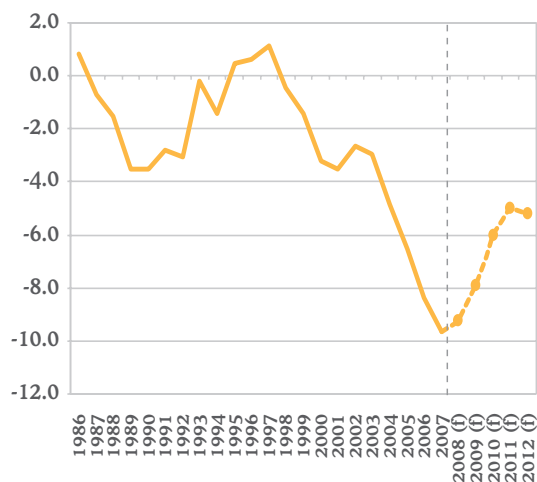
Chart 3.13.

### Intertemporal Current Account Model Net exports/consumption (%) (deviation with respect to the historic average excluding energy)



Source: BBVA ERD

Chart 3.14.  
**Net lending (+) / Net borrowing (-) of the Spanish economy**  
 As percentage of GDP



Source: BBVA ERD

economy's foreign financing requirements. However, results also indicate that in recent quarters the real interest rate has been an equally important determinant of the trade deficit. Given that the real interest rate is defined as the difference between the nominal interest rate and the gap in inflation in unit labour costs between Spain and other countries, an improvement in the Spanish economy's competitiveness would allow the adjustment in the trade deficit to be linked to accelerated economic activity, and thus, to lower growth in unemployment. Although gains in competitiveness in unit labour costs may be achieved by raising salaries more slowly than in countries with which the Spanish economy competes in international markets, they may also be achieved through growth in relative productivity. In this area, the Spanish economy as a whole has ample room for improvement compared with its competitors. The challenge lies in preventing the lion's share of the correction in the trade imbalance in coming quarters from stemming mainly from slower economic growth; to avoid this, the Spanish economy's reduction in foreign borrowing requirements must be based on enhancing its competitiveness vs. the rest of the world.

**From a medium-term standpoint, the trade deficit correction may be insufficient in a tough and complex financial environment such as the present.**

From the standpoint of savings and investment among the different economic agents, household and companies' investment in housing and capital goods respectively will slow, simultaneously boosting savings. This is the opposite of what public administrations are likely to do. They will increase their spending and reduce savings, partially offsetting the private sector's belt-tightening approach. None of this is new, occurring in previous adjustment phases such as the early 1990s.

Looking beyond performance in the next few quarters, when we apply consistency models in the medium term for agents' savings and investment balances, we see trends in the economy's foreign borrowing requirements which will be difficult to sustain in a financial environment as forbidding as the current one. Reasonable behaviour by agents amid a very moderate GDP recovery starting in 2010 implies a correction in the economy's foreign financing requirements toward ratios nearing 5% of GDP over a period of four to five years from now. Such a significant correction, comparable to that of the early 1990s but now without the lever of exchange rate adjustments, may be insufficient, as it continues to entail an increase in the accumulation of foreign financial obligations.

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## Box 2: Analytical derivation of the intertemporal current account model (ICA).

The partial equilibrium model considered by Dornbusch (1983), Bergin and Sheffrin (2000) and Campa and Gavilán (2006), among other authors, consists of a small and open economy producing two types of goods (tradable and non-tradable goods), which lends to and borrows from the rest of the world at a variable real interest rate. The representative consumer chooses the optimum consumption path by maximising the expected value of the discounted infinite sum of the utility subject to intertemporal budgetary restriction:

$$(1) \quad \begin{aligned} & \text{Max } E_0 \sum_{t=0}^{\infty} \beta^t U(C_{Tt}, C_{Nt}), \\ & \text{s.t. } Y_t - (C_{Tt} + P_t C_{Nt}) - I_t - G_t + r_t B_{t-1} = B_t - B_{t-1} \end{aligned}$$

where  $Y_t$  is production,  $C_{Tt}$  is consumption of a tradable good,  $C_{Nt}$  is consumption of a non-tradable good,  $I_t$  is investment,  $G_t$  is public spending on goods and services,  $r_t$  is the global real interest rate and  $B_t$  is the net position in foreign assets at the beginning of period  $t$ . All of the variables are measured as a function of the tradable good, thus  $P_t$  is the relative price of the non-tradable good, that is,  $P_t = P_{Nt} / P_{Tt}$ . In the ICA model, the left-hand side of the intertemporal budgetary restriction is understood to be the current account balance. Thus, a positive current account balance in period  $t$  is coupled with improvement in the net position of foreign assets, and vice versa.

The representative consumer utility function in each time period  $t$  is of the Cobb-Douglas type with regard to consumption of a tradable good and consumption of a non-tradable good:

$$(2) \quad U(C_{Tt}, C_{Nt}) = \frac{1}{1-\sigma} (C_{Tt}^\alpha C_{Nt}^{1-\alpha})^{1-\sigma},$$

where parameter  $0 < \alpha < 1$  is the proportion of total consumption used for tradable goods and parameter  $\sigma > 0$  is the inverse of elasticity of intertemporal substitution.

Resolving the problem of maximisation of the representative consumer we obtain the expression which determines the optimum trend of total consumption (see the derivation in the appendix to Bergin and Sheffrin, 2000):

$$(3) \quad E_t \Delta c_{t+1} = \gamma E_t r_{t+1}^*,$$

where  $\Delta$  is the difference operator,  $c$  is the logarithm of total consumption,  $\sigma$  is the elasticity of intertemporal substitution, and  $r^*$  is the "interest rate based on consumption" or, in other words, the weighting used in relative prices (particularly, for the global real interest rate,  $r_t$ , and for the change in relative price of the non-tradable good,  $\Delta P_t$ ). The combination of the expression (3) and the intertemporal budgetary restriction gives rise to an expression of the current account balance adjusted by the model ( $CA_t^*$ ):

$$(4) \quad -E_t \sum_{i=1}^{\infty} \beta^i [\Delta no_{t+i} - \gamma r_{t+i}^*] = CA_t^*,$$

where  $no_t \equiv \ln NO_t = \ln(Y_t - I_t - G_t)$  is the logarithm for net production, and where the current account balance adjusted by the model is defined as  $CA_t^* \equiv no_t - c_t$ .

Intuitively, expression (3) reflects one of the main characteristics of the ICA model derived from Bergin and Sheffrin (2000). In particular, the representative consumer decides to change the time trend of optimum consumption in accordance with the cost associated with debt. Meanwhile, expression (4) indicates that improvement in the current account balance would occur either because of a cut in expected net product or because of a rise in the interest rate based on consumption.

For the estimation applied to the Spanish economy in 1975-2008, the intertemporal model of the current account balance may be contrasted through the formulation of a first-order autoregressive vector, VAR(1), on the assumption that the performance of the three key variables  $\{\Delta no, CA^*, r^*\}$  is adequately represented by<sup>1</sup>

$$(5) \quad z_t \equiv \begin{bmatrix} \Delta no \\ CA^* \\ r^* \end{bmatrix}_t = \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix} \begin{bmatrix} \Delta no \\ CA^* \\ r^* \end{bmatrix}_{t-1} + \begin{bmatrix} u_{1t} \\ u_{2t} \\ u_{3t} \end{bmatrix}.$$

This representation allows us to estimate the expected future value of each key variable in each time period. In particular, using the expectation we find that  $E_t(z_{t+i}) \equiv A^i z_t$ , where  $A$  is the matrix formed by the coefficients  $a_{ij}$  of the equation (5). Using the combination of the estimate in (5) and expression (4), we obtain the current account balance adjusted by the model at each time period  $t$ .

$$(6) \quad CA_t^* = k z_t,$$

where

$$k = -(g_1 - \gamma g_2) \beta A (I - \beta A)^{-1},$$

$$g_1 = \begin{bmatrix} 1 & 0 & 0 \end{bmatrix},$$

and

$$g_2 = \begin{bmatrix} 0 & 0 & 1 \end{bmatrix}.$$

The model is estimated using quarterly data for the key variables - net product, consumption, real interest rates - for the Spanish economy in 1975-2008. The main source used to build the series is the *International Financial Statistics* (IFS) database, published by the International Monetary Fund. The definition of the variables is identical to that given in Campa and Gavilán (2006), thus the results shown in this article are comparable to previously published works. For example, the relative price of an internationally non-tradable good is obtained using the effective exchange rate, deflated by unit

<sup>1</sup> In the estimate which excludes the energy trade balance, we have used a VAR (2), as suggested by standard trailing selection.

labour costs. All of the variables are expressed in deviation from their historic average, and net output is expressed in per capita terms, divided by the working age population.

### Graphical representation of the ICA model

To gain an intuitive understanding of how the ICA model works, we have made a graphical representation of economic agents' decisions in the face of changes in income and interest rate expectations in a simplified version of the model for two periods, such as those analysed by Obstfeld and Rogoff (1996). To do this, we assume that consumers decide how much to consume (and consequently how much to save) in the present (represented as  $t$ ) and in the future (represented by  $t+1$ ). The budgetary restriction of agents, and thus of the economy as a whole, is the following:

$$C_1 + B_1 = (1+r)B_0 + Q_1 \quad (1)$$

$$C_2 + B_2 = (1+r)B_1 + Q_2 \quad (2)$$

$C$  represents consumption,  $B$  is the amount of foreign assets vs. the rest of the world,  $Q$  is agents' income (non-financial), which is considered exogenous to simplify the analysis, and  $r$  is the real interest rate. The above equations determine the following intertemporal budgetary restriction:

$$C_1 + C_2/(1+r) = Q_1 + Q_2/(1+r) = I \quad (3)$$

where  $I$  is permanent income, that is, the discounted current value of current and future income. In this context, the current account balance may be defined as the change in international financial wealth, that is, the variation in foreign assets:

$$CA_1 = B_1 - B_0$$

Using the above equations and assuming that  $B_0=0$ , we conclude that

$$CA_1 = Q_1 - C_1$$

Diagram 1 provides a graphical representation of this outcome. Point A represents the consumption possibilities in a situation of autarchy, i.e., using domestic output alone. However, this point is not optimum for consumers, given their preferences. The optimum choice stems from point B. In this case, the desired consumption in the initial period is higher than that generated domestically; the economy must therefore import consumer goods, incurring a trade deficit.

Diagram 2 illustrates the outcome of a decrease in output expectations in period 2. Such a drop, of the same magnitude as "d", will prompt budgetary restriction to shift in a parallel manner toward the origin of the coordinates. As a result, the optimum

consumption choice becomes point C. Consumption in the initial period,  $C_1$ , is now lower than domestic output, generating a trade surplus. Similarly, an improvement in expectations for future income growth will prompt an increase in the trade deficit, since consumers desire to consume in the present part of the rise in income they expect to receive in the future.

Finally, Diagram 3 shows the impact of a real interest rate increase (whether from a rise in the nominal interest rate or from a decline in inflation expectations). The result is that current consumption becomes more costly in terms of future consumption and the optimum choice, point C, leads to lower consumption in period 1. In this case, consumption lags domestic output, generating a trade surplus.

Diagram 1

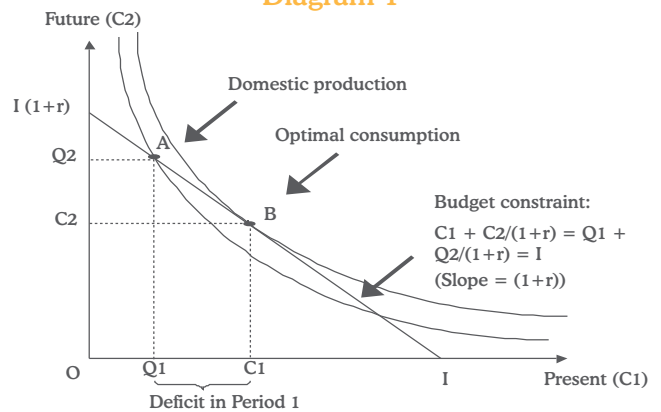


Diagram 2

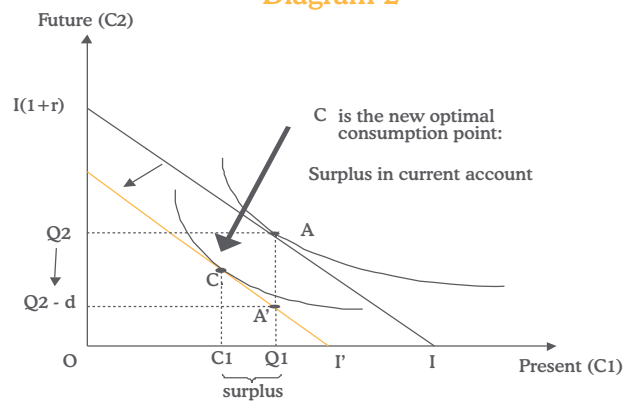
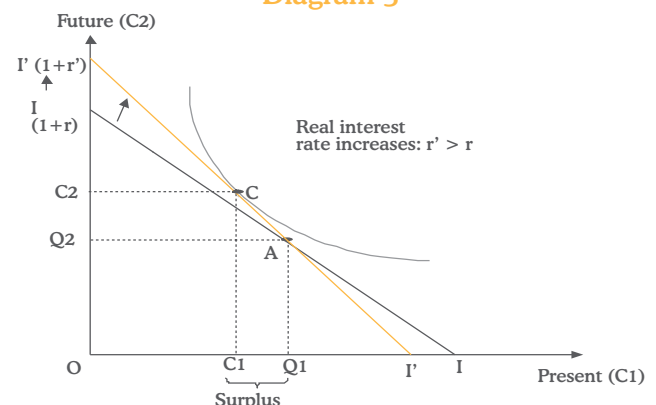


Diagram 3



## 4. Potential Spanish GDP growth in 2008-2015

Once the current correction phase has been overcome, the Spanish economy may return to growth rates of approximately 3% by 2015, lower than the growth potential of the second half of the past decade. Starting from this base case trend, we can formulate scenarios in accordance with a variety of assumptions regarding the performance of the factors shaping potential GDP growth. The demographic outlook is less dynamic than previously, and the labour market will converge more slowly to the level of economic activity seen in the most developed countries. Therefore, in order to guarantee potential growth the economy requires a productivity boom to growth rates unseen since the early 1990s. The implementation of the appropriate micro- and macroeconomic policies will be crucial to achieving these productivity gains.

### 4.1. Introduction

One of the consequences of the economic crisis assailing the world's leading economies, among these Spain, is that GDP growth forecasts for the next few years are being slashed, and as a result, growth forecasts for the trend component. This change in expectations for medium- and long-term growth is highly significant given that the economy's potential output is one of the key variables shaping both corporate investment strategies and the formulation of macroeconomic policy. It is the benchmark variable used to determine the economy's position in the cycle, and thus contains information about the presence or absence of inflationary pressures, and its growth rate serves as a reference for gauging long-term growth expectations. In addition, extracting a growth estimate from potential output allows us to develop an outlook for economic convergence and determine the role played by a range of underlying sources of long-term growth.

This paper estimates the Spanish economy's growth potential in the period 1970-2015, applying a growth accounting methodology and generalising the results in Doménech, Estrada and González-Calbet (2008) by taking into account the uncertainty associated with future performance of its determinants. The base case outlook for the period 2008-2015 is founded on reasonable assumptions about the possible future performance of demographic, labour market and technological variables. In addition to formulating a core estimate for potential GDP growth, the article explores the uncertainties surrounding the core outlook should any of the demographic, labour market or technological assumptions change. This sensitivity analysis establishes an interval within which there is a greater likelihood that the future trend for the Spanish economy's potential growth will be found. This estimate and outlook for potential GDP growth provides a glimpse of the expectations for the Spanish economy's medium- and long-term growth once the current slowdown has passed.

This section may be broken down as follows. Point 2 outlines the growth accounting methodology based on the production function and goes on to present forecast scenarios regarding the performance of the production factors' trend components. Finally, point 3 presents the different scenarios for potential growth obtained from the variables' different growth trends.

Chart 4.1.  
Demographic forecasts.  
Total population.

(Millions of people)

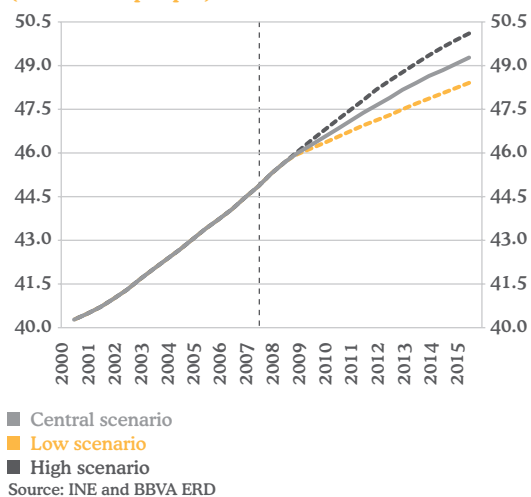


Chart 4.2.  
Demographic forecasts.  
Population 16-64.

(Millions of people)

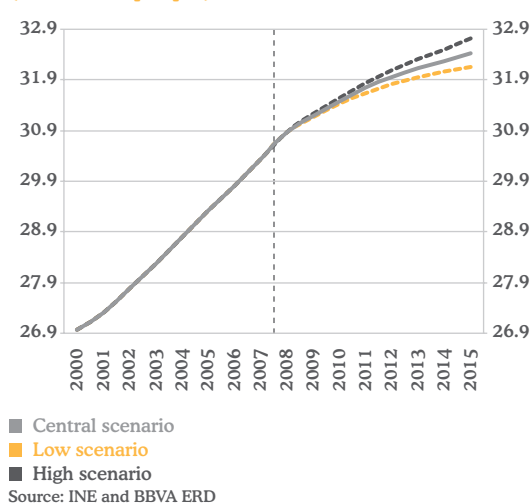
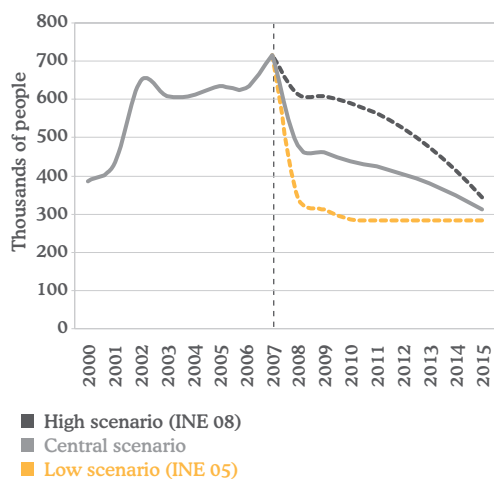


Chart 4.3.  
Hypothesis on net migration



## 4.2. Determinants of potential growth: scenarios to 2015

The economy's output potential is formally defined as the level of aggregate sustainable production or supply generated by the use of factors of production, capital stock and labour, at their respective long-term potential or equilibrium levels, all of which are combined in a function of production. The growth rate of potential output establishes an average of the long-term outlook for the economy, and thus allows us to analyse the current growth situation in comparison.

Potential output is a non-observable variable, and, in practice, an estimate may be drawn up using a range of methods.<sup>1</sup> In this section, we estimate potential GDP applying a growth accounting methodology which ultimately depends upon an assumption about the economy's production function. As argued below, an estimate based on growth accounting methodology offers two benefits. First, it is a method whose assumptions are based on economic theory, which, compared with methodologies based on observing output trend signals, allows us to identify and quantify underlying economic factors which explain the performance of potential output. Second, using certain reasonable hypotheses about the future performance of demographic, institutional and technological variables, this method allows us to develop scenarios about the possible future trend in the growth rate of potential output. As for the shortcomings of the growth accounting approach, it is worth noting that it is a forecasting methodology which requires a great deal of information in order to develop direct measurements of production factors and technological levels, as well as the selection of specific details in order to properly represent the workings of the economy's overall output.

The box accompanying this section describes the methodological approach used to develop the base case forecast for the Spanish economy's potential output growth in the period 1970-2015.

Because the purpose of this exercise is to generate forecasts for potential GDP growth, it is necessary beforehand to draw up a long-term outlook for growth in the variety of variables used to calculate these forecasts. The following outlines the manner in which we have calculated our base case forecast for all key variables for the period 1970-2015, as well as alternative outlooks which will be used to build a range of scenarios for potential GDP growth around the base case scenario.

### The outlook for demographics and the labour market calls for less dynamic performance than in the past.

As a starting point, three demographic scenarios were proposed. The most favourable (or high case) is in line with an outlook for lower forecast short-term population growth (2007-2015) as recently announced by INE.<sup>2</sup> The least favourable (or low case) is an updated and revised base case scenario of long-term forecasts (2002-2060) published by INE in 2005. The update consisted of substituting population figures

<sup>1</sup> From, for example, a multivariate approach in which potential output is estimated as an unobservable component of the link between inflation and the output gap (Kuttner, 1994), to an estimate of structural unemployment (or NAIRU) based on the Phillips curve and the resulting estimate of potential production using the relationship between the output gap and the unemployment gap established by Okun's Law (Staiger, Stock and Watson, 1997, or Doménech and Gómez, 2005 and 2006). See Mishkin (2007) for a detailed description of the different available methods.

<sup>2</sup> INE's publication of current population estimates as of 1 January 2008 has permitted short-term demographic targets to be updated.

through to 2008 with estimates of the current population in order to incorporate population growth rates included in long-term forecasts. Finally, the base case scenario is the mathematical average of the two extremes of the scenarios.

Charts 4.1 and 4.2 illustrate registered and forecast trends to 2015 in total population and working age population. Given the proposed demographic scenarios, Spain's annual average population growth will range between 0.8% and 1.3% between 2008 and 2015, to between 48.4 million and 50.1 million in 2015, with a base case scenario of 49.3 million.

Meanwhile, growth in the population aged between 16 and 64 will slow at both the high and low ends of the forecasts, to between 0.3% (32.2 million) and 0.7% (32.7 million) in 2015.

The main determinant of the differences among the three demographic scenarios is the varying performance expected in migration flows, as outlined in Chart 4.3.

The combination of the proposed demographic scenarios and hypotheses for forecasting the performance of the variables characterising the labour market and job creation result in a range of scenarios for trends in the labour market. The base case scenario for the active population is the result of the combination of the base case scenario for the working age population and a trend component of employment, which will reach 78% in 2020, according to a forecast by Cuadrado et al. (2007) (Chart 4.4).

The high-end scenario is the result of the interplay of a scenario for higher growth in the working age population with an activity rate of 79% in 2020, similar to that of countries such as Austria, Germany, the Netherlands, Portugal and Japan, among others, in 2007. Likewise, the active population figure in the low-end scenario is the result of the least favourable demographic scenario and an activity rate which rises<sup>3</sup> to 77% of the working age population in 2020. The results of forecast exercises indicate that the active population could grow on average by 1.1% to 1.6% between 2008 and 2015, reaching either 24.6 million or 25.5 million people in 2015 (25.0 million in the base case scenario) (Chart 4.5).

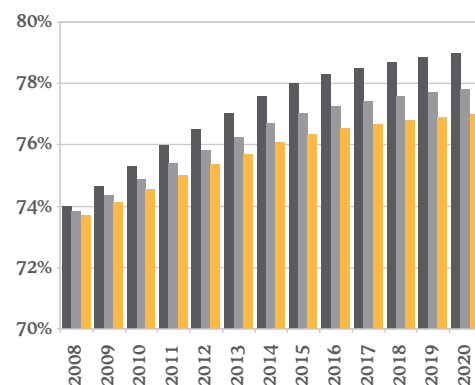
Based on demographic and active population targets, along with the forecast trend in the rate of structural unemployment (or NAIRU), the following employment<sup>4</sup> scenarios are formulated. The employed population in the base case scenario is defined by the base case scenarios for total population and active population, and by a structural component of the unemployment rate, which, starting in 2012, will stand at 6.0% in 2030, as detailed in Doménech, Estrada and González-Calbet (2008)- and 10.4% in 2015. As in the case of the active population, the high and low ends of the employment scenarios are designed in symmetrical fashion, adding (in the low case) and subtracting (in the high case) 0.85 percentage points to the rate of structural unemployment

<sup>3</sup>The low case scenario for economic activity could be skewed downwards by a outflow effect, if the unemployment rate rises and immigration flows reverse. Previous decades saw a clear negative correlation between the unemployment rate and the economic activity rate. Although the most recent Labour Force Survey (EPA) data at this time show no discouragement effect (see Table 1 on page 10), the likely increase in the unemployment rate in 2009 and 2010 could prompt a slowdown in growth of the working population.

<sup>4</sup>Bear in mind that  $\text{Employment} = \text{Working population} (1 - \text{Unemployment rate})$ .

Chart 4.4.

#### Hypothesis on activity rate



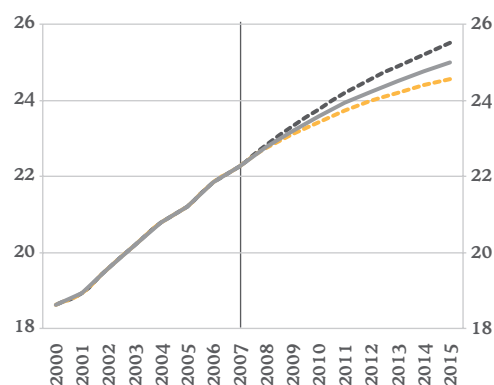
■ High scenario [79% in 2020]  
 ■ Cuadrado et al. (07) [78% in 2020]  
 ■ Low scenario [77% in 2020]

Source: Cuadrado et al. (2007) and BBVA ERD.

Chart 4.5.

#### Demographic forecasts. Active population.

(Millions of people)

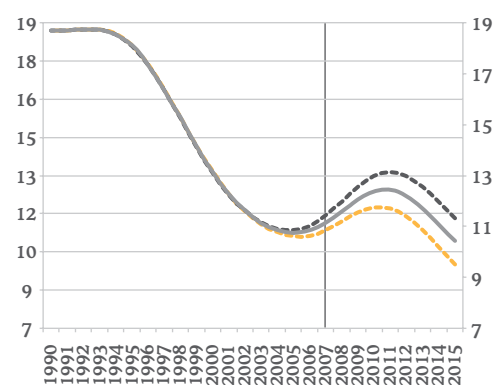


■ Central scenario (TA=78% in 2020)  
 ■ Low scenario (TA=77% in 2020)  
 ■ High scenario (TA=79% in 2020)

Source: INE and BBVA ERD

Chart 4.6.

#### Implied NAIRU in employment scenarios (%)



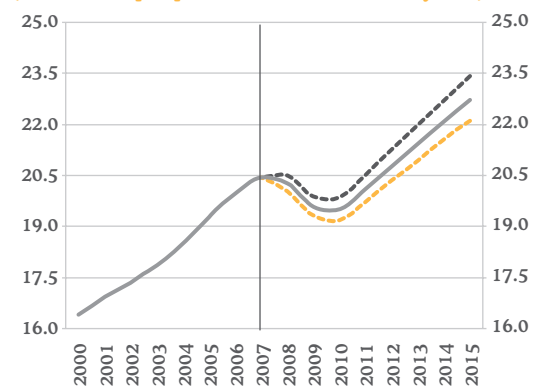
■ High scenario  
 ■ Central scenario  
 ■ Low scenario

Source: BBVA ERD

Chart 4.7.

**Employment.**

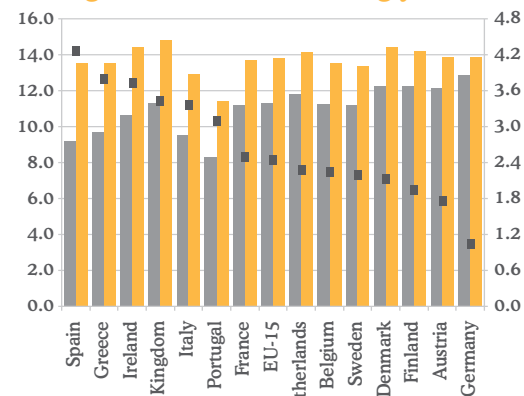
(Millions of people between 16 and 64 years)



■ Central scenario (TA=78% in 2020; NAIRU=10.4% in 2015)  
 ■ Low scenario (TA=77% in 2020; NAIRU=9.5% in 2015)  
 ■ High scenario (TA=79% in 2020; NAIRU=11.3% in 2015)

Source: INE and BBVA ERD.

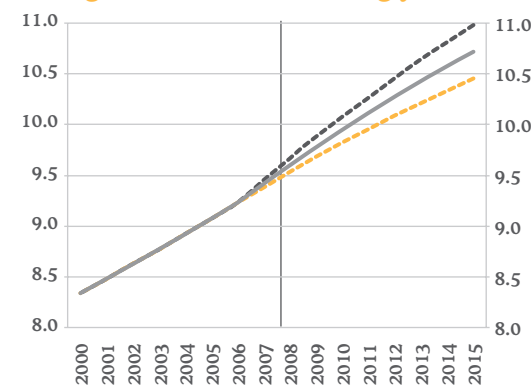
Chart 4.8.

**Average number of schooling years**

■ 2006  
 ■ 2050  
 ■ Increase 2006-2050 (right)

Source: de la Fuente and Doménech (2006) and Montanino, Przywara and Young (2004) and BBVA ERD. (No data for Luxembourg)

Chart 4.9.

**Average number of schooling years**

■ Central scenario (13.5 years in 2050)  
 ■ Low scenario (12.8 years in 2050)  
 ■ High scenario (14.3 years in 2050)

Source: INE and BBVA ERD.

in 2015, in line with the standard deviation in NAIRU between 2000 and 2007 (Chart 4.6).

Therefore, employment in Spain is set to increase by 2.1 to 2.9 million people between 2008 and 2015 (2.4 million in the base case scenario), as illustrated by Chart 4.7.

As for the average working day, we assume that it will remain constant from 2007 at 1,652 hours per year. The three employment scenarios thus define three scenarios for total hours worked in 2015: 37,532 million hours in the base case, 36,541 million in the low case and 38,690 million in the high case.

**Human capital: a convergence scenario for average years of schooling.**

To estimate the contribution of human capital to the economy, we have used the average number of years of schooling ( $s$ ) of the population aged 25 years and older, calculated by de la Fuente and Doménech (2006) and projected by Montanino, Przywara and Young (2004).<sup>5</sup> The base case scenario is the forecast by Montanino, Przywara and Young (2004) according to which the average number of years of schooling in Spain will increase to 10.7 in 2015 and 13.5 in 2050 (vs. 9.2 in 2006). Given the 2050 figure, we can extrapolate the average number of years of schooling assuming a convergence speed of 0.035 per year:

$$\Delta s_t = 0.035(14.65 - s_{t-1})$$

Using these assumptions, the above equation allows us to estimate that the trend in this variable will reach, in 2050, the level of human capital targeted by Montanino, Przywara and Young (2004). According to this scenario, Spain would be the EU-15 country with the largest increase in the average number of years of schooling, though it would still slightly trail the EU-15 average in 2050 (Chart 4.8).

The low case is the result of the average between the base scenario and an alternative target in which we assume that the Spanish population's rates of schooling remain constant in 2002.<sup>6</sup> Should years of schooling remain constant, the Spanish population's average years of education would reach 11.6 in 2050, with the long-term convergence value at 12.2. Therefore, the long-term value of the average number of years of schooling in the low case scenario is 13.7 ( $14.6 - (13.5 - 11.6)/2$ ), exceeding 10.5 in 2015 and 12.8 in 2050. The high case is developed in a symmetrical fashion, so that years of schooling converge at 15.6, amounting to 11.0 in 2015 and 14.3 in 2050. These projections are outlined in Chart 4.9.

**Investment in production continues to grow while the capital-output ratio remains constant.**

Chart 4.10 illustrates the performance of the stock of productive private physical capital as a proportion of GDP in 1960-2007.<sup>7</sup>

One of the stylised facts of economic growth establishes that, in the long term, the capital-output ratio tends to stabilise around its stationary value. In a basic long-term growth model (for example, Solow, 1956),

<sup>5</sup> An individual's average number of years of schooling constitutes only one measure of human capital. There are two reasons for this. First, because this item depends upon the quality of the education the individual receives (see Hanushek and Woessmann, 2008). Second, it does not consider the other components of human capital: informal education and work experience, i.e., know-how acquired on the job.

<sup>6</sup> See Montanino, Przywara and Young (2004), page 11.

<sup>7</sup> See, in Doménech, Estrada and González-Calbet (2008), the details of building a series of productive private physical capital stock.

the stationary value of the capital-output ratio is determined by the rate of investment in productive private physical capital, the rate of growth of the labour factor, long-term productivity growth and the rate of depreciation of capital stock. Based on the observed values for these variables, the stationary value of the capital-output ratio for the Spanish economy is 1.373, slightly higher than that seen in recent years. Chart 4.10 shows the intensity with which the Spanish economy makes use of physical capital per unit of product in comparison with the USA.

To obtain the projection for the base case trend in potential GDP growth, we estimate a convergence equation of the capital-output ratio to its stationary value of 1.373, in line with Doménech, Estrada and González-Calbet (2008). The long-term value of the capital-output ratio laid out in the low case scenario is 1.217, corresponding to the average value of the capital-output ratio for the period 1995-2007. The high case scenario is symmetrical to the low case with regard to the base case scenario, which would imply a long-term convergence path to the value of 1.462. In any event, given the scant expected variation in the capital-output ratio, as outlined later in this paper, its effect on potential GDP growth is fairly limited.

### Potential growth in total factor productivity will continue to rise, but it will take years for it to catch up with US growth.

The forecast scenario for total factor productivity (TFP) applies the error correction mechanism described by Doménech, Estrada and González-Calbet (2008). In particular, the TFP growth rate in Spain is determined by its past value and the technological gap with the US, which presupposes the existence of international dissemination of knowledge between the leader and follower economies (Jones, 2002). Despite this convergence mechanism, the efficiency gap is narrowing only slowly, so that in 2030 TFP will remain 15% higher in the US (see Doménech, Estrada and González-Calbet, 2008).

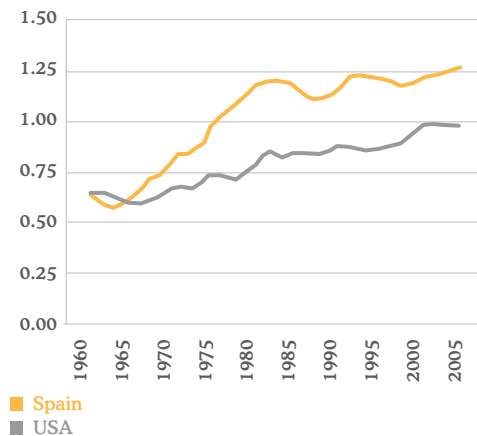
### 4.3. Scenarios for potential GDP growth in Spain

Table 4.1 summarises the range of scenarios which may be combined to generate alternative forecasts for potential GDP growth. A total of 243 alternative forecasts can be developed from the assumptions outlined above. The base forecast for potential GDP growth considered in the scenario stems from the combination of the base scenarios for all key variables.

Chart 4.11 shows the base scenario of potential GDP growth in the Spanish economy in 1990-2015. Surrounding the base scenario, arrayed progressively and shaded, are the intervals associated with a better (higher than the base scenario) or worse (lower than the base scenario) performance by demographic, labour market and technological variables. In particular, the first band or interval around the base scenario corresponds to a simultaneously improving and worsening demographic scenario. The second band or interval is obtained by improving and worsening the previous forecast according to the alternative scenarios for the employment rate. The confidence intervals successively open as the scenario for the rate of structural unemployment, average number of schooling years, and the capital-output ratio improves or worsens. In this manner, the upper limit of the last band or confidence interval is the best possible combination of the scenarios under consideration, while the lower limit of the last band or confidence interval is the worst possible combination of the range of scenarios.

Chart 4.10.

### Evolution of private productive physical capital over GDP (K/Y)

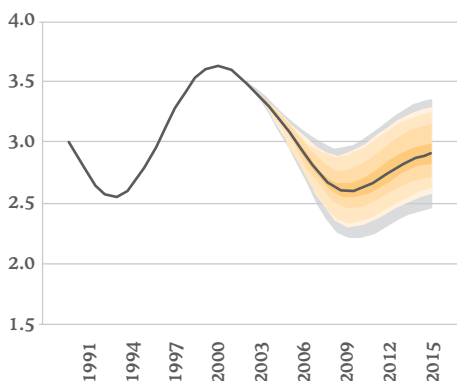


Source: BBVA ERD

Table 4.1.  
Alternative projection scenarios

Demographic scenarios	
Demo C	Central scenarios of {L and L16-64}
Demo S	High scenarios of {L and L16-64}
Demo I	Low scenarios of {L and L16-64}
Activity rate scenarios	
TA C	Central scenario, 78% in 2020
TA S	High scenario, 79% in 2020
TA I	Low scenario, 77% in 2020
Structural unemployment scenarios (NAIRU)	
NAIRU C	Central scenario, 10.4% in 2015
NAIRU S	High scenario, 11.3% in 2015
NAIRU I	Low scenario, 9.5% in 2015
Schooling scenarios	
School C	Central scenario, 13.5 years in 2050
School S	High scenario, 14.3 years in 2050
School I	Low scenario, 12.8 years in 2050
Capital-Output relation scenario	
KtY C	Central scenario, 1.373 (steady-state)
KtY S	High scenario, 1.462 (symmetrical)
KtY I	Low scenario, 1.217 (Spain average 1995-2007)
Additional assumptions	
Hours worked per employed person are assumed to remain constant from 2007 onwards: $h=1652$	
Elasticity of output to physical capital: $\alpha=0.36$ , is the average of developed countries	
Elasticity of output to human capital: $\beta=0.045$ (de la Fuente and Doménech, 2006)	

Chart 4.11.  
Potential GDP growth projections, Spain  
1990-2015.



Source: BBVA ERD

As may be seen in Chart 4.11, the GDP growth trend seen in the base case scenario in 2015 will be around 2.9%, with an interval between 2.44% and 3.34%. Three additional conclusions may be drawn from looking at the results. First, the chart highlights the importance to the potential growth projection of the underlying assumption about the performance of the immigration variable. In particular, the first confidence interval around the base case, constructed from the proposed scenarios for the working age population, is directly dependent on the assumed dynamic profile for the immigration variable. Meanwhile, given the hypotheses developed for the intervals of each variable, we can see that a source of great uncertainty lies in the future performance of the employment rate and, by extension, the capacity for expanding the number of employed while maintaining the dynamic profile for the structural unemployment rate. In other words, the results suggest that, even when the dynamic profile for the performance of potential employment remains the same, increasing the rate of participation in the labour market constitutes one of the key challenges facing the Spanish economy in the medium term. By contrast, the source of the least uncertainty lies in the effects of the performance of the average number of school years, since the country's high demographic inertia will prevent this variable from changing to any great extent in the short term. In the short term, an improvement or a deterioration from the base case scenario in the measurement used to forecast long-term trends in human capital has no significant impact on the rate of potential GDP growth, though it is the leading determinant of the labour productivity gap between Spain and the US (see Doménech, 2008).

It is likewise necessary to highlight the low probability that the two extreme scenarios will occur (i.e. the upper and lower limits). The worst-case scenario for the Spanish economy in 2015 would be the simultaneous occurrence of several adverse factors in relation to the base case, from a reduction in the growth rate of the working age population to a reduction in the capital-output ratio and a 0.7% decrease in the activity rate.

Finally, it is worth noting that the Spanish economy is likely to overcome the current slowdown with potential annual GDP growth that is slightly lower than the average growth registered during the growth phase which began in 1995. This last point would occur in the base case as well as in the low and high case scenarios. Table 4.2 shows average rates of potential GDP growth, and those of its components, in different time periods. These periods were selected based on the peaks and troughs in the base scenario for potential growth.

### Medium-term growth outlook: productivity will replace demographics and the labour market as the driving force.

The forecast for potential average growth in 2010-2015, compared with the performance seen in the previous growth phase in 1994-2000, is explained by a bleaker outlook for growth in activity, especially the rate of potential employment. Productivity growth in the future will act as a counterweight to the relatively bearish expectations for demographic and labour market variables. Table 4.2 illustrates a future growth trend more in line with the historic performance of the Spanish economy in the second half of the 20th century. That is, as demographic and employment variables run out of steam, the breakdown in Table 4.2 indicates that the driver of growth will be skewed more toward gains in labour productivity.

Will the Spanish economy be able to return to growth rates of 3% or higher after the current economic crisis is over? As suggested earlier, under reasonable assumptions about the future performance of the



determinants of potential growth such rates are perfectly feasible, on the condition that a favourable economic environment is guaranteed. To achieve this goal, it is necessary to make clear progress on three different fronts:

First, in the short term, it is necessary to minimise the impact of the current crisis on output and employment by increasing flexibility in prices and salaries. A more beneficial trend in the inflation gap with the EU, with the resulting boost in the Spanish economy's competitiveness would allow the trade deficit to narrow via relative prices rather than from the economic activity and employment side (on this point, see the article included in this report regarding the Spanish economy's foreign financing). The more that improved inflation stems from an adequate wage response to lower economic activity expectations, the better the economy will be able to avoid a significant rise in structural unemployment. Should this fail to happen, the resulting increase in NAIRU would negatively impact potential growth in coming years.

Second, for the Spanish economy to change its pattern of growth of the past 15 years, it must implement a variety of structural policies aimed at enhancing combined factor productivity, encompassing everything from policies with a clear macroeconomic bent (i.e. R&D policies geared toward creating and expanding high-tech industries or educational policies that improve human capital), to policies of a markedly microeconomic nature (i.e. organisational policies within companies to encourage efficiency per hours worked). If all economic agents make efforts in this regard, productivity gains would be guaranteed in the medium term.

Third, the Spanish economy must be able to significantly reduce its rate of structural unemployment in the medium term, following the spike expected in the short term. The results of the projection exercise shown earlier indicate that trends in the employed population, in general, and the employment rate, in particular, constitute the determining factors of economic growth that involve the greatest uncertainty in the scenario development process. Therefore, given that not only the high case scenario but also the base case presuppose that the authorities will take an active approach to policymaking, it is advisable that the economic policy measures implemented be effective. Thus, government employment services must contribute further to effectively reducing the costs of the job search process. Empirical evidence from a number of countries<sup>8</sup> has shown that neither temporary hiring by the government sector nor generalised job training programmes for the unemployed are effective in boosting employment and employability. In contrast, active policies such as measures to help jobseekers find work, in addition to being cheaper for the government than the abovementioned approaches, have proven effective in those countries where they have been implemented, such as Sweden, the United Kingdom and the US. In Spain, a step in the right direction is a measure, approved by the government on 18 April 2008 as part of its Economic Stimulus Plan, to hire 1,500 "guides" to assist unemployed people in drawing up personalised job search itineraries. The efficacy of subsidies to encourage the hiring of specific population groups who are at a disadvantage for access to employment or who suffer reduced employability, such as women, youth, the elderly, etc. should also be studied. These programmes' effectiveness depends upon the group to which they are targeted, with greater effectiveness seen in programmes aimed at the long-term jobless and women, and less effectiveness noted

Table 4.2.

**Composition of Potential GDP growth: Central or Base Case Scenario, Upper Limit and Lower Limit**  
(average annual trend growth rate, in %)

Upper limit	$\Delta \ln Y$	$\Delta \ln Y/H$	$\Delta \ln H/Ld$	$\Delta \ln Ld/Ls$	$\Delta \ln Ls/L16-64$	$\Delta \ln L16-64$
1988-1993	2.88	1.66	-0.26	-0.07	0.75	0.79
1994-2000	3.14	0.78	-0.12	0.87	0.79	0.82
2001-2009	3.22	1.06	-0.43	0.22	0.91	1.46
2010-2015	3.21	1.29	-0.07	0.24	0.74	1.00
Central scenario	$\Delta \ln Y$	$\Delta \ln Y/H$	$\Delta \ln H/Ld$	$\Delta \ln Ld/Ls$	$\Delta \ln Ls/L16-64$	$\Delta \ln L16-64$
1988-1993	2.88	1.66	-0.26	-0.07	0.75	0.79
1994-2000	3.16	0.78	-0.12	0.87	0.80	0.82
2001-2009	3.07	1.05	-0.43	0.14	0.86	1.44
2010-2015	2.78	1.17	-0.07	0.17	0.60	0.91
Lower limit	$\Delta \ln Y$	$\Delta \ln Y/H$	$\Delta \ln H/Ld$	$\Delta \ln Ld/Ls$	$\Delta \ln Ls/L16-64$	$\Delta \ln L16-64$
1988-1993	2.88	1.66	-0.26	-0.06	0.75	0.79
1994-2000	3.17	0.79	-0.12	0.88	0.80	0.83
2001-2009	2.90	1.02	-0.43	0.06	0.83	1.42
2010-2015	2.34	1.00	-0.07	0.10	0.50	0.81

Source: BBVA ERD

<sup>8</sup> See, in Grubb and Martin (2001) and Cahuc and Zylberberg (2004), chapter 11, among others.

in youths who have few qualifications. Finally, while the Spanish labour market has become more flexible in recent decades, it has become so more through an increase in seasonal work<sup>9</sup> than from any change in the legal structure regulating it. Therefore, a collective bargaining mechanism that more directly links salary increases to productivity gains<sup>10</sup> may offer a more ordered response on the part of employment to changes in economic activity.

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<sup>9</sup>Dolado (2008) offers a proposal to reduce the traditional segmentation in the Spanish labour market between workers with permanent and temporary contracts, and, at the same time, boost employment levels. The mechanism consists of narrowing the gap between firing costs for permanent and temporary workers, which would increase the conversion rate of temporary contracts to permanent ones, reduce the rotation of temporary contract workers between employment and unemployment, and lower the unemployment rate. The proposal consists of structuring dismissal severance packages on a sliding scale based on how long each employee has worked at a company.

<sup>10</sup>It also moderates the scattering over areas of activity of wage growth that is not linked to differences in productivity.

## Appendix. Description of Methodology

The indicator of the Spanish economy's level of well-being, measured by per-capita GDP or income ( $GDP/L$ ), may be broken down in the following components at each time period  $t$ :

$$(1) \quad \frac{GDP_t}{L_t} \equiv \frac{GDP_t}{H_t} \frac{H_t}{L_t^d} \frac{L_t^d}{L_t^s} \frac{L_t^s}{L_t^{16-64}} \frac{L_t^{16-64}}{L_t},$$

in which GDP per capita is the product of the following variables: (i) productivity (defined as the level of output per hour worked,  $GDP/H$ ), (ii) average number of hours worked per employed person ( $H/L^d$ ), (iii) employment rate (defined as employment as a ratio of labour supply,  $L^d/L^s$ ), (iv) activity level (defined as the labour supply as a ratio of the working age population,  $L^s/L^{16-64}$ ), and (v) the population structure (defined as the working age population as a ratio of the total population,  $L^{16-64}/L$ ). The performance of per-capita GDP over a period of time will be determined by how these variables perform, and among these only productivity may register positive growth in the long term. That is, in the long term the performance of average work hours, the employment rate, the activity rate and the population structure will be contained by each variable's respective limits. Still, changes in the performance of these variables in the medium term will significantly influence the time horizon for the economy's well-being.

Using the first difference in the logarithm of expression (1), we write the above expression in terms of growth rates:

$$(2) \Delta \ln \frac{GDP_t}{L_t} \equiv \Delta \ln \frac{GDP_t}{H_t} + \Delta \ln \frac{H_t}{L_t^d} + \Delta \ln \frac{L_t^d}{L_t^s} + \Delta \ln \frac{L_t^s}{L_t^{16-64}} + \Delta \ln \frac{L_t^{16-64}}{L_t},$$

in which per-capita GDP growth is the approximate sum of the rate of productivity growth, the rate of average hours worked, growth in the employment rate, growth in the rate of economic activity and growth in the working age population as a percentage of total population. Expression (2) likewise shows that the rate of output growth is not dependent on the rate of population growth, thus avoiding scale effects in the long-term growth breakdown.

To determine the long-term performance of productivity growth, we first assume that the economy's aggregate production is adequately represented if we use a Cobb-Douglas production function, with constant returns to scale on capital and labour in each time period  $t$ :

$$(3) \quad Y_t = A_t (K_t)^\alpha (h_t L_t^d)^{1-\alpha} \exp\{\beta s_t\},$$

where  $Y$  is GDP,  $A$  is total factor productivity ( $TFP$ ),  $K$  is the stock of productive private capital,  $h$  is the average number of hours worked per employed person,  $L^d$  is the number of employed people and  $s$  is the human capital per worker, measured, in line with Doménech, Estrada and González-Calbet (2008), as a function of years of schooling. Using the assumption that the markets for products and factors work in perfect competition, the  $\alpha$  parameter is the share of value added ascribed to capital income. Parameter  $\beta$  is the output elasticity to human capital. Equation (3) gives the  $TFP$  as a residual component once we have time series for capital stocks, total hours worked and human capital, and can make reasonable assumptions regarding the parameters of the production function.

Rewriting expression (3) as a function of the capital-output relationship ( $K/Y$ ) and using logarithms, we obtain productivity per hour worked:

$$(4) \quad \ln \frac{Y_t}{h_t L_t^d} = \frac{1}{1-\alpha} \ln A_t + \frac{\alpha}{1-\alpha} \ln \frac{K_t}{Y_t} + \frac{\beta}{1-\alpha} s_t,$$

Finally, differentiating expression (4) we obtain productivity growth as:

$$(5) \Delta \ln \frac{Y_t}{h_t L_t^d} = \frac{1}{1-\alpha} \Delta \ln A_t + \frac{\alpha}{1-\alpha} \Delta \ln \frac{K_t}{Y_t} + \frac{\beta}{1-\alpha} \Delta s_t,$$

in which the performance of productivity per hour worked depends upon the performance of technical progress ( $TFP$ ), the capital-output ratio and years of schooling.

Substituting expression (5) into expression (2), we obtain a breakdown of the GDP growth rate as a function of the growth rates of all key variables. The potential GDP growth rate is estimated by entering as inputs the economy's potential employment, which is calculated using a scenario for the rate of structural unemployment (or NAIRU), and the trend component of total factor productivity, which is extracted by applying the Hodrick- Prescott filter to the total factor productivity series.



## 5. Summary of EU forecasts

(year-on-year change in %, unless otherwise indicated)

	2003	2004	2005	2006	2007	2008	2009
<b>GDP in constant prices</b>	<b>0.8</b>	<b>1.9</b>	<b>1.8</b>	<b>3.0</b>	<b>2.6</b>	<b>1.0</b>	<b>-0.5</b>
Private consumption	1.2	1.5	1.8	2.0	1.6	0.2	-0.5
Public consumption	1.7	1.6	1.5	1.9	2.4	1.5	1.4
Gross fixed capital formation	1.3	1.9	3.4	5.9	4.2	0.8	-5.7
Stocks(*)	0.1	0.2	-0.1	0.0	0.0	0.1	0.1
<b>Domestic demand (*)</b>	<b>1.4</b>	<b>1.8</b>	<b>2.0</b>	<b>2.8</b>	<b>2.3</b>	<b>0.7</b>	<b>-1.2</b>
Exports (goods and services)	1.4	6.7	5.1	8.1	6.0	3.5	2.5
Imports (goods and services)	3.3	6.6	5.8	7.9	5.4	2.8	1.2
<b>External demand (*)</b>	<b>-0.6</b>	<b>0.1</b>	<b>-0.2</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.6</b>
<b>Prices</b>							
CPI	2.1	2.1	2.2	2.2	2.1	3.4	1.9
Core CPI	2.0	2.1	1.5	1.5	2.0	2.4	2.0
<b>Labour market</b>							
Employment	0.7	0.7	0.9	1.5	1.7	0.7	-0.3
Unemployment rate (% of active population)	8.5	8.7	8.7	8.1	7.3	7.4	8.1
<b>Public sector</b>							
Deficit (% GDP)	-3.1	-2.9	-2.5	-1.6	-0.7	-1.4	-1.8
<b>Foreign sector</b>							
Current account balance (% GDP)	0.4	0.8	0.2	0.0	0.3	-0.2	0.0

(\*) contribution to growth  
 \*\*Includes the impact of an increase in German VAT.

### Foreign scenario (% year-on-year)

	Real GDP growth(%)				Inflation** (%)			
	2006	2007	2008	2009	2006	2007	2008	2009
USA	2.9	2.2	1.5	-0.2	3.2	2.9	4.3	1.7
Japan	2.4	2.0	0.7	-0.3	0.2	0.0	1.2	0.3
Latam	5.3	5.6	4.4	2.0	5.0	6.0	7.8	6.9

\*Argentina, Brazil, Chile, Colombia, Mexico, Peru, Uruguay and Venezuela  
 \*\* For Latam, forecast at end of period

### Financial variables

	Official exchange rate (%), end of period				10Y interest rate(%), quarterly average*			
	11/07/08	4Q08	2Q09	4Q09	11/07/08	4Q08	2Q09	4Q09
EU	3.25	2.75	1.50	1.50	3.7	3.8	3.2	3.1
USA	1.00	1.00	1.00	1.00	3.8	3.8	3.6	3.5

\* 10Y rates based on German bonds

	Exchange rate (vs. euro)*				Brent crude (dollars per barrel)*			
	11/07/08	4Q08	2Q09	4Q09	11/07/08	4Q08	2Q09	4Q09
US dollar	1.28	1.30	1.21	1.15	57.4	82	75	70

\* Average in the period

## Summary of forecasts for the Spanish economy

(year-on-year change in %, unless otherwise indicated)

	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>GDP at 2000 prices</b>	<b>3.6</b>	<b>2.7</b>	<b>3.1</b>	<b>3.3</b>	<b>3.6</b>	<b>3.9</b>	<b>3.7</b>	<b>1.3</b>	<b>-1.0</b>
Private Consumption	3.4	2.8	2.9	4.2	4.2	3.9	3.4	1.1	-0.5
Public consumption	3.9	4.5	4.8	6.3	5.5	4.6	4.9	3.8	3.5
Gross fixed capital formation	4.8	3.4	5.9	5.1	7.0	7.1	5.3	-2.0	-9.1
Capital goods	-0.3	-2.9	4.1	5.1	9.2	10.2	10.0	-1.3	-13.9
Construction	7.6	6.3	6.2	5.4	6.1	5.9	3.8	-4.0	-9.6
Residential	7.5	7.0	9.3	5.9	6.1	6.0	3.8	-9.5	-20.7
Other	7.7	5.6	3.5	5.0	6.2	5.7	3.9	1.3	-0.6
Other Products	5.8	5.0	7.2	3.8	7.1	7.1	3.9	3.5	0.5
Stocks (*)	-0.1	0.0	-0.1	0.0	-0.1	0.2	-0.1	0.1	0.0
<b>Domestic demand (*)</b>	<b>3.9</b>	<b>3.3</b>	<b>3.9</b>	<b>4.9</b>	<b>5.3</b>	<b>5.3</b>	<b>4.4</b>	<b>0.8</b>	<b>-2.2</b>
Exports (goods and services)	4.2	2.0	3.7	4.2	2.5	6.7	4.9	3.1	-1.6
Imports (goods and services)	4.5	3.7	6.2	9.6	7.7	10.3	6.2	1.1	-4.3
<b>Net foreign demand (*)</b>	<b>-0.2</b>	<b>-0.6</b>	<b>-0.8</b>	<b>-1.7</b>	<b>-1.7</b>	<b>-1.5</b>	<b>-0.8</b>	<b>0.5</b>	<b>1.3</b>
<b>GDP at current prices</b>	<b>8.0</b>	<b>7.1</b>	<b>7.4</b>	<b>7.4</b>	<b>8.1</b>	<b>8.1</b>	<b>7.0</b>	<b>4.9</b>	<b>2.0</b>
EUR mn	680,678	729,206	782,929	841,042	908,792	982,303	1,050,595	1,101,824	1,124,027
<b>Prices and costs</b>									
GDP deflator	4.2	4.3	4.1	4.0	4.3	4.0	3.2	3.5	3.0
Household consumption deflator	3.4	2.8	3.1	3.6	3.4	3.5	3.2	4.4	2.6
CPI	3.5	3.5	2.9	3.0	3.4	3.5	2.8	4.3	2.3
Inflation gap with the EU (p.p.)	1.2	1.3	0.9	0.9	1.2	1.3	0.6	0.9	0.4
Remuneration per employee	3.6	3.3	3.6	3.0	3.7	3.9	3.7	5.1	3.7
Unit labour cost (ULC)	3.2	2.9	2.9	2.4	3.3	3.2	2.9	3.5	2.0
<b>Labour market</b>									
Active population (LFS)	0.3	4.1	4.0	3.3	3.5	3.3	2.8	2.9	1.7
Employment (LFS)	4.1	3.0	4.0	3.9	5.6	4.1	3.1	-0.2	-3.2
Change (in thousands of people)	640	484	666	675	1002	774	608	-42	-659
Employment (national accounts, FTE)	3.2	2.3	2.4	2.7	3.2	3.2	2.9	-0.2	-2.7
Unemployment rate	10.6	11.5	11.5	11.0	9.2	8.5	8.3	11.0	15.4
Productivity	0.4	0.4	0.7	0.6	0.4	0.7	0.8	1.6	1.8
<b>General government</b>									
Debt (%GDP)	55.6	52.5	48.7	46.2	43.0	39.6	36.1	36.2	39.6
Budget balance (% GDP)	-0.7	-0.5	-0.2	-0.4	1.0	1.8	2.2	-1.5	-4.3
<b>External sector</b>									
Trade Balance (% GDP)	-6.3	-5.8	-5.9	-7.2	-8.6	-9.1	-9.4	-9.3	-8.1
Current Account Balance (% GDP)	-3.9	-3.3	-3.5	-5.3	-7.4	-8.9	-10.1	-9.9	-8.2
<b>Households</b>									
Real disposable income	3.4	3.5	3.6	3.6	4.6	3.7	2.5	0.6	0.1
Nominal disposable income	6.8	6.3	6.7	7.2	8.0	7.2	5.7	4.9	2.7
Savings rate (% of nominal income)	11.1	11.4	12.0	11.3	11.3	11.2	10.2	11.6	12.8

Source: official institutions and BBVA Economic Research Department

(\*) contribution to GDP growth



## For more information please contact:

Servicios Generales Difusión BBVA Gran Vía 1 planta 2 48001 Bilbao P 34 944 876 231 F 34 944 876 417 www.bbva.es

### Economic Research Department:

#### Director

José Luis Escrivá

#### Chief Economists:

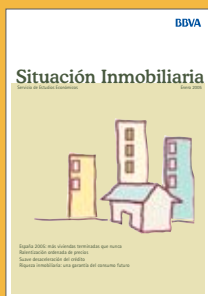
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