BBVA

Situación

Research Department

December 2003

Growth: hand in hand with Europe
Inflation: breaking the gap
Sales in the IPSEBENE
Fiscal policy: continuity
Technological capital as a productive factor

Contents

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1. International environment

The dynamics of the global recovery...

After the uncertainties of the past three years, the major industrial countries appear to be building up momentum as the US-led global economic recovery unfolds. As a result, short-term interest rates discounted in the futures markets are reflecting the fact that central banks will gradually move to adjust the stance of their monetary policies to this cyclical situation. This perception is not reflected in the behaviour of a number of financial variables, however. Rising gold prices and a weakening dollar seem to suggest that the current expansion phase may well lack a solid footing and therefore be short-lived. A high level of public and private indebtedness, the threat of geo-political turbulence and increasing trade protectionism constitute some of the uncertainties for the months ahead.

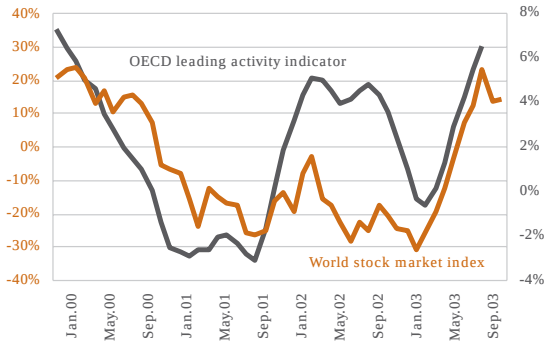
There is no doubt that an increasing number of factors are reflecting the global recovery in activity. In the first place, in the wake of the progress made in corporate restructuring, business confidence is improving, stock prices are rising and corporate bond differentials are falling. Secondly, it is important to note the positive surprises in activity data in Japan and the United States, while, following a period of stagnating activity, the European economy is posting stronger growth. In the US economy, in particular, although the current expansion is deemed to have started at the end of 2001, recovery had been slower than in other expansion phases. But the acceleration in rates of growth in the third quarter of 2003, to their highest level for the past 20 years, and the upward revision of the activity data forecast for the fourth quarter of this year have changed perceptions with regard to the recovery.

Thirdly, although US growth has to a large extent been driven by a powerful fiscal and monetary stimulus, there are signs that investment is beginning to pick up, which could augur well for the months ahead. The significant increase in productivity constitutes a strong support for the US economy. Investment in Japan has also been recording stronger-than-expected performances, in this case because of strong growth in the country's trading partners in Asia. Although domestic demand in Europe has been weaker, improving internal financial conditions and progress with corporate restructuring, notably in Germany, should help get demand growing again.

Forecasts for US growth in 2004 have been upgraded since last summer, with the economy now expected to grow by around 4%, instead of 3% as forecast in July. The shift in the Federal Reserve's policy bias from easing to neutral in November confirmed this change in expectations and represented the end of a period dominated by a deflationary bias. The same is true for Japan, where growth is now expected to rise to 1.7% next year, up from the 1% rate forecast last summer. Among the major economic areas, the exception is the EMU, where, although the downward risks to activity have diminished significantly, growth forecasts have scarcely changed.

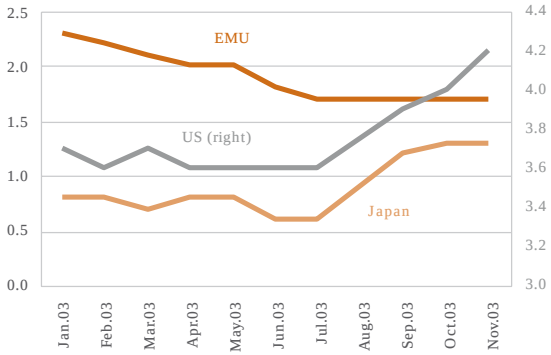
With this more optimistic growth outlook, long-term yields have stabilised at levels above 4%, both in the United States and the EMU, thus leaving behind the historic lows to which they fell in the spring owing to fears of deflation. In spite of this rise, long-term interest rates nevertheless remain at low levels. This is because, unlike in previous expansion phases, the absence of inflationary pressures, the low rate of capacity utilization and the slow rate of job creation are likely to delay - or reduce the magnitude of - any hike in interest rate in the industrial economies, compared with what the markets are factoring in. It is therefore likely that official interest rates will remain stable for most of 2004. In this sense, the increase in interest rates in the United Kingdom in November was prompted more by the behaviour of prices (especially those of the real-estate sector), and is not necessarily a

Graph 1.1
Leading indicators



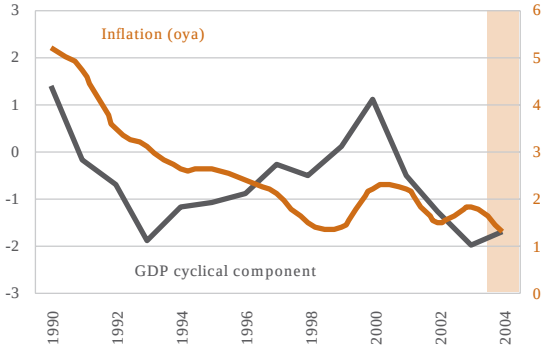
Source: OCDE, MSCI

Graph 1.2
2004 growth forecasts
Year-on-year



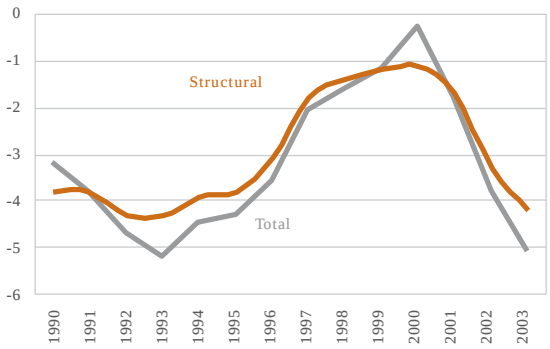
Source: Consensus Forecast

Graph 1.3
OECD: inflation and GDP cyclical component



Source: FMI

Graph 1.4
Fiscal deficit of major industrial economies
% of GDP



Source: FMI

Table 1.1. GDP growth
Year-on-year

	2002	2003	2004
OECD	**1.7**	**2.0**	**2.7**
US	2.2	3.0	3.9
EMU	0.9	0.5	1.7
United Kingdom	1.9	2.1	2.5
Japan	0.2	2.7	1.7
Developing countries	**4.4**	**5.0**	**5.6**
Latin America	-0.6	0.9	3.5
Transition countries	**4.1**	**4.9**	**4.7**
WORLD	**2.9**	**3.3**	**3.9**

Source: FMI and BBVA

Table 1.2. Inflation
Year-on-year

	2002	2003	2004
OECD	**1.6**	**2.4**	**1.7**
US	1.6	2.4	2.0
EMU	2.3	2.1	1.8
United Kingdom	2.2	2.8	2.6
Japan	-0.9	-0.3	-0.4
Developing countries	**5.4**	**6.0**	**5.3**
Latin America	9.2	10.7	7.3
Transition countries	**11.2**	**9.7**	**9.2**
WORLD	**3.5**	**3.9**	**3.4**

Source: FMI and BBVA

sign that the upward cycle in interest rates in the major economies has started.

...and the uncertainty about its duration

Nonetheless, even though world growth seems set to strengthen in 2004, there is a big question mark over the duration and intensity of the expansion phase. There are several factors that could hold back growth.

One of these is the high level of external debt in the United States, which is a reflection of the historically low level of domestic saving. This is a consequence of rising levels of public deficit, which, as is customary, have not been offset by an increase in private saving. With further tax cuts expected for the first half of 2004, as well as higher expenditure (on defence and health care), the deficit is expected to continue to widen. Any increase in investment will therefore require greater recourse to external borrowing, which will further widen the current account deficit. This situation could eventually come to be seen as unsustainable. A loss of confidence among foreign investors would exert downward pressure on the currency and upward pressure on US yields, in addition to having costs in terms of growth.

The situation in the European public accounts is also far from positive, with the credibility of the Stability and Growth Pact in tatters after a political decision was taken in November not to impose sanctions. Upward pressure on long-term interest rates therefore cannot be ruled out.

A second concern is the fact that the geo-political risk is far from being under control, which could generate fresh negative shocks in business and consumer confidence and drive up the price of oil. This is nonetheless a difficult factor to predict.

Finally, developments in trade policy have been disappointing in the past few years. Multilateral agreements have given way to a framework of bilateral relationships. The impact of the electoral cycle in the United States has introduced greater uncertainty in trade policy. The recently announced quotas on Chinese textiles reflect the Bush administration's need to stimulate growth in activity and, particularly in employment, in the US economy. However, such policies pose a significant threat to global growth given that they can be accompanied by rising uncertainty and a subsequent weakening of flows of capital and goods. This would have uneven effects, the impact being most negative in those economies with a greater reliance on external saving, as is the case of the United States.

The depreciation of the US currency to its lowest level against the euro since 1998, that is to say, since before EMU was launched, is in part a reflection of these uncertainties. In marked contrast to its behaviour in the period 1999-2000, the dollar has surprisingly not reacted to the positive data emerging from the US economy. This reflects the fact that, rather than a long-lasting expansion supported by high rates of productivity growth, what is being discounted is that this expansion phase may be choked off by the unsustainable levels of the US economy's current account deficit. As this uncertainty about the sustainability of the recovery will persist in the coming months, we foresee the dollar-euro exchange rate remaining around the 1.20 level in the first half of 2004, although high volatility over this period cannot be ruled out. In the second half of 2004, it will be the growth outlook for 2005 that will determine the evolution of the dollar. In a scenario with a sustained recovery in activity, led by the United States, the dollar should appreciate to around 1.10 against the euro by year-end, that is, to a level close to the euro's long-term equilibrium rate.

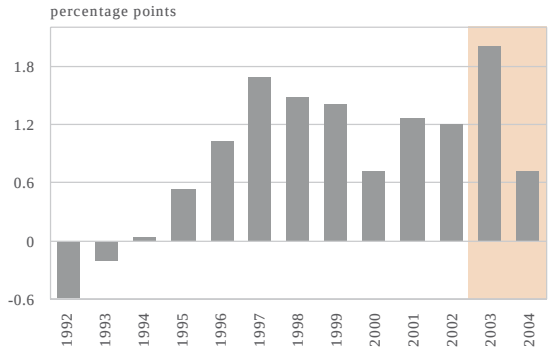
2. The real economy

Maximum growth differential in 2003; back to 1% in 2004

In 2003 Spain's economy is expected to have registered a growth differential with the EMU as a whole of close to 2 percentage points. GDP in Spain will probably increase by 2.4% this year, 0.4 percentage points more than in 2002, whereas the deceleration that began in 2001 in the EMU overall has continued, with GDP growth of only 0.5%. Despite the fact that EMU exports have a greater exposure to the rest of the world than those of Spain (which in a context of global recovery, and all other things being equal, boosts growth more in the EMU), the relatively more expansionary nature of ECB monetary policy for Spain (stronger growth and a higher inflation rate reduce real interest rates ex-post), and the stimulus provided by the tax reform account for the widening of the growth differential in 2003, from 1.2% in 2002.

Stronger growth in Spain in 2003 is due to the contribution of domestic demand, which more than compensated for the higher negative contribution to growth of net trade. In 2004 export growth will accelerate in response to rising external demand. However, it is important to consider the effect of the continuing positive differential in inflation vis-à-vis our main trading partners, with which the nominal exchange rate has been fixed since 1999 (with the exception of the United Kingdom). This entails a gradual loss of competitiveness via prices for Spanish goods and services, thereby holding back export growth when external demand picks up and adding to import growth when domestic demand expands. In 2004 the strong expansion forecasted for the world economy will slow the process of moderation in exports observed up to 2002. The external sector drag on activity will also decrease, compensating for the gradual weakening of the expansionary impact on domestic expenditure of the economic policy-mix.

Graph 2.1
Spain: growth differential versus EMU



Source: INE, Eurostat and BBVA

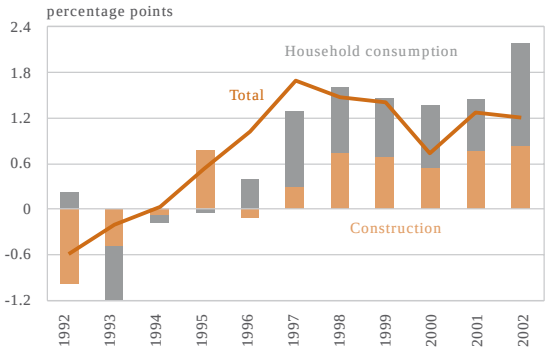
Table 2.1. Macroeconomic data

seasonally-adjusted data	2002				2003				2004							
year-on-year rates	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	2001	2002	2003	2004
Household consumption (1)	2.1	2.8	2.4	3.3	3.0	3.0	3.2	2.9	2.8	2.6	2.7	2.8	2.8	2.6	3.0	2.7
Public consumption	4.6	4.5	4.2	4.2	4.0	3.7	3.6	3.7	3.5	3.0	3.0	3.0	3.6	4.4	3.8	3.1
Gross fixed capital formation	0.7	-0.9	1.5	2.9	3.1	3.4	3.1	3.1	4.0	4.2	3.1	2.9	3.3	1.0	3.2	3.5
Capital goods and other prod.	-3.7	-6.4	-2.4	1.9	2.7	2.9	2.1	2.5	5.0	7.0	5.5	6.5	0.4	-2.7	2.5	6.0
Construction	4.6	3.9	4.8	3.7	3.4	3.8	3.9	3.6	3.2	2.0	1.2	0.0	5.8	4.2	3.7	1.6
Inventories (*)	-0.3	-0.8	0.0	1.1	0.4	0.0	0.2	0.0	0.0	0.0	0.0	0.0	-0.1	0.0	0.1	0.0
Domestic demand (*)	**2.0**	**1.5**	**2.5**	**4.5**	**3.6**	**3.2**	**3.5**	**3.2**	**3.4**	**3.1**	**2.9**	**3.0**	**3.0**	**2.6**	**3.4**	**3.1**
Exports	-3.8	-1.9	1.4	4.4	4.7	8.0	2.5	5.4	5.6	6.0	6.7	7.2	3.6	0.0	5.1	6.4
Imports	-4.3	-3.5	3.5	11.8	8.7	10.2	5.7	7.0	8.0	7.5	7.0	7.0	4.0	1.8	7.9	7.4
Net exports (*)	**0.3**	**0.6**	**-0.7**	**-2.4**	**-1.4**	**-0.9**	**-1.1**	**-0.8**	**-1.0**	**-0.7**	**-0.3**	**-0.3**	**-0.2**	**-0.6**	**-1.0**	**-0.6**
GDP at market prices	**2.2**	**2.0**	**1.8**	**2.1**	**2.2**	**2.3**	**2.4**	**2.5**	**2.4**	**2.5**	**2.6**	**2.8**	**2.8**	**2.0**	**2.4**	**2.5**
Agriculture	6.8	1.8	1.7	-5.7	-2.5	0.2	1.8	2.5	2.0	3.7	3.6	3.7	-3.3	1.0	0.4	3.3
Industry (2)	-0.2	-0.5	0.9	2.3	2.2	2.1	1.5	1.1	1.7	1.5	1.0	1.3	2.4	0.6	1.7	1.4
Construction	5.0	4.5	5.5	4.2	3.6	3.9	4.0	3.9	0.9	3.7	1.8	3.9	5.5	4.8	3.9	2.6
Services	2.2	2.5	2.0	2.1	1.9	1.9	2.3	2.4	3.0	2.3	3.0	3.3	3.3	2.2	2.1	2.9
market	1.9	2.4	2.0	2.2	2.0	2.0	2.4	2.6	3.4	2.5	2.9	3.3	3.3	2.1	2.3	3.0
non-market	3.2	2.6	1.9	1.7	1.6	1.7	1.8	1.8	1.8	1.8	3.1	3.0	3.0	2.3	1.7	2.4
Net tax on products	4.1	3.3	0.3	3.3	5.1	5.5	4.1	4.4	1.4	4.0	4.0	1.4	1.8	2.7	4.8	2.7

(*) Contribution to GDP growth
(1) Includes NPISH
(2) Energy and industrial branches

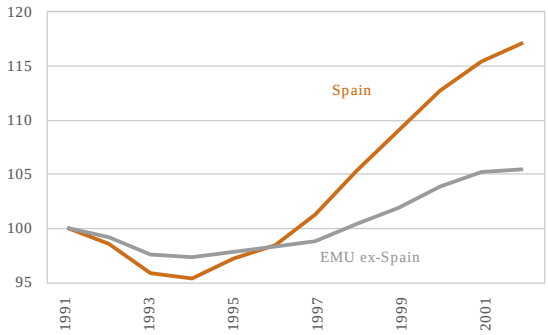
Source: INE and BBVA

Graph 2.2
Spain versus EMU
Contribution to growth differential



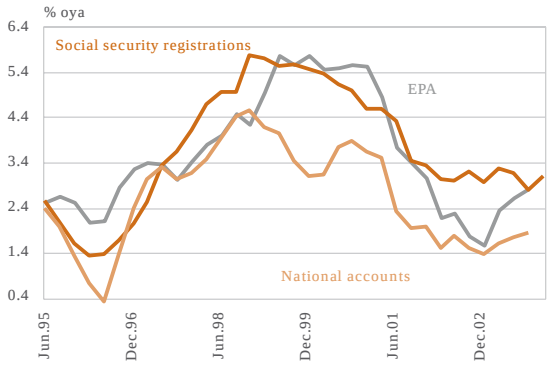
Source: INE, Eurostat and BBVA

Graph 2.3
Employment, 1991=100



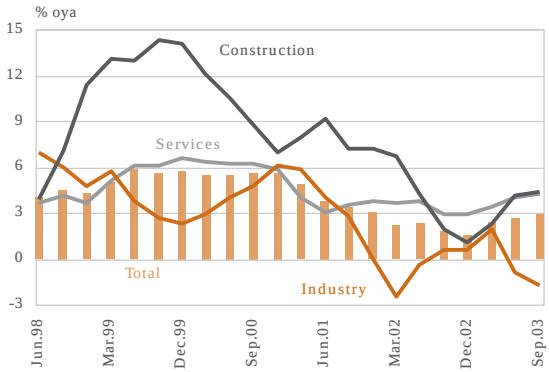
Source: Eurostat

Graph 2.4
Employment



Source: INEM, Ministry of Labour and BBVA

Graph 2.5
Employment, EPA



Source: INE and BBVA

In view of these developments, Spain should continue to converge in real terms with the EMU as a whole in 2004, though with a GDP growth differential of just under 1%, half that of 2003 and nearly the same as the average differential in 2001-2002.

Then, economic activity in Spain in 2004 will be relatively more dependent on the international environment. How it performs will have an impact on households' expectations and financial wealth, business prospects and hence particularly on consumption, investment and exports. The increase forecast in external demand will nonetheless make less of a contribution to growth because of the constant loss of competitiveness via prices of the Spanish economy versus the EMU as a whole.

2004: more employment...

Since the second half of the 1990s, the growth differential between Spain and EMU overall has been underpinned by household consumption and construction investment. Capital goods investment and exports have made a much lower contribution to this differential in GDP growth, practically zero in the case of gross fixed capital formation and negative for goods and services exports in the period 2000-2002. Stronger growth in Spanish households' consumption is attributable to the different development of its explanatory factors, employment in particular. This determinant of households' real disposable income grew in Spain by 17% between 1991 and 2002, whereas in the rest of the euro area the increase recorded over these 11 years was only 5%. Because of this, the employment growth differential between Spain and the rest of the area has stayed above 1 percentage point since 1997. This differential has its origins in the reforms undertaken in the Spanish labour market and the moderation of real wages[1], as well as in the less pronounced slowdown in activity in Spain resulting from the more expansionary nature of EMU monetary policy for the Spanish economy. Another result of all of this has been strong immigration growth[2], a factor that by itself adds somewhat to the flexibility of the labour market by increasing the geographical and sectoral mobility of employment demand in the economy.

Against this backdrop, employment as measured by the labour force survey (EPA) is expected to continue to grow in 2004 at a rate slightly above 2%. This is almost 0.5 points slower than the growth rate forecast for 2003 (2.6%, 0.7 percentage points more than in 2002). Despite sustained increases in employment of over 2%, the unemployment rate will probably rise by 0.3 points, from 11.4% of the labour force in 2003 to 11.7% in 2004, as a consequence of faster growth in the labour force (2.6%, 0.4 lower than in 2002)[3].

With regard to wages growth, the various indicators (collective wage agreements, the index of wage costs and salaried-employee compensation) show higher rates of growth than those of the past few years, but with rates of increase that are either stable or tending to fall slightly. In a scenario which should see the social agents maintain in 2004 (for the third consecutive year) the existing inter-confederation collective bargaining agreement, nominal wages growth is

[1] Real wage moderation is the result of both a reduction in negotiated wages and the fact that upward surprises in inflation expectations have not been incorporated into the collective bargaining processes. In addition, legal reforms have focused on the entry and exit mechanisms of the labour market (hiring types and dismissal costs), with the reform of the wage formation process in collective bargaining still to be addressed.

[2] Immigrant flows have been boosted by the lure of an expanding Spanish economy in a context of increasing numbers of potential immigrants as a consequence of the economic crisis in some Latin American countries. However, there has been a gradual slowing in the rate of increase of foreigners registering for social security. By September 2003 948,274 foreigners had registered, 5.7% of total social security registrations, with an annual rate of increase of 15.1%, 8.5 percentage points lower than in May.

[3] These figures are consistent with the current EPA survey, pending its adaptation to the 2001 Census population, which will have a significant impact on the survey. The population from which the EPA sample is taken will be larger and will have a higher activity rate because of the larger weights of the 16-55 age group and immigration.

unlikely to pick up from its current levels. Whether there are gains or losses in household purchasing power will therefore depend on the behaviour of prices in the economy. We expect the rate of increase of prices to slow in 2004, in the case of the CPI from 3% to 2.5%.

...and also confidence and wealth

While households' disposable income will sustain positive growth rates in 2003 and 2004 close to those of the past few years (2.4% on average since 1996), the household's wealth should post a stronger performance than in the past three years. Its real estate component (approximately 80% of the total) will continue to grow, although at slightly slower rates than in recent years (10.7% in 2001 and 12.6% in 2002) given the foreseeable slowdown in the rate of increase of house prices. As for the financial component of household wealth[4], after 3 years of falls (0.9% in 2000, 7.9% in 2001 and 9.2% in 2002), the recovery in the stock markets points to a more positive performance, as can already be seen in the slower rates of decline in the latest available data for the second quarter of the year.

The upturn in the financial markets, consistent with the recovery taking place in the global economy, will also help to consolidate the improvement in household expectations, which although correlated with the behaviour of unemployment, also have a component associated with the outlook for the general economic situation, and this has been improving since the first quarter of 2003.

...but the end of the stimulus from lower interest rates

With this improvement in Spanish households' confidence forecast to continue, the downward impact resulting from the end in 2004 of the stimulus provided by falling interest rates (in contrast to recent years) and the reduction of IRPF tax rates will be attenuated.

The pronounced decline in interest rates, which have been negative in real terms (ex-post) since 2002, has also been underpinning the consumption of the economic agents, both companies and households. The decline in interest rates as a result of the nominal convergence of Spain's economy in the euro area is a structural change that is perceived as permanent by the economic agents, thereby changing the relative price of current consumption and future consumption (saving). The result has been a re-composition of households' balance sheets, with a rapid increase in borrowing, particularly for house purchases, given that interest rates are expected to be "permanently" low by the Spanish economy's historical standards. Consequently, while indebtedness has risen, interest payments have been increasing by much less, enabling households to sustain at the same time a real increase in expenditure[5].

In the case of household consumption, therefore, the outlook for 2004 is for a moderate deceleration from the 3.1% rate forecast for 2003. However, this will be more a consequence of the winding-down of one-off expansionary stimuli (IRPF reform) than of any real deterioration in its medium-term determinants (disposable income and wealth).

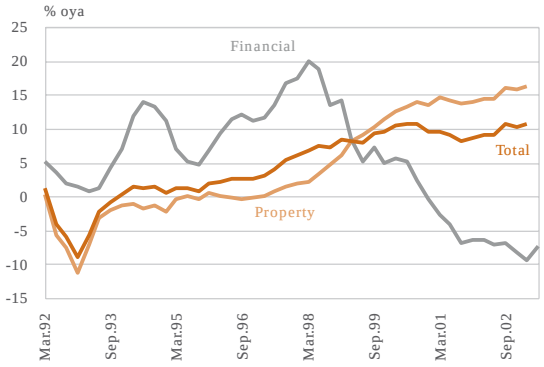
Improving global activity

The recovery under way throughout the industrial countries – with the United States leading EMU – will strengthen over the course of 2004, as shown by the leading indicators of the economic cycle in both economies. This will have a positive effect on the expenditure components of the Spanish economy that are more directly exposed

[4] In Spain consumption is more sensitive to the financial component of wealth than to the property component.

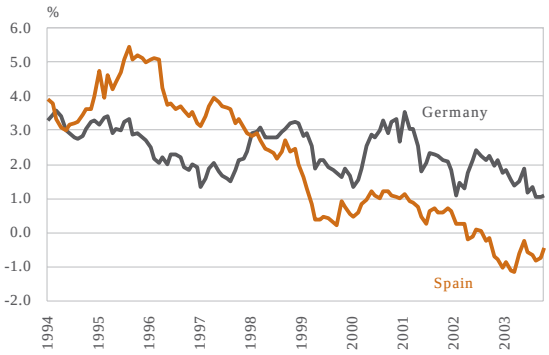
[5] El peso de los préstamos de los hogares e ISFLSH pasó del 73,9% de su renta bruta disponible en 2001 al 79% en 2002. En el mismo periodo, los pagos por intereses de préstamos cayeron 0,3 puntos porcentuales, del 4,5% al 4,3%.

Graph 2.6
Household wealth



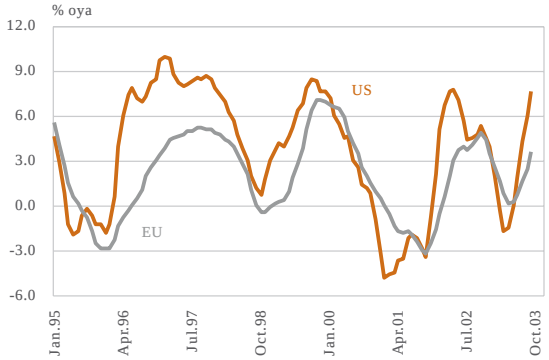
Source: Bank of Spain and BBVA

Graph 2.7
Real short-term interest rates



Source: ECB, INE and Eurostat

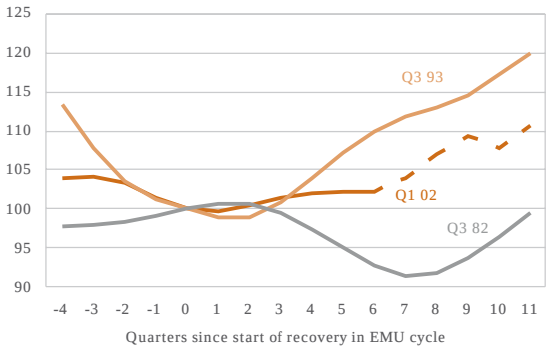
Graph 2.8
Leading indicators



Source: OECD

Graph 2.9

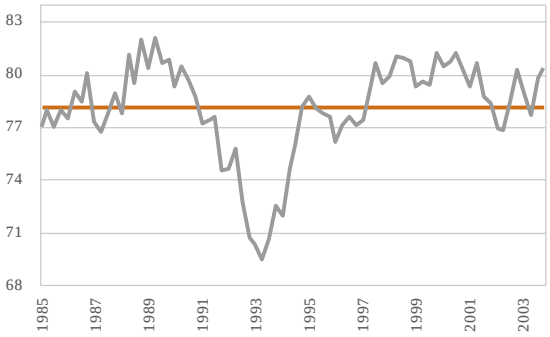
Investment in capital goods and other products



Source: INE, CEPR and BBVA

Graph 2.10

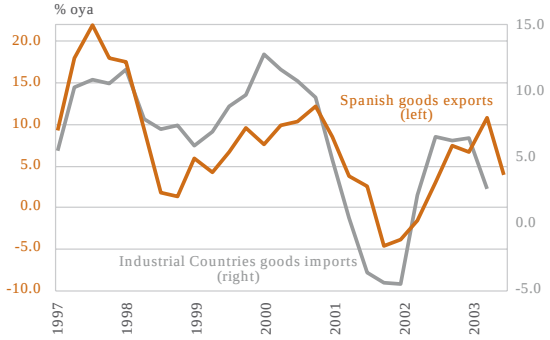
Capacity utilization in industry



Source: Ministry of Science and Technology

Graph 2.11

Spanish exports and Industrial Countries imports



Source: INE, FMI and BBVA

to external developments, and on exports and capital goods investment.

After registering a cyclical low in 2002, following a drop of close to 3%, investment in business equipment and other goods will grow at increasing rates in 2003 and 2004. Despite the fact that the return demanded from investment projects has fallen to record low levels, growth in investment has slowed continuously since 2000, in the case of the EMU overall from 3.5% to the 0.5% rate forecast for 2003. Moreover, the improving expectations among the economic agents as regards the likely path of growth have not been realised[6], which could slow somewhat the momentum of recovery in business investment compared with the typical pattern observed in previous phases. Capital goods investment in Spain is nonetheless increasingly correlated with the EMU cycle[7]. As can be seen in Graph 2.9, out of the cycles dated by the Centre for Economic Policy Research[8] (CEPR) for the euro area, in the 2 most recent cycles Spanish capital goods investment has moved in tandem with the European cycle. Given these developments, in a context of gradual strengthening in the current incipient recovery in Europe, there is likely to be a pick up in investment, with the average growth rate in 2004 rising to around 6%, more than 3 points above that estimated for 2003. In addition, the increase in capacity utilization rates in industry to levels above its historical average while activity has slowed is consistent with the hypothesis that the investment process under way will intensify if the first real signs of European expansion gather strength.

Financial conditions, meanwhile, are favourable for the implementation of investment projects, with continuing declines in the real cost of capital[9], to all-time lows, and, as the Bank of Spain's Central Balance Sheet Office has pointed out, with a widening differential between the return on assets and the cost of liabilities for non-financial companies. However, despite the good indicators for borrowing costs and business returns, the rapid increase in recent years of liabilities in company balance sheets may limit growth in investment to some extent despite the improving activity expectations. According to the Bank of Spain's Financial Accounts, by June of 2003 non-financial companies as a whole had accumulated balance sheet loans amounting to 76% of GDP (58 percentage points in long-term loans), 5 points more than a year earlier[10]. In this sense, according to the Bank Lending Survey of the Bank of Spain, in the third quarter of 2003 the general financing conditions on loans extended to non-financial companies remained stable, while for the first time since the survey was introduced conditions are not expected to tighten further. At the same time, demand for corporate loans for longer-dated terms also saw a positive development over this period.

Exports, capitalise global recovery

In contrast to the upward trend in place since the middle of 2002, Spanish exports decelerated in the third quarter of 2003[11]. This slowdown comes at a time when growth in some of the main importers of Spanish goods and services (France and Germany) seems to be resuming following the stagnation observed in previous quarters.

[6] This occurred for example in the euro area in 2002, with increases in the leading indictors of consumer and industrial sentiment which finally were not borne out by a real improvement in the activity data.
[7] The increase in correlation is not confined to this component of expenditure. Spain's GDP cycle has a correlation of close to 90% with the cycle of EMU overall, more than double that which existed at the start of the 1990s.
[8] The quarters in which the start of recovery in the euro area is dated are: Q175, Q382, Q393 and Q102. The latter has certain specific characteristics in that the preceding quarters marked a period of stagnation rather than recession.
[9] Estimated by means of the real long-term interest rate ex-post weighted by the ratio between the investment deflator and the total economy deflator.
[10] Despite this, as a result of the decline in interest rates, financial expenditure has not increased. In 2002 interest payments amounted to 4.3% of GDP, 0.2 points less than in 2001.
[11] The year-on-year deceleration in Q303 was due in part to the exceptional growth registered in Q202 in export and import volumes, the highest since mid-1987.

However, the upswing in these countries has so far been supported more by their own exports than by an increase in domestic demand and therefore in imports (and consequently purchases from Spain). This reduces the likelihood of any immediate rise in exports. During 2004, as domestic demand strengthens in the euro area as a whole, the recovery in Spanish sales of goods and services (tourism) should gather strength.

In a more general context, the recovery in the external demand of the Spanish economy, expressed in the form of the goods imports of the industrial countries, ground to a halt in the middle of 2003. In the EMU, the latest data for France, Germany and Italy show slower annual rates of growth up to August 2003. Moreover, industrial production in the euro area still shows no signs of any significant recovery, despite the improvement in expectations indicators.

Though expected to pick up further in 2004, from 5.1% in 2003 to 6.4%, Spanish export growth will continue to be held back by the deterioration in price competitiveness accumulated by the Spanish economy during the past few years. And this trend of faster price increases in Spain than in EMU is expected to remain largely unchanged. This behaviour can be seen to a greater or lesser degree in both consumer prices and in producer and export prices, as well as in the economy's general price level, as measured by the GDP deflator[12]. This may result in the loss of some of the gains in competitiveness that could be achieved not from lower relative prices, but from a greater capacity for innovation or an enhanced use of the economy's productive resources. The behaviour of the euro, which will appreciate again against the dollar in 2004, will also add slightly to the brake on growth applied by the increase in Spanish relative prices[13].

The moderation in domestic demand, mainly in consumption, in 2004, will help to slow import growth, from a forecast real growth rate of around 8% in 2003, to 7.4%. There will therefore probably be a negative contribution from the external sector to growth of 0.6 percentage points in 2004, down from 1 percentage point in 2003.

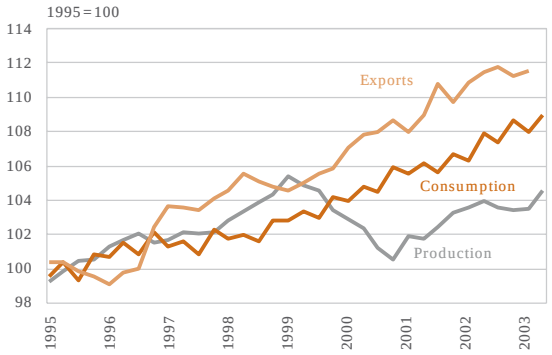
Slowing construction

Among the demand components in Spain, construction is the least exposed to the ups and downs of the external environment. Between 1998 and 2002, construction investment contributed on average 0.7 percentage points of the 1.2-point differential between Spain's GDP growth and that of the EMU overall[14]. In addition, by sub-sector of activity, the differential existed both in housing and in the rest of construction expenditure (non-housing and public works).

In the quarters ahead, the deceleration now taking place in construction in Spain will intensify as a result of the moderation in expenditure effectively executed on public works by the public administrations, but also because of a fall-off in housing demand on the part of households. In this sense, the gradual fall in the BBVA-ConstIA indicator, a signal of the state of activity in the sector obtained by means of the synthesis of various economic indicators[15], is consistent with this weaker outlook.

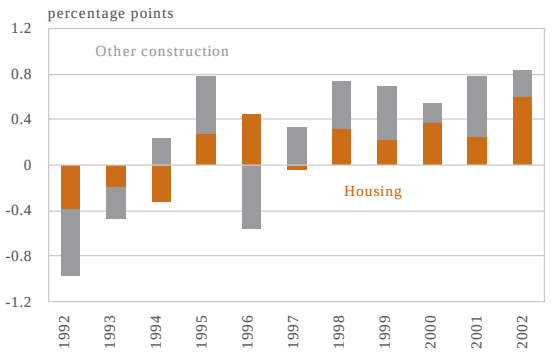
After 5 years in which property prices have risen at rates of over 10%, the increase in mortgage rates during 2004 will bring about a

Graph 2.12
Spain vs EMU: relative prices



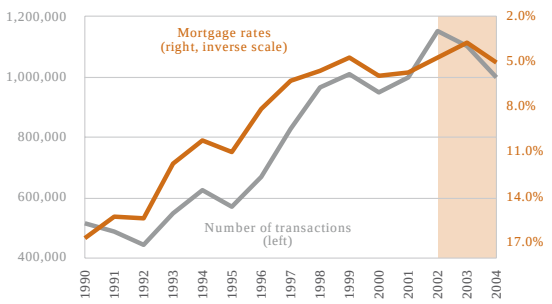
Source: Ministry of Economics, Bank of Spain and BBVA

Graph 2.13
Construction: contribution to growth differential



Source: Eurostat and BBVA

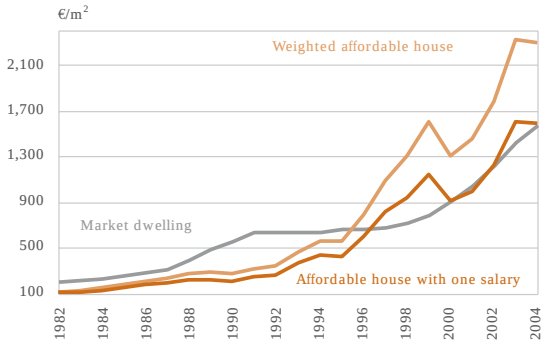
Graph 2.14
House transactions and interest rates



Source: Bank of Spain and BBVA estimates

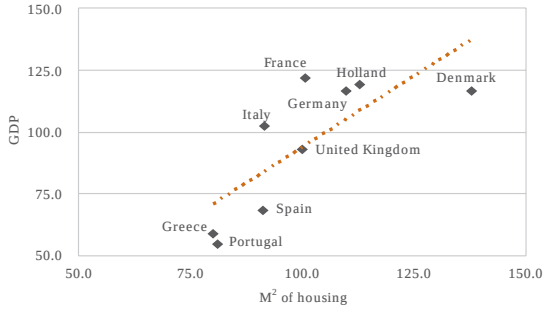
[12] It is important to recall, however, that within a monetary union there is a tendency for prices to even out across the different territories, more intensely in the case of those goods with a smaller non-tradeable (wage) component.
[13] This situation cannot be resolved with the permanent compression of business margins in addition to that imposed by the process of globalisation.
[14] While the rate of growth of construction has been slowing in Spain and EMU since 2000, in EMU as a whole this component of GDP is in recession, after contracting by 0.2% and 2.6% in 2001 and 2002.
[15] For details of the construction of this index, see "ConstIA-BBVA: an indicator of construction activity", BBVA Real Estate, October 2003, pp. 11-12.

Graph 2.15
Housing affordability



Source: Ministry of Development and BBVA

Graph 2.16
GDP per capita and consumption of housing
Europe = 100, base year 2001



Source: BBVA

reduction in the number of house transactions (from a peak of 1.150 million registered in 2002). Because of this, housing starts will fall back from their current highs, the eventual outcome being a lower level of activity in the sector.

Although house prices continued to increase in the first half of 2003, at an annual rate of 17%, practically the same rate as in 2002, there was no comparable deterioration in households' repayment capacity given the decline registered in mortgage interest rates. The mortgage interest rates of banks and savings banks fell by 95 basis points between December 2002 and September 2003, to an all-time low of 3.43%[16]. As a result, the monthly payment required to buy an standard dwelling has remained virtually stable despite the steep rise in house prices. However, in view of forecast developments in prices (down from a 17% annual rate of increase in 2003 to approximately 8% in 2004) and interest rates (upwards from the second half of 2004 on), the capacity of households to acquire a house at market prices will deteriorate further next year.

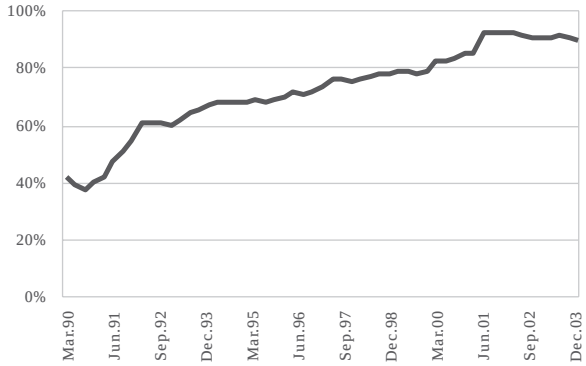
Irrespective of the correction of the current overvaluation in house prices and the slowdown or even stagnation of activity in 2004-05 after 6 years with increases outstripping GDP, social, demographic and factors relating to real convergence allow us to maintain a positive outlook for the sector in the long term. While it is true that the strength of residential demand is not solely due to the increase in the number of households, the recent 2001 Census has shown increases in population, and specifically in immigration, that raise population forecasts and projections of potential demand for housing. In addition, in a scenario with nominal stability within the EMU and the continuation of the process of real convergence, "consumption" of housing will tend to increase. This can be seen in those European countries with higher per capita incomes, where each person uses on average more square metres of main residence[17].

[16] Also, the year-on-year decline registered was the biggest in relative terms of the past 6 years.
[17] Not taking residences which are mainly owned for tourism purposes.

More synchronized demand

Cyclical correlation between Spain and the EMU

40-quarter moving period



Source: BBVA

Correlation of shocks in Spain and the EMU

Growth and unemployment	Supply	Demand
1982-1990	-0.15	-0.10
1991-1993	-0.22	-0.17
1994-2003	0.16	0.50
Growth and inflation		
1982-1990	0.22	0.05
1991-1993	-0.06	-0.02
1994-2003	0.36	0.56

Source: BBVA

The growth differential that currently exists between Spain and the EMU has rekindled the debate as to whether the EMU functions as an optimal monetary area and the transfer of monetary jurisdiction to the ECB is having beneficial effects on Spain's economy or whether, on the contrary, loose monetary policy is generating an inflation differential that will end up holding back future growth.

The interrelation between Spain and Europe has been increasing slowly but steadily for the past 30 years, and has intensified since Spain entered the EEC in 1986, with the resulting greater opening to trade. Thus, in the past few years, the correlation between the Spanish economic cycle and that of the EMU has stood at levels close to 90% (see graph), compared with a figure of 40% in the decade of the 1980s. The correlation is even higher if we look at variables for expectations or demand, such as the confidence readings[1].

However, from the point of view of policy coordination within the EMU, it is useful to know whether the shocks experienced by the EMU economies are permanent or transitory in nature, that is to say whether they are supply or demand shocks. This makes it possible to assess the appropriateness of a common monetary policy for the area as a whole.

Using the methodology of Blanchard and Quah, we have proceeded to make a decomposition of the shocks in the two areas. Thus, a shock is considered to be a supply (demand) shock when it has a permanent (transitory) impact on the level of activity. This decomposition is undertaken by means of a bivariate structural VAR comparing GDP and unemployment. However, bearing in mind the particular idiosyncrasy of the evolution of unemployment in the Spanish economy, and following other authors who have also carried out similar decompositions, we have also undertaken the decomposition using activity and prices. The analysis was carried out using quarter-on-quarter rates[2], with data for the period from the first quarter of 1980 to the second quarter of 2003.

Having obtained the results of the decomposition, we compare the correlation between the shocks experienced by Spain and the EMU in the period 1982-1990 with that for the period between 1994 and the present. The period 1991-1993, which saw the recession, shows a fall in the correlation of the shock, a logical development taking into account the fact that the crisis hit Spain and the EMU at different times, and that this analysis only focuses on the contemporary correlation. The above table presents, first of all, the results obtained with the decomposition using GDP and unemployment. It can be seen that the correlation between the shocks of the two economies has increased: from slightly negative values in the period 1982-1990 to a positive correlation. The biggest increase is nonetheless observed in demand shocks, for which the correlation stands at 50%. The table also shows the results obtained using the activity and prices variables, which confirm qualitatively those estimated with unemployment as the variable. In the case of the supply shocks, the increase in synchronization is similar in the cases of both unemployment and inflation, but from a slightly higher level in the latter case.

The increase in the contemporary correlation of the demand shocks is of particular significance considering that monetary policy has been transferred to a supranational organisation, the ECB, whose monetary policy must be geared to economic conditions in the euro area as a whole. However, the fact that the correlation is significantly different from 100% indicates that there is scope for designing policies at a national level that can help countries to cope with demand shocks not shared by the other countries in the area.

[1] A comprehensive analysis of the variables which show an increase in cyclical alignment between the different EMU countries can be found in Cabrero, A., C. Chuliá and A. Millaruelo, "Una valoración de las divergencias macroeconómicas en la UEM", *Documento ocasional*, 04/2003, Bank of Spain.

[2] The greater volatility of quarterly rates compared with annual rates means that, in the latter case, the correlation values increase over the whole sample period. However, the increase in correlation is maintained.

3. Prices and wages

Slowing inflation in 2004

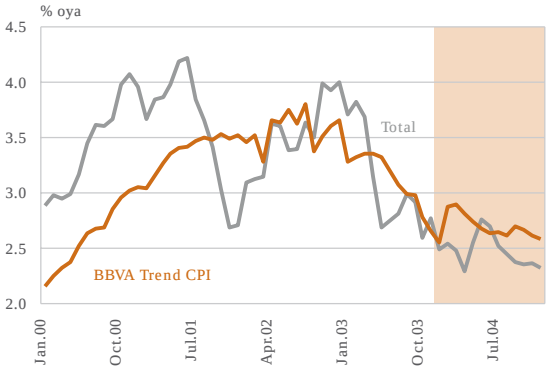
The inflation outlook in the Spanish economy has been moderating since the middle of 2003, and consumer prices are now forecast to slow more quickly in 2004. CPI inflation is therefore likely to come in at 2.5% in 2004, after rising by 3% in 2003. The IPSEBENE and BBVA Trend CPI measures of inflation are also expected to slow, with growth rates of 2.6% and 2.7%, respectively, 0.3 and 0.4 points lower than in 2003. These would be the lowest rates of increase in the main benchmark consumer price indices since 1999 in the case of CPI inflation and since 2000 in the case of IPSEBENE and BBVA Trend inflation.

It is important to stress the increase (since sales prices were included in the CPI in 2002) in the volatility of the most-frequently used measures of trend inflation, which strip out the traditionally more volatile components of the consumer price basket. This makes the measurement of the medium-term inflationary tensions in the economy more difficult. However, as discussed in the Box, "Trend Inflation and Underlying Inflation. Not the Same Thing", at the end of this chapter, trend inflation indicators drawn up using different methodologies coincide in showing a decline in the underlying tensions in consumer prices in the Spanish economy.

The forecast decrease in inflationary tensions is consistent with an economic scenario characterised by a fall-off in domestic demand in 2004, most notably in consumption, and a rising euro exchange rate against the dollar. The euro is expected to appreciate from its average level in 2003 to the dollar. Moreover, the combined impact of fiscal and monetary policies on Spain's economy will be less expansionary in 2004 than it was in 2003.

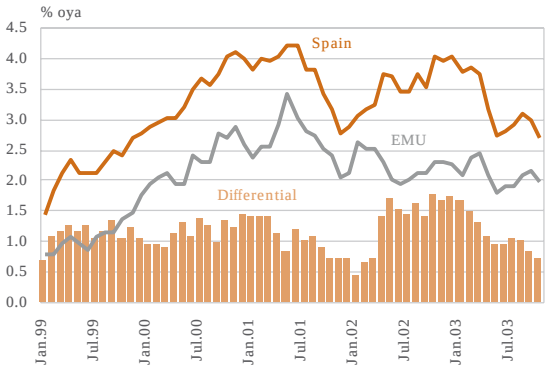
GDP is forecast to grow by 2.5% in 2004, 0.1 percentage points higher than in 2003. This development will be the result of a smaller external sector drag on activity and a slowdown in domestic demand, in particular in consumption and construction. Growth in household expenditure is expected to come in at 2.7%, 0.3 points below that of 2003, when personal income (IRPF) tax rates were cut. With these figures, GDP growth will remain below the growth rate of potential output, which is estimated to be around 2.7%. The relative strength of domestic demand is seen in the large deficits in both the trade account (just over 6% of GDP in 2003) and the current account (close to 3%). There is

Graph 3.1
Inflation



Source: INE and BBVA

Graph 3.2
Harmonised inflation



Source: Eurostat and BBVA

Table 3.1. Inflation

	Overall CPI			IPSEBENE			Residual CPI			Trend CPI		
	2002	2003	2004	2002	2003	2004	2002	2003	2004	2002	2003	2004
Jan.	3.1	3.7	2.5	3.6	3.2	2.5	2.0	4.9	1.6	3.5	3.3	2.9
Feb.	3.1	3.8	2.5	3.6	3.3	2.6	2.0	5.3	1.3	3.5	3.3	2.9
Mar.	3.1	3.7	2.3	3.5	3.2	2.6	2.7	4.7	0.8	3.3	3.3	2.8
Apr.	3.6	3.1	2.5	3.9	3.3	2.6	3.5	2.6	2.0	3.7	3.4	2.7
May	3.6	2.7	2.8	4.1	3.0	2.6	3.5	0.8	3.0	3.6	3.3	2.7
Jun.	3.4	2.7	2.7	4.1	2.9	2.5	2.3	1.4	2.9	3.8	3.2	2.6
Jul.	3.4	2.8	2.5	3.8	2.9	2.6	2.7	2.1	2.2	3.6	3.1	2.6
Aug.	3.6	3.0	2.5	3.8	2.9	2.7	3.1	3.0	2.0	3.8	3.0	2.6
Sep.	3.5	2.9	2.4	3.5	2.8	2.7	3.9	2.7	1.4	3.4	3.0	2.7
Oct.	4.0	2.6	2.4	3.7	2.6	2.5	5.4	2.1	1.5	3.5	2.8	2.7
Nov.	3.9	2.8	2.4	3.6	2.6	2.5	4.9	3.1	1.6	3.6	2.7	2.6
Dec.	4.0	2.5	2.3	3.6	2.5	2.5	5.0	2.3	1.5	3.7	2.6	2.6
Average	**3.5**	**3.0**	**2.5**	**3.7**	**2.9**	**2.6**	**3.4**	**2.9**	**1.8**	**3.6**	**3.1**	**2.7**

Source: INE and BBVA forecasts

therefore little chance of more pronounced falls in inflation, even though that is what might be expected after 2 years of below-potential growth and euro appreciation. Finally, the cost of oil imports is expected to come down both because of the higher exchange value of the euro and the fall in oil prices in dollars in the wake of the geopolitical uncertainty in 2003. The price of a barrel of Brent will probably average just below 26 dollars in 2004, 2.5 dollars less than in 2003.

The inflation differential vis-à-vis the rest of the EMU will drop to below 1% in 2004 for the first time since 1998. The one-percentage-point gap in 2003 is expected to shrink to 0.8 points in 2004. Although less intense than in previous years, the acceleration in relative prices in the Spanish economy relative to the EMU overall will therefore continue in 2004[1].

As regards the various components of Spain's CPI basket, the outlook for 2004 is for faster price increases only in the case of fresh food. Prices in this group have risen sharply in recent months, most notably those of certain products such as fresh vegetables that have been affected by supply problems.

For industrial goods, in contrast, the inflation outlook has moderated in recent months, after registering a rate of increase of 2.1% in the third quarter of 2003, 0.5 points below that of the previous quarter. This traditional trend component has registered a significant increase in volatility since January of 2002 when clearance sales prices were included in the calculation of consumer prices, with this change being felt most intensely in the clothing and footwear heading[2]. However, as noted in the Box in this chapter, the underlying inflationary tensions in the Spanish economy have been easing since at least the beginning of 2003, and the oscillations of the categories most affected by sales prices have not changed the underlying trend in prices.

Rising nominal wages, falling real wages

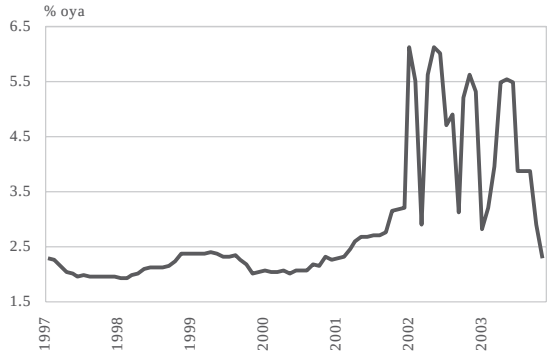
Within this scenario of slowing inflation in 2004, wages growth, not particularly dependent on the behaviour of labour productivity and indexed to past inflation through the inflation-adjustment clauses, is one factor that will be an impediment to lower prices tensions.

The increase accumulated by collectively-bargained wages up to October 2003 amounted to 3.5%, practically the same figure as that registered over the course of the year, and 0.5 points above average wages growth in 2002[3]. Thus, although the Collective Bargaining Agreement signed in 2002, later extended in 2003 and foreseeably again in 2004, slowed the acceleration observed in wage agreements up to 2001, the little credibility that exists with respect to the 2% inflation target[4] has brought about a gradual pick-up in pay awards and the wider use of catch-up clauses as a safeguard against past inflation. In 2003 such clauses affected approximately 80% of salaried employees with collective wage agreements. This year, in contrast to what happened in 2002, inflation has eased back towards the targeted rate of 2%, meaning that any uprating of wages for inflation will be smaller in size.

Our projected 3.8% rate of growth in the GDP deflator (compared with 4.4% in 2002 and a forecast rate of 4.1% in 2003) assumes that wages growth will remain around 3.5% because of the limits imposed by the existing agreement between employers and trade unions. Wages growth

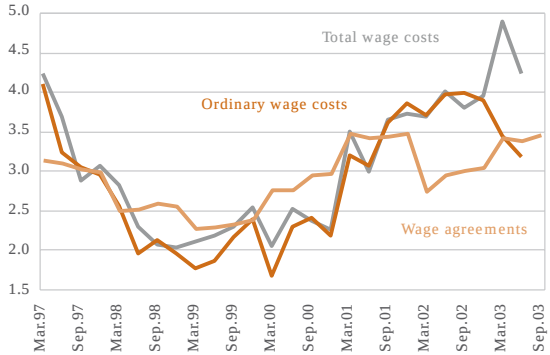
[1] This CPI behaviour can be generalised, to a greater or lesser degree, to the GDP deflator and producer prices.
[2] Although the volatility of the data makes any analysis of specific categories very provisional, the new base year for the CPI may have caused a jump in clothing and footwear inflation. The average rate of inflation of goods of this sort between January and October of 2003 was 4.1%, a rate 0.9 points below that registered in 2002, but no less than 1 point higher than any of the rates of increase registered in the period 1994-2001.
[3] When inflation-adjustment clauses are included, the increase in collectively-bargained wages in 2002 was 3.8%.
[4] The agreement between employers and trade unions was signed at the end of 2001, after 2 years with an average annual rate of inflation of 3.5%.

Graph 3.3
Clothing and footwear



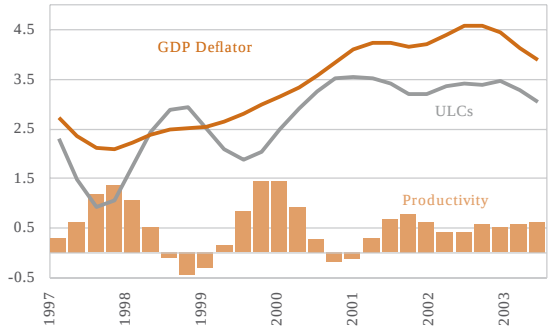
Source: INE and BBVA

Graph 3.4
Wages growth



Source: Ministry of Labour, INE and BBVA

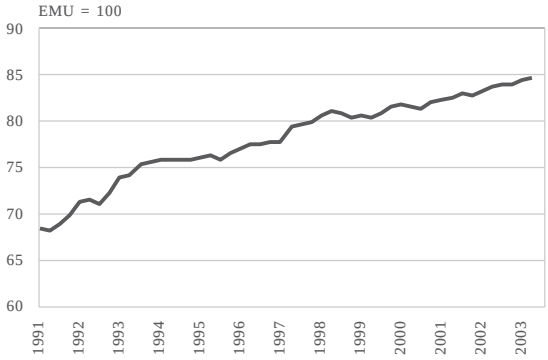
Graph 3.5
Economy



Source: INE and BBVA

Graph 3.6

Relative compensation per salaried employee in Spain with respect to the EMU



Source: INE, Eurostat and BBVA

for salaried employees in 2004 is therefore expected to edge downwards by 0.1 of a point to 3.8%.

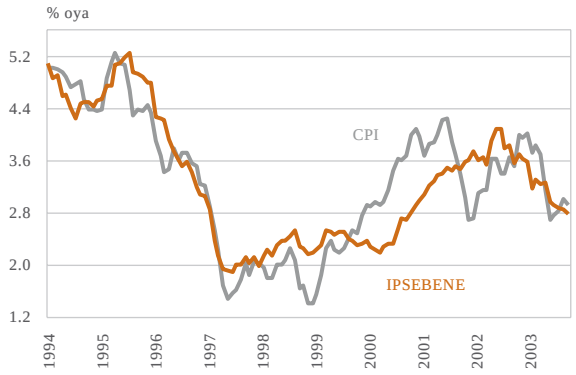
Against this backdrop, the Spanish economy is recording relatively low wages growth in real terms, with growth rates even below those of the EMU as a whole. Salaried-employee compensation in Spain has been clocking up annual rates of increase of around 4% in recent quarters, approximately 1.5 percentage points above wages growth in the EMU as a whole. In real terms, however, the annual rate of change in salaried-employee compensation in Spain has been negative for the past 6 quarters, in contrast to the increases observed in EMU as a whole.

This restraint in real wages in Spain is due to the moderation in nominal wage settlements and inflation overshoots with respect to expectations. However, the present collective bargaining process is based on wage indexation ex-post, so that upward supply shocks on prices may have permanent upward effects on wages, with the resulting risk of the link between real wages and labour productivity being severed.

The sustained increase in nominal wages in Spain at rates above those of the EMU as a whole results in a gradual weakening of the competitive advantage associated with lower levels of wages in absolute terms. According to Eurostat and INE data, nominal salaried-employee compensation rose by 70% in Spain between 1991 and 2003, twice the rate of the EMU as a whole. As a result, the relative level of salaried-employee compensation in Spain has moved from a situation in which it was 68% of that of the EMU as a whole in 1991 to stand at 85% in the middle of 2003.

Underlying inflation and trend inflation. Not the same thing

Inflation



Source: BBVA

Standard deviation of monthly rate

	Feb-93 // Dec-01	Jan-02 // Sep-03
Total CPI	0.21	0.51
Fresh food	1.19	0.79
Energy	1.25	1.60
IPSEBENE	0.17	0.63
Processed food	0.36	0.24
Non-energy industrial goods	0.14	1.82
Services	0.31	0.39
BBVA Trend CPI	0.14	0.71
Weighted average index*	0.12	0.16
Median index	0.12	0.13

* the weight of each category is divided by its standard deviation
Source: INE and BBVA

Underlying inflation is an economic concept that does not have a sole definition and for which there exist different statistical procedures for calculating it. In general terms, underlying inflation can be defined as the rate of growth in the general level of prices that persists over the long term and which has some sort of relationship to growth in monetary magnitudes[1]. This economic concept of permanence over the long term is equivalent statistically to the estimation of a price signal with a relatively reduced level of volatility. The procedures for calculating it can be grouped under three types[2]. The first of these is based on stripping out or adjusting the weight of the categories of the price index with the greatest volatility. The second group uses factorial statistical techniques to extract common information from a wide range of variables. Lastly, there are methods that use time series techniques with varying degrees of sophistication (from moving averages to the Kalman Filter) to extract the trend of the price index. In this box we show the effect on different measures of underlying inflation as a result of including clearance sales and special offers in the Consumer Price Index (CPI)[3].

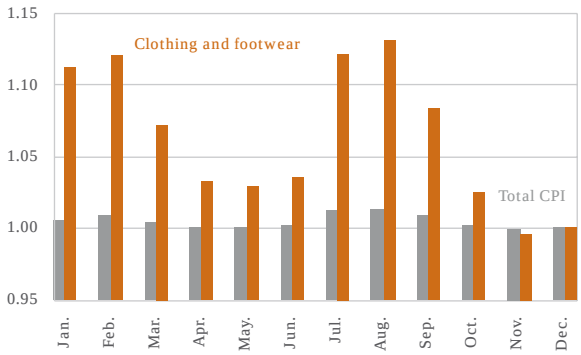
Clearance sales increase the sensitivity of the CPI to developments in the current economic situation by reflecting to a greater extent changes in the price-fixing policy of companies. This greater economic sensitivity of the CPI translates statistically into greater volatility. In this way, greater uncertainty exists with respect to the trend evolution in the CPI; the traditional method of calculating underlying tensions in prices.

The most common procedure for estimating underlying inflation is to eliminate from the basket of products that make up the CPI those categories that historically have experienced greater volatility. This would be the case of the IPSEBENE, the Index of Services and Non-Energy Manufactured Goods Prices, a variable whose growth is commonly considered to be equivalent to underlying inflation. The IPSEBENE strips out of the CPI non-processed foods and energy, which were the components with the greatest volatility out of the five special groups in the CPI up to December 2001[4]. As can be seen from Table 1, in the period between February 1993 and December 2001, the volatility in the monthly growth in the BBVA Trend CPI was 0.14, below the 0.17 level registered by the IPSEBENE and the 0.21 of total CPI. The breakdown of the five special groups into which the CPI basket is divided allows us to see that non-energy industrial goods were up to December 2001 the least volatile component of the index (0.14), almost 10 times less than energy prices (1.25) and fresh foods (1.19).

The inclusion of clearance sales in the CPI has brought about a permanent change in the volatility of all of the categories in the index, particularly so in the case of clothing and footwear (9.9% of the index), which are included in the group of non-energy industrial goods. As can be seen in Graph 2, while the average sales factor in 2001[5] for the total CPI was 1.005, for clothing and footwear it was 1.063, with a standard deviation also significantly greater for this group of products: 0.05 vs 0.005.

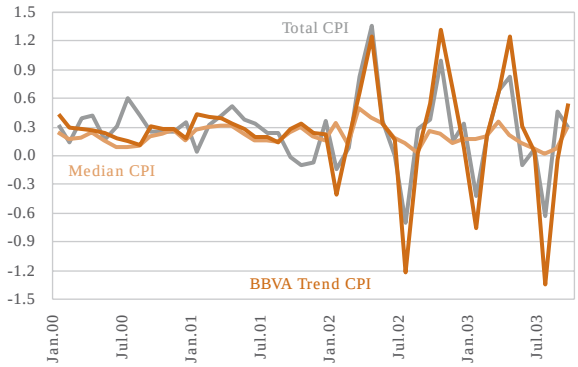
[1] Bryan, M. and Stephen G. Cecchetty, "Measuring core inflation", *Working Paper* No. 4303, NBER, March 1993.
[2] Morana, C. "Measuring core inflation in the euro area", *Working Paper* No. 36, European Central Bank, November 2000.
[3] A summary of the changes introduced by INE in the 2001 CPI System can be found in: "IPC Sistema 2001: más moderno y volátil", *Economic Report 2002*, BBVA Research Department.
[4] With the same objective of reducing volatility, the BBVA Trend CPI is drawn up as an underlying inflation signal, eliminating from the IPSEBENE other regulated or particularly volatile prices. For more detail, see: "Less tourism in BBVA Trend CPI", *Situación Spain*, November 2001, BBVA Research Department.
[5] In 2001, INE carried out two parallel samples for the CPI; with and without seasonal sales prices. The objective was to be able to calculate homogenous inflation rates for 2002. The sales factor is the ratio between the two samples for each group of products. From January 2002, only prices under the criterion of the New System are gathered.

Sales factors 2001



Source: INE and BBVA

Monthly growth in consumer prices



Source: INE and BBVA

The greater volatility with the 2001 CPI System of non-energy industrial goods - precisely the most stable group of the CPI with base year 1992 - complicates the calculation of an underlying inflation signal by means of the prior stripping out of the most volatile categories. As is shown in Table 1, the CPI of non-energy industrial goods has multiplied by 13 the historical volatility in its changes (1.82 vs 0.14), in addition to being the group with the highest standard deviation in its monthly variations since January 2002. While the total CPI has only increased its historical volatility by 2.4 times (from 0.21 to 0.51), the IPSEBENE or the BBVA Trend CPI have done so by four and five times, respectively.

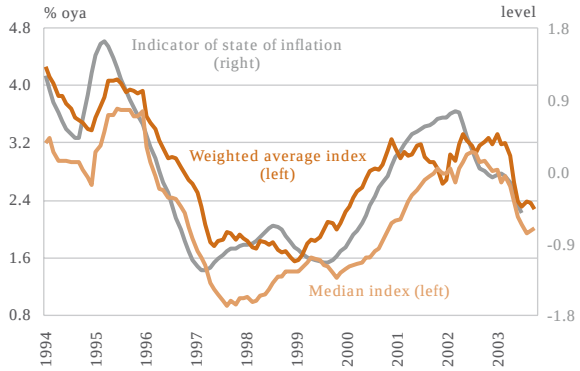
The elimination of categories in the price index in order to estimate trend inflation can be carried out by choosing beforehand those that are to be stripped out. However, one can also opt to eliminate the most volatile products at any point in time independently of what these products might be. In this way, the average of the variations in the products in the basket that do not surpass a specific threshold (trimmean) can be used as an estimate of underlying inflation. Alternatively, in order to avoid the complete removal of parts of the CPI basket, one can also correct their weightings using their historical volatility. That is, as the standard deviation of a category increases, the less its importance for trend inflation since its weighting in the index basket is weighted according to its volatility. Lastly, another possibility is to select as an estimate the monthly median change in the index, that which leaves 50% of the variations in the categories above that level and the other 50% below, without taking into account what category of prices it corresponds to. As can be seen in Table 1, the median variation in the 57 categories of the CPI is the least volatile of the options considered within the different possibilities for correcting the CPI. The median growth of the categories of the index practically maintains the same level of volatility before and after December 2001 (0.12 and 0.13, respectively). Only the index which weights the importance of each category according to its volatility approaches the results of the "median index" in the period starting in 2002.

Finally, the statistical technique of principal components has been used to extract the underlying state of inflation using the disaggregated data for the 57 categories within the CPI. Firstly, by means of ARIMA models, the trend component of each of the categories is estimated. The principal components are extracted from the trend growth rate series[6] of each category. These are artificial variables that taken together provide the same variability as the original series, and which in addition are orthogonal to one another (linearly independent).

The first principal component – that which explains a greater percentage of the combined variance - is linked to the state of underlying inflation in that it is assumed that the greatest percentage of combined variance of the series will be the result of a factor common to all of them and not due to factors specific to some of them such as possible supply or demand shocks. In the estimation carried out, this underlying common factor explains 14% of the common variance of the trend of the categories of the CPI. This indicator maintains a similar trajectory to the price index with weightings weighted according to the volatility of the different categories, or to that obtained on the basis of the median growth at any one moment; that is to say, trend inflation signals (see Graph 4).

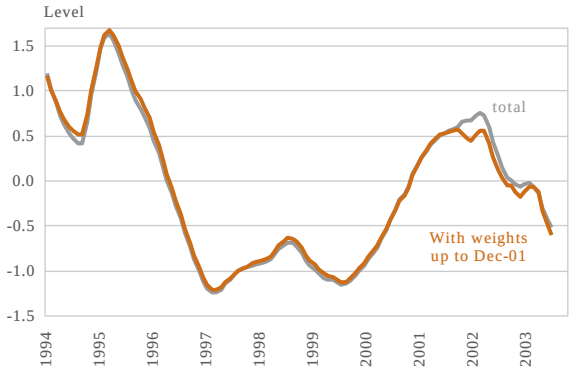
[6] The rate of growth is approximated by means of the first difference of the natural logarithm. Thereafter, the data series is standardised.

Trend inflation and state of inflation indicator



Source: INE and BBVA

Indicator of state of inflation



Source: BBVA

One advantage of this way of estimating trend inflation is its robustness to the structural change brought about by the introduction of clearance sales. The identification and estimation of an ARIMA model is complicated in the case of those products most affected by special offers; that is, clothing and footware[7]. However, if the indicator of the state of inflation is calculated without these categories, the resulting index maintains practically the same evolution as that which considers all of the products in the CPI. What is more, if the weights of every category in the indicator of the state of inflation are calculated using the information available up to December 2001, the changes with respect to the indicator that considers data from all of the sample are minimal (see Graph 5). This behaviour is consistent with the idea that the recent variations in the categories most affected by the seasonal sales are not due to some factor common to the rest of the categories, and, therefore, not the outcome of underlying changes in inflation. In addition, given that the indicator of the state of inflation has fallen since the start of 2002[8], it would be reasonable to assert that the underlying state of inflation has not changed as a result of the exceptional rises registered in the prices of some products as a result of the switch to the euro. Also, given that the indicator of the state of inflation is characterised precisely by the reduced weight therein of the categories most affected by the seasonal sales, one can deduce that it is these products (fundamentally clothing and footwear) that have been most affected by the impact of the rounding-up that resulted from the introduction of the euro.

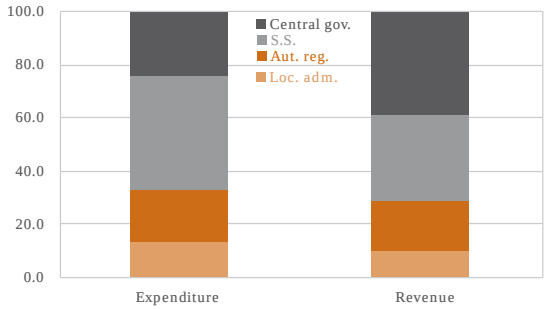
By way of summary, from the behaviour identified for the different indicators of the state of inflation, it can be deduced that the impact of the rounding-up as a result of the introduction of the euro will have had an impact on the prices in the economy for a given year (2002), but not on their growth rate that persists over the long term. Given the reduced sensitivity of the indicators of the state of inflation to changes in the measurement of prices with the incorporation of seasonal sales and the introduction of the euro in 2002, none of these factors seem likely to have changed underlying inflation in the Spanish economy.

[7] Since January 2002, there has been insufficient information available to be able to estimate new models following the break in the series that took place as a result of the inclusion of clearance sales.
[8] Unlike what occurs in the case of the other estimates of trend inflation.

Graph 4.1

Distribution of non-financial revenue and expenditure in 2002

Percentage structure



Source: IGAE

Table 4.1. Pluri-annual budget scenario

Net lending (+) or borrowing (-) (% GDP)

	2003	2004	2005	2006
General Govern.	**0.0%**	**0.0%**	**0.1%**	**0.2%**
Central Govern.	0.0%	0.0%	0.1%	0.2%
State	-0.5%	-0.4%	-0.3%	-0.2%
Social Security	0.5%	0.4%	0.4%	0.4%
Territorial Gov.	0.0%	0.0%	0.0%	0.0%

Source: Ministry of Finance

4. Fiscal policy

The transformation of the budgetary model in Spain

In the past few years the Spanish public sector has undergone a profound transformation, corresponding to the social and economic transformation of the country itself. This process has important consequences for the drawing up, approval, execution and control of government budgets. The transformation has given rise to what may be thought of as a "new model" with two distinctive characteristics: the decentralization of policies towards the territorial administrations and a new legislative framework for the budget.

The intense decentralization of revenue raising powers and expenditure competences from the Central government and the Social Security administrations to the different Territorial administrations – essentially autonomous regions and local administrations - has a huge impact on the State Budget given that, in the wake of the changes, it only partially reflects the reality of the public administrations[1]. This question is not merely a matter of technical importance. According to IGAE *(Intervención General de la Administración del Estado)* data, as shown in Graph 4.1, the territorial administrations managed in 2002 – the last year for which statistical information is available – 32.5% of non-financial expenditure and 29% of non-financial resources (27.4% of fiscal revenue). In addition, the application of the financial part of the new financing system for local administrations will accentuate the process of revenue decentralization. For a comprehensive analysis of the budget policies of the public administrations, we will therefore need increasingly to look at the budgets of the autonomous regions and local administrations.

Secondly, the State Budget is drawn up within a new regulatory framework, fundamentally represented by the 2002-2006 Stability Programme, the Fiscal Stability Law *(Ley General de Estabilidad Presupuestaria, LGEP)* and the full application of the financing system for the territorial administrations[2]. The application of the LGEP already in 2003 implied the establishment of a 3-year balanced budget target for the public administrations and their various sub-sectors (the central government and Social Security system, autonomous regions and local administrations) and the introduction of a ceiling on total non-financial expenditure by the State. The 2004 State Budget introduces a third basic element for 2004, that is, the presentation of a pluri-annual budget scenario, referring to 2004-2006, which coincides with the updated Stability Programme of the Kingdom of Spain (see Table 4.1).

This pluri-annual approach to budgetary policy is of undoubted utility, and could be considerably enhanced if in addition to the scenario for the evolution of the main aggregates, the main revenue and expenditure headings were presented with some degree of disaggregation. And even more if medium and long-term trends were identified, taking into account the intertemporal budget restriction of the public sector. In the case of Spain's public accounts, this new approach would make it necessary to take into consideration of the foreseeable reduction in EU funding after 2007 as a result of the forthcoming enlargement of the EU (in the budget for 2004 such funding amounted to 6,414 million euros, or 0.8% of GDP) and on a

[1] The partial nature of the budget is accentuated if the increase in public companies is considered, which is particularly significant in the area of investment. This means that even the analysis of the public administrations as an indication of the situation of the public sector is more limited than in the past.

[2] In addition, at the same time as the budget was going through parliament, the General Budget Law and the General Law on Subsidies were approved. These laws complete the process of change in the legal regime of public finances in Spain undertaken by the Government.

larger time scale to include the expected increase in public expenditure on social protection associated with population ageing. In this line of recommendations, it would be very positive if Spain were to adopt voluntarily the *ROSC* Report on Fiscal Transparency by the IMF, as Germany, France, Italy and the United Kingdom, among others, have already done, with a view to bolstering confidence among the economic agents as regards the budget[3].

Fiscal consolidation in Spain, with perspective

The Spanish public administrations have made noteworthy efforts in the area of fiscal adjustment over the past 8 years. This drive has been based on the maintenance of levels of revenue – despite successive tax cuts – and the reduction of primary current expenditure.

According to the IGAE, the public administrations closed the year 2002 with a small surplus of 357 million euros (0.05% of GDP), an improvement on the previously-estimated deficit of 0.1% of GDP and in marked contrast to the evolution of the public accounts of the major countries in the Economic and Monetary Union (EMU). This adjustment has nonetheless been achieved at the expense of an increase in the deficit of fiscal year 2001, to 0.3% of GDP (1,741 million euros). This surplus is the culmination of a process set in motion in 1995 to reduce the fiscal imbalance. As can be seen in Graphs 4.2 and 4.3, the improvement in the public accounts has been achieved on the basis of a significant reduction in non-financial expenditure, to 39.7% of GDP (5.3 percentage points between 1995 and 2002), and a slight increase in non-financial resources, to 39.8% of GDP (1.4 points up on 1995). It is important to note that lower expenditure on interest payments arising from the decline in interest rates due to the process of nominal convergence with the EMU made a crucial contribution to the evolution of expenditure. As a result, this heading fell as a percentage of GDP to 2.8% in 2002, as against 5.3% in 1995.

In 2003 the good shape of public accounts will be maintained, within the framework of the fiscal rules

Fiscal year 2003, the first in which the budget was drawn up under the new LGEP, will be no exception to this process of budgetary consolidation. In fact, it is expected that the public accounts will end the year with a small surplus of around 0.2% of GDP[4], on the basis of a better-than-expected revenue performance.

An analysis of the State budget execution, with IGAE data for the first nine months of the year (see Table 4.2), leads us to anticipate a deficit of around 3,300 million euros (0.4% of GDP) in cash-balance terms at the end of the fiscal year. Although this implies a slight deterioration with respect to the end of 2002, it is 0.2 or 0.3 points better than the official budget projection included in the 2004 budget (5,210 million euros, or 0.7% of GDP).

This performance is based in part on the fact that expenditure will follow remarkably closely the initially-budgeted figures. One should highlight that State non-financial expenditure is capped under the LGEP, so that this performance confirms the value of transparent fiscal rules. Thus, in the first ten months of the year, budget appropriations - deriving from initially unforeseen expenditure such as compensation to municipal and provincial councils (diputaciones) resulting from the partial suppression of the Economic Activity Tax

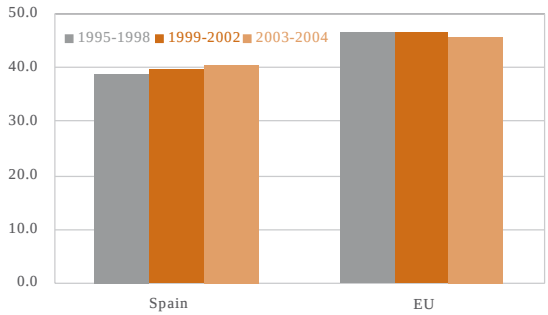
[3] As the IMF itself highlighted in preliminary conclusion 8 of the Article IV Consultation of November 2003.

[4] In fact, during the parliamentary debate, the Minister of Finance forecasted that a 0.5% of GDP surplus could be achieved on the basis of a stronger performance in the Social Security system, which was expected to run a surplus of approximately 0.9% of GDP.

Graph 4.2

Current revenue (1995-2004)

% GDP



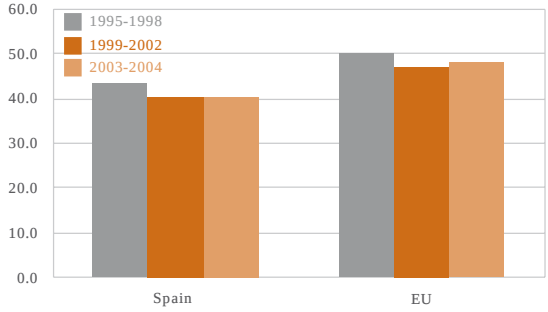
The 2003 and 2004 data are forecasts by the European Commission for the EU, and by BBVA for Spain

Source: European Commission and BBVA

Graph 4.3

Current expenditure (1995-2004)

% GDP



The 2003 and 2004 data are forecasts by the European Commission for the EU, and by BBVA for Spain

Source: European Commission and BBVA

and the army involvement in Iraq – amounted to 2,850 million euros, one-third less than in 2002. In addition, more than half of these were met by drawing down funds from the Contingency Fund (included within the cap on expenditure), so that total appropriations in the first ten months of the year stood at 1,201 million euros. State non-financial expenditure is therefore expected to come in quite close to the expenditure ceiling or, at worst, slightly above it. In any case, the overrun would be substantially lower than that observed in previous fiscal years.

Most of the improvement is accounted for by the very strong, and even surprising (given the successive tax reforms and slowdown in real growth in the Spanish economy[5]), performance of tax revenue, which could be around 4% above budget. Job creation and the upturn in corporate earnings will drive personal income tax (IRPF) and corporation tax revenues to above the budgeted figures, while consumption growth should push up VAT collections (the first nine months of the year registered close to 80% of the budgeted figure) and hold up excise taxes revenues despite the freeze in rates. This should permit the State deficit in national accounts terms to come in slightly lower than projected (0.4% instead of the official forecast of 0.5%).

The social security system outperforms

As shown in Table 4.3, the social security system is likely to end the year with a surplus of approximately 7,250 million euros on an accrual basis. This surplus amounts to 1% of GDP, which is the equivalent of a surplus of approximately 0.8 or 0.9 points in national accounts terms.

[5] Though less surprising bearing in mind the continuing strong growth in nominal GDP (6.5% in 2003, on BBVA estimates, after 6.6% in 2002)

Table 4.2. State Budget execution (main headings)

(Millions of euros)	2003 BBVA budget projection (1)	2003 IGAE outturn (September) (2)	2003 FINMIN initial budget (3)	2002 FINMIN outturn (4)	Execution (2)/(1)	Change (1)/(4)
			CASH-BALANCE BASIS			
Non-financial revenue	109,930	76,531	105,696	108,478	70%	1.3
Tax revenue	96,844	66,793	92,959	93,616	69%	3.4
Direct taxes	58,956	37,524	55,218	55,544	64%	6.1
IRPF	34,682	23,531	32,217	32,278	68%	7.4
Corporation tax	22,503	12,722	21,090	21,431	57%	5.0
Indirect taxes	37,887	29,269	37,741	38,072	77%	-0.5
VAT	26,161	20,406	25,742	25,729	78%	1.7
Excise taxes	9,582	7,266	9,880	10,383	76%	-7.7
Non-financial expenditure	113,228	82,955	114,517	111,747	73%	1.3
Current transfers	58,084	42,162	57,500	59,015	73%	-1.6
Cash balance	-3,299	-6,424	-8,821	-3,269		0.9
(% GDP)	(-0.4%)	(-0.9%)	(-1.2%)	(-0.5%)		
			NATIONAL ACCOUNTS BASIS			
Non-financial revenue		77,539	-	110,819		
Non-financial expenditure		77,283	-	114,395		
Net lending (+) or borrowing (-)		256	-3,646	-3,576		
(%GDP)		0.0%	-0.5%	-0.5%		

Note: Only the main headings are shown, so that the aggregates do not coincide with the sum of the components.
Source: IGAE, Ministry of Finance and BBVA

This performance basically reflects a surge in receipts from social security contributions due to the buoyant rate of job creation and the increase in the maximum contribution base in excess of the targeted rate of inflation. Receipts from social security contributions are expected to be 1,300 million euros higher than budgeted. In this way, non-financial receipts could be up to 10% above the initially-budgeted figures. This would more than compensate for the expenditure overshoot (around 5% with respect to the initial budget), mainly in the areas of current expenditure on goods and services and current transfers. In addition to this deviation in the budget outturn, the inflation rate in November 2003 was 2.8%, according to INE, which will lead to additional expenditure in this heading of almost 1.0 billion euros, which will be distributed over fiscal years 2003 and 2004.

Finally, the main areas of uncertainty concern the accounts of the territorial administrations. First of all, no complete outturn figures are available for the budgets of the autonomous regions and local administrations for 2002, and IGAE budget projections are of very recent publication. In addition to this lack of information, the control of health care expenditure is subject to uncertainty, after the transfer of responsibilities in this area to the autonomous regions was completed in the first half of 2002. Thus, if the expenditure items included in these programmes, particularly pharmaceutical expenditure, registered overruns when managed by a single administration, now they have been decentralized the probability of additional slippages from budget plans will increase, especially in the early years of new management. As a result, the emergence of a slight deficit in the accounts of the territorial administrations is not out of the question, similar to that projected for 2002 by the IGAE (around 0.3%), and basically accounted for by the autonomous regions (see Graph 4.4).

In this way, the accounts of the public administrations in 2003 could register a surplus of around 0.2%, in line with the latest statistics from the Bank of Spain on the balance of the net financial operations of the public administrations (0.2% accumulated between the second quarters of 2002 and 2003).

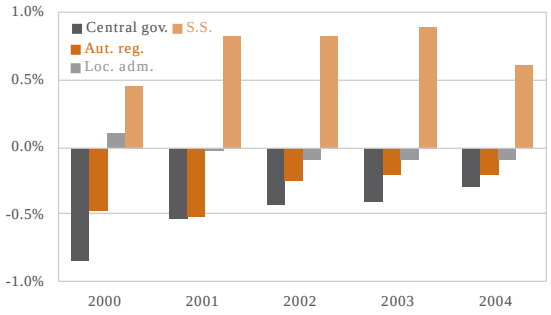
A balanced budget will be maintained in 2004

In this context, the 2004 State Budget maintains the pattern of continuity in economic policy, with the objective of a balanced budget as the key feature (see Box: “The Budget for 2004: continuation of

Graph 4.4

Net lending (+) or borrowing (-)

% GDP



Source: IGAE and BBVA

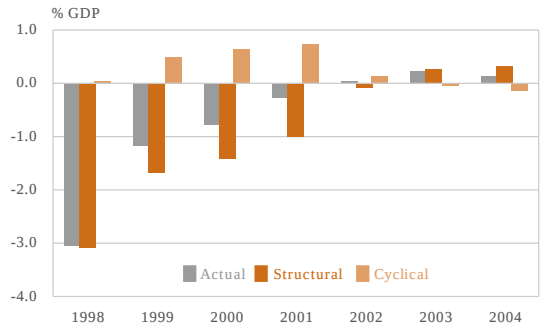
Table 4.3. State Budget execution (main headings)

(Millions of euros)	2003 BBVA budget projection (1)	2003 LSAMIN and FINMIN outturn (August) (2)	2003 LSAMIN budget (3)	2002 LSAMIN outturn (4)	Execution (2)/(1)	Change (1)/(4)
		CASH-BALANCE BASIS				
Non-financial revenue	84,680	54,242	77,103	82,689	64%	2.4
Social Security contributions	73,015	50,250	71,702	70,829	69%	3.1
Non-financial expenditure	77,426	48,183	73,194	75,843	62%	2.1
Current transfers	73,850	44,271	69,568	70,004	60%	5.5
Contributory pensions	60,459	42,259	60,024	56,853	63%	6.3
Temporary disability	4,342	3,111	4,623	4,754	72%	-8.7
Non-financial balance	7,254	6,059	3,906	6,846		6.0
(%GDP)	(1.0%)	(0.8%)	(0.5%)	(1.0%)		

Note: Only the main headings are shown, so that the aggregates do not coincide with the sum of the components.
Source: Ministry of Finance, Ministry of Labour and Social Affairs and BBVA

Graph 4.5

General government net lending (+) or borrowing (-), 1998-2004



Source: European Commission and BBVA

Table 4.4. General government deficit cycle-adjusted

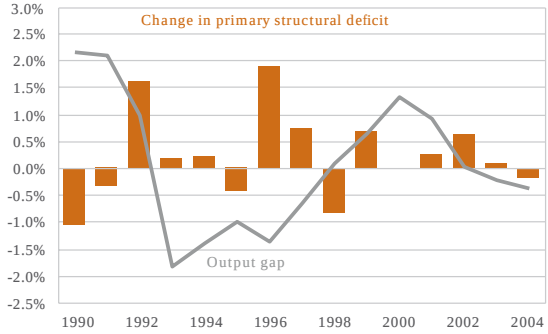
% GDP

	2001	2002	2003	2004
Actual deficit	-0.3	0.0	0.2	0.1
Structural deficit	-1.0	-0.1	0.3	0.3
Primary structural deficit	2.1	2.7	2.8	2.6
Interest payments	3.1	2.8	2.5	2.3
Output gap	1.3	0.9	0.0	-0.2

Source: European Commission and BBVA

Graph 4.6

Fiscal policy and economic cycle in Spain, 1990-2004



Source: European Commission and BBVA

the new model").

The positive results achieved with the establishment in 2003 of a ceiling for State non-financial expenditure should help to increase the credibility of the fiscal rule, limiting any overshooting with respect to the ceiling fixed for 2004 (117,260 million euros). Additionally, the elasticity of the revenue of the main types of tax to nominal growth in the Spanish economy seems to guarantee that revenue projections will be comfortably achieved, and consequently also the deficit target (around 0.4 points of GDP). In the same way, the Social Security system will continue to show a marked, albeit transitory, strength, once again outperforming the budgeted figures (0.4 points of surplus). In this scenario, the dynamism of receipts from social security contributions should make it possible to compensate for the expenditure overruns (mainly in the uprating of pensions for higher inflation), with a possible contribution of around 0.6 points of surplus.

Fiscal policy will be practically neutral

In view of the above, the public administrations will run a balanced budget in the next few fiscal years, both in terms of the actual balance as well as adjusted for the effect of the economic cycle (structural balance). On BBVA estimates, in 2003 Spain will have a structural surplus of 0.3% of GDP (compared with a deficit of 0.1% in 2002). As shown in Graph 4.5, the process of structural improvement in the public accounts has been a very significant one in recent years, most notably in 1999 and 2001.

As regards the primary structural surplus (the structural balance excluding interest payments), which is a measure of discretionary fiscal policy, it stands at an all-time high, and is likely to stabilise at levels just above 2.5% in the coming years as the decline in interest expenditure begins to level off in terms of GDP (see Table 4.4). The traditional indicator accepted for evaluating the fiscal policy stance examines not the level of the surplus, but rather how it changes. In this sense, as shown in Graph 4.6, the fiscal policy stance will remain practically neutral in 2003 and 2004 (slightly restrictive in 2003 and slightly expansionary in 2004), leaving the automatic stabilisers to work in a counter-cyclical manner.

Given the loose monetary conditions established by the ECB, this neutral fiscal policy stance means that the economic policy-mix (the combination of fiscal and monetary policies) will be expansionary for the cyclical situation of the Spanish economy.

2003 surplus to be allocated to the Reserve Fund

The LGEP regulates how surpluses are to be allocated, establishing that, when the public accounts run a surplus, this surplus will be used to reduce net debt if it has been generated by the State government, and that if the surplus comes in the Social Security system, priority is to be given to the Reserve Fund.

Given the above, the situation in the accounts of the public administrations corresponds to the second case, meaning that the legal framework rules out any other use for the surplus. This would also be required in view of the foreseeable increase in public expenditure on social protection policies as a consequence of the process of population ageing. Currently, the Reserve Fund stands at 12,023 million euros (1.6% of GDP) after the additional allocation of funds made in December totalling 2.0 billion euros deriving from the larger surplus forecast for the Social Security system. Adding the allocation included in the 2004 Budget (3,008 billion euros), the Reserve Fund will come to approximately 2% of GDP during next fiscal

year. While this is once again an improvement on projections, it should not be allowed to shift the focus away from the structural reforms needed in the Social Security system given the financial risks that will emerge from 2015 onwards[6].

The downtrend in the debt-to-GDP ratio continues

The regulations outlined above on the use of surpluses and the increasing use of operations involving changes in financial assets and liabilities account for the increase in the debt stock in 2003. This is expected to stand at approximately 380 billion euros, or 51% of GDP, compared with 53.8% in 2002. In 2004, the nominal growth in GDP means that the downward trend in the debt-to-GDP ratio should continue, to stand at around 49% (even though the volume of debt will likely increase by 3%). However, two institutional changes will affect this ratio in the years ahead. In the first place, during the first half of 2004 the INE will revise the National Accounts, which foreseeably will increase the level of GDP and in turn cause the debt-to-GDP ratio to fall. In the reverse direction, the government has announced that it will take on the debt of RTVE, the state broadcaster, during the next legislature. In 2004 this debt will amount to approximately 6,900 million euros, which will increase the debt-to-GDP ratio by just under one point. When both effects are combined, the debt-to-GDP ratio seems likely to fall further.

[6] See Balmaseda, M. and P. Tello (2003): "The impact of legislative changes on contributory pensions", *Situación Spain*, July 2003, pp. 29-40. BBVA Research Department.

The Budget for 2004: continuation of the new model

Macroeconomic forecasts, 2002-2004

(% oya)	INE 2002	GOVERNMENT 2003	GOVERNMENT 2004	BBVA 2003	BBVA 2004
Real GDP and components (% oya)					
Final consumption expenditure	**3.0**	**2.9**	**3.1**	**3.2**	**2.8**
Private consumption	2.6	2.8	3.1	3.0	2.7
Public consumption	4.4	3.2	2.9	3.8	3.1
Gross fixed capital form.	**1.0**	**3.3**	**3.8**	**3.2**	**3.5**
Capital goods	-2.7	2.8	5.0	2.5	6.0
Construction	4.2	3.7	3.0	3.7	1.6
Inventories(*)	0.0	0.1	0.0	0.1	0.0
Domestic demand	**2.6**	**3.1**	**3.3**	**3.4**	**3.1**
Exports of goods and serv.	0.0	3.9	6.3	5.1	6.4
Imports of goods and serv.	1.8	6.4	7.0	7.9	7.4
Net trade (*)	**-0.6**	**-0.9**	**-0.4**	**-1.0**	**-0.6**
Real GDP (mp, % oya)	**2.0**	**2.3**	**3.0**	**2.4**	**2.5**
Nominal GDP (mp, % oya)	**6.6**	**6.6**	**5.9**	**6.5**	**6.4**
Prices and costs (% oya)					
GDP deflator	4.4	4.3	2.9	4.1	3.8
Household consumption deflator	3.5	3.2	2.7	3.0	3.1
Labour market					
Full-time employment QNA (% oya)	1.5	1.8	1.9	1.6	1.5
Annual change ('000s)	240.4	281.8	299.7	253.0	241.0
Unemployment rate (EPA)	11.4	11.3	11.0	11.4	11.7
Apparent labour productivity (% oya)	0.5	0.5	1.1	0.8	1.0

(*) Contribution to growth

Source: INE, Ministry of Finance and BBVA

Consolidated non-financial budget

(millions of euros)	2004 SBD04 FINMIN	2003 BBVA Budget Outturn	2003 SB03 FINMIN
Personnel costs	24,216	22,597	23,041
Current expenditure on goods and services	6,510	6,428	6,036
Financial expenditure	19,148	19,432	19,764
Current transfers	150,715	147,923	143,658
Contingency fund	2,345	-	2,290
CURRENT OPERATIONS	**202,935**	**196,380**	**194,790**
Real investments	10,546	10,485	10,004
Capital transfers	7,036	6,592	6,721
CAPITAL OPERATIONS	**17,582**	**17,077**	**16,725**
NON-FINANCIAL EXPENDITURE	**220,517**	**213,458**	**211,515**
Direct taxes and social security contributions	153,319	150,017	144,516
Indirect taxes	39,836	37,887	37,741
Other current revenue	20,302	22,389	20,501
CURRENT OPERATIONS	**213,457**	**210,293**	**202,759**
Real investment sales	534	679	498
Capital transfers	2,842	2,577	2,773
Capital operations	**3,376**	**3,256**	**3,272**
NON-FINANCIAL REVENUE	**216,833**	**213,549**	**206,031**
Non-financial balance	-3,684	91	-5,484
(% GDP)	(-0.5%)	(0.0%)	(-0.7%)

Source: Ministry of Finance and BBVA

At the end of September, the Spanish government approved the 2004 State Budget Draft (SBD04). The consolidated budget (Central Government, Social Security and Territorial Administrations) was drawn up on the basis of producing a balanced budget on a National Accounts basis. It forecasts a lending capacity of 262 million euros, equivalent to 0.03% of GDP (a balance consistent with a deficit in terms of budget accounting of 3,684 billion euros, or 0.5% of GDP after adjustments mainly for interest payments and execution).

The macroeconomic scenario upon which the revenue and expenditure figures for 2004 have been projected contains two basic differences with respect to what BBVA expects. On the one hand, BBVA anticipates a slowdown in real domestic demand mainly due to a deceleration in private consumption (2.7% against the Government's 3.1%) and in construction (1.6% against 3%). As regards the external sector, the main difference lies in the evolution of imports, whose greater dynamism will make the contribution to growth somewhat more negative (-0.6% against –0.4% for the Government). In this way, real GDP growth will come in at 2.5%, compared with the official target of 3%. However, nominal economic growth, which is a key factor in a large part of revenues, could be above what the Government is forecasting (6.4% against the official figure of 5.9%), increasing the dynamism of revenue collections.

The priorities of SBD04 are the promotion of domestic security and justice, social expenditure, public investment and research (the last two elements as a means of enhancing productivity), after the provision of education and health services has been transferred to the Autonomous Regions. This is reflected in an increase with regard to the initial budget for 2003 above that forecast for growth in nominal GDP. Of these policy priorities, one should highlight the increase in expenditure in pensions and disability benefits, which have been given more importance as a result of the Agreement on the Improvement and Development of the Social Protection System of 2001. Also, the Government and social agents agreed at the end of November to raise minimum and widows pensions in fiscal year 2004. This measure, which is not included in SBD04 and which totals about one billion euros, will accentuate the bias in favour of social expenditure.

These functions are reflected in the economic structure of expenditure. On the basis of the completed budget figures for 2003 estimated by BBVA, personnel costs (7.2%) and capital transfers (6.7%) are likely to show the biggest variations with respect to the end of 2003. On the other hand, one should highlight the maintenance of cost-containment in current expenditure on goods and services (1.3%) and the continuation of the trend toward lower financial costs (due to lower interest-rate payments). The upside risks in these headings rest in the amount of current transfers and in the purchase of goods and services. As regards the first, on top of the assignment of part of the upward deviation in inflation observed in 2003, there will be a further

Main headings of State non-financial budget

(millions of euros)	2004 SBD04 FINMIN	2003 BBVA Budget Outturn	2003 SB03 FINMIN
Personal income tax	31,974	34,682	32,217
Corporation tax	24,109	22,503	21,090
Direct taxes	58,087	58,956	55,218
VAT	27,490	26,161	25,742
Excise taxes	9,996	9,582	9,880
Indirect taxes	39,836	37,887	37,741
TAX REVENUE	97,923	96,844	92,959
NON-FINANCIAL REVENUE	110,496	109,930	105,696
Current transfers	58,843	58,084	57,500
NON-FINANCIAL EXPENDITURE	117,260	113,228	114,517
Non-financial balance	-6,764	-3,299	-8,821
(% GDP)	(-0.9%)	(-0.4%)	(-1.2%)

Note: Only the most important items are shown, meaning that the aggregate figures do not coincide with the sum of the components.

Source: Ministry of Finance and BBVA

Main headings of the Social security non-financial budget

(millions of euros)	2004 SBD04 FINMIN	2003 BBVA Budget Outturn	2003 SB03 FINMIN
Social security contributions	76,404	73,015	71,702
NON-FINANCIAL REVENUE	**82,217**	**84,680**	**77,103**
Current transfers	74,815	73,850	69,568
Contributory pensions	64,307	60,459	60,024
Temporary disability	5,312	4,342	4,623
NON-FINANCIAL EXPENDITURE	**78,690**	**77,426**	**73,194**
Non-financial balance	3,526	7,254	3,909
(% GDP)	(0.4%)	(1.0%)	(0.5%)

Note: Only the most important items are shown, meaning that the aggregate figures do not coincide with the sum of the components.

Source: Ministry of Finance, Ministry of Labour and Social Affairs and BBVA

deviation in 2004 (according to BBVA estimates, this will stand at 2.4% in November against the Government's 2%), which in turn will create an additional impact on the budget of around 500 million euros. As regards the second area, despite the fact that the transfer of responsibilities has reduced the role of the Central Government and the Social Security System in some policy areas, the modest growth projected in purchases in absolute terms of goods and services is not likely to be the case.

On the revenue side, the SBD04 forecasts that direct taxes and social security payroll taxes will increase their contribution to the budget as a whole to 70.7% (1.2 percentage points more than in the completed 2003 budget) at the expense of excise taxes and current transfers. The use of budget outturn figures, rather than comparing projected figures, allows us to verify that the SBD04 assumes very modest rates of growth in direct taxes and social security contributions (2.2% with respect to the outturn figures as opposed to 6.1% when the figures for the initial 2003 Budget and the SBD04 are compared) and an increase below the nominal growth in the economy in indirect taxes (5.1% with respect to the outturn figures against 5.6% in terms of the 2003 Budget compared with SBD04). Collections could come in higher if the strength in consumption forecast by the Government (or even in the case of the slight slowdown forecasted by BBVA) and the creation of jobs are maintained, and if the improvement in corporate earnings after a number of years of uncertainty continues. This would provide a margin for compensating the upward risks in public expenditure, even if the announcements of further tax cuts are fulfilled. Some of these are included as amendments to the Law Accompanying the 2004 Budget both within the area of the central government (IRPF and corporation tax credits to promote house rentals) as well as on the territorial level (taxes on inheritance and charitable contributions and the regional part of the IRPF).

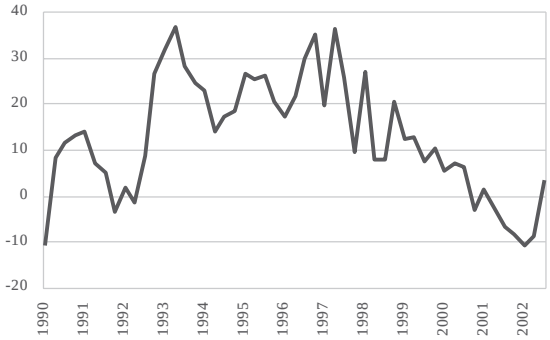
According to the SBD04, the State deficit in terms of budgetary accounting will be at 6,764 million euros, or 0.9% of GDP (3,488 million in National Accounts terms, or 0.4% of GDP). The limit on non-financial expenditure established by the LGEP (Fiscal Stability Law) was fixed at 117,260 million euros, 2.4% above the figure for 2003. The transfer of certain responsibilities for justice and research to the Autonomous Regions, the definitive completion of the first year in which the funding system for the Autonomous Regions has been in place (2002), and the implementation of the financial part of the funding system for the local administrations complicates year-on-year comparisons. Estimates of these changes have been carried out (except those that refer to justice and research since they involve limited amounts) with a view to providing homogeneous comparisons between 2004 and 2003. In this way, according to the figures in SBD04 against the homogeneous ones drawn up by BBVA for 2003, direct taxation would show an increase of approximately 4.8% (instead of –1.5% for the non-homogeneous comparison), while the increase in collections from VAT and excise taxes would be slightly higher at 5% (similar to the 5.1% derived from the non-homogenous comparison). On the expenditure side, as was the case for the consolidated expenditure figures, what stands out is the further fall in financial costs and the drastic reduction in purchases of goods and services.

The accounts of the Social Security Administrations are projected to post a surplus of 3,526 million euros (four decimal points of GDP), a target that could even be surpassed given the extraordinary current situation of the system. The increase in revenues is based on the strength of Social Security contributions as a result of the creation of jobs (241,000 according to BBVA and 300,000 according to the Government) and an increase in the maximum contribution bases above that of forecast inflation. As regards expenditure, the process of transferring policies has highlighted the importance of social benefits, amongst which expenditure on pensions stands out. This could increase to an extent beyond that of the budgeted figures (a rise of 6.4% over BBVA's budget outturn figures) as a result of the commitment to maintaining purchasing power.

Graph 5.1

Net financial assets of households and companies*

(% change oya)

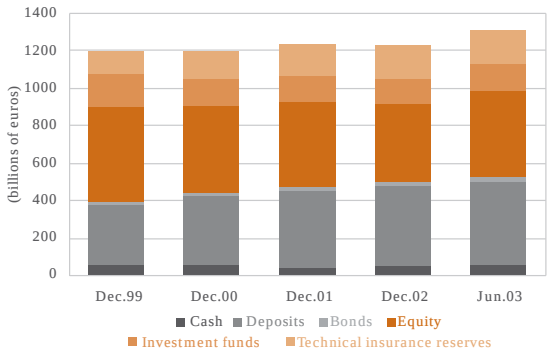


* In companies internal financing is excluded

Source: Bank of Spain

Graph 5.2

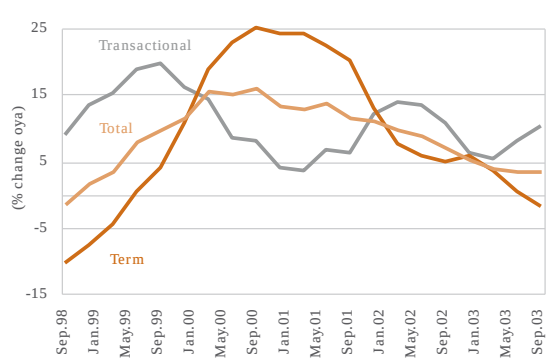
Household financial assets



Source: Bank of Spain

Graph 5.3

Household deposits



Source: Bank of Spain

5. The financial system

Improving wealth situation

During the first half of 2003, the net financial assets of households and non-financial companies[1] as a whole increased for the first time since December 2001.

In the case of households, the level of debt showed a slight increase with respect to the end of the previous year, reaching 40% of total financial assets. Despite this pick-up, debt still remained below the maximum posted in the third quarter of 2002. The slight slowdown in credit, the increase in savings and the recovery of the financial markets have alleviated the deterioration in financial wealth seen over the past five years.

In the case of companies, the debt-to-financial-assets ratio fell half a point with respect to the end of 2002, totalling 82% of financial assets.

More financial assets...

Financial savings of households grew by 7.7% year-on-year in the first half of the year. This increase was due mainly to a 28% rise in net acquisitions of financial assets, given that returns from the stock market in this period were practically zero, while returns from fixed income instruments remained at low levels.

Despite this, if growth in financial assets is measured in relation to GDP, it can be seen that after three years of falls, financial wealth recorded an increase of six percentage points with respect to the end of 2002, to 168%. However, the balance of financial assets still remains below the high point achieved in 1999 (177%).

The assets of non-financial companies increased 10.5% year-on-year in the first half, with the increase in net acquisitions coming in at 39%. This represented the biggest increase in a six-month period since December 2000.

...more diversified

Bank deposits have remained the main target for household saving, although to a lesser extent than in the past two years. The low level of interest rates and risk aversion to risk reduction after the end of the war in Iraq have led households to diversify their savings to a greater extent in search of higher returns. This has meant that households have shifted back to institutional forms of saving and, to a lesser extent, to the stock markets.

Bank deposits of households rose by 3.3% year-on-year in September, compared with an increase of 7% in the same period a year earlier. Within the category of deposits, a change in the trend of their composition is noticeable. While transactional deposits (sight and savings) have accelerated over the course of the year to the extent of posting year-on-year growth of 10.4% in September, term deposits have continued to decelerate to the point of falling 1% in the same period.

One factor of particular relevance in explaining the strength in transactional liabilities is the maintenance of an aggressive policy for capturing these types of resources on the part of online banking. Although, as can be seen in Graph 5.4, the percentage of new deposits captured by these types of institutions has slowed down, the growth in transactional liabilities is above that of traditional banking. This has increased the share in deposits of online banking by one percentage point, to 6.1% of total bank deposits, and by 30 basis points, to 2.3% of deposits in the system overall.

The fiscal reform that entered into force at the beginning of 2003

[1] Excluding internal funding in the case of non-financial companies.

does not seem to have had a significant impact on the evolution of term deposits. This contrasts with the experience of the tax reform of 1999, when deposits with an agreed maturity over two years reached annual growth rates of above 170%. A comparison carried out by the Bank of Spain of after-tax returns of deposits and investment funds assuming a financial yield of 5% is presented in Graph 5.5. For an income level within the bracket of 27,000 to 42,000 euros, the net return on long-term deposits turns out to be only marginally better when compared with investment funds for investment periods of above two years.

Nonetheless, the absolute tax advantage that investment funds continue to hold over deposits, combined with the removal of "the tax toll" imposed on the former, explains why the reform of personal income tax (IRPF) has been felt mainly in the evolution of investment funds. According to figures from Inverco, 20% of new gross inflows to funds come from transfers from other funds.

Therefore, the normal relationship generally observed of substitution between investment funds and deposits has shifted in favour of the former in 2003.

Risk Aversion falls

The net assets of funds grew by 14% year-on-year in September in contrast to the falls seen during a large part of 2002. This increase is due in part to the revaluation associated with the recovery in the financial markets, although a sharp increase in net inflows during this period was also recorded. Renewed interest in this type of product is seen in the number of investment fund holders, which recorded an increase of 6.4% between December 2002 and September 2003, registering levels not seen since 2001.

In fact, if a comparison on a European level is made, it can be seen that Spain is one of the countries where net inflows and net assets have increased most. Only France and Ireland – the latter being an international centre for collective investment owing to the fiscal benefits available – have increased their share in the total net assets of European institutional investment more than Spain.

New inflows to investment funds have been accompanied by a re-balancing of portfolios that has mainly favoured guaranteed equity funds at the expense of FIAMMs. Guaranteed equity funds have gone from a situation of falling 6% year-on-year at the end of 2002 to an increase of 50% in October 2003, while growth in FIAMMs has decelerated from 21% to 11% over the same period. The return on investment in equity funds (including guaranteed funds) has been greater in Spain than in Europe as a whole. Only 5% on average of net inflows to funds in Europe have gone to equity funds, compared with 56% in Spain.

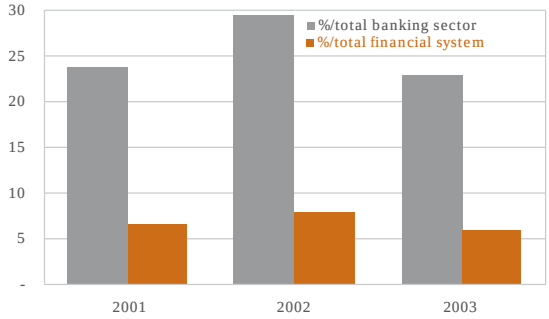
This increase in Spanish households' exposure to the stock markets is also apparent in the direct acquisition of shares in listed companies. Some 10% of new financial savings in the first half of the year went to this type of asset, which brought the volume of acquisitions of stocks to levels not seen since September 1999.

Pension funds have also undergone a noticeable recovery over the course of the year. Their net assets under management grew by 21% in September from a year earlier. Once again, both the rise in value of fund portfolios and the increase in new investment have contributed to this.

The positive tone of the financial markets has brought about a change in the sign of returns on this type of financial product, from an average annual fall of 4.4% at the end of 2002, to an increase of 4.8% in September of this year.

Graph 5.4

Percentage of new deposits captured by online banking sector between September 2002 and September 2003

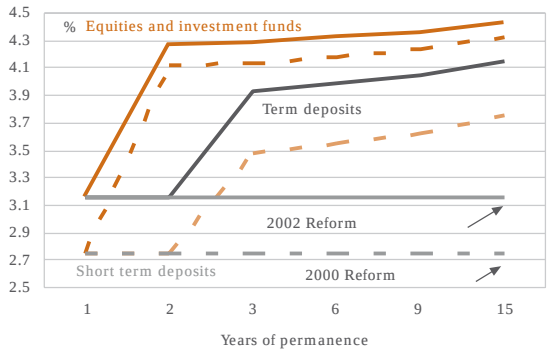


Source: AEB and Bank of Spain

Graph 5.5

Difference in net returns on financial products after fiscal reform

(5% common financial yield)

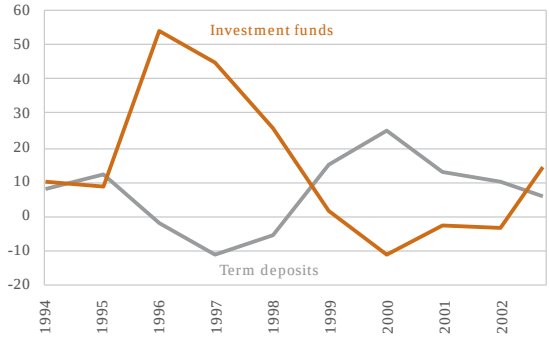


Source: Bank of Spain

Graph 5.6

Term deposits and investment funds

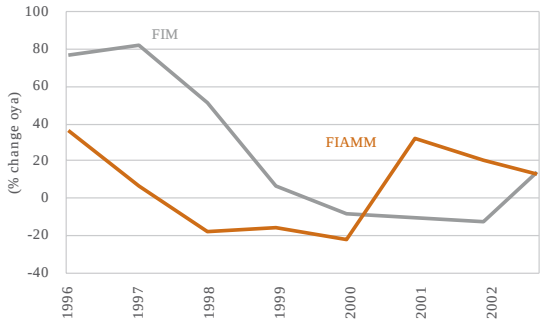
(% change oya)



Source: Inverco

Graph 5.7

Net assets by type of investment fund

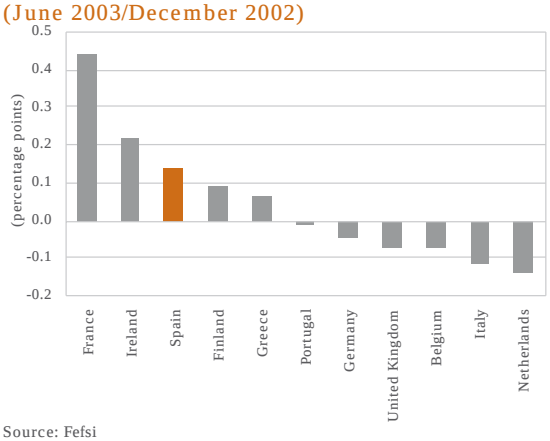


Source: Inverco

Graph 5.8

Change in share in investment funds

(June 2003/December 2002)

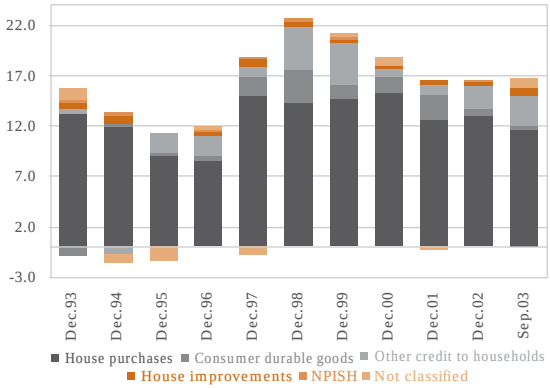


Source: Fefsi

Graph 5.9

Contribution to growth in credit to households

(%)



Source: Bank of Spain and AHE

As regards contributions to pension funds, the volume of these tripled in the first half of the year compared with the same period a year earlier. However, the fact that since 1998 on average 67% of contributions to pension funds are carried out in the last quarter of the year complicates the process of making an extrapolation of this performance to the whole of the year.

The IRPF reform saw the introduction of a new type of retirement saving in the form of Defined Benefits Retirement Saving Plans. However, this type of instrument has seen scant development. The low level of interest rates means that guaranteed returns have failed to attract investors. The limited changes forecast in interest rates throughout 2004 do not point to any significant changes in the flow of funds towards this alternative form of investment.

Credit continues to increase

Economic growth, the strength of the real-estate sector and the fall in interest rates are the main factors behind the continuation of the expansion in credit for another year. According to the latest figures on interest rates published by the Bank of Spain, interest rates net of commissions on new credit operations fell between 86 and 66 basis points in the period January to October.

Funding to the private sector has continued to grow at rates of around 13% during the year. The expansion in credit has continued to be driven by the dynamism of the real-estate sector, although the trend in the case of households was the reverse of that of companies.

As can be seen in Graphs 5.9 and 5.10, while lending to households for the acquisition of a home has started to moderate, in the case of companies, credit associated with the real-estate sector continues to increase its contribution to the growth in lending to businesses. This is mainly due to credit to real-estate developers, which is increasing at rates of 40%, while credit to the construction sector has started to slow down.

The sustained growth in lending for property in the past few years has led to a situation in which, despite the recent slowdown, this component already accounts for 68% of outstanding loans to households and 53% of new credit operations carried out in the year. Other forms of credit have undergone an acceleration and are growing at rates of 14%, with a moderate recovery in consumer credit.

With respect to corporate credit, with the exception of that linked to real-estate, the most dynamic sectors in taking up bank financing have been agriculture, the hotel and restaurant trade, and, to a lesser extent, industry.

Greater growth than within EMU

If one makes a comparison with the development of credit within the EMU, it can be seen that the growth in lending in Spain continues to be much stronger. Credit to the private sector is growing at rates of 4%, compared with 13% in Spain.

Although one has to take into account the differences in economic growth between Spain and the rest of the euro zone, it is noticeable that the areas where the greatest differences exist are property lending and corporate credit. While property lending in Spain amounts to 11.8% of all such credit in the euro area, in the first nine months of the year, the volume of new operations represented 20.6% of the total. On the other hand, as regards other forms of lending to households, the difference between outstanding credit and new operations in Spain and the EMU as a whole is barely two percentage points.

Also, the dynamism in lending to companies is greater in Spain. While Spain's share within the EMU is 12.9%, new credit in the first nine months of the year accounted for 27.8%.

More resources, less lending in 2004

During the next few months, the maintenance of interest rates at low levels will help to maintain the search for higher returns in financial products other than deposits. As a result, the trend towards financial disintermediation will continue, mainly towards investment funds. In this sense, the coming into effect of the new Investment Fund Law, although the drawing up of the regulations is still pending, will foreseeably be accompanied by an increase in the supply of new types of investment funds, which should help to maintain the attractiveness of this type of product.

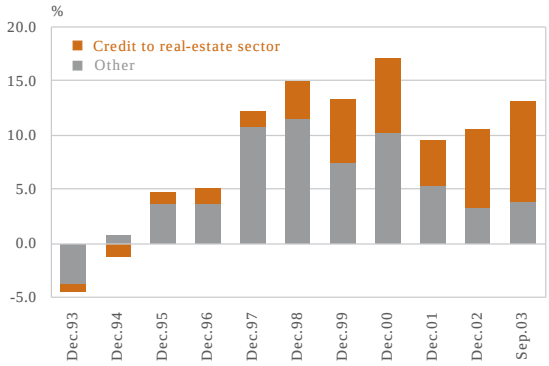
Another relevant aspect as regards the evolution in financial saving in the coming months is the probable outsourcing of pension funds on the part of the central government envisaged in the Draft Law of the 2004 State Budget. This would give a push to the market for employee pension funds, not so much due to the initial contribution of resources (they represent only 0.25% of the current net assets of employee pension funds), but rather because of the strong increase of 78% in the number of participants in employee plans.

As regards financing, according to the third-quarter survey on bank lending, credit institutions are forecasting a slowdown both in the supply and demand for housing loans in the last quarter, while they expect other forms of credit to remain stable.

Since this survey began, entities have been repeatedly pessimistic in their forecasts for credit demand. However, in 2004, the loss of dynamism in the real-estate sector, the level of household debt and the end of the period of falling interest rates leads to predict a probable slowdown in the balance of loans granted by financial entities, which will be felt more in the area of mortgage lending.

Graph 5.10

Contribution by the real-estate sector (real-estate and construction) to growth in credit to productive activities

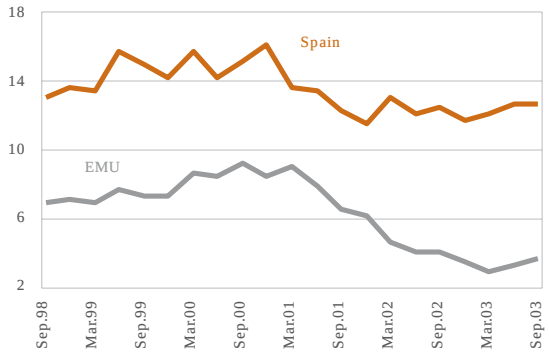


Source: Bank of Spain

Graph 5.11

Credit to the private sector in Spain and the EMU

(% change oya)



Source: Bank of Spain and ECB

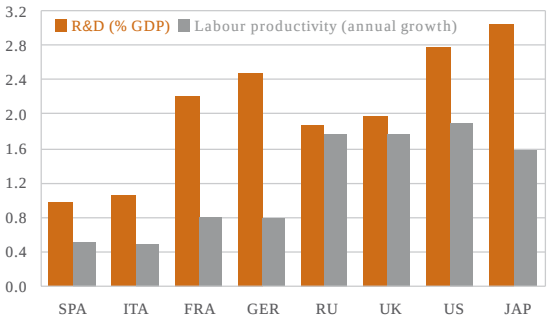
Table 5.1. Financial variables

(% oya, unless otherwise indicated)

	2001*	2002*	jul-03	ago-03	sep-03	oct-03	Outstanding (bn €)
Private sector deposits	13.6	8.5	9.3	9.2	8.6	8.6	524
- Sight and savings	14.4	7.6	11.7	11.8	11.1	11.6	299
- Term	12.6	9.8	6.2	5.8	5.3	5.0	225
Net assets of investment funds	-2.9	-4.0	10.8	11.8	14.2	13.9	195
- FIAMM	32.0	22.0	15.2	15.2	13.4	11.2	58
- FIM	-11.0	-12.0	8.9	10.4	14.6	15.1	137
Net assets of pension funds	15.8	10.3	—	—	21.4	—	52
- Individual	12.7	8.5	—	—	20.4	—	28
- Employee	21.1	13.0	—	—	22.9	—	23
Credit to private sector (banks and savings banks)	11.0	12.8	15.2	15.4	14.0	14.4	707
Mortgage	18.4	19.3	21.5	21.5	20.5	20.8	388
Other credit	4.5	6.4	8.4	8.8	7.0	7.4	319
Non-performing loans ratio (banks and savings banks)**	0.90	0.92	0.83	0.83	0.83	0.80	n.d.

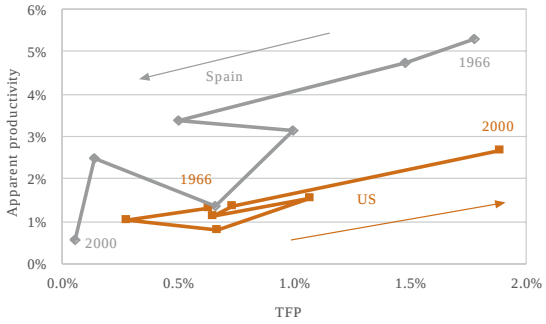
* End-year
** Non-performing loans/total credit
Source: Bank of Spain and Inverco

Graph 1.
R&D and productivity, 1992-2002



Source: INE, European Commission and Eurostat

Graph 2.
Productivity growth in Spain and the US
% oya



Source: European Commission and BBVA

6. Article: Technological capital as a productive factor; a regional and sectorial analysis

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Introduction

The past few years have seen the emergence of a very broad-based consensus as regards the importance of investment in new technologies and innovative activities as a means of enhancing long-term economic growth. The European Commission as well as central banks, the OECD and practically all national governments consider Research, Development and Innovation activities as a key factor in long-term productivity growth.

The theoretical basis for this viewpoint stems from the ground-breaking contributions of Solow and Griliches, which were taken up and extended during the 1990s in the studies on endogenous growth models carried out by Romer, Aguion and Howitt, and by Grossman and Helpman among others. The renewed interest in these models is based on the positive relationship observed in the past decade between the innovative drive of economies – as expressed by the ratio of R&D to GDP – and the evolution of productivity. In this context, Spain stands out as a paradigmatic case. Strong growth in activity contrasts with relatively low levels of investment in R&D, with both apparent labour productivity and total factor productivity (TFP) slowing down in the past decades (See Graphs 1 & 2).

The main objective of this article is to assess the contribution of innovation to productive activity in Spain in the past two decades. Statistical limitations prevent us from considering the impact of R&D plus innovation, which is a concept closer to that put forward in the theoretical works cited. As a result, this article will limit itself to R&D activities. The main contribution to the empirical research is the level of disaggregation. Therefore, the estimation of the contribution of technological capital, as measured by the stock of R&D, to production will be carried out on a disaggregated level, involving, on the one hand, the autonomous regions and, on the other, the productive sectors. We will also evaluate the existence of positive externalities derived from investment in R&D outside the region or sector in question. Finally, the estimations for the sectors will be extended by classifying the sectors on the basis of the degree of their technological content.

The article is organised as follows. The first section establishes the methodological framework used to gauge the contribution of technological capital to activity, based on the estimation of production functions. The second describes how the series used have been constructed; particularly for technological capital. The third section presents the empirical results by region, while the fourth section deals with the sectors. The paper ends with the conclusions drawn as well as the main recommendations.

1. The empirical model

The evaluation of the impact of technological capital derived from the accumulation of investment in R&D on the economy is carried out through the estimation of production functions. In order to do so, the traditional production function is extended to include an additional determinant. Specifically, apart from capital *(K)* and labour *(L)*, we have added the stock of own technological capital (K^T) as a productive factor. This production function can be expressed in a general form as:

$$Y = F(K, L, K^T, A(Z), Z)$$

where *A* represents technical progress as an indication of the efficiency of the productive process and *Z* a vector of variables that encompasses other determinants of production such as technological capital external to the economy and human capital *(H)*.

Apart from evaluating the impact of own technological capital, we also gauge the contribution - a priori positive – that investment in R&D carried out by the rest of the regions or the rest of the sectors has on the output of the unit being analysed. As the production function shows, the contribution of external technological capital, as well as that of human capital, emerges as a determinant of technical progress; or alternatively, in line with the literature on knowledge spillovers, as a positive externality on economic activity.

This approach, under which technological capital contributes to economic growth by various means, is fully consistent with the literature on economic growth and R&D, and allows us to take on board the main contributions of this body of work.

For the purpose of estimation, technology is represented by a Cobb-Douglas production function with constant returns to scale of internal production factors (capital, labour, human capital and own technological capital). The methodology used for the estimation is that of panel data in the levels of the variables[1]. Under these assumptions, and taking logarithms of all variables, the equation to be estimated is as follows:

$$y_{i,t} = \beta k_{i,t} + \varphi l_{i,t} + \gamma k^{T}_{i,t} + \phi h_{i,t} + \lambda \sum_{j \neq i} K^{T}_{j,t} + \varepsilon_{i,t}, \quad \beta + \varphi + \gamma + \phi = 1$$

$$\varepsilon_{i,t} = \alpha_i + \alpha_t + \mu_{i,t}$$

where the lower-case letters represent the logarithm of the corresponding variable; β, φ, γ, ϕ and λ represent the elasticities of output to the different productive factors and a_i and a_t represent individual fixed effects by region or sector and time[2].

2. The statistical series

We have constructed an original database with the maximum coverage in time and the greatest regional and sector disaggregation possible. It covers output and employment, measured respectively as real gross valued added to base prices in 1995 constant euro terms and the number of jobs adjusted to their full-time equivalent obtained from INE's *Regional Accounting* and *National Accounting*. The productive capital is measured in 1995 constant euro terms and obtained from the BBVA-IVIE Foundation series. And human capital is represented by the proportion of employed people with a medium level of education obtained from the Bancaja-IVIE Foundation series. The series for technological capital have been constructed specifically for this study.

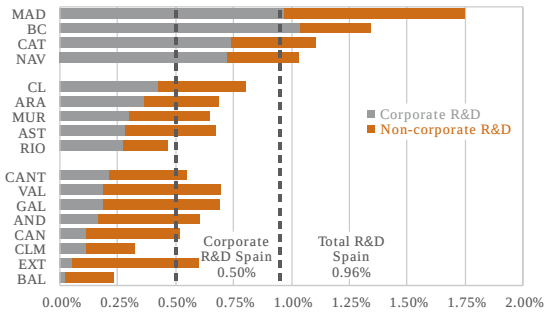
The regional database covers the 17 autonomous regions (excluding Ceuta and Melilla) for the period 1987-1999. The sectorial series cover 16 non-agricultural, non-financial productive sectors in the private sector between 1986 and 2000 [3]. In addition, INE Input-Output Tables have been used to determine the degree of technological content of each sector (as estimated by means of the percentage of intermediate purchases from Information and Communication Technology sectors, ICT). Lastly, the absence of series on human capital with sufficient disaggregation (data is only available for six groups of activity) prevents us from including this factor in the sectorial specification.

[1] Estimations in first differences contain biases that are well recorded in the literature on production functions. In any case, the results in first differences are also available.
[2] The econometric analysis confirmed the appropriateness of the estimations with fixed effects vis-à-vis the alternative of random effects.
[3] The sample of the sectors is quite representative of the Spanish economy as a whole, accounting for 74% of value added, 68% of employment, 93% of capital and 99% of technological capital.

Graph 3.

Regional R&D in Spain, 2001

(% GDP)



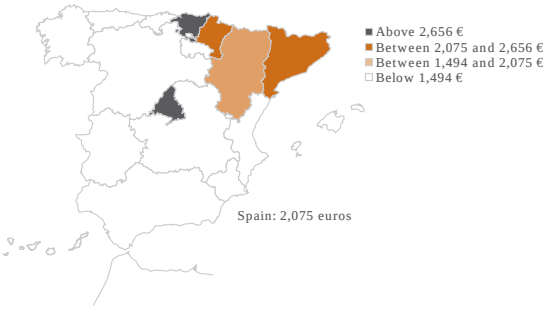
Note: non-corporate R&D includes the R&D activities of the universities, public administrations and non-profit private institutions.

Source: INE

Graph 4.

Technological capital per employee, Spain 2002

(1995 euros per employee)

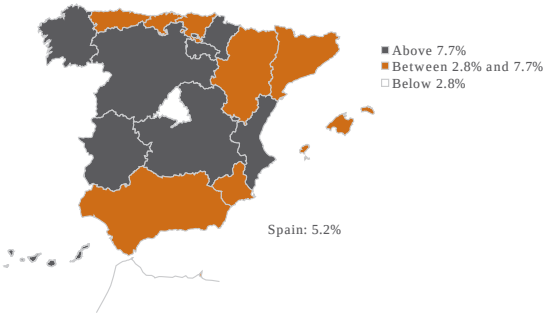


Source: INE and BBVA

Graph 5.

Technological capital per employee, Spain 1987-2002

(average rate of growth)



Source: INE and BBVA

The series on technological capital - identified as the stock of R&D – have been drawn up using the INE's Survey on R&D Activities by means of the perpetual inventory method. The flows of R&D have been identified by internal expenditure on R&D in real terms using the deflator for gross fixed capital formation. In this manner, the technological capital of region *i* (or analogously of sector *i*) in year *t* is expressed as follows:

$$K^T_{i,t} = (1 - \delta)K^T_{i,t-1} + (R\&D)_{i,t+1-\theta}$$

while the stock in the starting year 0 (1987 for the regional series and 1986 for the sectorial series) can be expressed as:

$$K^T_{i,0} = \frac{(R\&D)_{i,0+1-\theta}}{g + \delta}$$

where θ is the delay between implementing the investment in R&D and its effective use in the productive process, d the rate of depreciation of this investment and g the average growth rate in the period. Assuming, in line with the literature, a one-year lag before investment in R&D has an impact on productivity, and a depreciation rate for this type of 10%[4], these expressions become:

$$K^T_{i,t} = 0.9K^T_{i,t-1} + (R\&D)_{i,t}$$

$$K^T_{i,0} = \frac{(R\&D)_{i,0}}{g + 0.1}$$

3. The regional results

In Spain, as well as in the rest of the European Union countries, there is considerable differences in the R&D investment effort across regions. This makes it recommendable that the analysis of the contribution of technological capital to the increase in productivity takes into account these regional differences.

As Graph 3 shows, investment in R&D as a percentage of GDP in 2001 varied significantly among the Spanish regions, with three identifiable groups: leading regions with levels of corporate and total R&D above the average (Madrid, Basque Country, Catalonia and Navarre), following regions that show levels of total R&D similar to the rest of the regions but with a significantly higher proportion of corporate R&D (Castilla y León, Aragón, Murcia, Asturias and La Rioja) and lagging regions.

Additionally, this classification is quite robust over the whole time period considered (1987-2001), which manifests itself in significant differences in the stock of technological capital per employee (reflected in Graph 4). While in 2002 the technological capital per employee in Spain stood at 2,075 constant euros, leading regions (Madrid, Basque Country) were significantly above the national average at more than 2,600 euros per employee. The following autonomous regions in terms of technological capital are Catalonia and Navarre, which are slightly above the national average, while the rest of the regions are well behind, as seen particularly in the case of the Balearic Islands, Castilla-La Mancha and Extremadura.

However, at the same time, a certain convergence in regional R&D has taken place, to the extent that – as seen in Graph 5 - those autonomous regions that started off the period under study with lower levels of technological capital have shown, in general terms, higher rates of growth (reaching 16% in the case of Castilla-La Mancha and 24% in La Rioja). In short, R&D appears to have emerged as one of the sources of regional convergence.

[4] The estimated amount of technological capital would logically be less if alternative assumptions are used, such as a higher depreciation rate or a greater delay in the impact of the R&D.

On the basis of the model described in the second section, the contribution of technological capital to output per autonomous regions between 1987 and 1999 is calculated. A check of the hypothesis of constant returns to scale in internal productive factors results in one not being able to reject the hypothesis. In the estimation, common output elasticities to the productive factors are assigned to all the regions. In addition, the significance of the inclusion of time and regional fixed effects is tested. The results of the specifications chosen are included in Table 1.

Focusing on the contribution of the stock of R&D, it can be seen that it has positive and significant elasticity in practically all the specifications, with the estimated coefficient (around 0.06) very robust when additional explanatory variables such as human or external technological capital are included. In addition, in a Cobb-Douglas production function with constant returns to scale, the implicit return of the production factors is equal to their elasticity multiplied by the ratio of the stock of the factor to output $\left(r = \beta \frac{K}{Y}\right)$. This implies that while the calculated coefficient of technological capital is substantially below that associated with productive capital (estimated at between 0.4 and 0.6), the marginal return of technological capital is very high, given the low level of technological stock in the Spanish economy. This would suggest the need to incentivate this type of investment.

The literature on endogenous economic growth highlights the importance of the spread of knowledge (accumulated among other means by carrying out R&D activities) as a source for generating positive externalities. While the results of the estimations confirm the relevance of own technological capital in the production function of the Spanish regions, they do not confirm the existence of these externalities. The coefficient associated with external technological capital, that is the stock of R&D accumulated by the rest of the autonomous regions, is not significantly different from 0 (although the estimated coefficient has the correct sign). Equally, human capital also does not emerge as a significant production factor in the Spanish regions, which contrasts with some aggregate studies, although these do not include technological capital as a productive factor (specifications II and III)[5].

In short, these results throw into question the existence of positive externalities derived from the spread of knowledge throughout the whole territory. This appears to point to the need for each region to invest in R&D as a means of increasing productivity[6].

One explanation for the lack of positive externalities of technological capital could stem from the productive specialisation of the regions, where activity may be concentrated in sectors that are not technology or knowledge intensive. The following Section goes further into these questions by analysing the contribution of technological capital to production by sector.

4. The sectorial results

Most of the negative differential in R&D in Spain with respect to the most developed economies is accounted for by R&D financing by the corporate sector. According to Eurostat figures, around two thirds of the negative differential with respect to the EU is accounted for by

Table 1. Regional production functions with technological capital

Dependent variable: ln (Output/labour)	I	II	III
Capital/labour	**0.437**	**0.599**	**0.604**
	(0.04)	(0.06)	(0.06)
Stock R&D/labour	**0.056**	**0.064**	**0.063**
	(0.01)	(0.01)	(0.01)
External Stock R&D		**0.051**	**0.078**
		(0.10)	(0.11)
Human capital			**0.001**
			(0.001)
Region fixed effects	Yes	Yes	Yes
Time fixed effects	No	Yes	Yes

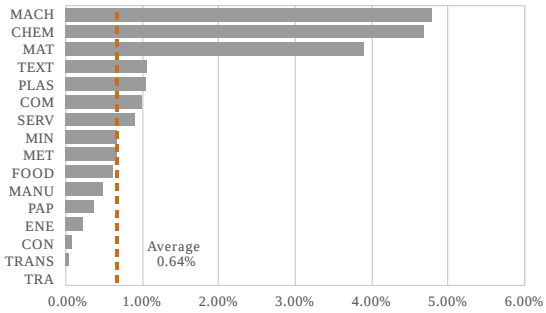
Standard errors in brackets
Source: BBVA

[5] Estimations in first differences confirm the results obtained by estimating in levels.
[6] However, as established by a number of recent studies (Keller, 2002), the externalities derived from the spread of knowledge could have geographical limitations. The variable of distance is used as a proxy for the extent of the commercial and labour relations between regions. In this way, a thorough examination of this issue constitutes one of the natural extensions of the research. Along these lines, for the period 1987-1996 accumulated external technological capital in the closest regions does have a significant impact on the productivity of the Autonomous Regions (see "The New Economy by regions: technological capital and productivity", Situación Spain, July 2002, pp. 8-9, BBVA Research Department).

Graph 6.

R&D by sector in Spain, 2000

(% value added)

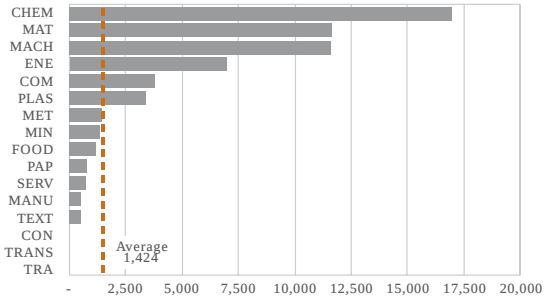


Source: INE

Graph 7.

Technological capital by sector in Spain, 2000

(euros per employee)



Source: INE and BBVA

Table 2. Sectorial production functions with technological capital

Dependent variable: ln (Output/labour)	IV	V	VI
Capital/labour	**0.699**	**0.538**	**0.559**
	(0.05)	(0.07)	(0.07)
Stock R&D/labour	**0.017**	**-0.020**	
	(0.01)	(0.02)	
External Stock R&D		**0.126**	
		(0.03)	
Human capital			**0.095**
			(0.02)
Sector fixed effects	Yes	Yes	Yes
Time fixed effects	No	No	No

Standard errors in brackets

Source: BBVA

corporate R&D. In addition, beyond the objectives of regional convergence, R&D is equally critical in determining the competitiveness of the Spanish economy and its companies. These factors, along with those derived from the lack of regional externalities, explain the need for a more extensive examination of the contribution of corporate R&D to the evolution of sector productivity.

The analysis of the extent of technological investment in the 16 sectors analysed shows a great concentration in three areas: Machinery, Chemicals and Transport Material. As reflected in Graph 6, investment in R&D in 2000 in these areas was between 4 and 5% of their value added[7]. These sectors, along with Textiles, Plastics and Rubber and Communications, are the only ones in which this type of investment is above 1% of output (compared with an average for the sectors of 0.6). This confirms the close relationship between the Information Technology producing sectors and R&D.

The differential in the extent of the innovation initiatives was in general terms maintained during the period 1987-2000 with the exception of some sectors such as the Energy sector, where the extent of the innovative effort in 2000 was comparatively less than during the rest of the period[8]. The use in the estimation of technological capital, that is to say, accumulated investment in R&D, limits the impact of atypical years, as well as being more in accordance with the structure of a production function. The three leading branches (Machinery, Chemical Products and Transport Material) accounted for two thirds of corporate technological capital in 2000 (See Graph 7), with their capital to value added ratio standing at 30% (compared with a national average of around 4% of value added at approximately 1,400 euros per employee).

In a similar way to the analysis carried out for the Spanish regions, production functions to evaluate the contribution of corporate technological capital to sectorial output between 1986 and 2000 have been estimated. As with the regional section, the hypothesis of constant returns to scale cannot be rejected, common output elasticities to the productive factors have been assigned to all the sectors, and time and sector fixed effects are included in the estimation. The results of the chosen specifications are given in Table 2.

In contrast with the regional results, own corporate technological capital does not appear to be a significant productive factor in the activity of the 16 main sectors of the non-agricultural, non-financial private economy in the past 15 years. On the other hand, external technological capital does show a positive contribution (specification V in Table 2). That is why alternatively, the impact of total technological capital on production has been considered by aggregating own and external capital (total stock of R&D). Total technological capital does show itself to be relevant, as seen in the significance and the robustness of its estimated elasticity, even above that obtained on the regional level. This outcome points on the one hand to the existence of productive externalities on the sectorial level, and on the other to the existence of differences in the behaviour of the different sectors in the sample[9].

[7] The 16 sectors analysed are Energy (ENE), Metallurgy and metal products (MET), Non-metal minerals (MIN), Chemical products (CHEM), Machinery (MACH), Transport materials (MAT), Food, beverages and tobacco (FOOD), Textiles (TEX), Other manufactured products (MANU), Paper and printing (PAP), Plastics and Rubber (PLAS), Construction (CON), Trade and hostelry (TRA), Transport services (TRANS), Communications (COM) and Other market services (SERV).

[8] The opposite case is represented by the Textile sector, which was one of the top four most innovative sectors in 2000, while its ranking in terms of technological capital per employee was more modest. Whether these types of discrepancies are the result of an atypical year or whether they mark a structural shift in the degree of innovation is beyond the scope of this study. In any case, the use of technological capital avoids biases in the results.

[9] The estimations in first differences only partially confirm these results. The contribution of external technological capital is less evident, although the results remain the same for the total stock of R&D.

The different productive branches of the economy differ in the extent of their technological content, which could have an impact on the carrying out of R&D activities and on productivity. Although the extent of expenditure and investment in Information and Communication Technologies need not coincide with the effort made in the area of R&D, there are reasons that suggest that these activities are increasingly inter-related. In order to assess this, the sectorial estimates are grouped together on the basis of the extent of their technological activity in line with the methodology proposed by the OECD. According to this methodology, the degree of technological activity is quantified on the basis of three indicators: investment in R&D over value added, investment in R&D over production, and the technological content of intermediate and investment goods over production. This study uses only the last criterion in order to avoid possible biases resulting from using R&D as a classification criterion and as a productive factor. As in the case of any classification, this is not without its limitations, which derive in large part from the degree of aggregation of the branches.

Using the Input-Output Tables for Spain drawn up by the INE for the period 1995-1998, and calculating the proportion of purchases made by each sector from the ICT sectors over total intermediate purchases, the non-agricultural, non-financial sectors of the private economy that are analysed are classified in two big blocks: sectors with medium-to-high technological content and sectors with low technological content[10]. Using this as a base, the hypothesis of common output elasticities to the productive factors in all the sectors is relaxed, allowing these to differ according to whether they are sectors with medium-to-high technological content or non-technological sectors. Table 3 shows the estimations selected.

As can be seen, own technological capital shows significant elasticity in the technological sectors (between 0.06 and 0.10 depending on the specification), while elasticity is not significantly different from zero in the non-technological sectors. This suggests that technological capital, and therefore investment in R&D, drives production in the branches with greater technological content and which are more involved in the production and use of technology. On the other hand, it does not have an impact in production in the branches with low technology. This could be a result of the characteristics proper to their activity, or because they have not reached a critical level of technology.

However, these specifications do not introduce the possibility that positive externalities exist among the sectors. The estimations that incorporate not only own technological capital, but also external technological capital show that the latter is particularly significant in the branches with medium-to-high technology as well as those with low technology, which suggests the presence of positive external effects. Therefore, investment in R&D and the consequent accumulation of technological capital gives a push to production in all sectors of the economy. The presence of positive externalities is not surprising for the branches with medium-to-high technology, but it implies that those branches with limited technological content also benefit from investment in R&D. This result is confirmed by the estimations that include total technological capital, as is seen in Table 3 (column IX).

By way of summary, the empirical evidence shows that investment in R&D is not only productive for companies with a greater technological profile, but also that its accumulation has an impact on the

[10] The sectors with medium-to-high technological content are Energy, Chemical products, Machinery, Transport materials, Construction, Communications and Other market services. The group of low technological content sectors includes Metallurgy and metal products, Non-metal minerals, Food, beverages and tobacco, Textiles, Other manufactured products, Paper and printing, Plastics and Rubber, Trade and hostelry and Transport services.

Table 3. Technological sectors Non-technological sectors

Dependent variable: ln (Output/labour)	VII	VIII	IX
Capital/labour			
Tech sectors	**0.878** (0.05)	**0.763** (0.07)	**0.743** (0.07)
Non-tech sectors	**0.367** (0.07)	**0.155** (0.08)	**0.143** (0.09)
Stock R&D/labour			
Tech sectors	**0.103** (0.02)	**0.066** (0.02)	
Non-tech sectors	**0.007** (0.02)	**-0.024** (0.02)	
External Stock R&D			
Tech sectors		**0.102** (0.04)	
Non-tech sectors		**0.139** (0.04)	
Stock I+D total			
Tech sectors			**0.167** (0.03)
Non-tech sectors			**0.113** (0.03)
Sector fixed effects	Yes	Yes	Yes
Time fixed effects	No	No	No

Standard errors in brackets
Source: BBVA

rest of the sectors, giving a push to production on the sectorial level due to the benefits of positive externalities[11].

5. Conclusions

In this study, regional and sectorial production functions are estimated to gauge the impact of innovation on economic activity. Statistical limitations prevent us from analysing the combined contribution of technological investment and innovation in its full sense (R&D plus innovation), and therefore, the analysis has been confined to the contribution of accumulated investment in R&D to growth. This may exclude an important part of the technological progress of the Spanish economy, particularly given its specialisation in service sectors and its productive structure, which is based on small and medium-sized enterprises. Therefore, the results have to be taken as a partial analysis of the issue.

In any case, the estimations confirm the high return from technological capital, both on a regional level and for the sectors as a whole, particularly those with medium-to-high technology. This suggests that innovation could play a key role in the modernisation of Spanish companies. This innovative process should include both an increase in investment in R&D as well as changes to the organisational structure of companies as a way of enhancing their efficiency and productivity.

The results also confirm the presence of productive externalities in the accumulation of technological capital on the sectorial level, both for technological and non-technological sectors. That is, investment in R&D on a national level has an impact on sectorial activity as a whole, independent of the technological nature of the sector.

The existence of positive externalities on a sectorial level contrasts with their lack of significance on a regional level. This suggests the need to strengthen the ways knowledge is spread among regions. Among these, the ones that stand out include labour mobility and commercial relations between companies and institutions located in different regions (as for example Chambers of Commerce). In the same way, collaboration between the business sector and universities, as generators of basic research, needs to be strengthened in order to enhance both the spread of knowledge among the regions as well as its application in the productive processes.

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[11] The results disaggregated according to the technological content of the sectors are quite dependent on whether the estimation is in levels or first differences. In particular, while the specification in levels points to the presence of positive externalities in all of the sectors, the specification in first differences does not confirm this result for the low technology sectors. That is, productive externalities only exist for the most technology-related sectors.

Summary of forecasts

(% change y/y, except for express indication)

	1999	2000	2001	2002	2003	2004
GDP at constant prices	**4.2**	**4.2**	**2.8**	**2.0**	**2.4**	**2.5**
Expenditure						
Private consumption	4.7	4.0	2.8	2.6	3.0	2.7
Public consumption	4.2	5.1	3.6	4.4	3.8	3.1
Gross Fixed Capital Formation	8.8	5.7	3.3	1.0	3.2	3.5
Capital Goods	8.6	5.1	0.4	-2.7	2.5	6.0
Construction	9.0	6.1	5.8	4.2	3.7	1.6
Inventories (*)	0.1	-0.1	-0.1	0.0	0.1	0.0
Internal Demand (*)	**5.6**	**4.6**	**3.0**	**2.6**	**3.4**	**3.1**
Exports (goods and services)	7.7	10.0	3.6	0.0	5.1	6.4
Imports (goods and services)	12.6	10.6	4.0	1.8	7.9	7.4
External Demand (*)	**-1.4**	**-0.4**	**-0.2**	**-0.6**	**-1.0**	**-0.6**
Activity						
Industry	3.7	4.0	1.4	1.0	0.7	1.9
Construction	8.6	6.4	5.4	4.9	3.3	0.4
Services	4.1	4.0	3.2	2.2	2.7	2.7
GDP at current prices	**7.1**	**7.8**	**7.1**	**6.6**	**6.5**	**6.4**
Euro, billions	565	610	653	696	742	789
Prices and costs						
GDP Deflator	2.8	3.5	4.2	4.4	4.1	3.8
Private Consumption Deflator	2.4	3.1	3.3	3.5	3.0	3.1
CPI	2.3	3.4	3.6	3.5	3.0	2.5
Inflation gap with EMU (p.p.)	1.1	1.2	1.0	1.3	1.0	0.8
Compensation of employees	2.7	3.7	3.8	3.9	3.9	3.8
Unitary Labour Costs (ULC)	2.1	3.1	3.4	3.4	3.1	2.8
Competitiveness (real effective exchange rate)	-1.5	-3.2	2.0	3.2	6.0	1.0
Labour Market						
Labour force	1.8	3.3	-0.2	3.0	2.6	2.6
Employment, LFS	5.5	5.5	3.8	2.0	2.6	2.2
Increase, thousands of people	760.3	801.8	575.8	312.1	423.7	367.3
Employment, National Account	3.7	3.6	2.4	1.5	1.6	1.5
Unemployment rate (% of labour force)	15.7	13.9	10.5	11.4	11.4	11.7
Productivity	0.5	0.6	0.4	0.5	0.8	1.0
Public Sector						
Debt (% GDP)	63.1	60.5	56.8	53.8	51.0	49.0
Deficit (% GDP)	-1.2	-0.8	-0.3	0.1	0.2	0.0
External Sector						
Trade Balance (% GDP)	-5.8	-7.1	-6.6	-6.0	-6.2	-6.0
Current Account Balance (% GDP)	-2.3	-3.4	-2.8	-2.4	-2.7	-2.3
International Outlook						
GDP: World	3.6	4.7	2.3	2.9	3.3	3.9
US	4.1	3.8	0.3	2.4	3.0	3.9
EMU	2.6	3.5	1.6	0.9	0.5	1.7
World Trade	6.6	13.3	-0.6	4.5	7.0	7.0
CPI: US	2.2	3.4	2.8	1.6	2.4	2.0
EMU	1.1	2.3	2.6	2.3	2.1	1.8
Exchange rate: $ / €	1.07	0.92	0.90	0.94	1.13	1.16
Brent Barrel, price ($)	18.0	28.4	24.9	25.0	28.4	25.8
Exchange rate and interest rate (**)		**dic-03**	**mar-04**	**jun-04**	**sep-04**	**dic-04**
Official interest rate						
US		1.00	1.00	1.25	1.25	1.75
EMU		2.00	2.00	2.00	2.00	2.25
10 year interest rate (**)						
US		4.34	4.50	4.70	4.80	5.10
Germany		4.40	4.20	4.50	4.50	4.50
Exchange rate (**)						
$/€		1.21	1.20	1.17	1.14	1.10
¥/$		108	110	110	110	110

Source: official institutions and BBVA

(*) Contribution to GDP growth

(**) Forecasts, end of period

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