CYCLICAL CHARACTERISTICS OF THE SPANISH ECONOMY IN THE PERIOD 1980-2005

Cyclical characteristics of the Spanish economy in the period 1980-2005

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In the past, various studies have explored empirically the main stylised facts of the cyclical behaviour of the Spanish economy. However, the cyclical regularities found may have been affected by the publication in 2005 of new National Accounts estimates, with base year 2000 (CNE-2000). These estimates involve notable methodological changes, such as chain linking and the use of new estimation procedures and statistical sources [see Banco de España (2005)], along with the incorporation of data on the latest economic developments, which show a prolonged expansion of activity. Accordingly, it is worth examining the characteristics of the behaviour of the Spanish economy in recent decades in the light of this new evidence, and analysing the stability of these patterns over time.

Stylised facts of the cycle in the period 1980-2005

In general, the studies carried out to characterise the business cycle in Spain conclude that the Spanish economy displays similar features to those of the developed countries and, especially, of the countries that make up the euro area [see, for example, Dolado, Sebastián and Vallés (1993), Licandro and Puch (1997), Ortega (1998) and Lores (2001)]. In this section the same type of analysis is applied to the period 1980-2005, in order to clarify whether the new information available changes the features identified in the literature[1]. For this purpose, various statistics are examined which measure, on one hand, the magnitude of the fluctuations of the cyclical component of the main macroeconomic variables[2] (such as the standard deviation) and, on the other, their relationship with output fluctuations (such as the relative standard deviation of each variable with respect to that of GDP and its correlation with the latter).

The period studied begins in a phase of low growth, followed by a strong expansion (from 1986 to 1992) and another brief, but intense, recession which paved the way for the most recent cycle (see Chart 1). The expansionary phase of this cycle continues to the end of the sample period (2005 Q2), although the intensity of the rate of growth of output can be seen to have had various phases. From 1993 until approximately 2000 GDP grew at high rates, which reached more than 5% in the latter year. Thereafter, there was a slowdown in the rate of growth of output, to 2.7% in 2002, with a subsequent rebound to over 3%. The information on the path of this variable in the second half of 2005 and in the first few quarters of 2006 points to extension of the expansionary phase beyond the sample period considered[3].

When analysing the main statistics describing the business cycle, certain features stand out (see Table 1). Thus, while economic theory suggests that private consumption should fluctuate less than output, reflecting the preference of households for a smooth intertemporal consumption pattern, in the case of Spain the variability of private consumption is seen to be

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1. The data used are seasonally adjusted quarterly data obtained from the Instituto Nacional de Estadística (National Institute of Statistics) and the Banco de España, spanning the period 1980 Q1-2005 Q2. The new CNE-2000 data begin in 1995 Q1, and have therefore been chained back to the year 1980 using the rates of change of the previous national accounts data, with base year 1995.   **2.** The cyclical component of each series on which these statistics are based is obtained by applying the filter proposed by Baxter and King (1995) to series in logarithms, except for those variables that may take negative values, such as the change in inventories and net exports (whose ratios to GDP are considered) and for the rate of inflation (which is incorporated in levels).   **3.** According to the dating of the Spanish cycle found in the literature for this period and using a variety of cyclical-component extraction methods (see for example that used by the Economic Cycle Research Institute), three peaks are identified (approximately in 1980, 1992 and 2000) and two troughs (in 1981 and 1993). There is uncertainty regarding the 2000 peak, since the literature has not coincided in identifying a trough since then, which may be interpreted as meaning that the expansionary phase is still continuing.
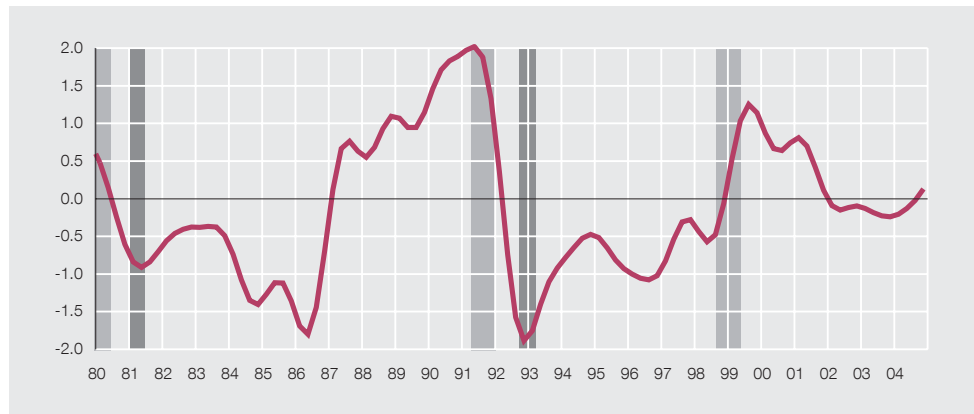
SOURCE: Banco de España.

a. Extracted applying the Baxter and King filter (1995). The shaded areas correspond to peaks (light grey) and troughs (dark grey) of the dated cycle.

greater than that of GDP[4]. This result has already been documented in other studies of the Spanish business cycle in previous periods and is not found in other countries. A possible explanation, highlighted by numerous studies of the determinants of private consumption in Spain[5], is a greater presence, especially in the first part of the period analysed, of liquidity restrictions than in other economies, which is reflected in higher estimates of the elasticity of consumption with respect to disposable income than in other OECD countries. Also, the influence of household wealth on consumption has increased in recent years, which may have led this variable to fluctuate more relative to GDP. Private consumption is, moreover, strongly procyclical and has a contemporaneous relationship with output[6], as seen in the other developed economies. Government consumption also displays greater cyclical fluctuations than output, and is moderately procyclical and contemporaneous with respect to the GDP cycle.[7]

Investment is the component of output that displays the greatest variability (four times that of GDP), as well as being strongly procyclical. This pattern of cyclical behaviour is obviously based on gross fixed capital formation, the main component of investment, as opposed to changes in inventories. Within gross fixed capital formation, residential investment is the component that fluctuates least, while public investment fluctuates almost seven times as much as output.

Imports and exports also display a high degree of variability, although net exports fluctuate less than output. Imports are highly procyclical, almost as much as consumption and investment, which means that net exports are countercyclical. This behaviour by the external sector over the cycle suggests that demand impulses and not supply ones have predominated in the Spanish economy over the past 25 years. In fact, positive demand impulses tend to increase both output and prices, leading to a deterioration in competitiveness. All this helps to make

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4. Their variability is similar, however, when durables consumption, which has a very high standard deviation (almost five times that of GDP), is excluded. **5.** See, for example, L'Hotellerie and Sastre (2005) and the references mentioned therein. **6.** A variable is procyclical if its maximum correlation with output is positive, countercyclical if it is negative and acyclical if this correlation is not significant. On the other hand, the relationship of a variable to output is said to be contemporaneous, lagged or leading according to whether the maximum correlation of the variable in question with respect to GDP occurs without a lag, or with a lag or lead of one or more quarters, respectively. **7.** The fact that it is procyclical should not necessarily be equated with a procyclical fiscal policy, since general government consumption does not include items such as transfers and subsidies. In fact, the cyclical correlation of government consumption with GDP does not follow any specific pattern in the developed economies, very often being not significant and close to zero.

CYCLICAL CHARACTERISTICS OF THE SPANISH ECONOMY
1980-2005

TABLE 1

	Standard deviation	Relative standard deviation (a)	Correlation with GDP (b)
GDP	0.94	1.00	1.00
Private consumption	1.14	1.21	0.86 (0)
General government consumption	1.24	1.32	0.50 (0)
Total investment	4.04	4.28	0.84 (0)
Gross fixed capital formation	*3.62*	*3.84*	0.84 (0)
Changes in inventories	*0.34*	*0.36*	0.29 (1)
Net exports	0.64	0.68	-0.51 (0)
Exports	*2.35*	*2.49*	-0.29 (4)
Imports	*4.10*	*4.35*	0.75 (0)
Gross value added:			
Agriculture	*4.48*	*4.75*	*0.25 (0)*
Industry	*1.63*	*1.73*	*0.90 (0)*
Construction	*3.33*	*3.53*	*0.74 (0)*
Non-market services	*0.98*	*1.04*	*0.61 (0)*
Market services	*0.81*	*0.86*	*0.82 (0)*
Employment	1.34	1.43	0.85 (0)
Total hours	1.59	1.68	0.77 (0)
Productivity	0.65	0.69	-0.46 (-3)
HICP inflation rate	0.73	0.78	0.31 (4)

SOURCE: Banco de España.

a. Relative standard deviation with respect to GDP.
b. Maximum correlation of each variable with GDP. The lag (positive) or lead (negative) with which

imports increase in line with activity, making them more procyclical, and acts as a disincentive to exports[8].

If output is examined on the supply side, it can be seen that all sectors except services display greater variability than GDP. The productive branches, with the exception of agriculture, have a close contemporaneous relationship with aggregate output. As for the labour market, total employment is procyclical and more volatile than GDP, unlike in other countries, where its variability is usually less than or similar to that of output. This greater cyclical fluctuation of employment in Spain arises from the existence of rigidities in the functioning of the labour market (for example, the high dismissal costs for permanent contracts), which have meant that the adjustment of employment to the position in the cycle is basically made through more intensive use of temporary hiring rather than permanent hiring. This same reason also explains more intensive use of the number of hours worked under permanent contracts, as the high degree of variability of total hours worked in the economy shows. A final factor that may have contributed to the variability of employment being greater than that of GDP has been the large inflow of immigrants and the increase in female participation during the prolonged upturn of recent years, which has enabled the high growth in employment demand to be accommodated during this period.

At the same time, it is possible to conclude that apparent labour productivity is countercyclical, a general characteristic of European economies. Economic theory would interpret this fact as

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8. On the other hand, a positive supply shock, besides increasing output, would reduce prices and improve competitiveness. This would stimulate exports while imports would fall.

further evidence of the predominance in this period of demand over supply impulses. On the one hand, real business cycle models, which assume that the main source of cyclical fluctuations is technological shocks, predict strongly procyclical productivity. On the other hand, Keynesian models attribute most cyclical fluctuations to demand impulses. Against this background, in the event of a demand stimulus (and taking into account the presence of diminishing marginal returns to labour) production will increase, albeit less sharply than employment, giving rise to a slowdown in productivity, which would display countercyclical behaviour.

Comparing these results with those obtained by other authors for Spain in a less recent period[9], it can be seen that including the data for the most recent years in the analysis entails less variability in absolute terms for most of the variables studied. However, the standard deviations relative to GDP increase slightly or remain unchanged, since the magnitude of output fluctuations has also decreased in recent years. As regards the degree of correlation with the GDP cycle, the comparison with these same studies reveals a slight increase in these correlations for some variables, such as private consumption and, to a greater extent, imports, exports and employment. In this same respect, the literature which studies the common factors of international cycles[10] also finds an increase in the cyclical synchronicity between macroeconomic variables in the 1990s, which may be attributable to both the greater weight of common shocks which affect all the sectors of an economy and to stronger transmission of impulses from one sector to another.

The differences discerned in this article with respect to previous studies of the economic cycle in Spain may arise for two reasons: on one hand, the sample period subject to analysis is different and includes the two latest complete cycles and, on the other hand, there has been a change in the national accounts methodology incorporated in our series. The following sections analyse how each of these reasons affects the differences found.

Recent changes in the characteristics of the cycle in Spain

In order to analyse the changes over time in the cyclical regularities of the Spanish economy the abovementioned statistics have been calculated for two sub-samples: 1980 Q1-1992 Q4 and the 1993 Q1-2005 Q2. The end of the recession of the early 1990s is therefore taken as the cut-off point between the two sub-samples.

In qualitative terms, most of the stylised facts described for the sample as a whole do not change when each of these periods is analysed separately, but in quantitative terms the differences are appreciable. Thus, over the cycle that commenced at the beginning of the 1990s the fluctuations were considerably smaller. Moreover, an increase is appreciated in the synchronicity of numerous variables with the GDP cycle.

In particular, the most striking difference is the fall in the standard deviation of GDP in absolute terms, from 1.08 in the first sub-sample to 0.73 in the second (see Chart 2). This lower cyclical variability is a phenomenon observed in all the advanced economies in the 1990s and has been related in the literature to, among other causes, the decline in inflation rates associated with more effective monetary policies (following the introduction of explicit inflation targets and greater transparency in their implementation) and the lower incidence of large global shocks.

Private consumption displayed a lower standard deviation in the second period, but maintained its greater variability with respect to GDP, while its correlation with output remained high (see Chart 3). Government consumption became acyclical, as frequently happens among the

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9. The comparison is made with Lores (2001), who analyses the cyclical behaviour in the period 1970 Q1-1998 Q4, Ortega (1998), who evaluates the period 1973 Q1-1997 Q1, and Dolado, Sebastián and Vallés (1993), who study the period 1970 Q1-1991 Q4.   10. See, for example, Canova, Ciccarelli and Ortega (2004).
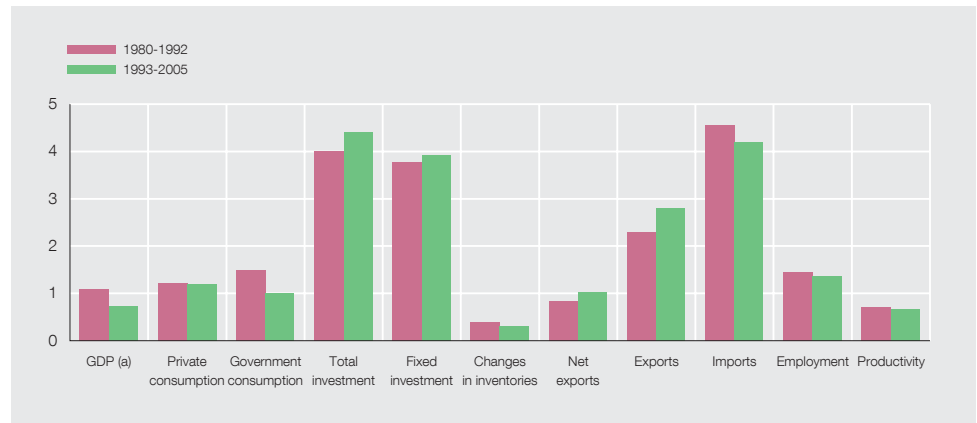
SOURCE: Banco de España.

a. Standard deviation in absolute terms.

CORRELATION WITH RESPECT TO GDP   CHART 3

SOURCE: Banco de España.

developed economies. Real goods and services exports, which were slightly countercyclical in the first period analysed, became moderately procyclical in the second, this being linked to the greater openness of the economy in the more recent period and to the increase in cyclical synchronicity with the euro area countries, which are Spain's main trading partners[11].

The variability of employment fell slightly in the most recent cycle, but it is still higher than that of GDP. The greater cyclical fluctuation of this variable in the 1980s may be related to the fact that most of the labour market adjustment was borne by employment, since wages hardly reacted to changes in economic conditions. In recent years, however, wages have shown greater sensitivity to cyclical movements, which has brought changes in employment more into line with those in output, although it continues to fluctuate less. At the same time, labour productivity became more countercyclical in the second period, which is probably associated with the fact that during the long expansionary phase of the most recent cycle, a significant part of the large increase in employment, principally based on the greater inflow of immigrants, has been concentrated in sectors with relatively low productivity levels.

11. See Buisán and Restoy (2006).
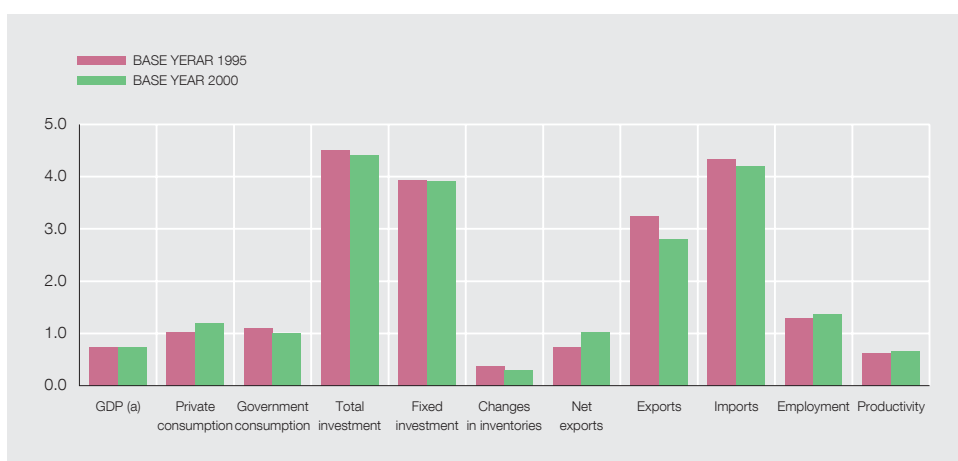
SOURCE: Banco de España.

a. Standard deviation in absolute terms.

Changes attributable to the new base-2000 National Accounts

To analyse how much of the differences found with respect to previous studies are attributable to the change in the National Accounts, the statistics calculated with the base-1995 National Accounts data have been compared with those of the CNE-2000. Since the sole source of data until 1995 Q1 was base-1995 accounts, the statistics that enable the cycle to be characterised have only been calculated for the second period analysed.

As seen in Chart 4, the differences found are not significant. The variability of GDP in the most recent cycle is the same with both base years, while the correlations between the variables and output are generally slightly lower with the CNE-2000. Among the features that change most with the new accounts are precisely the two that distinguish the regularities of the Spanish cycle most from those of other economies, since with the new base the cyclical fluctuations of private consumption and employment with respect to GDP increase. By contrast, exports and total investment are seen to have had a lower relative variability with CNE-2000, attributable, in the latter case, to a reduction in the variability of residential investment.

Conclusions

The empirical regularities in relation to the cyclical characteristics of the Spanish economy do not differ much, in general terms, from the evidence available for other countries, except as regards the fluctuations of private consumption and employment with respect to output, which are higher in the case of Spain. The greater variability of private consumption has been a traditional feature of the Spanish economy, reinforced in recent years by the presence of significant wealth effects on households (especially, as a result of the sharp rise in property values). As regards employment, the proportion of temporary employment in Spain, which is relatively high in comparison with other countries, is an important factor in explaining the magnitude of the fluctuations with respect to GDP.

In the more recent period (1993-2005), there was a significant reduction in cyclical fluctuations with respect to the previous period, as has been the case in other areas. The data also show greater synchronicity and cyclical correlation between many of the macroeconomic variables and GDP, in line with the evidence existing for other countries, including those of the euro area. Finally, the new base-2000 National Accounts data are found to have modified some of the features described, but have not entailed any significant qualitative changes. However, the future publication of a homogenous National Accounts series for 1980-2005, in which the period

1980-1995 will be estimated using the new National Accounts criteria, may modify some of these results.

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