
The significance of sectoral composition in recent stock market developments

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1. INTRODUCTION

From end-1995 to March 2000 the stock market indices of the main international bourses rose sharply. Their value multiplied over this period by a factor of between 2.5 and 3.5. March 2000 marked a turning point for this rising trend, giving way to a continuous decline which has led indices to lose around half their value (see Chart 1). Following these corrections, the indices in most markets stood at end-2002 at levels last observed in 1997.

The Spanish markets have proven no exception to this general trend. Between 31 March 2000 and 31 December 2002, the Madrid Stock Exchange General Index (MSEGI) tumbled by 41.5%, a lesser reduction than was the case for the Euro Stoxx Index (53.3%), comprising euro area companies, and similar to that of the S&P 500 (41.3%), made up of US corporations. Although the performance of most sectors has been unfavourable, the intensity of the fall in share prices has been uneven. The biggest declines have been in telecommunications, technology and media stocks.

Insofar as the performance of share prices has differed greatly from sector to sector, it is worth enquiring whether the sectoral composition of indices may account for the smaller slide on Spanish markets when set against their European counterparts and the greater fall on the latter compared with US markets.

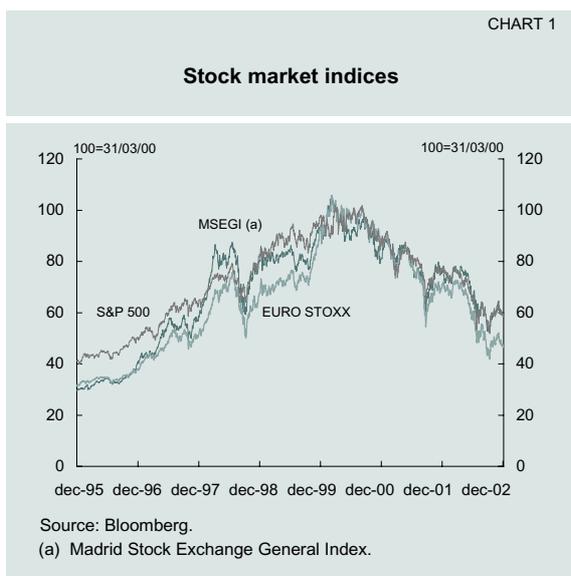
Against this background, this article studies the contribution of the different sectors to the reduction in indices in Spain, in the euro area and in the United States. It also analyses the significance of composition effects when explaining the differing performances of indices.

2. SHARE PRICE PERFORMANCE

To conduct this analysis 13 sectors are considered, although in the case of the Madrid Stock Exchange information for the whole period studied is only available for 8 of them, since the series of the other 5 begin in 2001 (1).

Table 1 shows the sectors analysed and their average weight in each of the three mar-

(1) The annex describes the procedure followed in constructing the different sectoral indices.



kets in the period from March 2000 to December 2002. The salient feature of this table is that the sectoral composition of the MSEGI differs substantially from that of the other two indices (Euro Stoxx and S&P 500). In the Spanish markets there is a high concentration in very few sectors. Specifically, banks, telecommunications corporations, utilities and energy companies have an overall weight of 75.2%. Conversely, in the euro area markets and in the United States, the four most represented industries account on average for 49.6% and 59%, respectively. The four weightiest sectors in Spain are also of significance in the latter two markets, although the related concentration is not so high (40.8% in the euro area and 27.6% in the United States). By contrast, it is the technology companies which, on average, show greater weight in the Euro Stoxx (14.3%) and, above all, in the S&P 500 (23.4%), while their average weight in the MSEGI is much lower (5.9%). Likewise, other industries with quite appreciable relative significance in these markets have no or a very low presence in Spain. This is the case, for instance, of insurance, automobiles and healthcare.

Table 2 shows the changes in stock market prices of the 13 sectors considered in this section for each of the three markets from 31 March 2000 to 31 December 2002.

Developments across sectors in traded prices reveal elements that are common to all three markets. Thus, the companies most affected by the downtrend in prices were those in the technology, telecommunications and media sectors, precisely the three industries whose prices had most risen between 1995 and March 2000. Other companies evidencing a negative though somewhat less unfavourable performance

TABLE 1
Average weights of sectors in stock market indices

	Spain	Euro area	USA
Banks	30.9	14.4	12.2
Telecommunications	24.3	11.4	6.2
Utilities	12.8	5.5	3.3
Energy	7.2	9.5	6.0
Construction	3.8	1.8	0.1
Food	2.4	6.2	4.2
Capital goods	2.3	7.1	10.4
Technology	5.9	14.3	23.4
Other	10.5	29.9	34.2
Of which			
Insurance	0.5	7.5	3.8
Healthcare	0.5	4.2	13.0
Media	1.7	5.1	4.2
Retail	6.3	2.3	5.3
Automobile	0.0	3.1	0.9

Sources: Bloomberg and Banco de España.
(a) Madrid Stock Exchange General Index for Spain, Euro Stoxx for the euro area and S&P 500 for the United States.
(b) In Spain's case, weights as at outset of 2002.

were utilities; banks, in Spain and in the rest of the euro area; and insurance companies listed on euro area markets.

The comparison between markets in Spain and in the euro area overall shows that, with the exception of the technology and, above all, the energy sectors, Spanish prices have generally performed less unfavourably since March 2000. The better relative performance of Spanish markets was seen in companies whose activity is based to a greater extent in the domestic market, namely in construction, the production of capital and intermediate goods, and the food industry. This was partly attributable to the lesser relative slowdown in the Spanish economy during the period. Conversely, in the energy sector, the performance of Spanish corporations was worse owing to the adverse impact of the Argentine crisis on the leading corporation in this group (Repsol YPF). Since late 2001, when the economic and financial situation in Latin America worsened, some of the industries made up predominantly of corporations with a presence in this region (banking and telecommunications) have performed slightly more poorly than have companies in the euro area on average.

US corporations have, compared with their euro area counterparts, performed less unfavourably in most sectors, with the exception of the technology and, above all, the automobile industries. Bank, insurance company, construction and food industry share prices have proven particularly resilient in the United States.

TABLE 2

Changes in traded prices (a)

%

	Spain			Euro area			USA		
	31/03/00	31/03/00	31/12/01	31/03/00	31/03/00	31/12/01	31/03/00	31/03/00	31/12/01
	31/12/02	31/12/01	31/12/02	31/12/02	31/12/01	31/12/02	31/12/02	31/12/01	31/12/02
Banks	-32.9	-7.3	-27.6	-34.4	-10.4	-26.8	-9.0	6.8	-14.7
Telecommunications	-65.1	-41.2	-40.8	-77.7	-65.1	-36.0	-66.0	-47.0	-35.9
Utilities	-31.4	-8.3	-25.2	-45.6	-19.5	-32.4	-35.5	-3.7	-33.0
Energy	-30.9	-18.6	-15.2	-17.8	-0.8	-17.1	-15.5	-2.5	-13.3
Construction	20.5	15.6	4.2	-29.5	-2.0	-28.1	78.3	100.5	-11.1
Food	37.3	26.5	8.5	-28.3	-5.8	-23.9	27.9	36.2	-6.1
Capital goods	13.3	23.7	-8.4	-45.0	-24.0	-27.6	-29.8	-7.7	-23.9
Technology	-83.7	-69.9	-45.8	-75.5	-49.3	-51.8	-76.0	-61.5	-37.6
Other	-35.6	-26.3	-12.6	-52.5	-19.2	-41.2	-17.6	4.0	-20.7
Of which:									
Insurance			10.9	-61.2	-19.7	-51.7	-7.2	18.3	-21.6
healthcare			-38.0	-20.1	35.6	-41.1	-5.4	18.2	-20.0
Media			-45.7	-76.1	-49.9	-52.4	-54.3	-33.3	-31.5
Retail			-12.4	-38.1	-13.4	-28.6	-26.8	-4.0	-23.8
Automobile			—	-37.2	-10.8	-29.6	-45.1	-25.7	-26.2
Market index	-41.5	-23.9	-23.1	-53.3	-28.7	-34.5	-41.3	-23.4	-23.4

Sources: Bloomberg and Banco de España.

(a) Madrid Stock Exchange General Index for Spain, Euro Stoxx for the euro area and S&P 500 for the United States.

The comparison between Spanish and US firms shows more balanced results. In 4 of the 8 sectors for which full information is available on the Madrid Stock Exchange (telecommunications, utilities, food, and capital and intermediate goods), the Spanish market performance has been better, while the opposite has been the case with all other productive activities.

Further, with the exception of Euro Stoxx, the performance of which was poorer in 2002, the decline in indices was very similar in the two sub-periods analysed in Table 2. Nonetheless, the distribution by sector of these falls was very different from the first sub-period to the second. Between March 2000 and December 2001, price slides were very concentrated in just a few sectors such as technology and telecommunications, while in 2002 the unfavourable performance of prices was more widespread.

In order to assess the relative significance of the different sectors when explaining the declines in indices, Table 3 shows the contributions of the different industries to the changes in the MSEG1, the Euro Stoxx and the S&P 500. These have been approximated to drawing on the changes in the sectoral indices and the weights of these sectors in the aggregate (2). The contributions in Spain differ substantially from those observed in the other two markets. Thus, in the Spanish market, telecommunica-

tions firms (16.1 points) and banks (10.1 points) are, in that order, the industries that most explain the falls observed. The greater contribution of these sectors in Spain is attributable, above all, to the greater weight they have in the Spanish index. Ranking third and fourth in terms of significance are technology firms and utilities, respectively. Overall, share price developments in these four sectors account for around 85% of the fall in the MSEG1.

In the euro area and in the United States, the declines in indices are largely due to the performance of very few sectors. In these markets, the slide attributed to the performance of technology stocks is far greater than that in Spain (12.5 and 26.6 points, respectively), despite the poorer behaviour of this sector on the Spanish exchanges, which can naturally be explained by their greater weight in those markets. Telecommunications corporations and banks contributed significantly to the fall in the Euro Stoxx index (13.6 and 4.2 points, respectively), and much more moderately to that in the S&P 500 (5.2 and 0.9 points). In both instances, however, the contribution of these sectors was far lower than in the case of the MSEG1. In the euro area the contributions of the insurance sector (4 points) and the media sector (4.9 points) were also very notable.

(2) See the annex for a description of the approach followed to calculate these contributions.

TABLE 3

Sectoral contributions to the change in stock market indices (a)

%

	Spain			Euro area			USA		
	31/03/00	31/03/00	31/12/01	31/03/00	31/03/00	31/12/01	31/03/00	31/03/00	31/12/01
	31/12/02	31/12/01	31/12/02	31/12/02	31/12/01	31/12/02	31/12/02	31/12/01	31/12/02
1. Total	-39.3	-21.6	-24.2	-53.3	-29.1	-34.2	-41.2	-23.4	-23.3
Banks	-10.1	-2.2	-8.8	-4.2	-1.3	-4.1	-0.9	0.7	-2.0
Telecommunications	-16.1	-11.0	-8.2	-13.6	-11.4	-3.1	-5.2	-3.7	-2.0
Utilities	-4.0	-1.1	-3.2	-2.4	-1.0	-1.9	-0.9	-0.1	-1.0
Energy	-2.2	-1.3	-1.1	-1.4	-0.1	-1.9	-0.8	-0.1	-0.8
Construction	0.8	0.6	0.2	-0.5	0.0	-0.6	0.0	0.0	0.0
Food	0.9	0.6	0.2	-1.5	-0.3	-1.6	0.8	1.0	-0.3
Capital goods	0.3	0.4	-0.3	-3.0	-1.6	-2.0	-2.8	-0.7	-2.7
Technology	-5.1	-5.4	-1.2	-12.5	-8.2	-6.1	-26.6	-21.5	-6.6
Other	-3.6	-2.1	-1.9	-14.3	-5.2	-12.8	-4.9	1.1	-7.9
Of which:									
<i>Insurance</i>			0.1	-4.0	-1.3	-3.8	-0.2	0.5	-0.9
<i>Healthcare</i>			-0.2	-0.5	0.9	-2.1	-0.5	1.7	-2.9
<i>Media</i>			-0.8	-4.9	-3.2	-2.4	-2.5	-1.6	-1.3
<i>Retail</i>			-0.8	-0.8	-0.3	-0.7	-1.3	-0.2	-1.5
<i>Automobile</i>			—	-1.1	-0.3	-1.0	-0.4	-0.3	-0.3
2. Market index	-41.5	-23.9	-23.1	-53.3	-28.7	-34.5	-41.3	-23.4	-23.4
3. Unexplained (3 = 2 – 1)	-2.3	-2.4	1.1	0.0	0.4	-0.4	-0.1	0.0	-0.1

Sources: Bloomberg and Banco de España.

(a) Madrid Stock Exchange General Index for Spain, Euro Stoxx for the euro area and S&P 500 for the United States.

The sectors evidencing price rises in Spain and in the United States (construction, food and, in the case of the MSEG1, capital goods too) made a contribution to their respective indices that was very small given their limited weight in the aggregate indices.

A common feature of the sub-periods observable in the three areas is the lesser contribution of telecommunications and technology companies since late 2001, which has partly been due to their lesser weight, and an increase in that of banks, especially in Spain and in the euro area, further to the recent deterioration in their prices. There was also a lesser concentration of contributions in 2002, especially in the United States and, to a lesser extent, in the euro area. Hence, in the period from March 2000 to December 2001, over 90% of the decline in the S&P 500 was attributable to technology stocks, while in 2002 10 sectors were needed to attain that percentage. In the euro area, 3 industries accounted for more than 75% of the fall in the Euro Stoxx index in the first sub-period, and 9 sectors in the second sub-period. By contrast, on the Madrid Stock Exchange no significant changes were apparent between the two periods as regarded the concentration of contributions.

3. THE SIGNIFICANCE OF THE SECTORAL COMPOSITION OF INDICES

One key question is the extent to which the different sectoral composition of the MSEG1 has played a determinant role in explaining its different performance in relation to the other two indices. To respond to this it is worth calculating what the change in the MSEG1 would have been had its composition been the same as that of the other two indices, i.e. if the relative sectoral weights of the Euro Stoxx and S&P 500 indices and the sectoral changes in our market were used.

In the period from March 2000 to December 2001, the fact that information covering all sectors of the Madrid Stock Exchange cannot be had means that an approximation can only be made drawing on the 8 industries available. The application of the Euro Stoxx weights to the changes in these sectors in the Madrid Stock Exchange gives a decline of 18.3%, a less unfavourable change than the fall attributable to these sectors that was observed in the euro area bourses as a whole (23.8%). This result suggests that the better performance of the MSEG1 compared with the European index during this period is not attributable to the different composition of our exchanges.

The same exercise, using the weights of the S&P 500, produces a 26.6% decline, a fall on a similar scale but somewhat less sharp than the loss of value of the S&P 500 attributable to the same sectors (24.5%). As a result, in this case the different sectoral composition does not appear either to have had a pivotal effect on the different trend of the Spanish index compared with that of US bourses.

For the analysis of the December 2001-December 2002 period, and using the information on the 12 sectors available, application of the Euro Stoxx weights to Spanish stock market price changes gives a fall of 19.7%, a considerably less unfavourable performance than the decline in this index attributable to the same sectors (30.3%). Once again, these results show that, during 2002, the better relative performance of the MSEG1 compared with the Euro Stoxx was not due either to the different composition of our index.

For the same period, applying the S&P 500 weights gives a loss of value of 23.9%, two points more than the contributions of the 12 sectors to the reduction in that indicator. That is to say, the performance of the MSEG1 would have been slightly more unfavourable than that of the US index had they both had the same composition.

To round off the set of possible comparisons of the impact of different stock market composition on relative performance, the changes in the Euro Stoxx using the weights of US stock markets for the 13 sectors considered can be calculated. Carrying out this exercise for the period from March 2000 to December 2002 gives a fall of 52.3% compared with a joint contribution of the 13 sectors to the less unfavourable decline in the S&P 500 (41.3%). In the recent period (2002), the falls obtained are 33.3% and 22.2%, respectively. These results suggest that the poorer performance of euro area bourses compared with their US counterparts does not appear either to respond to a composition effect.

4. CONCLUSIONS

This article has studied the respective performances of Spanish, euro area and US stock market prices since March 2000, when the indices of the main international markets peaked. Although most sectors have moved on a declining trend, non-homogenous patterns of behaviour have been seen. In this respect, the companies most adversely affected have been those in the technology, media and telecommunications sectors.

The contributions of the different industries to the declines seen were concentrated in a limited number of sectors, especially between March 2000 and December 2001. On the Spanish stock market the sectors that most contribute to explaining the declines are telecommunications, banking, technology and utilities.

Despite the very different sectoral composition of the stock markets, this does not appear to have played a key role in the different performances of the indices. The better performance of the Spanish index compared with its euro area counterpart reflects, above all, a less unfavourable performance overall by Spanish share prices. Likewise, the poorer relative performance of the European stock market index compared with that of the US index does not appear either to respond to a composition effect.

These findings are consistent with the assumption that the relative robustness of Spanish as opposed to euro area share prices may be due to better market expectations as regards the earnings of corporations listed in Spain, underpinned by the satisfactory behaviour of the Spanish economy in the cyclical downturn. Further, the bigger fall in share prices in the euro area compared with the United States shows, rather than the different composition of the indices, a somewhat greater deterioration in the earnings outlook for listed European companies.

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ANNEX

CALCULATION OF SECTORAL INDICES AND OF CONTRIBUTIONS

In the case of Spanish markets, the only available sectoral indices are those constructed by the Madrid Stock Exchange. Until end-2001, these indices included a total of 10 sectors that allow for an approximation to the performance of 8 of the 13 sectors considered in the analysis in section 2 of this article. Since 2002, the Madrid Stock Exchange has altered the sectoral indices it prepares. With the new definitions 7 sectors and 23 sub-sectors are offered. By combining both it is possible to replicate reasonably the 8 former sectors considered in the analysis (although homogeneity between the two periods is not complete) and two of the five remaining ones. For two other sectors (healthcare and technology), the following procedure has been adopted. The first of these has been drawn up with the traded prices of the firm Zeltia, while the second is capitalisation-weighted, taking the sub-sectoral index of Electronics

and Software and the firm Amadeus as of the outset of January 2002. Finally, it has not been possible to construct an index for the automobile sector as no companies in this sector are listed on the Spanish stock market.

In the case of the euro area and US stock markets, a greater number of sectors and/or sub-sectors is available, meaning it has been possible to construct 13 sectoral indices for the Euro Stoxx and the S&P 500. In some cases, these have been devised by combining several sub-indices, using the market capitalisation of the companies concerned to construct the aggregate.

The contributions for each period have been calculated by multiplying the weighting for each sector at the start of the period by its percentage

change. This approach is only correct when there are no changes in the composition of the sectors, which entails an approximation error. In the case of the Madrid Stock Exchange, an approximation has been made to the contributions of the 2000-2002 period using the average weight since, prior to 2002, the MSEG1 was calculated applying fixed weights for the entire year.

As the sectoral weights prior to 2001 are not available for the Euro Stoxx and the S&P 500, the approximation to these has been made by implicitly assuming that all the changes in weights are due to changes in company share prices. In this way, the weights have been recalculated backwards, with the relative growth of the sectoral indices in respect of the change posted by the market as a whole being applied to them.