European non-financial listed groups: analysis of 2011 data

III WG on IFRS impact and CBSO databases
European Committee of Central Balance Sheet Data Offices (ECCBSO)

March 2013

eccbso

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BOXES AND ANNEXES

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IMPORTANT INFORMATION ABOUT THE SOURCE USED (ERICA DATABASE)

The data used in this study are obtained from publicly available financial statements of European non-financial listed groups, having been treated manually, by CBSO statistics and accounting specialists, to be fitted on a standard European format (ERICA format); this manual treatment means, in some cases, the interpretation of the original data, a constraint that readers of this document should bear in mind.

Neither database represents the total population of European non-financial groups; nevertheless, the coverage attained with ERICA 1 (partial dataset with details only available for some countries) and especially with ERICA 2 (i.e., the core common elements of the database) on the listed European groups, is well-balanced with the situation and national composition of the stock markets. The analysis conducted in this document with both datasets of ERICA, with the limitation expressed in the previous paragraph, provides a view of the position of the listed non-financial European groups.

The opinions of the authors of this document do not necessarily reflect those of the national central banks to which they belong or those of the ECCBSO.

All the graphs and tables presented in the document are referred to the same source (ECCBSO-ERICAdatabase, datasets 1 and 2), except for those cases where another one is indicated.

Since 2006, the reduced format (IFRS-based) created by the IIIWG of the ECCBSO has been used for the collection of data from the financial statements of European non-financial listed groups, in some cases manually, in others obtaining the information from the databases currently available in some countries of the IIIWG. Finally, this has entailed having, for the first time in the ECCBSO's history, a database of comparable financial statements, called ERICA (European Records of IFRS Consolidated Accounts), with two datasets: ERICA 1, more detailed with fewer groups, and ERICA 2, with around 1,200 European groups, fully representative of the stock markets of the countries participating (see Box 1), with somewhat fewer details; the differences between both datasets are limited to some informative details (segment information, IFRS alternatives applied, fair value accounting); the balance sheet and the P&L account have, in practice, the same details in both datasets.

Although the database was created for methodological uses (to better understand IFRS standards, to create an IFRS standard format, to test with real cases the impact of new standards, to understand better the limits and success of using consolidated accounts), the quality of the data and their interest (there is increasing demand to have access to the consolidated accounts of the European non-financial listed groups)[1], means that the dissemination of this first study on the results of the European listed groups is considered advisable. Nevertheless, three main drawbacks should be highlighted:

1 The microdata (official consolidated accounts published by the European non-financial groups) have been submitted to manual treatment by the members of the IIIWG or by other departments involved at our central banks in the collection of these data.
2 Precisely for this reason, the microdata have to be kept confidential.
3 Consolidated accounts make it difficult to isolate the impact of changes in the perimeter of consolidation. The structural ratios (indebtedness, for example) reflect properly the situation of a whole group at a moment in time. Rate of growth, on the other hand, mixes the impact of the organic development of the subsidiaries included in the group, with corporative developments (increases due to the inclusion of new subsidiaries in the perimeter).

Main findings of the current study:

- Profitability, which improved during 2010, has shown a downward trend in 2011.

  – The downward trend in 2011 has been balanced by a strong and good performance of industrial groups, following the path followed in 2010 by these groups. In any

1 Although ESMA has guaranteed ready access to the public information available in the different European stock exchange markets, through the OMAs (Officially Appointed Mechanism), the financial statements are solely available in pdf, making it difficult to upload and compare the data. We hope that the existence and publication of the current study will show even more the interest in and need to have readily updated information, i.e. electronically available information (XBRL would be a good option).

event, in aggregate terms, there has been a deterioration in groups´ results in 2011, affecting the EBIT evolution, ratios (margin and profitability) and profit (loss) before tax; this poor performance has been particularly intense in small groups (less than 250 bn turnover).
- In connection with the foregoing, cash flow from operating activities presented in 2011 a negative evolution in all sectors of activity.

2 Financial structure without significant changes

- Moderate increase in 2011 in equity, based on the performance of industry, that combined with a weakening of the equity ratio, biased by large groups' behavior. Groups belonging to the construction sector still show an equity ratio 10 points lower than the other groups' sector aggregates.
- The rise in cash and cash equivalents ended in 2011 after two years of increase (2009 and 2010, in an environment of economic and financial uncertainty, groups decided to adopt a wait and see stance). 2011 showed a decline in cash flow generated by operating activities, affecting this element of the assets.
- Financial debt rose moderately in 2011, mainly due to the evolution of short-term finance. In any event, the indebtness rate remained stable.

3 Low (negative) impact of fair value in 2011

- Analysis of the detailed data, available exclusively in the subset of groups of ERICA 1, shows that the impact on European groups of fair value accounting was once again low in 2011, proving negative and higher in absolute values in equity and positive in the income statement.
- The correlation and the regressions analysis conducted with the figures available still confirm the idea that groups are not using fair value to control profits (losses) for the year.

4 ERICA 1 and 2 cover well the European listed groups population / High degree of activity concentration in the European groups, especially in the smaller groups of the sample (diversification is connected to the size of the group) (see Boxes 1 and 2 of the document).

II PROFITABILITY

Profitability analysis is based on around 1200 non-financial European groups, most of them listed on a European stock exchange. In aggregated results, large groups as well as German and French groups have a strong influence. Moreover, the weight of the sectors in the sample is driven by the specific composition of the listed groups in each country and might therefore differ from the actual sector compilation of total population.

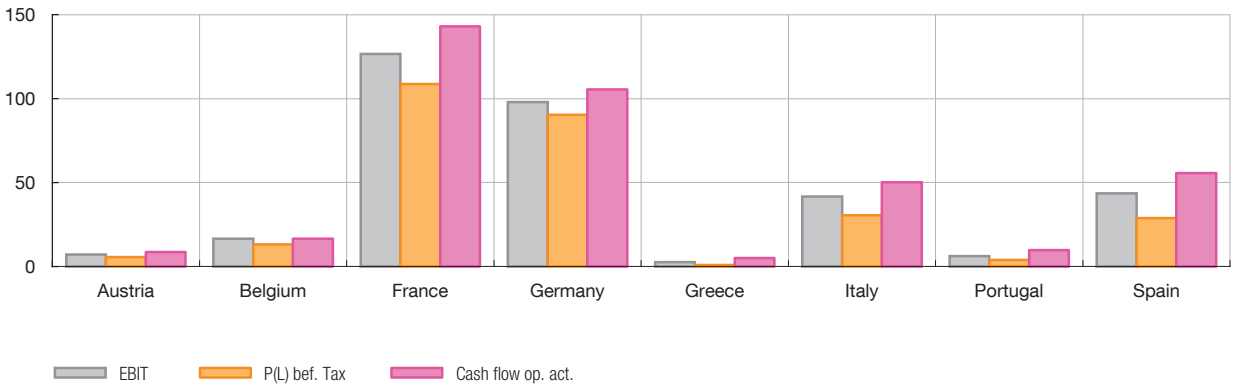
MAIN FIGURES OF THE SAMPLE; COUNTRIES COVERED AND RELATIVE IMPORTANCE OF EACH SECTOR TABLE 2
Main figures for 2011, data in billion of EUR

	Number	EBIT	Cash Flow Op. Act.	P/(L) bef. Tax
By source and country				
Banque de France db	361	126.68	143.02	108.76
Bundesbank db	223	97.87	105.43	90.34
Cerved db	274	41.62	50.25	30.59
OeNB db	48	7.08	8.55	5.56
Banco de Espana db	112	43.61	55.63	28.89
ERICA1				
Belgium	82	16.58	18.11	13.15
Greece	51	2.55	4.98	0.95
Portugal	39	6.17	9.72	3.86
By sector				
1. Industry	549	176.19	199.63	171.59
2. Energy	63	69.88	83.83	51.65
3. Construction	57	12.46	15.39	5.79
4. Services	514	87.59	132.72	59.42
5. Not classified		0.60	0.63	0.54
By size (turnover)				
1. Small groups (<250mm)	563	3.19	4.77	0.65
2. Medium (250mm-1,5bn)	369	22.46	25.10	13.96
3. Large groups (>1,5 bn)	262	321.07	402.33	274.38
Total	1,194	346.72	432.20	288.99

Source: ECCBSO - ERICA database (datasets 1 and 2) (a).
Note: The number of firms by country and by sector or by size are different: some double accounted groups belong to the same country but are in different sectors.

a All the graphs and tables presented in the document are referred to the same source (ECCBSO-ERICAdatabase, datasets 1 and 2), except for those cases where another one is indicated.

COMPARISON OF THE WEIGHT OF EACH COUNTRY CHART 2



That said, the ERICA database allows a sound analysis of the profitability of European groups, showing a downwards trend in profitability in 2011 which was limited in totals by a strong sector industry.

II.1 EBIT: SOUND PERFORMANCE OF SECTOR INDUSTRY HELD OFF A SIGNIFICANT MINUS IN TOTAL ERICA POPULATION

After the heavy decline in profitability in 2009 which affected all sectors and company sizes (to differing degrees), the EBIT situation improved enormously in 2010 (+40%[2] compared to 2009) but decreased slightly again in 2011 (-1,7% to 347 € bn) in totals. Although revenues rose by 11% and all sectors (except Services) and company sizes benefitted from this development, this surplus could broadly not be transferred down to profits.

The breakdown by sector and size showed that only sector industry could produce once again a sound surplus in EBIT (+15%) whereas all other sectors and also all company sizes declined. The decline in EBIT stood between -10% (for construction) and -17% (for services) and was particularly heavy for small groups (-13%). Medium and large groups recorded a slight reduction of 1,5 – 2%.

EBIT ratios: slight downwards trend in 2011

The analysis in relative terms, by means of two complementary ratios that compare EBIT with Assets (a proxy to ROA) and with Revenue (being a proxy of the evolution of margins), broadly shows a slight negative performance:

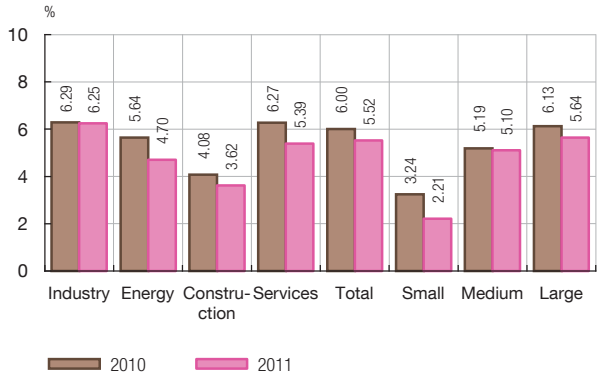
- Ratio EBIT / Assets decreased from 6% to 5.5% in weighted average resp. from 5.2% to 5.0% in median.
- Ratio EBIT / turnover decreased from 9.5% to 8.6% in weighted average resp. from 6.3% to 6.2% in median.

2 As usual in the analysis of trends with consolidated data, it is difficult to isolate which part of this improvement is due to corporate growth (inclusion of new subsidiaries in the scope of consolidation) and which to internal increases.

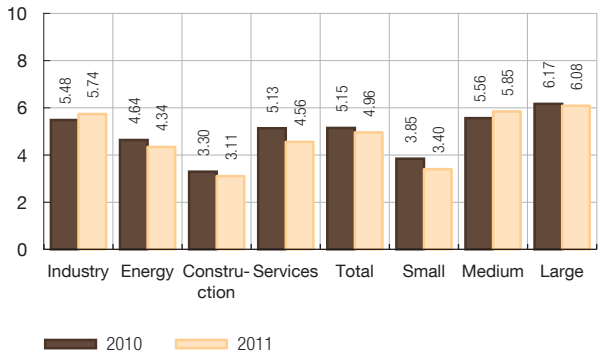
EBIT / ASSETS TOTAL

CHART 2.1.1

WEIGHTED AVERAGE (IN %)



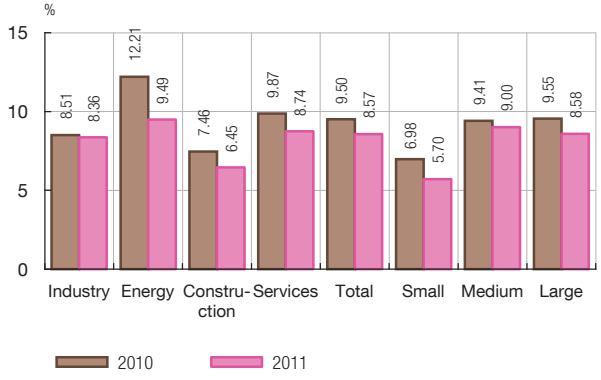
MEDIAN (IN %)



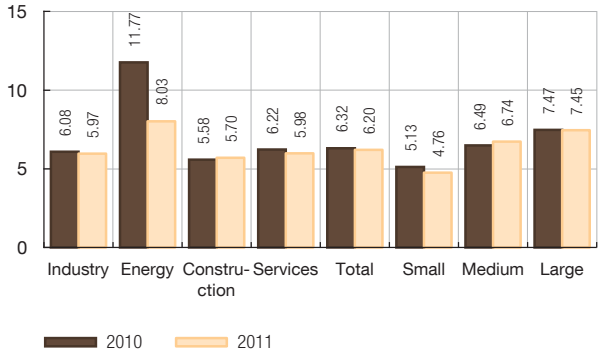
EBIT / REVENUE

CHART 2.1.2

WEIGHTED AVERAGE (IN %)



MEDIAN (IN %)



Whereas sector industry could more or less keep its position the ratios declined for all other sectors, most for energy. Sector energy in particular declined in ratio EBIT to revenue as the development of the both input parameters stood in heavy contrast to each other: revenues recorded a sound surplus of 13.6% but EBIT caved in by 12.5%. Specially the small companies in this sector were hit hard causing a cut in the EBIT/turnover ratio from 13.7% to 5.6% in median. In weighted average the ratio for small companies was even negative (-2.4%). Nevertheless in totals energy remained the most profitable sector with a median EBIT/turnover ratio of 8%.

Sector construction was furthermore the last in terms of profitability even though the ratio EBIT/turnover could be improved very slightly from 5.6% to 5.7% in median comparison. The EBIT/assets ratio stood at 3.1% in median (2010: 3.3%).

Regarding company sizes in totals the medium segment presented a minor increase in the median EBIT ratios whereas for all others it was a slight downwards trend.

II.2 Profit (Loss) before tax – decline damped down again by prominent influence of the industrial groups

In contrast to the development in 2010 where Profit before tax increased significantly (up more than 70%) due to an additional beneficial development in the aggregated financial result of the groups, total profits declined in 2011 by 2.9% to 289 € bn indicating a negative impact of the aggregated financial result for the current year.

The gap between the development of sector industry and all other sectors, which has already been described in chapter II.1 EBIT, is even stronger for profit before tax. Whereas industry could reinforce its profits by almost 21% all other sectors were hit by a profit reduction of -20.6% (Energy) to -45% (Construction).

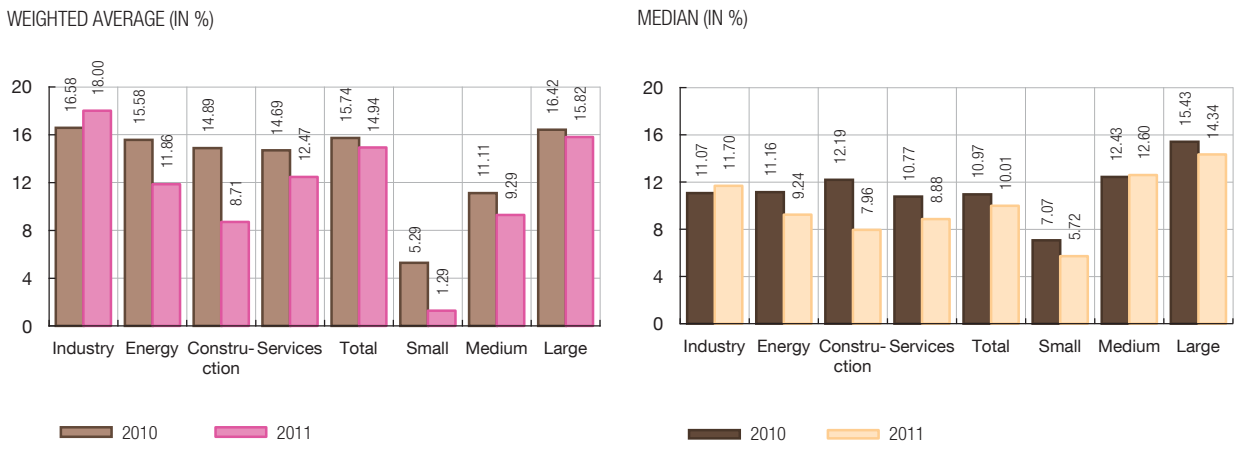
Regarding company sizes only the large companies could keep their profits more or less stable (-1.4%), medium companies lost 17.7% of their profits and small companies even 71%.

Profit (loss) before tax/Equity ratio:

After a considerable increase of the ratio in 2010 (+5.7 points to 16.2% in weighted mean resp. 4 points to 11.4% in the median) which was due to the high profit growth rate, the ratio fell in 2011 as well due to the profit situation, this time decreasing. In totals the effect was not significant (decrease of about 1 point to 15% in weighted means resp. to 10% in median) as sector industry compensated most of the profit squeeze of the other sectors. Analysing the sectors individually the picture was quite different. While industry remained quite stable respectively showed a slight increase in weighted average all other sectors were confronted with a substantial reduction in the Profit/Equity ratio. Profitbreak down was in particular heavy for sector construction causing a decline in the ratio by 4 points to 8% in median and by around 6 points to 8.7% in weighted average. But also sector energy and services displayed a drop by 2-3 points, in weighted average even more.

PROFIT (LOSS) BEFORE TAX/ EQUITY RATIO

CHART 2.2



According group size once more the small groups were affected most, particularly in weighted average. Large groups lost about 1 point in the ratio and only the medium size segment was stable in median comparison at least. Aggregated large groups showed a ratio of 14.3% in the median which was almost three times as high as for small groups. The gap between small and large groups was extremely pronounced in sector energy as the small groups there were even faced with a loss before tax. This caused a negative turnaround in median ratio from 4.7% in 2010 to -2.1% in 2011 (-7.5% in weighted average). The performance of the small groups in sector construction contracted to less than the half in the median ratio (from 12% to 5.6%).

II.3 Cash flow from operating activity: Decline affecting all sectors

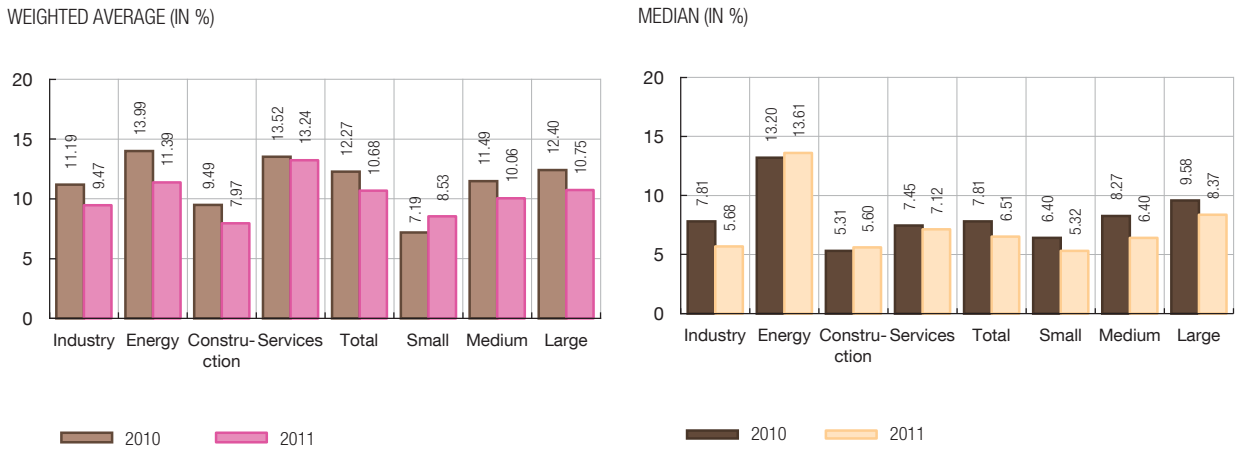
Following the downwards trend in EBIT and in Profit before tax, also aggregated Cash Flows declined by 5.1% to 432 € bn. In contrast to the development observed before, this reduction affected all sectors including industry (-0.6%). Most affected was sector construction with a minus of 12.6%.

Regarding group size the medium and large segment recorded a reduction in Cash Flows of 10% and 5% respectively. Only small groups recorded a high rise (+26%) which however can be traced back to an outlier in the sector Energy (see also graph below where the rise for the small segment is only reflected in weighted average ratio but not in median).

Cash flow operating activity/revenue: declining trend

In relative terms, the Cash flow operating activity / revenue ratio shows a declining trend: with the decrease in cash flows and the growth in revenue, the aggregated cash flow ratio decreased from 8% to 6.5% in 2011 in median terms (weighted average: from 12.3% to 10.7%). Against the aggregated downwards trend, sectors construction and Energy reflected a slight increase in median ratio (but decrease in weighted average, indicating a strong negative impact of few major groups). All group sizes followed the aggregated decline with the exception of the small groups in weighted average (outlier in sector energy as mentioned above).

CASH FLOW OPERATING ACTIVITIES / REVENUE — CHART 2.3



Despite its heterogeneity, the number and the importance of the groups included in ERICA provide a relevant assessment on the financial structure of the main listed groups of the non-financial sector in continental Europe (though some large groups of certain countries are missing).

Indeed, the results rely on the data of around 1200 European groups. However, as the 262 largest groups represent more than 89% of the total equity, they have a strong influence on the aggregated results.

Nevertheless, the number of groups and their representativeness differ from country to country (see box 2 for more information):

– Large influence of French and German groups in the entire dataset: together both countries represent nearly the half of the sample, and more than 60% of the total equity of the analysed financial accounts;

MAIN FIGURES OF THE SAMPLE, COUNTRIES COVERED AND RELATIVE IMPORTANCE OF EACH SECTOR TABLE 3

Main figures for 2011

	Number	Revenue - billion euro	Total equity - billion euro	Total assets - billion euro	Financial debt - billion euro
By source and country					
Banque de France db	361	1,287	723	2,104	586
Bundesbank db	48	90	47	120	37
Cerved db	223	1,365	523	1,734	520
OeNB db	274	542	281	954	369
Banco de España db	112	385	214	777	316
ERICA1					
Belgium	82	123	68	178	55
Greece	51	57	30	83	31
Portugal	39	71	31	127	59
By sector					
1. Industry	549	2,100	945	2,797	850
2. Energy	63	736	435	1,488	449
3. Construction	57	193	66	344	136
4. Services	514	1,002	476	1,623	630
5. Not classified	11	7	3	7	2
By size (turnover)					
1. Small groups (<250mm)	563	56	50	144	63
2. Medium (250mm-1.5bn)	369	249	150	440	178
3. Large groups (>1.5 bn)	262	3,734	1,727	5,675	2,067
Total	1,194	4,039	1,927	6,259	2,307

Note: The number of firms by country and by sector or by size are different: some double accounted groups belong to the same contry but are in different sectors.

– The industrial distribution shows disparities between countries with a strong presence of the energy sector in Italy, Portugal and Spain; of the industry sector in Belgium and Germany; and of construction in Austria and Spain;
– Some of these differences are explained by the specific sectoral composition of the national stock markets.

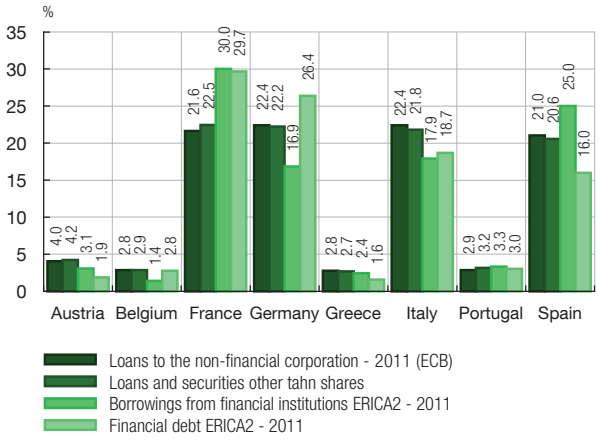
As a consequence, these elements introduce a selection bias into the groups of ERICA under study:

– On the basis of a macro indicator (Financial debt), the coverage of countries is more or less satisfactory: Belgium, Italy and Portugal seem to be well represented in ERICA, but France and Germany are overrepresented.
– Because of the composition of the national stock markets, some sectors are overrepresented (Energy in Austria, Italy and Portugal, industry in Belgium and Germany), as occurs in the total population analysed (European listed groups).

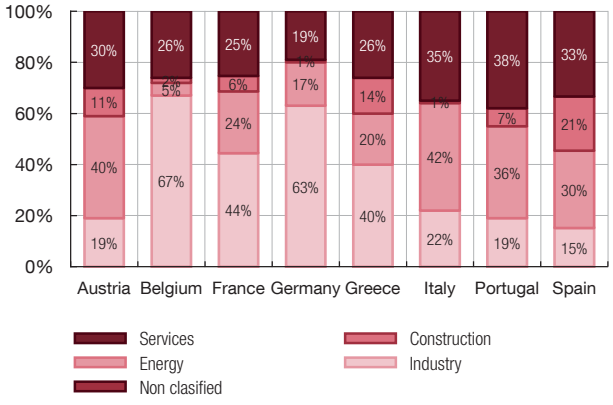
As a matter of fact, the results obtained with ERICA cannot be considered as a perfect snapshot of the situation of the non-financial groups as a whole, but they may be viewed as a good tool for knowing the recent evolution and behaviour of non-financial listed European groups. Nevertheless, sectoral analysis is probably balancing properly the situation of European listed non-financial groups.

FINANCIAL STRUCTURE ANALYSIS CHART 3

COMPARISON OF THE WEIGHT OF EACH COUNTRY



TOTAL ASSETS: BREAKDOWN BY ACTIVITY FOR EACH COUNTRY



Source: ECB and ECCBSO-ERICA database.

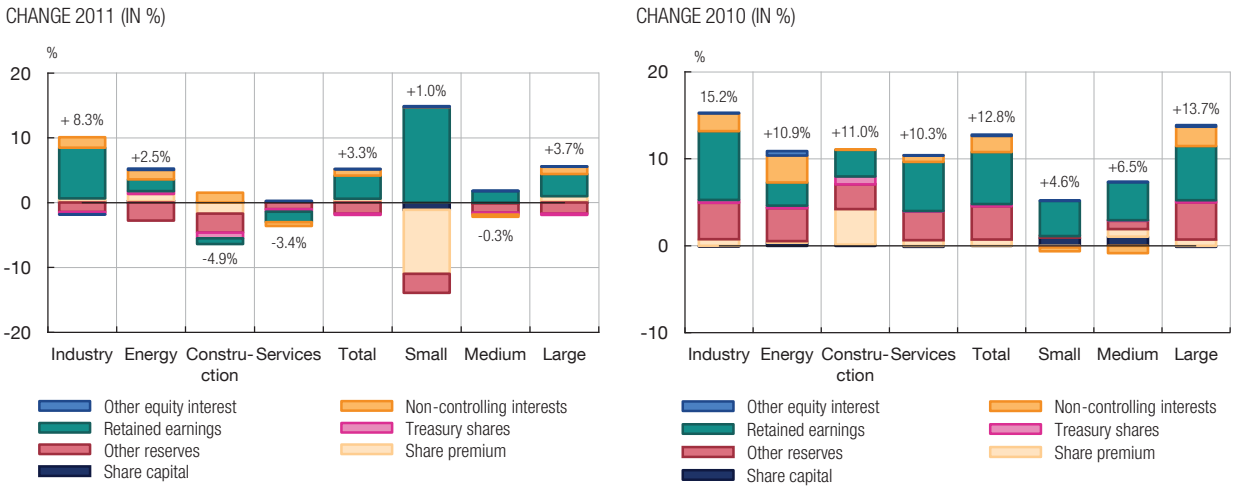
III.1 Equity: moderate increase in equity but weakening of the equity ratio

Moderate increase in equity in 2011

After a significant increase in the year 2010 (+12.8% for all groups), the changes in equity have been far more moderate in 2011 with an overall growth of 3.3%.

CHANGES IN THE CONSTITUENTS OF EQUITY

CHART 3.1.1



Source: ECCBSO-IIIWG –Erica2 Dataset (sliding sample).

The industry sector showed the best development in the period considered, with an equity increase of 8.3%, followed by the energy sector with a plus of 2.5%. In contrast to that, the construction and the services sectors had a decrease in equity. In terms of size in particular large groups contributed to the overall increase.

Taking into consideration the different constituents of equity it can be seen that across all sectors and sizes there was a negative impact of the other reserves. This resulted from measurement effects that are reported in the other comprehensive income. These effects differed from group to group but the main drivers seem to be the actuarial gains and losses reserves, the hedging reserves and the available for sale reserves. As far as the actuarial gains and losses reserves are concerned, in certain groups the negative impact was due to the anticipation of the revised IAS 19, which changed the accounting of pension liabilities.

The massive change in the constituents of small groups followed from one outlier, who settled his accumulated losses by a capital reduction. The only positive component in the construction sector – the non-controlling interests – resulted from an acquisition and was therefore a pure consolidation-scope related effect.

The equity ratio (Equity / Total assets) decreased on average

The equity ratio showed an uneven development. The weighted mean lost 0.4 points to 31.4%, the median, however, gained 1.5 points to reach 37.8%.

The weighted average ratio decreased across all sectors. The largest decline had been reported in the services sector (-1.8 points) and the industry (-1.3 points). The construction sector still posted a lower ratio (less than 20%) than all the other sectors (around or more than 30%). With regard to the size of the groups only the medium groups were able to improve their equity ratio a little by 0.4 points.

EQUITY RATIO - EQUITY / TOTAL ASSETS

CHART 3.1.2

The median showed a slightly different picture. Nearly all sectors had an increase in the equity ratio, except the energy sector (-1.3 points). Of particular note was the development of the construction sector, because there the equity ratio rose by 2.8 points. While small and medium sized groups contributed to the increase, the ratio of the large groups remained nearly static (-0.1 points).

III.2 The rise in cash and cash equivalents ended

Stabilisation of liquidity in 2011

For the 1194 groups of the dataset, the total amount of cash and cash equivalents reached more than 450 billion euros in 2011.

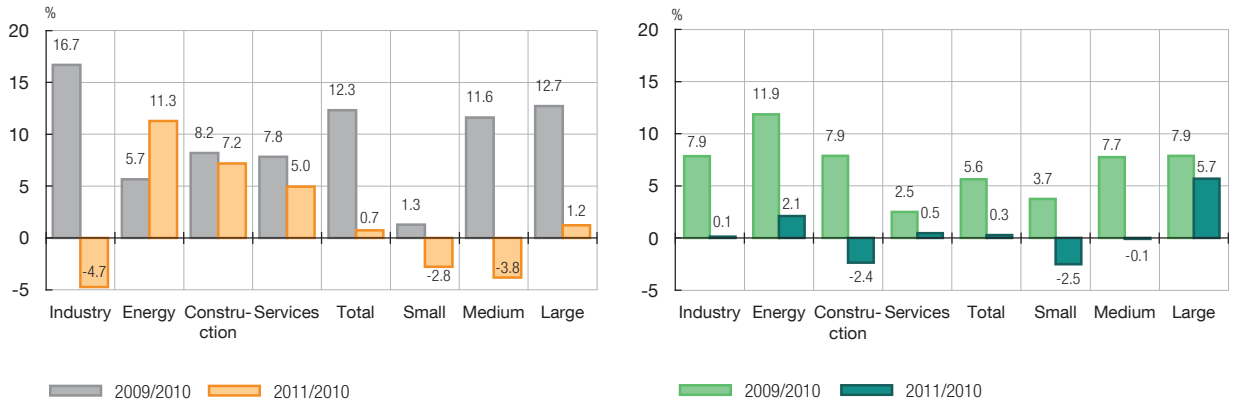
The trend of the last years to hold more and more cash and cash equivalents seems to be broken. The strong preference for liquidity was a sign of the heightened economic and financial uncertainty of the previous years. In 2011 there was only a slight increase in cash and cash equivalents of 0.7% on average. In particular industry - the sector with the highest gain in the last years – reduced its liquidity (-4.7%) in 2011. Compared with 2010, only the energy sector showed an accelerating cash growth.

The overall median performed similarly and remained almost unchanged (+0.3%). It is notable that the development of single medians often differed from the changes on average. For example the median of the construction sector showed a reduction of -2.4% while the weighted average rose by 7.2%. This highlights the fact that small and medium sized groups downsized their liquidity more than the large ones.

The stagnation of cash in 2011 was explained by the combination of net cash flows from operating, financing and investing activities:

CHANGE IN CASH AND CASH EQUIVALENTS

CHART 3.2.1



Source: ECCBSO-IIIWG – Erica2 Dataset (sliding sample).

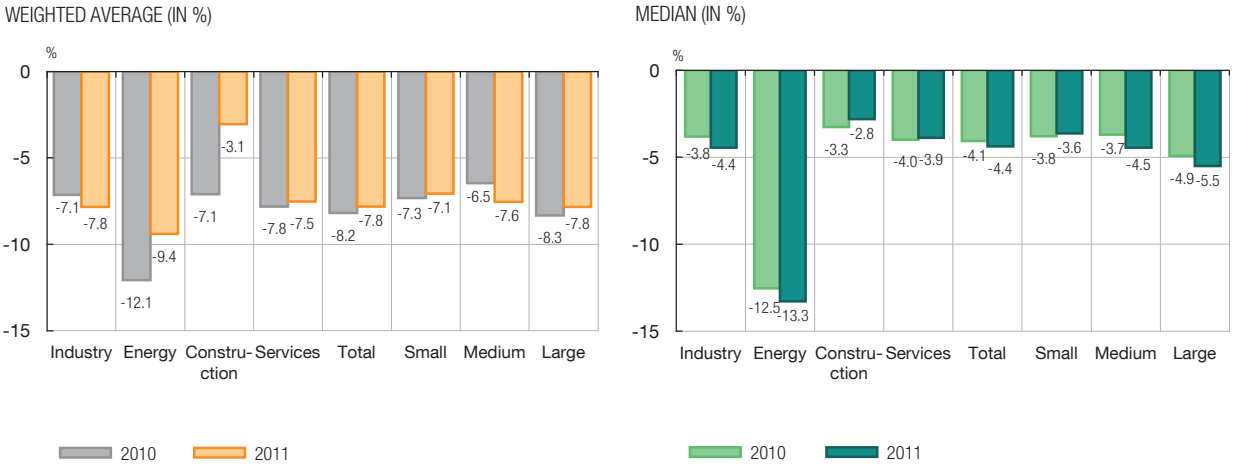
- net cash flow from operating activities declined, following the downward trend in EBIT, and was affected by an increase in inventories (in the industry groups mainly);
- despite an increase in several large industry groups, net expenses from investing activity remained hesitating;
- net cash flow from financing activities stabilised.

Slight reduction in investment expenses, except in the industry groups which have invested more

As during the previous year, the overall investment expenses did not increase in 2011. This is particularly true for the construction and energy sectors, which reduced their investment activities in relation to revenue significantly. Only the industry sector and medium sized groups increased their investment activities. The medians over all sectors and sizes showed a nearly stable, but not uniform development during the last year.

NET CASH FLOW FROM INVESTING ACTIVITIES / REVENUE

CHART 3.2.2



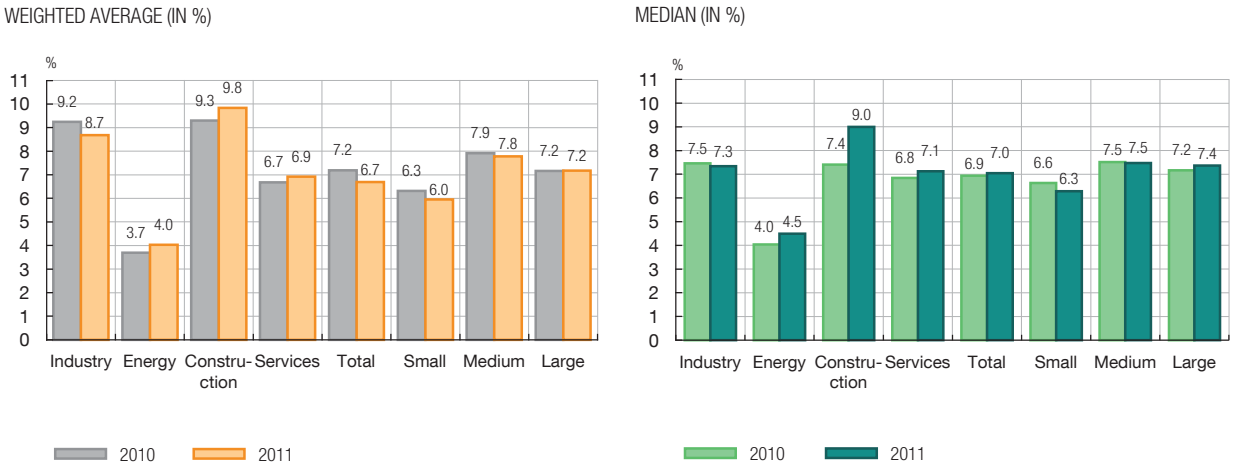
Lower liquidity rate driven by the industry sector

In spite of the stagnation of cash and cash equivalents, the liquidity in relation to total assets only showed a moderate decline of 0.5 points on average, with a level of 6.7% at the end of 2011. The median ratio remained largely stable (+0.1 points) at a level of 7% by the year end.

The main driver for the decline of the weighted average was the development in the industry sector, where the liquidity rate sunk from 9.2% to 8.7%. All other sectors improved their ratio. The groups of the energy sector still showed a quite low indicator of 4%.

CASH - CASH AND CASH EQUIVALENTS / TOTAL ASSETS

CHART 3.2.3



III.3 Financial debt rose moderately and the indebtedness rate remained largely stable

Moderate increase in financial debt in 2011

Total financial debt rose by 4.5% on average (1.2% in 2010).

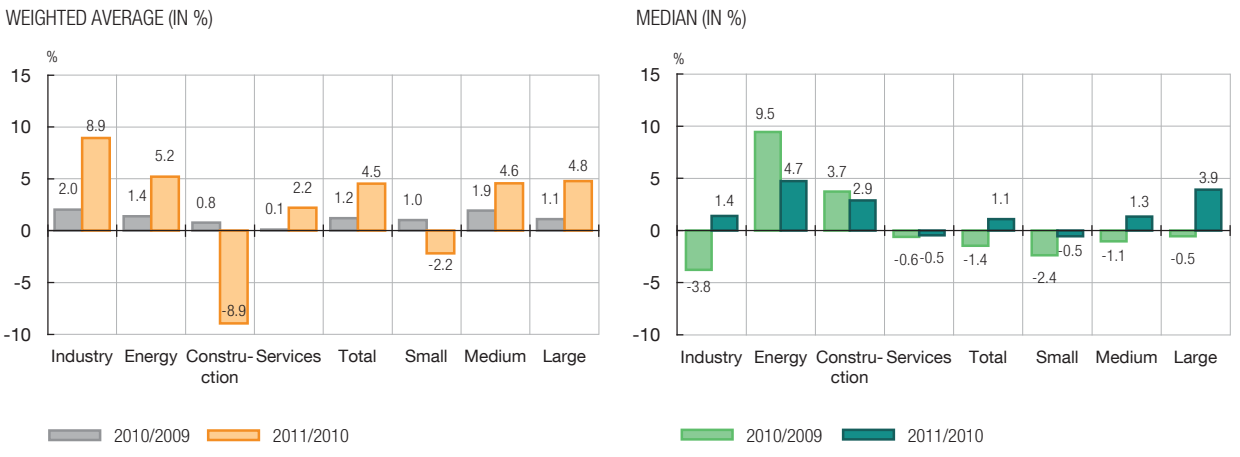
The trends by sector and size were not uniform: a strong increase in industry and energy can be observed, a significant decline in construction and a moderate gain in the services sector. Compared to 2010 the changes in financial debt were much more pronounced.

The median also showed an overall increase of 1.1%. And again the trends by sector and by size were not uniform. It is noticeable that the changes by sectors – in contrary to development of the average – were less pronounced than the year before. This indicates that the increase can be attributed to the changes in financial debt of the large and medium sized groups.

A noticeable element was the differing trends between short-term financial debt (+11.8%), and long-term debt (+1.9%). Current financing needs increased whereas economic uncertainties penalised investment, and encouraged a wait-and-see stance for the majority of the groups in Europe.

CHANGE IN FINANCIAL DEBT

CHART 3.3.1



Source: ECCBSO-IIIWG – ERICA2 Dataset (slinding sample).

Another striking finding was the more dynamic trend in unsecured debentures, mainly in the larger groups, prolonging a trend already observed in 2009 and 2010.

The weight of financial debt remained largely stable

Although the absolute amount of financial debt rose in 2011, the indebtedness rate remained largely stable, around 33% of total assets. The overall rate even decreased by 0.6 points on average. The most significant change can be seen in the construction sector, where the ratio fell from 41.4% in 2010 to 39.6% in 2011. All other sectors showed a slight increase (up to a maximum of 0.5 points). Besides, the larger groups had an average ratio lower than the small and medium ones.

The changes of the median are more pronounced than the ones of the weighted rate and the development is not uniform. The median of the indebtedness rate over all sectors and sizes decreased by 1.3%.

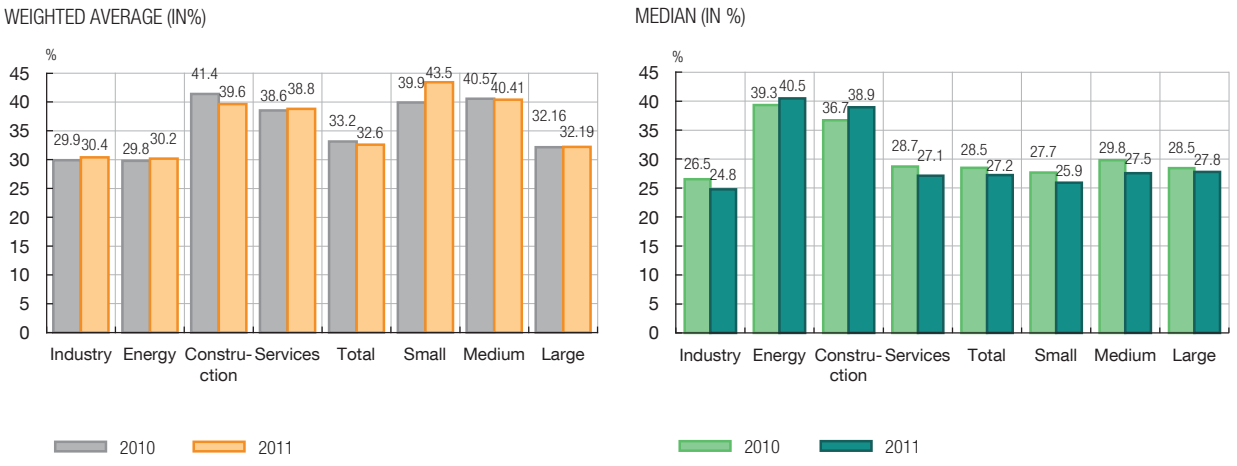
Ultimately, the quartiles of the ratio provided differentiated findings:

- the median ratio increased in the energy sector and was much higher than the weighted average (40.5% in 2011 against 30.2%);
- in small and medium groups, the median ratio was lower than the weighted average, a sign of strong disparities; indeed, differences between the first and the last quartile were significant;
- similar disparities were observed in services.

In terms of equity, and taking into account the net financial debt (financial debt less cash and equivalents), the stabilisation in the indebtedness rate was confirmed. The net financial debt ratio rose slightly in 2011 to reach 80.9% on average, against 80.3% in 2010. The construction sector once again had a strong ratio (more than 132%). In the services and construction groups, the dispersion was very pronounced with sizable differences between the first and the last quartile.

FINANCIAL DEBT / TOTAL ASSETS

CHART 3.3.2



IV FAIR VALUE IMPACT ON FINANCIAL STATEMENTS

IV.1 Main findings about fair value accounting, from a subset of ERICA database

This paragraph provides a summary of the more remarkable findings obtained from the data available on around 270 European groups, the largest among those listed, included in the first dataset of ERICA database where information about fair value impacts is available (what has been called ERICA 1 dataset, see box 1). Fair value impact analysis relies on financial statements for the year 2011 and includes data from 270 groups, 155 of which were subject to fair value revaluation, corresponding to 57% of the total sample (77% in 2010).The selected highlights can be summed up as follows:

- In 2011, it is notable that the fair value revaluation impact is negative and higher in absolute values in equity and positive in the income statement. Large groups tend to record more fair value revaluation than small and medium sized groups.
- Fair value revaluation has a limited impact on revenues and total equity. Besides the low in-sample impact, we discover some impacts related to the effect of outliers. In the analysis of outliers we witness a variety of situations that justify the fair value revaluation: share investment (put and call option), interest rate hedge, cash flow hedge, commodity risk and investment properties reflecting market conditions.
- In order to evaluate the hypothesis of using discretionary fair value revaluation, we consider the correlation between fair value revaluation in the income statement (item 1) and profit (loss) for the year before fair value revaluation (items 5+1). This analysis refutes the idea that there is a negative and a linear relationship between the two, so we find that, in general, companies do not use fair value to control the profit (loss) for the year. Instead we have evidence that fair value revaluation in 2011 increases the magnitude of profit (loss) of the year instead of smoothing it.

– With a linear regression model analysis, we found that size, intangible assets, activity, risk and business opportunities and some sectors (energy and construction) may be relevant in explaining fair value accounting. With 2011 data we compute a model that explains 60% of fair value revaluation in equity and we got 3 models that explain the absolute value of fair value with some certainty (ajusted r square between 47% and 67%).
– Finally, concerning the comparison between fair value revaluation in accounting and its comparison with European stock indices, we have found an evident connection between both, in all time series analysed 2005 to 2011, with the exception of 2010, due to the lack in ERICA details of fair value for years prior to 2010 on the largest German groups; from 2011 on, these details are also available for German groups; that will provide more insights into fair value accounting effects in future editions of this study.

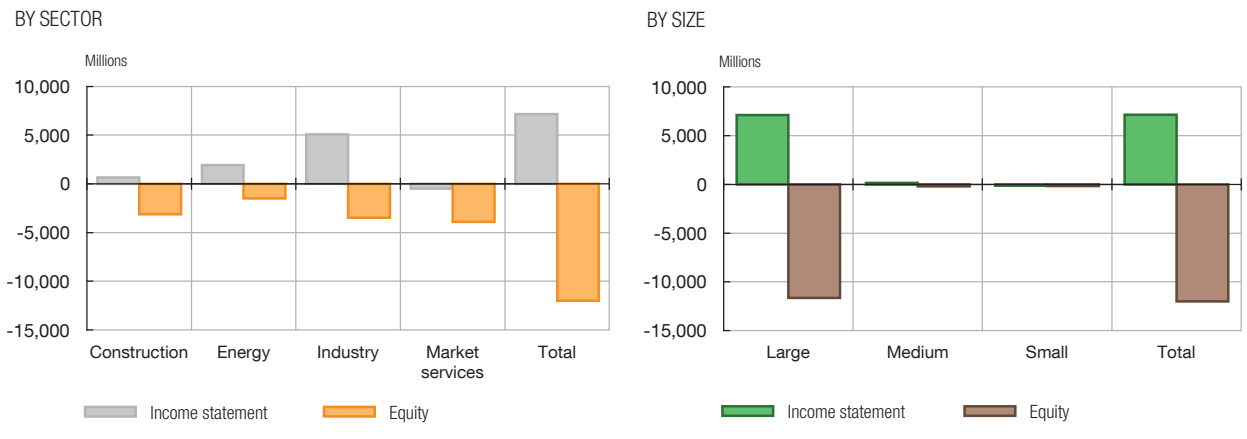
IV.2 Higher impact on equity than on income statement, with opposite signals

Despite the greater number of groups with fair value revaluation in income statement, total amount of fair value revaluation in equity is negative and higher in absolute terms than the positive amount in income statement. Overall, it is found out that 94 groups have fair value revaluation in equity, 130 groups reported fair value in the income statement and 116 groups did not make any adjustment. These figures present a different picture than in 2010, when we found out a higher impact in income statement than in equity and both negative.

Analysis by sector (graph 4.2) shows that fair value revaluation in income statement results mainly from the positives values of industry (54)[3] and energy (14) sectors. Market services, trade and real estate (51) is the only one that presents a negative value but with the least impact. Related with revaluation in equity, all the sectors are aligned with a negative impact: energy (11) sector exhibits the lowest impact among sectors and market services sector, trade and real estate (33) the highest.

3 Data in brackets refers to the number of groups in the situation described.

FAIR VALUE REVALUATION (TOTAL BY SECTOR AND SIZE). 2011 DATA CHART 4.2



In terms of size (graph 4.2), it is noted that larger firms tend to make more fair value revaluations. Large groups have more assets, so they are expected to have more fair value revaluations. Large and medium sized groups record positive adjustments in income statement and small groups negative. All size dimensions show negative fair value revaluations in equity.

IV.2.1 Positive impact in the income statement mainly due to financial instruments[4]

Regarding the number of groups, 130 groups reported fair value revaluation in the income statement. Financial instruments designated as hedges is the item with most groups (100) and Gain (loss) in changes in fair value of non-current assets (24) is the one with fewest observations. For total sample, all the items have positive contribution to income statement, the only exception are Gains (losses) on financial instruments designed as hedges that perform a negative impact (graph 4.2.1).

Fair value gains (losses) from financial instruments is the item with more impact in fair value revaluation in income statement due to one group of industry sector which reflects fair value measurement of the put and call options on the outstanding percentage of participation in another company of the group. The other sectors present this item with a marginal contribution.

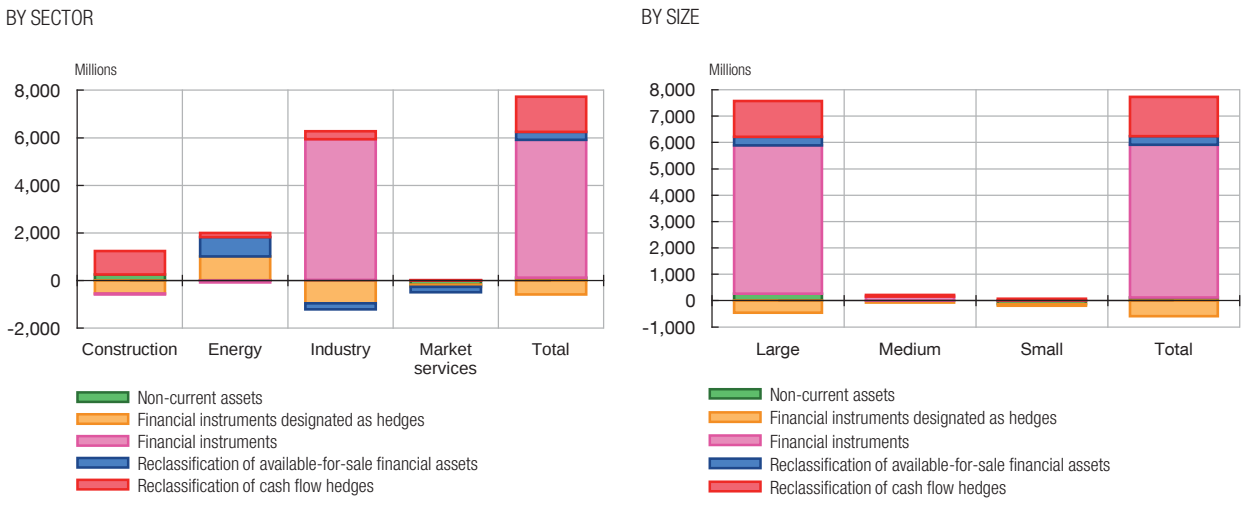
Reclassification adjustment of cash-flow hedges has the second biggest positive impact. All sectors reported a positive revaluation, highlighting construction (8) and industry (34) with the highest values. The highest value belongs to a group of construction sector as result of hedges to cover interest rate risk in United States projects.

Fair value gains (losses) from financial instruments designated as hedges is the largest in number of groups (100) and presents a negative value in total sample due to industry (46) and construction (9) sectors. Energy sector (12) has the highest positive contribution. For total

4 Note that Reclassification in available-for-sale financial assets and Reclassification of cash-flow hedge, albeit with a negative sign, contribute positively to the calculation of fair value impact in the income statement.

FAIR VALUE REVALUATION IN INCOME STATEMENT (TOTAL BY SECTOR AND BY SIZE). 2011 DATA

CHART 4.2.1



sample, those opposite signals offset and decrease fair value impact. The biggest negative impact is due to financing liabilities and associated instruments of one group belonging to industry sector. The biggest positive value is a combination of net income (charges) from commodity risk and charges from derivative instruments in energy sector.

Fair value revaluation of non-current assets presents an offsetting behavior between market services, trade and real estate (14) and construction (3) with negative and positive values, respectively.

Reclassification of available-for-sale financial assets has the largest positive contribution in the energy sector (5), which determines the signal in total sample. Market services, trade and real estate and industry perform negative values, partially offsetting energy behavior. Any group belonging to construction sector performs this type of revaluation.

By size (graph 4.2.1), large firms make more fair value adjustments in the income statement. Only in fair value gains (losses) from financial instruments and non-current assets medium and small groups account some significant values, respectively.

IV.2.2 Negative impact on equity due to cash flow hedges

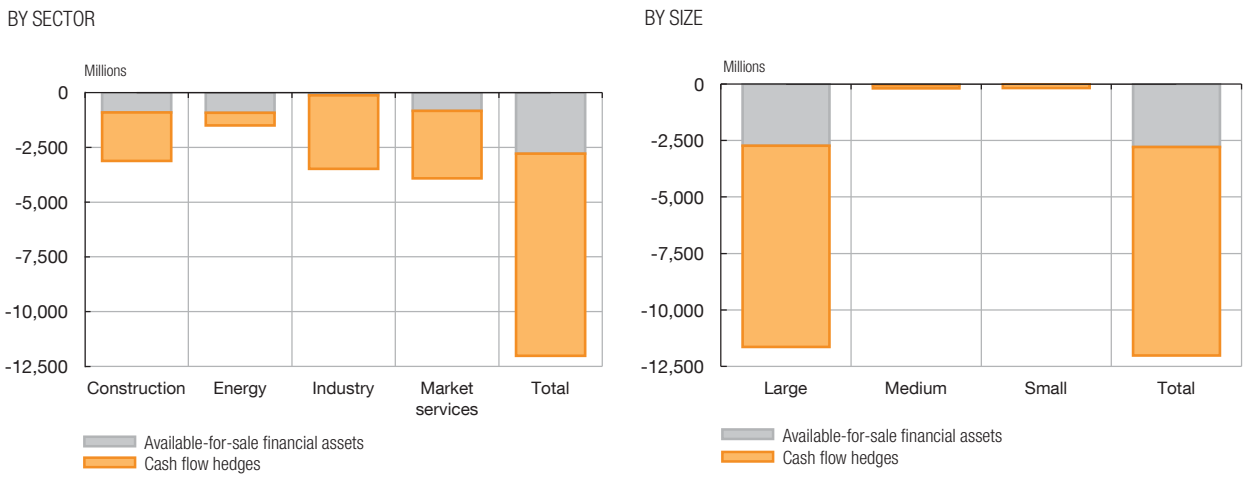
Fair value revaluation in equity is negative (94) as a result of both components of the aggregate (graph 4.2.2), with cash flow hedges representing 77% of the total impact.

Industry (37) and market services, trade and real estate (28) show the highest amounts recorded in fair value revaluation in equity due to cash flow hedges. However, explanations are different. When in industry is due to one group that represents 2/3 of the aggregate, in market services, trade and real estate is spread between five groups. On the opposite side, energy sector (8) shows the lowest negative value as a result of an offset between groups.

In available-for-sale financial assets construction (5), energy (8) and market services, trade and real estate sector (19) present almost the same negative amounts. Concerning individual data,

FAIR VALUE REVALUATION IN EQUITY (TOTAL BY SECTOR AND BY SIZE). 2011 DATA

CHART 4.2.2



one group belonging to construction sector shows the highest negative impact, corresponding to the decrease in the market value of shares hold by the group as available-for-sale financial assets and being responsible for the value presented by the sector. Energy sector is the only where all groups perform negative available-for-sale financial assets revaluations.

By size (graph 4.2.2), it is noted that fair value negative revaluation in equity arises from the large groups, mainly due to cash flow hedges instead of available-for-sale financial assets.

IV.3 Impact in relative terms: low impact on total sample but some impact related to sectors and outliers

Fair value revaluation has a limited impact on revenues, total equity and financial assets

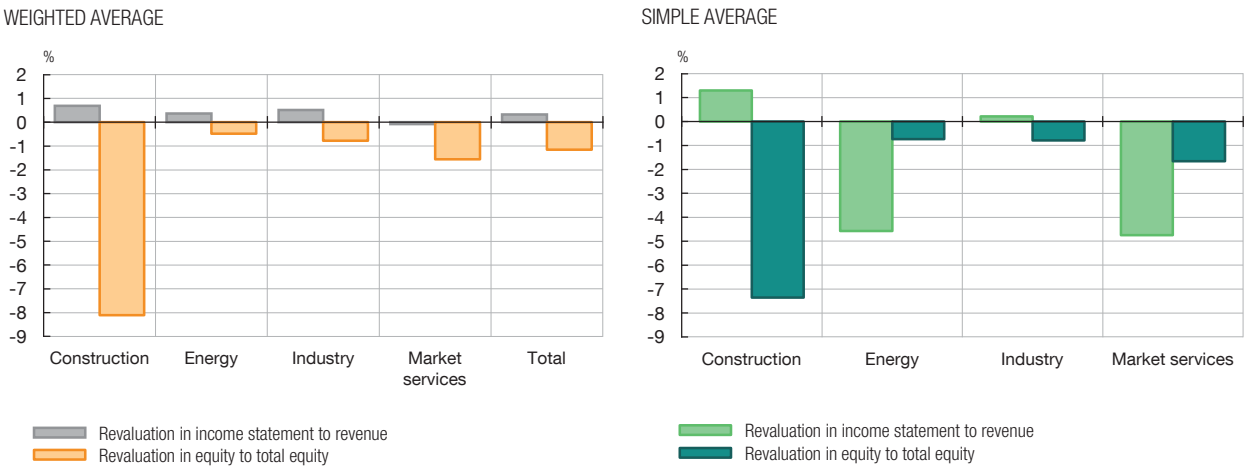
Overall, fair value revaluation in the income statement has a limited weight in revenues (graph 4.3.1). However, some small groups (8) have higher ratios (above 10%) which cause big differences between the simple average and the weighted average in market services, trade and real estate (6) and energy (2).

Revaluations in equity to total equity (graph 4.3.1), in terms of weighted average, are low for the total sample except in construction sector. It is noted that large companies belonging to construction sector have great value in this indicator reflecting the adverse economic conditions that affect this kind of companies. The simple average shows a low impact of fair value revaluation on total equity: the maximum value occurs in the construction sector (-7.36%) as stated before.

The fair value revaluation impact in the income statement to financial assets is less than 3.4% (graph 4.3.2). In this ratio, it is worth noting the difference between the simple average and weighted average in all sectors, especially in energy. The highest ratios presented by groups in terms of simple average are mainly result of a low denominator instead of a big amount of fair value revaluation. In the energy sector one group is enough to explain the behavior of the sector.

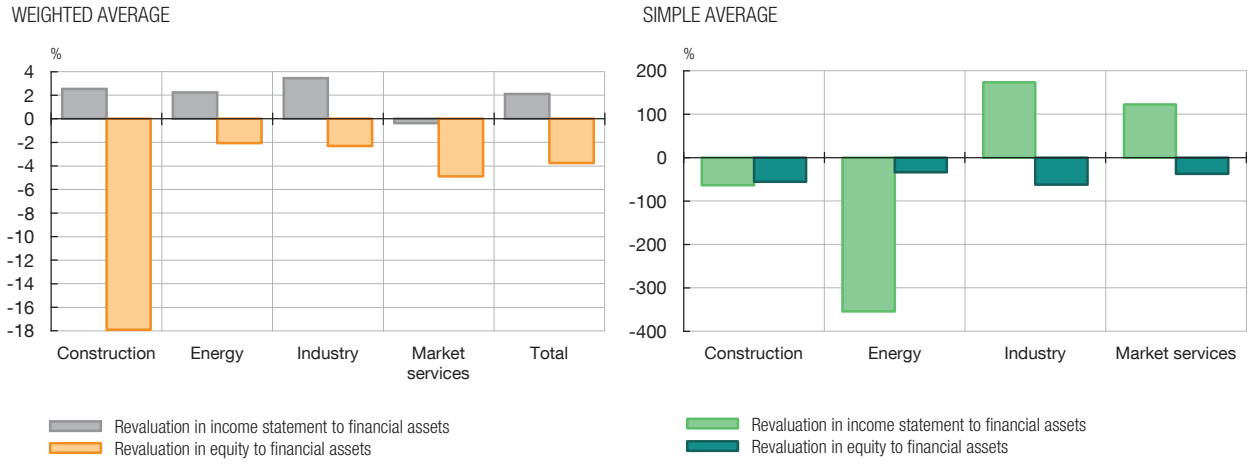
FAIR VALUE REVALUATION IN INCOME STATEMENT (TO REVENUE) AND EQUITY (TO TOTAL EQUITY). 2011 DATA

CHART 4.3.1



FAIR VALUE REVALUATION IN INCOME STATEMENT AND EQUITY TO TOTAL FINANTIAL ASSETS. 2011 DATA

CHART 4.3.2



In terms of weighted average, fair value revaluation impact in equity to financial assets (graph 4.3.2) is negative (-3.75%) and generally low, with the exception of the construction sector. This sector is influenced by the fact that 3 groups (1 medium and 2 large) have done a large amount of revaluations in equity, which determines high values not only in terms of weighted average but also simple average. The high value of industry in terms of simple average is the result of 3 groups that despite small values of fair value revaluation in equity have an even lower prevalence of financial assets.

IV.4 Correlation analysis: Groups do not use fair value to control profit (loss) for the year

There is a frequent idea that groups can use the fair value mechanisms to increase or decrease their results. In this way, in years of poor performance groups tend to increase their gains using discretionary fair value revaluation, and in the years of good performance they will rely on these adjustments to lower the results, compensate losses or lower gains in future years.

In order to evaluate this hypothesis, we consider the correlation between Fair value revaluation in the income statement (item 1) and Profit (loss) for the year before fair value revaluation (items 5 + 1). According to this initial hypothesis, a negative relationship between these variables was to be expected.

Just for the energy sector is not recorded a statistically significant relationship between variables. Although the statistical significance of the relationship, only in market services, trade and real estate sector the type of relationship is in accordance with the above hypothesis (negative relationship). However, correlation coefficient is low, less than 0.3, which means a very weak correlation between variables.

This analysis refutes the idea that there is a negative and a linear relationship between fair value and profit (loss) in the income statement. In general, groups do not use fair value to control profit (loss) for the year. In 2011 fair value revaluation increased the magnitude of profit (loss) of the year instead of smoothen it.

PEARSON CORRELATION COEFFICIENT

TABLE 4.4

	Observationes	Pearson correlation coefficient
Sample	270	0.626 (b)
Construction	21	0.457 (a)
Energy	21	0.238
Industry	118	0.701 (b)
Market Services	110	-0.191(a)

a Correlationsis significant at the 0.05 level (2-tailed).
b Correlationsis significant at the 0.01 level (2-tailed).

IV.5 Multiple linear regressions: size, intangible assets, activity, risk and business opportunities and some sectors (energy and construction) can explain fair value accounting

In order to provide a complementary view to the previous correlation analysis, a multiple linear regression was used to analyse fair value revaluation. Linear regression is the most widely used of all statistical techniques. We try to explain fair value revaluation as a function of a set of accounting variables present in the ERICA 1 database (total assets, intangible assets, revenue, profits, research and development), using for that purpose 3 different estimated models. The variables used and their accounting proxies, the specification of the models and the correlation matrix and its analysis is provided in detail in the statistical annex to this document.

The use of accounting variables as proxies for the concepts used in the models had poor explanatory power in the regression models used with 2010 data. Some relationship was found between fair value accounting (the existence of fair value impact) and the size of the group, the existence of intangible assets and the level of profitability. With 2011 data, one of the models (model A in annex) using fair value in equity as dependent variable has some explanatory power (adjusted R square of 60%). Two new formulations were also tried this year: the first consisted of using the absolute value of the fair value as dependent variable and the second was to consider sectoral stock market indices as independent variable. In the first case, we got again some explanatory power (adjusted R square of 65%) (model D in annex) and in the second formulation the results are poor for the total but at the same level of the previous one for equity.

IV.6 Fair value impact on consolidated accounts and its comparison with stock indices

IV.6.1 Decrease in 2011 in the capitalisation of European Listed Groups

The analysis performed with ERICA dataset shows a clear connection between the fair value impact on financial statements and the evolution of European stock indices. The first studies carried out by IIIWG with 2005 figures detected evidence of asymmetric accounting (preference to record positive impact on fair value), probably due to the lack of sufficient use and experience of IFRS standards at that time in the European Groups. In contrast, the data available for 2008, 2009 and 2011 show the correct application of IFRS standards by European

groups: the downtrend in 2008 in fair value was connected to the negative performance of the value of financial assets value on the stock markets, as a result of the financial crisis. In 2009, the change was in the opposite direction, both fair value impact on financial statements and European Stock market indicexes recovered sharply, whereas in 2011 the downtrend of the capitalization has come together with a deterioration in fair value impact. The only exception has been found in 2010, when the positive uptrend by the capitalisation of the European groups with the information available in ERICA presented an opposite trend in the same year, with an intensification of the negative impact of fair value on financial statements, probably due to the lack of representativeness of German groups until 2010 (those precisely with the best performance in the stock markets in 2010), because the accounting details for the analysis of fair value were not available; this drawback has been solved in 2011, with the inclusion of the biggest groups of this nationality in the fair value analysis.

The following graph (graph 4.6.1) summarises the trends observed in the last 7 years in the stock market index calculated by the IIIWG using Stoxx Europe 600 data: an increase in the indices from 2005 to 2007, a sharp cut in 2008, a recovery in 2009 and 2010 that has come followed by a decrease in 2011. The sharp recovery in capitalisation in 2009 affected all the sectors of activity analysed, the same has happened, with opposite sign in 2011. While the performance of the market indices in 2010 was positive in all sectors considered, its increase was mainly based on the intense increase in the industry sector, where the German groups' performance had a great influence.

STOCK MARKET INDEX: TOTAL SECTORS OF ACTIVITY CHART 4.6.1

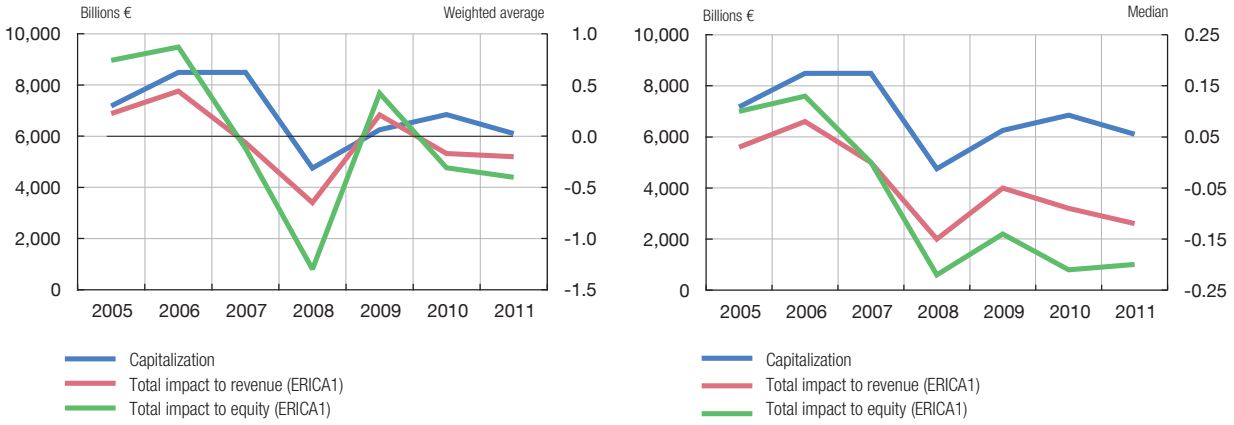
Source: In-house calculations based on Stoxx Europe 600 data.

IV.6.2 Connection of fair value impact and performance of stock market indices in the time serie analysed (2005-2011), except in 2010

Theoretically, there is a connection between the performance of overall stock market indices and the valuation of financial assets in the balances of the European Groups. In any event, globalisation means that European Groups portfolios also include investments in foreign subsidiaries located overseas (in the sense of "out of Europe"). The following graph (graph 4.6.2.1) summarises the patterns reported in the previous paragraph: the data available reports a clear connection between fair value accounting of the financial assets and the capitalization in the European stock markets in the time serie analyzed (2005 to 2011), not being affected by figures of outliers: this trend is confirmed with the weighted average and median data. Only

FAIR VALUE IMPACT (ERICA1) AND CAPITALIZATION

CHART 4.6.2.1



Source: In-house calculations based on Stoxx Europe 600 data.

2010 data informs of an exception, due to the lack of data of fair value accounting for German groups (until 2011 these details were not available for this country, which had an extraordinary influence in the good performance of the markets in 2010).

The recovery in the capitalization of the European quoted groups detected in 2009 came together with a change in the trend and in the sign of the fair value impact. Effectively, in 2009 the two indicators used (total impact on equity and on revenue), passed from negative values, to levels in values close to 0.5%, reducing the decrease in the markets detected in 2008, a year that was totally influenced by the overall financial crisis. In 2010, there was a mismatch between the market valuation of European groups and the impact on fair value detected in the financial statements available for analysis (ERICA 1); probably, the lack of data of German groups in ERICA 1 affects this strange development. This temporary phenomenon has disappeared in 2011, in which year the capitalization and fair value accounting have had a common and negative evolution.

The next part of this paragraph will comment briefly on the comparison between stock market indices and fair value accounting, by sector of activity.

The breakdown of the ERICA sample by sector of activity theoretically could create a disconnection between accounting for the fair value impact and developments in stock market indices: the changes in the fair value accounting of European Groups, of the construction sector for example, are connected to the market price of the sectors of activity where these groups have their portfolio invested, not only subsidiaries in construction, but also in energy or services, for example. The data available reveal that this has not happened. Indeed, the contrary is the case. What is seen is an intense correlation of both variables in a sectoral analysis in most of the years considered in the analysis. This phenomenon is a result of the high concentration of the European groups' portfolios in subsidiaries with the same activity as the parent company (see box 2 of this document for more details).

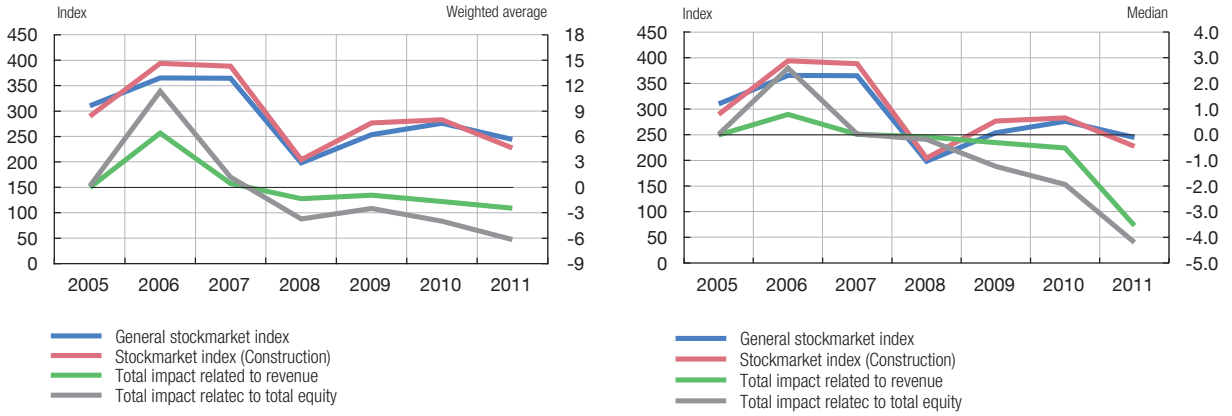
Construction groups have followed the same patterns as the overall sample (see graph 4.6.2.1): an intense increase in their fair value revaluation in 2006, mainly due to the behavior of the outliers, in a context of revaluation of investment properties. The downturn in the valuation

of these assets in 2008 explains the sharp drop in the capitalization of construction groups in this year, which is totally in line with the devaluation evidenced by fair value accounting. In 2009 and 2010, although the fair value impact still remains negative, the capitalization of the market recovered, as a result of the investments of these groups in the subsidiaries of the energy and market services sectors. Finally, in 2011 both, market capitalization and fair value impact were negative.

Developments in the groups classified in the market services sector have been uneven in 2010 and 2011, when considering data on the fair value impact on the weighted average or the median: although the fair value impact improved in 2010 and deteriorated in 2011 in aggregate terms, the data were affected from the behaviour of some outliers, which can be observed using a median that shows a contrary performance in both years, worsens in 2010 and gets slightly better in 2011, in contrast to the performance of the market values.

FAIR VALUE IMPACT (ERICA1) AND STOCK MARKET INDEX
Construction

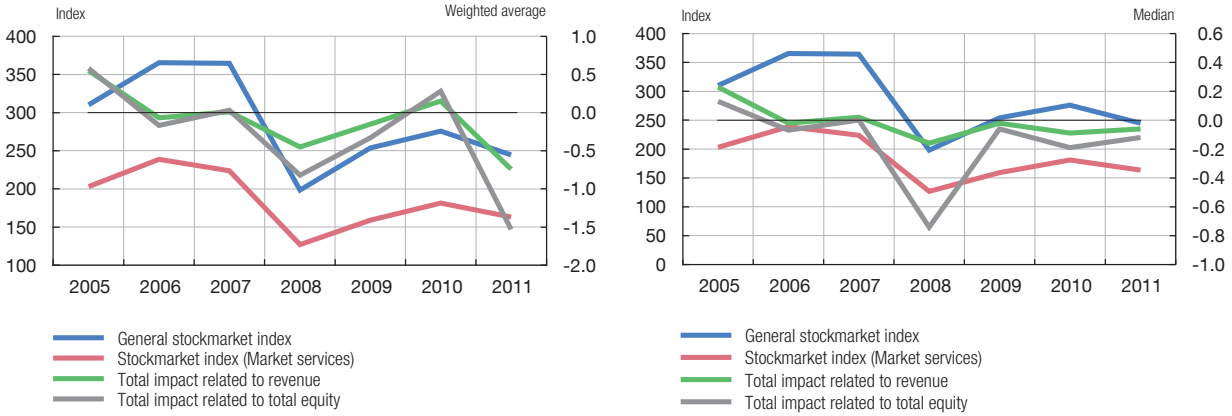
CHART 4.6.2.2



Source: In-house calculations based on Stoxx Europe 600 data.

FAIR VALUE IMPACT (ERICA1) AND STOCK MARKET INDEX
Market services sector

CHART 4.6.2.3



Source: In-house calculations based on Stoxx Europe 600 data.

FAIR VALUE IMPACT (ERICA1) AND STOCK MARKET INDEX
Energy sector

CHART 4.6.2.4

Source: In-house calculations based on Stoxx Europe 600 data.

FAIR VALUE IMPACT (ERICA1) AND STOCK MARKET INDEX
Industry sector

CHART 4.6.2.5

Source: In-house calculations based on Stoxx Europe 600 data.

Probably, the clearest demonstration of the need to use both approaches to the analysis of data, in aggregate terms and with the statistical distribution of the European groups, can be shown in the previous graph. The sharp deterioration in the fair value impact in 2010 on the energy sector reported by the weighted average data (see graphs 4.6.2.4), although also negative, shows slightly less intensity when using median data. In 2011, again, the median data shows a clear connection between the market evolution and the fair value accounting, that can´t be found in the weighted average, as a result of the influence of the outliers (the evolution of some European big energy groups). The graph 4.6.2.5 reports the behaviour of Industry groups. As it was previously said, the lack of data on fair value accounting of German groups before 2011 affects this comparison, due to the relevance of them in the recent recovery and expansion of the maket value detected in the industry sector. Fortunately, the availability of data for this country will allow IIIWG to better understand in future updates of this study the influence and importance of German industry in the evolution of European stock markets and the impact on fair value accounting

ERICA DATABASE: MAIN CHARACTERISTICS AND COVERAGE BOX 1

The analysis conducted in this document, as said, is mainly based on consolidated financial statements available in ERICA database. This has two sources of information with a different level of details, giving rise to two datasets, ERICA 1 and 2. The information on fiscal year 2011 included in ERICA 1 comprises data on 300 European groups from different sectors of activity. The data have been manually treated by the members of IIIWG in order to complete as fully as possible items included in the reduced standard format. The initial target was to include 30 real cases by country, except those without enough human resources to face the workload; Portugal decided to cover the full population of non-financial groups since, due to the small number of Portuguese listed groups, the addition of 11 more real cases saw the target met. Greece and Belgium have also decided to increase the number of manually treated real cases to 60 and 82, respectively. Those countries that currently have a real database of consolidated groups have transferred their information in a format consistent with that available in ERICA 1, to integrate them into a common dataset called ERICA 2.

The inclusion of information available in five central balance sheet data offices´ databases (Austria, France, Germany, Italy and Spain) means that more than 1200 European groups are available in ERICA 2. The breakdown by activity differs abruptly from one database to the next, and is better represented in ERICA 2.

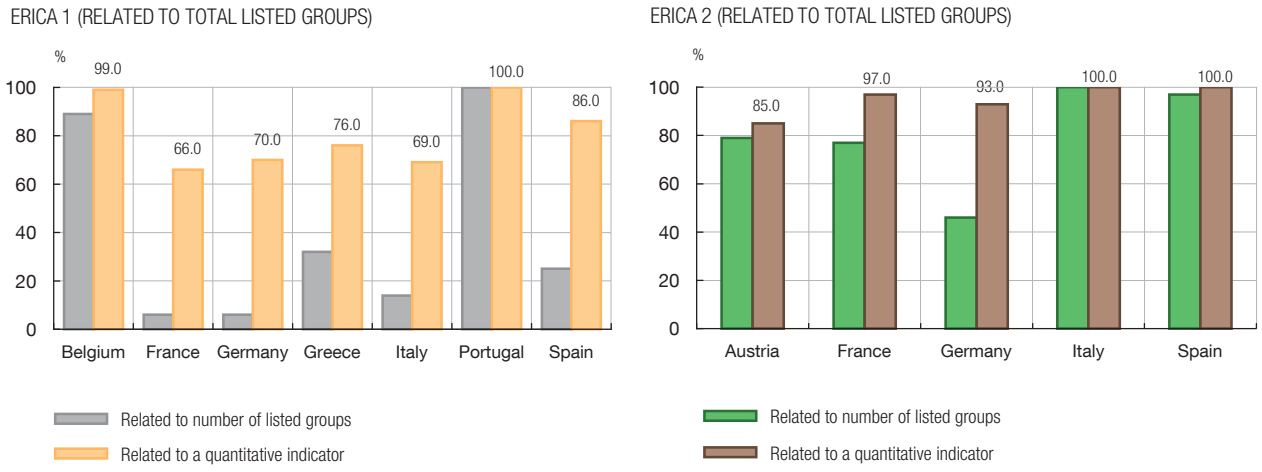
Coverage of both databases

The following graphs offer information on the degree of coverage reached by the ERICA 1 and ERICA 2 data-bases.

The coverage of ERICA 1 concerning the number of quoted consolidated groups varies from Portugal (100%) and Belgium (89%) to France and Germany, where the coverage is 6% in both cases. Quantitative indicators also provide interesting results, showing that the ERICA 1 is a sound sample of the consolidated groups´ population. Belgium, Portugal and Spain disclose the highest coverage rates, between 86% and 100%, varying according to the quantitative indicator selected (revenue, net turnover or equity), whereas in France, Germany,Italy and Greece it is around 70%.

The coverage of ERICA 2 based on the total number of quoted consolidated groups differs between 46% in Germany and 100% in Italy. Austria and France have coverage ratios of 79% and 77%, respectively. Hence the coverage is quite good for all countries; only in Germany is the coverage significantly lower. But this picture changes when considering a quantitative indicator as the basis for the coverage instead of the total number of

COVERAGE OF DATABASE CHART BOX 1.1

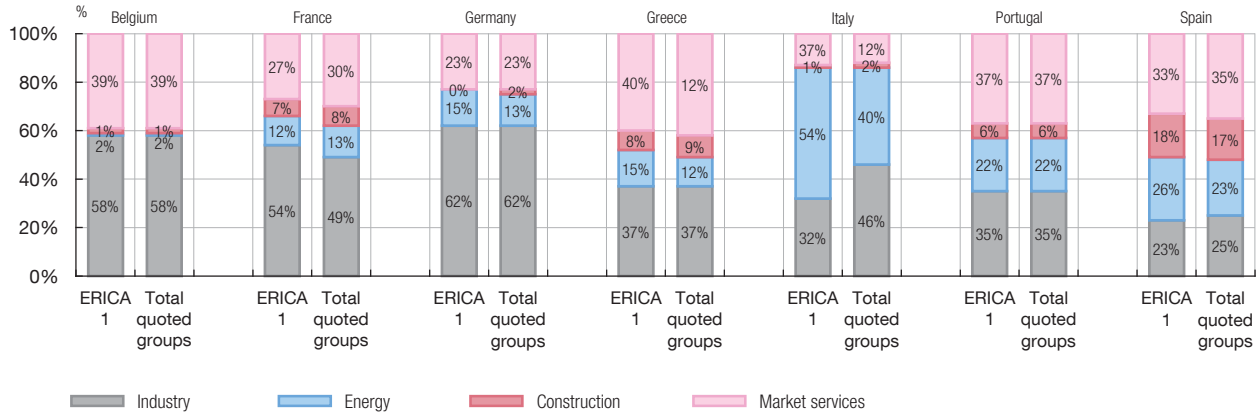


quoted groups. Based on turnover, equity or market capitalisation, the coverage increases to values ranging from 85% in Austria to 100% in Italy and Spain. As the coverage in Germany rises strongly to 93%, we now have high coverage ratios for all countries. These results show that ERICA 2 is a sound sample of listed consolidated groups.

The sectoral breakdown of the population (listed European groups) differs greatly from country to country. Industry represents 25% of the Spanish listed market and 35% in Portugal, which is very different from the figure of 62% in Germany or 58% in Belgium; another example is the construction sector, which accounts for only 1% of coverage in Belgium or 2% in Germany and Italy, whereas in Spain it covers 17%. The energy sector represents the 40% of total quoted groups in Italy and 22% in Portugal while in Belgium it supposes only 2% of total listed groups.

The sample used is representative of the stock market´s national characteristics and it represents soundly in most of the countries the structure by sector of activity of total listed groups and, therefore, is affected by their bias. However, those countries with a lower coverage in terms of a quantitative indicator, expressed some differences of structure, as Italy, where energy sector is significantly overrepresented whereas industry is under-represented and France where industry is slightly overrepresented.

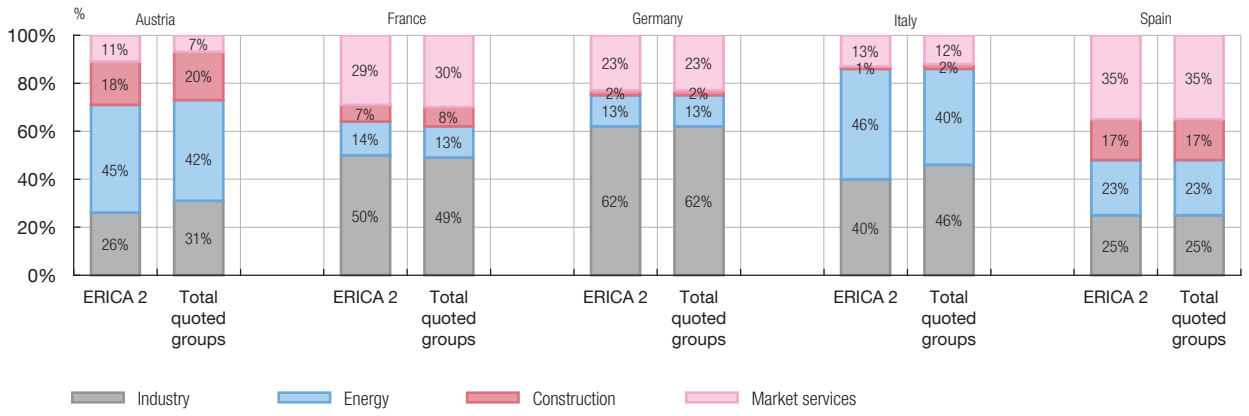
STRUCTURE BY COUNTRY AND SECTOR (RELATED TO A QUANTITATIVE INDICATOR) CHART BOX 1.2



The sectoral structure of all the listed groups of a country is very well represented by ERICA 2, as the coverage of ERICA 2 in terms of a quantitative indicator is very high (up to 97% in France and 100% in Italy and Spain)[5]. Only in Austria the Energy sector is slightly overrepresented in ERICA 2, whereas the industry is underrepresented. In

5 Note that Reclassification in available-for-sale financial assets and Reclassification of cash-flow hedge, albeit with a negative sign, contribute positively to the calculation of fair value impact in the income statement.

STRUCTURE BY COUNTRY AND SECTOR (RELATED TO A QUANTITATIVE INDICATOR) CHART BOX 1.3



ERICA 2 the differences between the countries in the sectoral breakdowns are again clearly visible. In Germany the industrial sector is especially important, whereas in Italy the energy sector stands out. Construction accounts for a large part of the stock market in Austria (20%) and Spain (17%), in the other countries construction plays only a minor role (between 2% and 8%).

ACTIVITIES PURSUED BY EUROPEAN NON-FINANCIAL LISTED GROUPS IN EUROPE: AN ANALYSIS OF THEIR DIVERSIFICATION — BOX 2

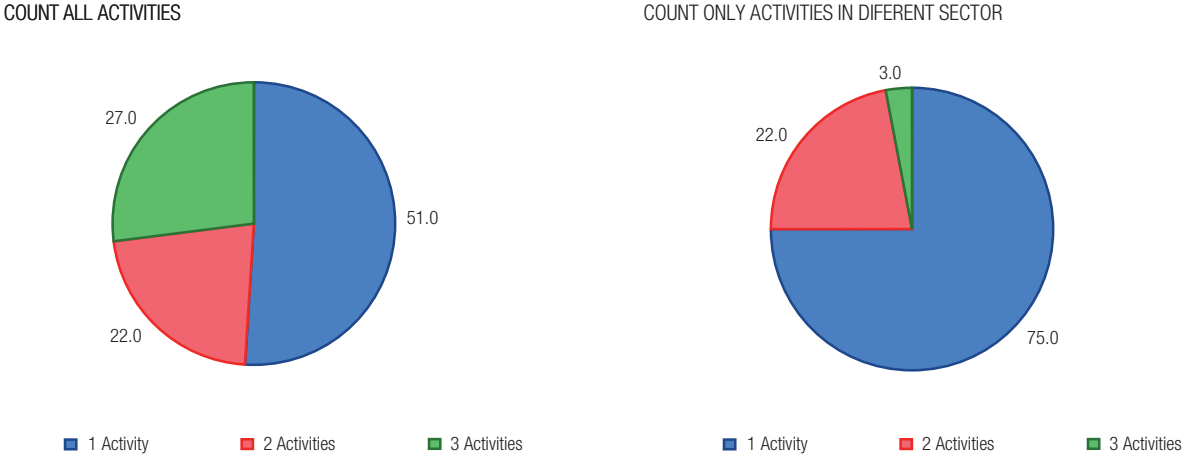
The scope of this analysis is to identify how the revenue of the groups is divided between the different activities that the groups may have. The analysis is performed for the population of ERICA 1 dataset as a whole (the one with the necessary details to that end), for each sector of activity (construction, energy, industry, market services) and for each group size (small, medium, large) in an effort to find similarities, differences and patterns between sectors of activity and group sizes.

During the analysis of the data, a small percentage of revenue (1%) was identified that could not be explained by the first three activities of the groups. This probably indicates that there are groups that have more than three activities. For that reason, a new category “other activities” is created, in which that small percentage is included.

In order to perform the analysis, two different approaches were followed. The first approach takes into account all the activities that the groups have, whether these activities belong to the same upper level of sector of activity (according to NACE) or not. The second approach takes into account only those second and third activities declared by the groups that belong to different upper levels of sectors of activity. To be more precise, if for example a group has three activities, one of which in the industry sector and two in the market services sector, it will be treated as having only two activities.

Following the first approach, 51% of the groups are doing business only in their main activity, 22% have a second one and the remaining 27% also have a third one. Following the second approach, the percentage of groups that are doing business only in their main activity rises to 75%, the percentage of groups that have a second activity remains stable at 22% and the percentage of groups that have a third activity falls to 3%. The results are depicted in the following charts.

NUMBER OF REAL CASES AND NUMBER OF ACTIVITIES - 2011 — CHART BOX 2.1

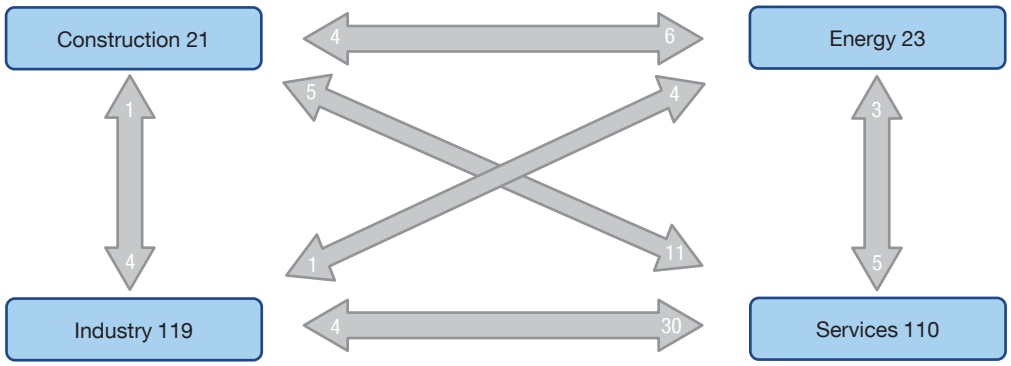


But what is the nature of the other activities that the groups may have? The following chart demonstrates, for each sector of the economy, the kind of other activities in which the groups are involved.

From this chart we can see that for the majority of the groups, the second activity in which they are involved is in the services sector.

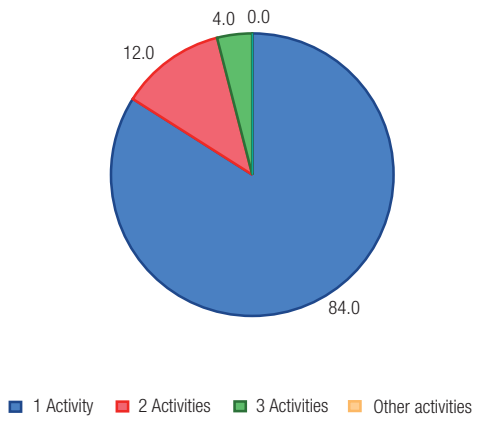
In terms of revenue, the degree of concentration in European listed non-financial groups rises. Following the first approach, it turns out that the biggest percentage of revenue (i.e. 84%) is derived from the first activity, 12% from the second activity and the remaining 4% from the third activity. Following the second approach, the percentage of revenue that is derived from the first activity rises to 92%, the percentage of revenue that is derived from the second activity falls to 7%, while no revenue is derived from the third activity. The results are depicted in the following graphs.

RELATIONS OF ACTIVITIES OF GROUPS 2011 CHART BOX 2.2

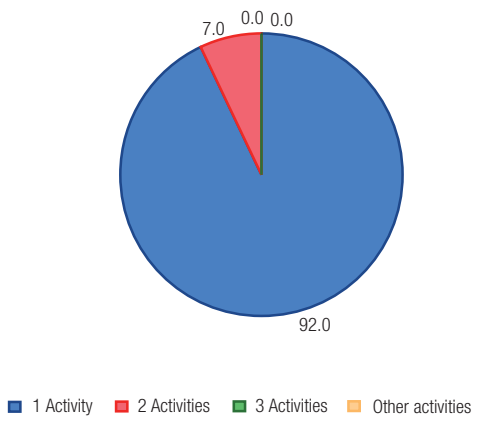


PERCENTAGE OF REVENUE FROM EACH ACTIVITY - 2011 CHART BOX 2.3

COUNT ALL ACTIVITIES



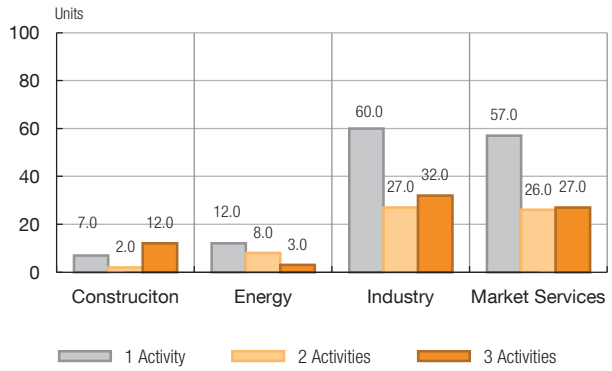
COUNT ALL ACTIVITIES



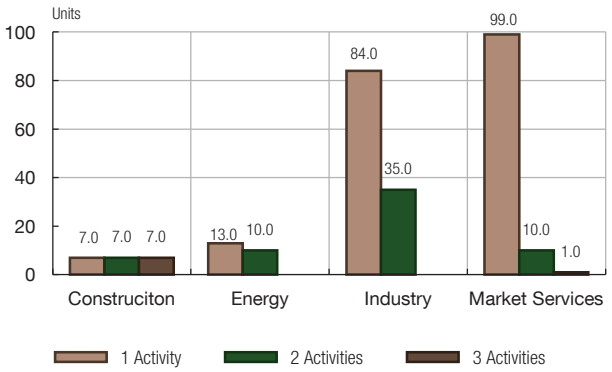
From a sectoral point of view, the situation is depicted in the following graphs:

NUMBER OF REAL CASES & NUMBER OF ACTIVITIES FOR EACH SECTOR - 2011 CHART BOX 2.4

COUNT ALL ACTIVITIES



COUNT ONLY ACTIVITIES IN DIFERENT SECTOR

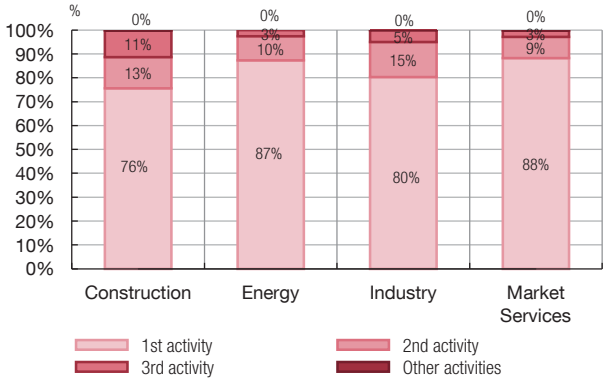


From these graphs it can be seen that the picture is mixed across sectors. Following the first approach, more than half of the groups in the construction sector have three activities, while in the industry and in the market services sectors, half of the groups have only one (i.e. their main) activity. Following the second approach, the picture changes significantly, and it turns out that only the groups that belong to the construction sector have three activities. This is to be expected because, as the construction sector is mostly influenced by the cycles of the economy, groups that belong to this sector need to be more diversified in their activities.

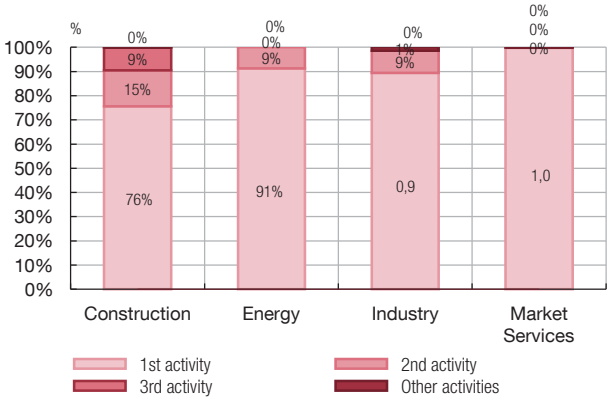
The distribution of revenue from a sectoral point of view is depicted in the following graphs:

PERCENTAGE OF REVENUE FROM EACH ACTIVITY FOR EACH SECTOR - 2011 CHART BOX 2.5

COUNT ALL ACTIVITIES



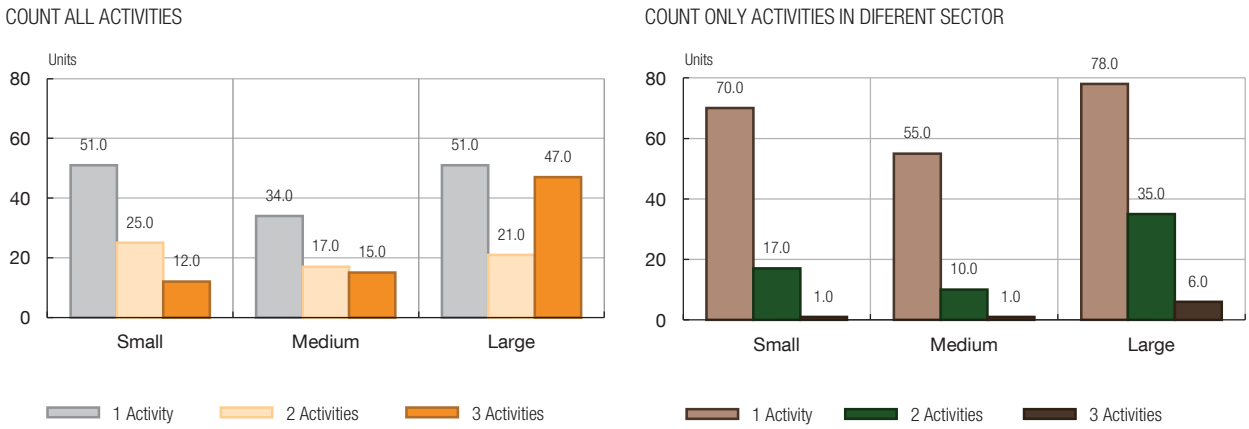
COUNT ONLY ACTIVITIES IN DIFERENT SECTOR



These graphs show that, for all sectors and for both approaches, the biggest percentage of revenue arises from the first activity, with the construction sector being the most diversified following both approaches.

From a group size standpoint, the situation is depicted in the following graph:

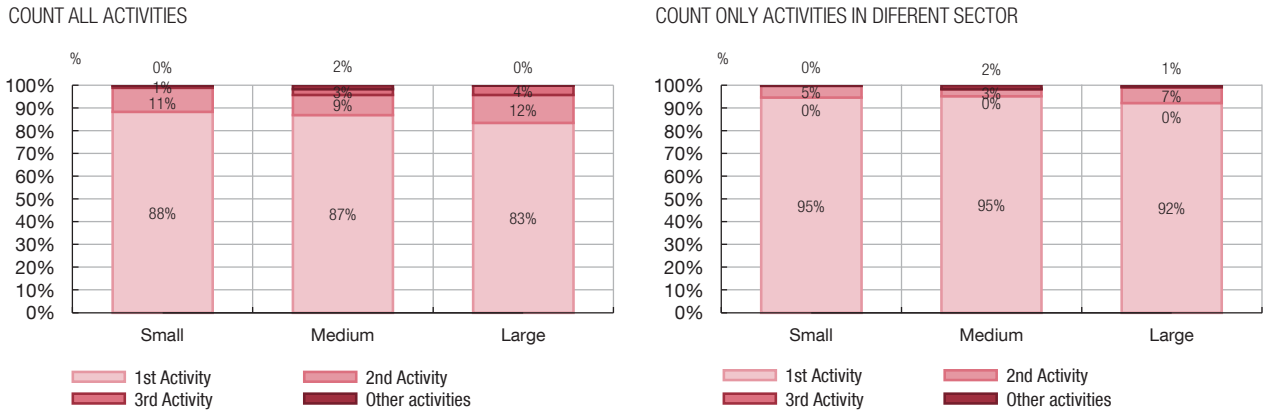
NUMBER OF REAL CASES & NUMBER OF ACTIVITIES FOR EACH GROUP SIZE - 2011 CHART BOX 2.6



From these graphs it can be seen that, following the first approach, around 50% of the groups have only one (i.e. their main) activity, irrespective of their size. However, concerning the second and third activities, it turns out that smaller groups tend to be less diversified in their activities than bigger groups. Following the second approach, the picture changes significantly and with the exceptions of one small and one medium group, only large groups have three activities, something that is expected, since larger groups tend to get involved in more activities that belong to different sectors of the economy.

The distribution of revenue from a group size point of view is depicted in the following graph:

PERCENTAGE OF REVENUE FROM EACH ACTIVITY FOR EACH GROUP SIZE - 2011 CHART BOX 2.7



These graphs portray how, for all group sizes and for both approaches, the biggest percentage of revenue arises from the first activity, with large groups being slightly more diversified following both approaches.

STATISTICAL ANNEX 1. STRUCTURE OF THE BALANCE SHEET OF EUROPEAN NON-FINANCIAL LISTED GROUPS IN 2011

STRUCTURE OF THE BALANCE SHEET IN 2011: MAIN QUOTED NON FINANCIAL GROUPS

TABLE ANNEX 1

	Small	Medium	Large	Industry	Energy	Construction	Services	Total
NUMBER OF COMPANIES	563.0	369.0	262.0	549.0	63.0	57.0	514.0	1194.0
I. Assets, non-current, total	67.3	66.0	65.6	58.4	72.7	55.0	73.9	65.6
1. Property, plant and equipment, net	15.8	24.4	28.1	23.8	45.3	12.6	21.0	27.6
2. Investment property	31.8	16.3	0.6	0.1	0.1	2.6	8.6	2.4
3. Intangible assets, net	11.4	19.8	23.5	21.4	16.0	25.3	31.6	23.0
4. Biological assets, total	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0
5. Investments in related parties	3.5	1.3	3.2	3.0	3.0	6.0	2.7	3.1
6. Deferred tax assets	2.2	1.8	2.5	2.4	2.2	2.8	2.6	2.4
7. Other financial assets, non-current	1.6	1.4	4.7	2.9	4.8	4.9	6.5	4.4
8. Remaining assets, non-current	0.7	0.9	2.9	4.7	1.3	0.9	0.9	2.7
II. Assets, current, total	32.7	34.0	34.4	41.6	27.3	45.0	26.1	34.4
9. Non-current assets and disposal groups held for sale	2.2	1.1	0.8	0.7	0.6	3.4	0.9	0.9
10. Inventories	11.0	9.0	7.1	11.4	3.5	8.2	3.4	7.3
11. Other financial assets, current	1.2	1.0	3.9	3.6	5.1	1.7	2.9	3.7
12. Current tax receivables (only income tax)	0.3	0.3	0.3	0.2	0.5	0.2	0.2	0.3
13. Trade receivables, net, total	9.4	11.6	10.9	12.0	9.9	16.4	8.8	10.9
14. Cash and cash equivalents	5.9	7.8	7.2	8.7	4.0	9.8	6.9	7.2
15. Remaining assets, current	2.7	3.2	4.2	4.9	3.6	5.1	3.0	4.1
ASSETS, TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
I. Equity, total	35.0	34.1	30.4	33.8	29.4	19.3	29.3	30.8
A. Equity attributable to equity holders of parent	33.1	31.5	26.7	30.3	24.6	16.3	26.3	27.1
1. Share capital	12.0	7.6	3.5	3.1	3.5	2.1	6.5	4.0
2. Share premium	14.6	10.6	7.4	7.3	5.8	6.4	10.7	7.8
3. Other reserves	0.6	3.7	1.8	0.6	2.6	3.2	3.1	1.9
4. (-) Treasury shares	0.4	0.7	0.8	0.8	0.9	0.9	0.6	0.8
5. Retained earnings (accumulated losse	6.3	10.3	14.7	20.0	13.6	5.4	6.6	14.2
B. Minority interest (in net assets)	1.7	2.5	3.7	3.5	4.5	2.9	2.9	3.5
C. Other equity interest	0.1	0.0	0.1	0.1	0.2	0.2	0.1	0.1
II. Liabilities, total	65.0	65.9	69.6	66.2	70.7	80.7	70.7	69.2
A. Liabilities, non-current, total	38.1	37.0	38.1	33.0	45.6	37.9	39.7	38.0
6. Borrowings, non-current	31.1	29.5	22.8	19.7	24.0	29.1	28.5	23.5
7. Deferred income, non-current	0.8	0.4	0.4	0.2	1.1	0.4	0.3	0.5
8. Provisions, non-current	0.8	1.0	5.7	4.2	8.7	2.4	4.6	5.3
9. Post employment benefit obligation, non-current	0.9	1.3	3.5	4.5	2.7	0.8	2.2	3.3
10. Deferred tax liabilities	2.4	2.8	3.4	3.0	4.6	2.9	2.6	3.3
11. Remaining liabilities, non-current	2.1	1.9	2.2	1.3	4.5	2.4	1.6	2.2
B. Liabilities, current, total	26.9	28.9	31.5	33.2	25.2	42.7	30.9	31.2
12. Liabilities included in disposal groups held for sale	1.4	0.3	0.4	0.3	0.3	2.0	0.4	0.4
13. Borrowings, current	12.2	10.8	9.3	10.7	6.2	10.6	10.3	9.5
14. Deferred income, current	0.7	1.0	0.9	0.5	1.4	1.0	1.1	0.9
15. Provisions, current	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.1
16. Post employment benefit obligation, current	0.6	0.9	2.1	2.8	1.4	2.5	1.2	2.0
17. Current tax payables (only income ta:	0.4	0.4	0.4	0.3	0.6	0.2	0.5	0.4
18. Trade payables, total	6.5	8.8	10.4	10.9	7.6	13.7	10.5	10.2
19. Remaining liabilities, current	5.0	6.6	7.8	7.6	7.6	12.8	6.9	7.7
EQUITY AND LIABILITIES, TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

STATISTICAL ANNEX 2. STRUCTURE OF THE INCOME STATEMENT OF EUROPEAN NON-FINANCIAL LISTED GROUPS IN 2011

STRUCTURE IN THE INCOME STATEMENT IN 2011. MAIN QUOTED NON FINANCIAL GROUPS

TABLE ANNEX 2

	Small	Medium	Large	Industry	Energy	Construction	Services	Total
Revenue	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
EBIT	5.7	9.0	8.6	8.4	9.5	6.5	8.7	8.6
+ Net financial result	-4.9	-3.3	-1.6	-0.7	-2.8	-3.4	-2.7	-1.7
+ Profit(loss) from investments	0.6	-0.1	0.4	0.5	0.4	-0.1	0.0	0.3
+ Other non operating income	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Profit(loss) before taxes	1.2	5.6	7.3	8.1	7.0	3.0	5.9	7.1
- Income tax expense	1.5	2.1	2.5	2.5	3.0	1.1	2.3	2.4
Profit (loss) before discontinued operation	-0.3	3.5	4.8	5.7	4.0	1.9	3.6	4.7
+ Discontinued operations	0.0	0.0	0.1	0.0	-0.2	0.1	0.3	0.0
Profit (loss) before minorities	-0.2	3.5	4.9	5.5	4.1	2.1	4.0	4.7
- Minority interest	0.3	0.1	0.6	0.6	0.8	0.3	0.5	0.6
Profit (loss) for the year	-0.3	3.3	4.3	5.1	3.3	1.8	3.4	4.2

STADISTICAL RESULTS ON THE FINANCIAL STRUCTURE IN 2010 AND 2011

TABLE ANNEX 3

		Small		Medium		Large		Industry		Energy		Construction		Services	
		2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011	2010	2011
Equity / Total assets (%)	Number	835	563	500	369	309	262	774	549	73	63	78	57	702	514
	Q1	23.8	27.1	23.8	26.3	23.9	24.2	25.6	28.4	22.8	23.2	13.9	13.0	23.7	25.4
	Median	38.4	41.4	35.6	36.7	32.7	32.6	38.8	40.4	30.8	29.5	23.0	25.7	36.1	37.9
	Q3	52.7	55.7	47.2	48.0	43.2	43.2	50.4	53.1	39.4	37.2	31.1	33.9	48.4	49.7
	Weighted mean	39.4	35.0	33.7	34.1	31.4	30.4	35.1	33.8	29.8	29.3	20.2	19.3	31.1	29.4
Cash and equivalents / Total assets (%)	Q1	2.6	2.4	3.7	3.6	3.7	4.2	3.5	3.6	2.1	2.2	4.1	3.5	2.9	2.9
	Median	6.6	6.3	7.5	7.5	7.2	7.4	7.5	7.3	4.0	4.5	7.4	9.0	6.8	7.1
	Q3	14.4	14.7	13.6	12.7	12.0	11.7	14.1	12.8	6.9	7.0	15.7	12.8	13.7	13.5
	Weighted mean	6.3	6.0	7.9	7.8	7.2	7.2	9.2	8.7	3.7	4.0	9.3	9.8	6.7	6.9
Financial debt / Equity (%)	Q1	24.0	19.7	37.4	30.7	48.2	48.5	29.9	28.5	76.5	82.5	75.8	81.6	30.6	26.9
	Median	66.9	56.9	79.9	70.5	80.5	83.0	66.9	60.5	130.4	134.6	143.5	142.3	77.0	69.0
	Q3	158.6	127.5	154.8	140.2	140.3	144.1	128.4	106.2	193.8	178.4	304.4	298.7	154.8	142.6
	Weighted mean	96.4	102.4	109.2	104.6	102.2	105.8	84.4	89.4	100.0	103.0	185.5	180.2	121.6	129.4
Net financial debt / Equity (%)	Q1	0.0	-3.4	15.2	6.5	22.2	22.1	5.5	4.6	69.6	65.8	23.2	39.8	2.6	0.0
	Median	47.7	39.0	57.7	50.0	57.1	56.1	44.8	41.9	116.3	116.2	108.1	111.3	54.9	47.9
	Q3	137.1	113.2	119.7	113.7	110.3	114.1	103.3	81.6	177.2	170.9	249.9	233.2	126.4	119.2
	Weighted mean	80.9	87.0	86.7	83.2	79.4	82.2	58.2	63.8	87.6	89.2	141.2	132.1	100.3	106.1
Financial debt / Total assets (%)	Q1	12.2	10.9	16.8	14.8	18.7	18.0	14.4	13.6	28.3	26.8	24.1	29.0	13.9	12.0
	Median	27.7	25.9	29.8	27.5	28.5	27.8	26.5	24.8	39.3	40.5	36.7	38.9	28.7	27.1
	Q3	43.5	42.6	43.6	42.7	39.8	38.4	38.9	36.6	47.6	48.8	47.3	51.3	45.5	44.8
	Weighted mean	39.9	43.5	40.6	40.4	32.2	32.2	29.9	30.4	29.8	30.2	41.4	39.6	38.6	38.8
Current borrowings / Financial debt (%)	Q1	22.0	24.3	17.2	17.1	11.5	15.4	20.1	23.0	11.9	13.7	25.0	23.3	13.5	15.1
	Median	42.2	46.2	35.3	41.1	21.8	25.6	37.0	43.4	22.3	21.4	42.6	42.4	33.6	36.0
	Q3	70.0	74.3	60.9	67.3	40.0	43.5	60.5	69.1	37.1	32.7	70.4	55.7	64.2	67.3
	Weighted mean	35.2	28.1	27.1	26.9	26.0	29.1	33.2	35.3	18.2	20.5	26.9	26.6	24.0	26.5
Borrowings from credit institutions / Financial debt (%)	Q1	62.6	63.0	61.1	63.4	25.2	20.8	53.1	46.8	36.8	39.1	66.4	65.2	47.4	41.9
	Median	86.3	88.2	87.6	88.3	51.0	43.3	84.9	85.9	62.6	63.0	83.8	86.2	80.5	78.7
	Q3	97.8	98.5	97.5	98.1	81.1	76.7	97.4	97.8	89.9	86.7	94.6	96.0	96.1	96.2
	Weighted mean	76.1	83.5	71.9	73.5	33.7	31.5	35.3	31.0	33.1	32.9	69.0	70.3	41.1	38.8
Net cash flow from operating activities / Revenue (%)	Q1	0.0	0.2	2.7	2.7	4.7	4.4	2.2	1.6	4.9	6.7	0.0	0.8	1.3	2.3
	Median	5.8	5.3	7.9	6.4	9.2	8.4	7.4	5.7	12.6	13.6	5.5	5.6	7.3	7.1
	Q3	14.2	14.4	14.2	13.1	15.2	13.4	12.6	10.5	22.4	23.2	12.6	11.7	18.1	18.2
	Weighted mean	8.2	8.6	10.7	10.1	12.3	10.7	10.9	9.4	13.9	11.4	8.9	8.0	13.5	13.3
Net cash flow from investing activities / Revenue (%)	Q1	-9.6	-8.8	-8.3	-9.2	-10.1	-10.7	-7.0	-7.7	-34.3	-39.9	-8.5	-5.8	-11.7	-10.9
	Median	-3.8	-3.6	-3.7	-4.5	-4.9	-5.5	-3.8	-4.4	-12.5	-13.3	-3.3	-2.8	-4.0	-3.9
	Q3	-1.2	-0.9	-1.2	-1.9	-2.8	-2.8	-1.8	-2.2	-5.8	-5.2	0.0	0.0	-1.0	-0.8
	Weighted mean	-7.3	-7.1	-6.5	-7.6	-8.3	-7.8	-7.1	-7.8	-12.1	-9.4	-7.1	-3.1	-7.8	-7.5
Net cash flow from financing activities / Revenue (%)	Q1	-5.8	-6.3	-6.5	-5.8	-6.1	-5.3	-5.6	-4.6	-5.4	-5.2	-6.9	-6.2	-8.0	-7.6
	Median	-1.0	-1.3	-1.9	-1.5	-2.2	-1.7	-1.7	-1.4	2.1	-0.8	-1.2	-0.7	-1.8	-1.7
	Q3	5.3	4.5	2.2	2.5	0.7	1.5	2.0	2.7	24.6	16.4	5.8	6.9	3.0	2.5
	Weighted mean	-0.7	-2.0	-2.5	-3.1	-2.8	-2.7	-1.9	-2.0	-1.3	-1.1	-0.6	-3.9	-5.2	-5.1

STATISTICAL ANNEX 4. STATISTICAL RESULTS ON FAIR VALUE DATA FOR TOTAL GROUPS IN 2011

IMPACT OF FAIR VALUE ACCOUNTING ON FINANCIAL STATEMENTS

TABLE ANNEX 4

Year 2011	Total				
	Number of groups	Weighted average	Simple average	Standard deviation	Coefficient of variation
Concepts from financial statements					
1. Fair value revaluation in the income statement	130	7,111,115,974	26,337,467	409,753,359	15.56
1.1. Gain (loss) in changes in fair value of non-current assets	24	85,309,337	315,961	18,511,085	58.59
1.2. Gain (loss) on financial instruments designated as hedges	100	-584,210,204	-2,163,741	70,286,768	-32.48
1.3. Fair value gains (losses) from financial instruments	81	5,790,600,231	21,446,668	405,060,185	18.89
1.4. Available-for-sale financial assets: Reclassification adjustments for gains (losses) included in profit or loss (-)	26	-332,809,000	-1,232,626	50,979,913	-41.36
1.5. Cash flow hedges: Reclassification adjustments for gains (losses) included in profit or loss (-)	69	-1,486,607,610	-5,505,954	52,098,881	-9.46
2. Fair value revaluation in the statement of changes in equity	94	-12,036,504,620	-44,579,647	235,717,758	-5.29
2.1. Available-for-sale financial assets: Gains (losses) arising during the period	56	-2,785,681,463	-10,317,339	85,904,768	-8.33
2.2. Cash flow hedges: Gains (losses) arising during the period	82	-9,250,823,157	-34,262,308	195,356,345	-5.70
3. Fair value revaluation in the financial statements (1 + 2)	155	-4,925,388,646	-18,242,180	363,904,957	-19.95
4. Operating revenue	270	2,911,139,574,444	10,781,998,424	24,226,034,417	2.25
5. Profit (loss) of the year	270	135,242,137,227	500,896,805	1,697,276,626	3.39
6. Total equity	270	1,418,949,772,589	5,255,369,528	11,841,826,595	2.25
7. Total movements in equity	270	41,766,509,640	154,690,776	1,568,705,503	10.14
8. Investment property and biological assets	106	20,660,741,663	76,521,265	369,815,490	4.83
9. Financial assets (current and non-current)	246	388,990,396,514	1,440,705,172	7,351,608,348	5.10
9.1 of which, Hedging assets (current and non-current)	125	80,886,849,929	299,580,926	1,269,516,754	4.24
Analysis of the impact in income statement					
10. Revaluation in income statement to revenue (1/4)	130	0.33	-2.42	23.08	-9.55
11. Revaluation in income statement to profit (loss) of the year (1/5)	130	7.10	77.64	862.14	11.10
12. Revaluation in income statement to financial assets ((1.2 + 1.3 -1.4-1.5) / 9)	112	2.11	74.94	2418.15	32.27
13. Revaluation in income statement to non-financial assets (1.1 / 8)	23	0.61	-62.56	368.45	-5.89
Analysis of the impact in equity					
14. Revaluation in equity to total equity (2/6)	94	-1.15	-1.73	3.70	-2.13
15. Revaluation in equity to total movements in equity (2/7)	94	-46.05	26.20	164.71	6.29
16. Revaluation in equity to financial assets (2/9)	92	-3.75	-53.20	157.87	-2.97
Analysis of the total impact					
17. Total impact related to revenue (3/4)	155	-0.20	-3.51	24.37	-6.94
18. Total impact related to profit (loss) of the year (3/5)	155	-4.20	65.38	796.30	12.18
19. Total impact related to total equity (3/6)	155	-0.40	1.81	43.54	24.04
20. Total impact related to total movements in equity (3/7)	155	-12.72	21.17	228.56	10.80
21. Total impact related to financial assets (1.2 + 1.3 -1.4 - 1.5 + 2) / 9)	138	-1.42	25.35	2140.96	84.45

IMPACT OF FAIR VALUE ACCOUNTING ON FINANCIAL STATEMENTS (cont.)

TABLE ANNEX 4

Year 2011	Total						
	Percentile 1	Percentile 10	Percentile 25	Median	Percentile 75	Percentile 90	Percentile 99
Concepts from financial statements							
1. Fair value revaluation in the income statement	-371,000,000	-17,480,500	-176,000	0	0	9,861,000	659,000,000.00
1.1. Gain (loss) in changes in fair value of non-current assets	-34,995,000	0	0	0	0	0	14,747,000.00
1.2. Gain (loss) on financial instruments designated as hedges	-149,636,000	-14,500,000	0	0	0	2,197,000	317,000,000.00
1.3. Fair value gains (losses) from financial instruments	-130,000,000	-3,078,000	0	0	0	1,239,000	152,850,000.00
1.4. Available-for-sale financial assets: Reclassification adjustments for gains (losses) (included in profit or loss (-)	-45,000,000	0	0	0	0	0	83,000,000.00
1.5. Cash flow hedges: Reclassification adjustments for gains (losses) included in profit or loss (-)	-230,000,000	-5,714,500	0	0	0	1,500,000	125,000,000.00
2. Fair value revaluation in the statement of changes in equity	-1,506,249,000	-60,821,500	-457,000	0	0	0	251,000,000.00
2.1. Available-for-sale financial assets: Gains (losses) arising during the period	-425,000,000	-4,027,977	0	0	0	0	127,000,000.00
2.2. Cash flow hedges: Gains (losses) arising during the period	-921,079,000	-42,000,000	0	0	0	0	83,100,000.00
3. Fair value revaluation in the financial statements (1 + 2)	-1,366,000,000	-64,550,000	-4,000,000	0	0	5,542,500	517,000,000.00
4. Operating revenue	1,852,000	48,076,500	188,510,000	977,421,500	8,739,275,000	32,177,017,500	112,954,000,000.00
5. Profit (loss) of the year	-2,219,000,000	-54,254,000	-3,495,000	18,481,086	340,268,000	1,498,450,000	6,860,000,000.00
6. Total equity	-248,233,000	26,560,000	107,120,697	408,079,500	3,768,000,000	15,292,000,000	63,354,000,000.00
7. Total movements in equity	-5,860,000,000	-337,557,500	-23,376,000	2,249,856	75,300,000	719,000,000	8,118,000,000.00
8. Investment property and biological assets	0	0	0	0	8,782,000	102,527,000	2,623,606,000.00
9. Financial assets (current and non-current)	0	4,709	410,000	15,934,000	324,800,000	2,515,344,500	19,747,000,000.00
9.1 of which, Hedging assets (current and non-current)	0	0	0	0	23,739,000	374,400,000	8,223,000,000.00
Analysis of the impact in income statement							
10. Revaluation in income statement to revenue (1/4)	-59	-4.38	-0.36	-0.02	0.22	1.66	36.89
11. Revaluation in income statement to profit (loss) of the year (1/5)	-279	-22.35	-3.22	0.42	9.50	34.51	669.23
12. Revaluation in income statement to financial assets ((1.2 + 1.3 -1.4-1.5) / 9)	-6,877	-176.01	-15.18	-0.68	4.23	28.69	8600.00
13. Revaluation in income statement to non-financial assets (1.1/8)	-1,740	-28.51	-3.48	0.59	10.53	84.06	169.34
Analysis of the impact in equity							
14. Revaluation in equity to total equity (2/6)	-24	-6.81	-1.72	-0.41	0.01	0.40	3.50
15. Revaluation in equity to total movements in equity (2/7)	-530	-25.03	-8.69	0.13	9.61	112.67	1213.51
16. Revaluation in equity to financial assets (2/9)	-958	-100.00	-28.66	-4.71	-0.12	5.56	66.32
Analysis of the total impact							
17. Total impact related to revenue (3/4)	-129	-7.35	-0.95	-0.12	0.11	0.66	50.13
18. Total impact related to profit (loss) of the year (3/5)	-286	-40.15	-11.05	-0.21	6.69	33.66	1193.73
19. Total impact related to total equity (3/6)	-32	-5.69	-1.46	-0.20	0.27	1.70	60.34
20. Total impact related to total movements in equity (3/7)	-514	-32.90	-6.67	0.43	16.42	85.65	610.07
21. Total impact related to financial assets (1.2 + 1.3 -1.4 - 1.5 + 2) / 9)	-6,877	-194.17	-39.38	-4.06	0.74	26.96	8600.00

STATISTICAL ANNEX 5. MULTIPLE LINEAR REGRESSION MODEL

The variables used in the model are shown in the following table:

INDEPENDENT VARIABLES AND PROXIES USED — TABLE ANNEX 5.1

Concept	Proxy	Symbol
Size	Total assets	ASSETS
Intangible Assets	Intangible assets	INTANGIBLE
Activity	Revenue	REVENUE
Profitability	Profit (loss)	NET_INC
Risk and business opportunities	Research and Development	RESEARCH_DEVELOPMENT
Stock Market	Variation of the stock market index by sector	STOCK_MARKET
Sector	Energy sector	Sector_Energy (dummy)
	Industry sector	Sector_Industry (dummy)
	Construction sector	Sector_Const (dummy)
	Market services, trade and real estate sector	Sector_MS_RE (dummy)

Explanation of concepts and the relationships

Size: We expect a positive relationship between size and the amount of fair value revaluation. Larger groups have more assets, so are more likely to have fair value revaluations.

Intangible assets: Firms with more intangible assets due to the difficulty of assessing the value of these assets, in principle tend to do more revaluations. The management team has sizable discretionary power in respect of these kinds of assets.

Activity: Groups with large revenues have greater liquidity and commodities risks and need to take out more hedging instruments.

Profitability: As described above, managers tend to provide stable results. In good years they manipulate the results negatively, so that in bad years it is possible to compensate for losses (negative relationship).

Risk and business opportunities: Groups that spend more on research and development are not yet mature, business is booming. These groups have riskier assets, so more business risk. These groups tend to take out more hedging instruments.

Stock Market: Companies tend to have equity shares of companies of the same sector and at the same time they are exposed to the same market risks.

Sector: Groups within the same industry share a set of features, such as the same types of assets, practices and similar risks. It is expected that groups within the same sector show the same behavior in terms of fair value.

Model specification

In order to determine the relationship between Fair value revaluations and variables, 3 different models were estimated. Model A considers all variables in absolute terms. In Model B, the

independent and dependent variables were weighted by assets, excluding this variable from the model. In Model C the option was to address the concept of size using 3 dummy variables, instead of the absolute value of the assets.

Model A

$$\mathrm{FV}_K = \alpha_1 + \beta_1 * ASSETS + \beta_2 * INTANGIBLE + \beta_3 * REVENU + \beta_4 * NET\_INC + \beta_5 * RESEARCH\_DEVELPMENT + \sum_{i=6}^{9} (\beta_i * Sector\_j) + \varepsilon_1$$

Model B

$$\frac{\mathrm{FV}_K}{ASSETS} = \alpha_1 + \beta_1 * \frac{INTANGIBLE}{ASSETS} + \beta_2 * \frac{REVENU}{ASSETS} + \beta_3 * \frac{NET\_INC}{ASSETS} + \beta_4 * \frac{RESEARCH\_DEVELOPMENT}{ASSETS} + \sum_{i=6}^{9} (\beta_i * Sector\_j) + \varepsilon_1$$

Model C

$$\mathrm{FV}_K = \alpha_1 + \sum_{i=1}^{3} (\beta_i * Dimension\_p) + \beta_4 * INTANGIBLE + \beta_5 * REVENU + \beta_6 * NET\_INC + \beta_7 * RESEARCH\_DEVELOPMENT + \sum_{i=8}^{11} (\beta_i * Sector\_j) + \varepsilon_1$$

Model D

$$\mathrm{ABS\_FV}_K = \alpha_1 + \beta_1 * ASSETS + \beta_2 * INTANGIBLE + \beta_3 * REVENU + \beta_4 * NET\_INC + \beta_5 * RESEARCH\_DEVELOPMENT + \sum_{i=6}^{9} (\beta_i * Sector\_j) + \varepsilon_1$$

Model E

$$\mathrm{FV}_K = \alpha_1 + \beta_1 * ASSETS + \beta_2 * INTANGIBLE + \beta_3 * REVENU + \beta_4 * NET\_INC + \beta_5 * RESEARCH_{DEVELOPMENT} + \beta_6 * STOCK\_MARKET + \varepsilon_1$$

where:

FV_K - Fair value variables (FV_Total, FV_Income and FV_Equity);

$\mathrm{ABS\_FV}_K$ - Absolute value of fair value variables (FV_Total, FV_Income and FV_Equity);

$Sector\_j$ – 4 dummy variables (Sector_Energy, Sector Industry, Sector_Const and Sector_MS_RE);

$Dimension\_p$ – 3 dummy variables (Small, Medium and Large);

ε_1 - Error term, disturbance term, or noise.

Correlation analysis

CORRELATION MATRIX

TABLE ANNEX 5.2

Concept	FV_Income	FV_Equity	FV_Total	Assets	Intangible	Revenue	NET_INC	Research development
FV_Income	1	-.471 (b)	.821 (b)	.391(b)	.144 (a)	.360 (b)	.468 (b)	.494 (b)
FV_Equity		1	.117	-.578 (b)	-.252 (b)	-.385 (b)	-.393 (b)	-.302 (b)
FV_Total			1	.066	-.001	.156 (a)	.273 (b)	.361 (b)
Assets				1	.732 (b)	.901 (b)	.737 (b)	.481 (b)
Intangibel					1	.576 (b)	.487 (b)	.203 (b)
Revenue						1	.775 (b)	.524 (b)
NET_INC							1	.633 (b)
Research development								1

a Correlation is significant at the 0.05 level (2-tailed).
b Correlation is significant at the 0.01 level (2-tailed).

Analysing the bivariate correlations between the dependent variables, a high correlation is observed between the total amount of fair value and each of its components, but the correlation between them is low. Only the bivariate correlation between intangible assets and fair value in equity proved statistically significant besides the low value of the coefficient. None of the other bivariate correlations between dependent and explanatory variables proved statistically significant.

Among the independent variables, it is observed that all bivariate relationships are statistically significant: highlights include the relationship between revenue and the assets and revenue and net profit (loss), with a coefficient above 0.8. Some authors have reported that the presence of correlation between two variables only affects the linear relationships when there is a perfect linear combination of variables, and this is not the case.

Linear regression models

MODEL A - LINEAR REGRESSION MODELS (ESTIMATION METHOD: OLS)

TABLE ANNEX 5.3

Dependent variable	FV_Total (1)	FV_Income (2)	FV_Equity (3)
(Constant)	-47,688,450	-50,888,689	3,200,239
Sector_Energy	190028765 (a)	35,406,202	154622563 (a)
Sector_Const	-41,499,843	70,943,406	-112443249 (a)
Sector_MS_RE	17,985,259	40,960,093	-22,974,835
Assets	-0.006 (a)	0.0060 (a)	-0.0121 (a)
Intangible	0.003	-0.011 (a)	0.0141 (a)
Revenue	0.004	-0.0063 (a)	0.0102 (a)
NET_INC	0.055	0.0684 (a)	-0.013
Research_development	0.2122 (a)	0.2051 (a)	0.007
Adjusted R Square	0.179	0.309	0.602

a Statistically significant at a level of 5%.

MODEL B - LINEAR REGRESSION MODELS (ESTIMATION METHOD: OLS)

TABLE ANNEX 5.4

Dependent variable	FV_Total / assets (1)	FV_Income / assets (2)	FV_Equity / assets (3)
(Constant)	-0.007	-0.005	-0.003
Sector_Energy	0.001	0.000	0.001
Sector_Const	-0.001	0.003	-0.005
Sector_MS_RE	-0.003	-0.002	0.000
Intangible / assets	0.010	0.008	0.002
Revenue / assets	0.004	0.003	0.001
NET_INC / assets	0.031 (a)	0.031 (a)	0.000
Research_development / assets	0.022	0.017	0.005
Adjusted R Square	0.064	0.035	0.027

a Statistically significant at a level of 5%.

MODEL C - LINEAR REGRESSION MODELS (ESTIMATION METHOD: OLS)

TABLE ANNEX 5.5

Dependent variable	FV_Total (1)	FV_Income (2)	FV_Equity (3)
(Constant)	-98,122,769	-119066134 (a)	20,943,365
Intangible	-0.003	-0.002	-0.0010
Revenue	-0.001	0.000	-0.0016
NET_INC	0.043 (a)	0.07 (a)	-0.027 (a)
Research_development	0.193 (a)	0.234 (a)	-0.041 (a)
Sector_Energy	102,176,447	119,871,108	-17,694,661
Sector_Const	-61,169,382	95,416,430	-156,585,811
Sector_MS_RE	-5,036,791	37,595,364	-42,632,155
Small	95,621,448	87,122,746	8,498,701
Medium	98,356,452	87,527,740	10,828,712
Adjusted R Square	0.143	0.279	0.178

a Statistically significant at a level of 5%.

MODEL D - LINEAR REGRESSION MODELS (ESTIMATION METHOD: OLS)

TABLE ANNEX 5.6

Dependent variable	ABS_FV_Total (1)	ABS_FV_Income (2)	ABS_FV_Equity (3)
(Constant)	26,948,728	251,082	18,865,969
Assets	0.01378 (a)	0.00527 (a)	0,01143 8 (a)
Intangible	-0.01793 (a)	-0.01214 (a)	-1.229 (a)
Revenue	-0.01038 (a)	-0.00363	-0.00779 (a)
NET_INC	0.04741(a)	0.09419 (a)	0.00196
Research_development	0.08891(a)	0.18699 (a)	-0.02151
Sector_energy	-240.691.259 (a)	-49,501,245	-183.413.106 (a)
Sector_industry	-48,611,752	-42,692,293	-29,171,973
Sector_Const	59,953,030	22,429,726	78.411.413 (a)
Adjusted R Square	0.65	0.468	0.662

a Statistically significant at a level of 5%.

MODEL E - LINEAR REGRESSION MODELS (ESTIMATION METHOD: OLS) TABLE ANNEX 5.7

Dependent variable	FV_Total (1)	FV_Income (2)	FV_Equity (3)
(Constant)	-40,896,363	-2,930,136	-37.966.227 (a)
Assets	-0.00513 (a)	0.00618 (a)	-0.01132 (a)
Intangibel	0.003	-0.01086 (a)	0.01349 (a)
Revenue	0.004	-0.00639 (a)	0.01000 (a)
NET_INC	0.05135 (a)	0.06764 (a)	-0.01629
Research_development	0.19233 (a)	0.20142	-0.0091
Stock_market	-40,036	123,250	-163,286 (a)
Adjusted R Square	0.166	0.313	0.566

a Statistically significant at a level of 5%.

Despite the low explanatory power of some models, a few conclusions can be drawn:

- *Size,* measured by total assets, is statistically significant in explaining the three formulations of fair value. Groups with more assets tend to use fair value revaluation. But when replaced by 3 dummy variables (small, medium and large) – model C - the variables lost statistical significance as almost large groups have fair value revaluation, this effect is captured by constant term.
- In model A *intangible assets* and *activity* demonstrate explanatory power in terms of fair value in equity and income statement, but not relevant to the overall fair value. Given the explanatory power of the model that uses as dependent variable the fair value in equity, we can concluded that at least these variables influence the fair value in equity.
- Despite showing a sign contrary to expectations, *profitability* is a predictive value of fair value in the income statement (models A.2 and B.2). These results agree with those obtained in the analysis of correlations.
- *Research and development* variable in models A.1 and A.2 proved to be statistically significant by it-self, but the models do not have great explanatory power.
- Model E instead of the dummy by sector used the *variation of the stock market* by sector. This variable is statistically significant in the model with equity as dependent variable but overall results of this model were worst than the ones performed by model A, so we concluded that consideration of these variables did not introduce improvements in the models.
- *Energy and construction groups* seem to share some characteristics with the implication in explaining fair value revaluation in equity (model D).