Goodwill Disclosure in Europe. Profiles of disclosing companies

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Abstract
The paper investigates the determinants of goodwill disclosure on a sample of European companies. In particular, the factors associated to particular extents of disclosure are examined. The results provide evidence that, determinants coherent with proprietary cost theory significantly affect the extent of goodwill disclosure. Conversely the hypotheses formulated according to the signaling theory are not supported. The methodology adopted provides meaning to relations between variables that might be robust only or particularly within a specific range of variation of the independent variables. Finally, issues of compliance due to the technical complexities of IAS 36 are documented.

Keywords: Goodwill Disclosure Determinants; Antecedents of disclosure; Goodwill Disclosure Index; Cluster Analysis.

1. Introduction

The impairment test is one of the main innovations introduced by IAS/IFRS, particularly in relation to goodwill. The accounting treatment introduced by IAS 36 raises several questions and requires extensive and detailed notes to be disclosed in order for stakeholders to assess the reliability of the recognized values.

The adoption of impairment test has been extensively discussed in literature (Carlin & Finch, 2011; Chalmers, Godfrey, & Webster, 2011;

Moehrle, Reynolds-Moehrle, & Wallace, 2001; Van Hulzen, Alfonso, Georgakopoulos, & Sotiropoulos, 2011, only to name a few).

After 2008, the global economic crisis focused the attention of both academics and practitioners on the fragilities arising from the IASB/FASB accounting practices (Benson, Clarkson, Smith, & Bettucci, 2015). In particular significant write-off recognitions were expected as result of the impairment test (Bepari, Rahman, & Mollik, 2014) but evidences are contradictory (Ji 2013).

In recent years the academic debate takes into consideration the complexity and subjectivity of goodwill impairment (Carlin & Finch, 2010; Godfrey & Koh, 2009; Lhaopadchan, 2010; Quagli, 2011).

All the above mentioned issues motivate the aim of this study and let us argue that an exhaustive disclosure on goodwill impairment is needed to make financial statement users aware of the test's degree of accuracy.

The descriptive notes about impairment, together with business combinations and financial instruments, are the highly demanded, but they also are among the most costly to prepare. The level of users' satisfaction associated is generally low (Johansen & Plenborg, 2013)

The aim of this study is to measure the level of goodwill disclosure, trying to discover the factors that may explain why different extents of disclosure are provided in company annual reports. The analyses are performed on a sample of European companies, and cover the years 2008-2010. During this period, relevant and frequent recognitions of impairment losses are to be expected, therefore an analysis of goodwill impairment disclosure is of critical importance.

In line with the theoretical frameworks generally adopted in extant literature about disclosure we have identified a number of variables expected to explain company behaviors in relation to goodwill accounting. We tested whether particular relations may exist within a specific level of disclosure and a range of variance of the expected determinants. We compared the results with non-parametric tests, measuring the robustness of the same relations at a general level.

The results obtained are of great interest. We document the existence of particular relations between variables, even when a general relation is not supported. In particular high free float, big size, high audit quality, multi-listing and allocation of goodwill to a high number of CGUs are in relation with a medium-high level of goodwill disclosure. Conversely, a medium-low extent of disclosure is in relation with high ownership

concentration, low level of debt, mono-listing and no information about the number of CGUs.

The paper extends to goodwill impairment the research on disclosure determinants and provides valuable results from both a theoretical and practical perspective. The clusters analysis represents an original approach and provides in-depth qualitative description about the disclosing behaviour of companies.

The remainder of the paper is structured as follows: in section 2 extant literature on goodwill impairment is summarized. In section 3 the research hypotheses are described. In section 4 the sample and the data collected are presented. The methodology is described in section 5, while in section 6 the main findings are discussed. Final considerations and further research directions are described in the last section.

2. Literature review

Goodwill accounting has always raised strong debates, among academics and standard setters (Zeff, 2005; Benson et al., 2015).

In literature, studies comparing the value relevance before and after the introduction of the impairment test have produced conflicting results, particularly for what concern: the quality of financial reporting (Chambers, 2007); the timeliness in recognition of expenses (Van Hulzen et al., 2011; Ji, 2013); the increased usefulness of financial information about intangible assets (Chalmers, Clinch, Godfrey, & Wed, 2012; Matolcsy & Wyatt, 2006).

The managers' subjectivity is an additional issue raised about the introduction of the impairment (Comiskey & Mulford, 2010; Guthrie & Pang, 2013; Lhaopadchan, 2010).

The agency theory predicts that managers will use private information opportunistically, thus goodwill and impairment may be affected by their subjectivity (Francis, Hanna, & Vincent, 1996; Beatty & Weber, 2006; Hamberg, Paananen, & Novak, 2011; Darrough, Guler, & Wang, 2014). Generally speaking, investors perceive the recognition of impairment losses as a negative signal (Li, Shroff, Venkataraman, & Xiying Zhang, 2011), managers could then manipulate the impairment through optimistic assumptions (Carlin & Finch, 2009; Zang, 2008); or by adopting a wider configuration of the CGUs in order to compensate the losses arising from a particular acquisition (Chambers, 2007).

Coherently, the big bath theory suggests that when companies show a significant decrease in earnings, managers may take the opportunity to write down intangible assets and worsen the profitability even further (Chenheiter & Melumad, 2002; Jordan & Clark 2004; Walsh, Craig, & Clarke, 1991). This practice is more likely to occur after a manager turnover (Zucca & Campbell, 1992; Scott, 2003).

Several studies focus on the information disclosed in the descriptive notes. The disclosure of goodwill should describe, in particular, all the assumptions adopted to perform the impairment test, in order to provide a traceability to the readers of the financial statement and allow them to appraise its reliability. In particular:

- in presence of impairment loss, the disclosure should provide adequate information about the root causes, in order to smooth a negative market reaction, especially when the loss is consequence of exogenous factors, not completely attributable to the managers' responsibility;
- in the absence of impairment loss, the disclosure should provide evidences of the reliability of the test. Particularly during a world crisis, financial statement users might be sceptic if impairment losses are never recognized. In this case a profound level of disclosure could help convince them of the reliability of the accounting treatment.

According to the agency theory (Jensen & Meckling, 1976), the assumption 'more communication, less asymmetries' is even more valid for goodwill because of its specific nature and the complexities embedded in its evaluation (Francis, Huang, Khurana, & Pereira, 2009; Petersen & Plenborg, 2006).

The proprietary cost theory (Verrecchia, 1983; Wagenhofer, 1990) and the signalling theory (Spence, 1973; Ross, 1977) are also adopted by several studies to investigate the value relevance of disclosure. The former assumes that information can generate risks when actual or potential competitors receive indications about company strategy. Managers' inclination to disclose information is then considered as the final result of their appraisal of accompanying costs and benefits. Proprietary costs may also derive from the technicalities associated with the production of information (Prencipe 2004).

According to the signalling theory, companies with higher performance are more willing to disclose information in order to inform the financial markets and reduce the risk of adverse selection. In this light stakeholders could interpret a poor disclosure as an attempt to hide negative results arising from the impairment test.

Therefore, the level of disclosure of goodwill impairment derives from a balance between the need to increase company credibility (as expected by the agency and signalling theory) the opportunity to contain the costs of disclosing information and the potential threats to the company's competitive advantage (as prescribed by proprietary cost theory).

3. Definition of hypothesis

The purpose of this paper is to identify the factors associated to different level of disclosure about goodwill impairment. In the following sections, we describe our hypotheses about a set of variables specifically selected to explain the company behaviour in relation to goodwill disclosure, namely specific determinants. In addition we consider, as control variables, a set of determinants largely recognized by extant literature to be in relation with company disclosure (namely traditional determinants).

3.1. Specific Determinants

Prencipe (2004) finds that the listing status age and the level of detail of operating segments significantly affect the extent of voluntary disclosure of segment reporting . Disclosure of goodwill impairment presents lots of issues which are comparable to segment reporting in terms of complexities and discretional assumptions needed to accomplish the accounting standards (McGreachin, 1997; Rockness, Rockness, & Ivancevich, 2001), in particular for what concern the estimation of the fair value and the value in use.

In particular we expect that the allocation of goodwill to CGUs identified as sub-groups of the operating segments, requires higher detail of information to be provided, and as consequence, higher costs for recognition and disclosure. For that reason, several companies allocate goodwill at the operating segment level or at company level (Kahairi, Laili, & Tran, 2012; Wines, Dagwell, & Windsor, 2007). Guthrie & Pang (2013) find that recognition of goodwill impairment is less likely to occur in firms with less than three CGUs and firms with no effective disclosure on CGUs.

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As consequence, we formulate the following hypothesis:

H1. The higher the number of CGUs (compared to that of operating segments) the higher the extent of disclosure.

The second and third expected determinants of goodwill disclosure are also selected according to the proprietary cost theory framework:

H2. Higher listing status age has a positive impact on the extent of goodwill disclosure.

H3. Multi-listing (on multiple stock exchanges) has a positive impact on goodwill disclosure.

Older listing status age should produce a positive effect on goodwill disclosure, because over time companies improve their ability to meet the requests of all external users, and proprietary costs decrease (Prencipe, 2004). Similarly, when companies are listed on multiple stock exchanges, economies of scale can be developed in preparing information for stakeholders operating in different markets (Huafang & Jianguo, 2007; Hope, Kang, & Kim, 2013). Furthermore if a company operates on a market that requires a higher level of disclosure, then it will probably find convenient to align its disclosure policy to that level on all the markets it is listed in.

Switching to signalling theory, we can introduce the concept of relevance, arguing that:

H4. The higher the relevance of goodwill in financial statements, the higher the extent of goodwill disclosure.

Relevance is a multifaceted concept that can be differently measured according to the definition adopted (Bugeja & Gallery 2006). In line with Chalmers et al. (2012) we adopt a concept of relevance associated to the incidence and variation of goodwill and to the intensity of impairment losses recognized. We assume that high incidence and the recognition of additional amounts of goodwill (or impairment losses) trigger a deeper disclosure. The following sub-hypotheses are then formulated:

H4 a). The higher the % variation of goodwill recognized, the higher the extent of goodwill disclosure.

H4 b). The higher the incidence of goodwill on total assets, the higher the extent of goodwill disclosure

H4 c). The higher the incidence of recognized impairment loss (as % of previous year goodwill), the higher the extent of goodwill disclosure.

3.2. Traditional Determinants

The variables traditionally considered as significant determinants of an extensive disclosure are: size, ownership concentration, level of debt, profitability, audit quality.

The agency theory considers size a significant determinant of information asymmetries. A huge number of studies document the existence of a positive relation between size and extent of disclosure (Chalmers & Godfrey, 2004; Jensen & Meckling, 1976; Lang & Lundholm, 1993; just to name a few), consequently we expect that to be true also of goodwill disclosure:

H5. The higher the size, the higher the extent of goodwill disclosure.

Ownership concentration is reasonably considered one of the principle sources of information asymmetries. The evidence of extant literature generally suggests that the more concentrated is management ownership, the lower will be the level of company disclosure. We consequently assume that:

H6. The higher the ownership concentration, the lower the extent of goodwill disclosure.

The possible explanations for H6 could be different. Moyer, Chatfield, & Sisneros (1989) show that greater managerial ownership reduces the information gaps between internals and externals. Alternatively several studies (Lang, Lins, & Miller 2004; Baik, Kang, & Morton, 2010) show that the more concentrated is the insider property, the higher will be managers' reluctance in offering information to

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externals, producing a kind of "entrenchment effect" (Verriest & Gaeremynck 2009). Similarly firms with dispersed ownership have a greater incentive to provide detailed information (Raffournier 1995).

Level of debt, cost of debt, profitability and audit quality are generally considered to be in relation with disclosure. According to signaling theory, profitability and debt level should be positively associated with the extent of disclosure (Armitage & Marston, 2008; Lang & Lundholm 1993; Mazumdar & Segupta, 2005). This hypothesis could also apply to the extent of goodwill disclosure: in particular we can hypothesize that the more the acquisitions that generated goodwill are covered by debts, the more will company managers be inclined to provide lenders an accurate representation of the CGUs performance where goodwill is allocated to. A similar hypothesis can be made concerning profitability.

Audit quality or audit firms' size are often considered within the agency theory framework (Malone, Fries, & Jones, 1993; Hossain, Perera, & Rahman, 1995) and a positive impact on disclosure is documented.

Summarizing we formulate the following additional hypotheses:

H7. The higher the profitability, the higher the extent of goodwill disclosure.

H8 The higher the level of debt, the higher the extent of goodwill disclosure.

H9 The higher the audit quality, the higher the extent of goodwill disclosure.

4. Data collection and description of variables

The sample is composed by 100 European non-financial companies, listed in the ten largest European stock exchanges (as of 31st December 2007) with available data over the investigated period (see table 1). Ten companies from each stock exchange have been randomly selected.

National Stock Exchanges
Great Britain (London SE)
Germany (Deutsche Boerse)
Spain (BME Spanish Exchanges)
Italy (Borsa Italiana)
France (Euronext
Belgium (Euronext)
Netherland (Euronext)
Portugal (Euronext)
Sweden (NASDAQ OMX Nordic Exchange
Denmark (NASDAQ OMX Nordic Exchange)

Table 1 European stock exchanges included in the sample (Source World federation of Exchanges)

	2008		2009		2010		Percentiles (year 2008)		
	Avg	Std Dev	Avg	Std Dev	Avg	Std Dev	25%	50%	75%
Turnover (€ millions)	18,381	48,316	14,966	33,077	17,334	42,068	352	1,412	13,387
Total Assets (€ millions)	18,760	37,296	19,205	38,118	21,446	43,790	419	1,558	21,161
% goodwill on total assets	15%	14%	16%	15%	15%	15%	3.07%	9.80%	25.12%
% impairment loss on goodwill	2%	9%	3%	14%	2%	8%	0.00%	0.00%	0.07%
Goodwill % variation	66%	3.06%	5%	0.19%	7%	0.39%	0%	4%	19%
Return on Investments	10%	14%	6%	15%	8%	11%	5%	8%	14%
% Equity on total assets	63%	25%	63%	26%	65%	24%	43%	62%	85%
% Total debt on Equity	152%	214%	180%	334%	139%	221%	35%	88%	183%
% Ownership concentration	39%	25%	41%	25%	40%	25%	17%	42%	60%
% Free float shares	61%	25%	59%	25%	60%	25%	40%	59%	83%

Table 2 Descriptive statistics about sample companies

Table 2 exhibits descriptive statistics for sampled companies, while in appendix the detailed list of sample companies is reported.

The descriptive statistics show that the sample is heterogeneous in terms of company size (as expressed by turnover and total assets), and that goodwill represents a substantial proportion of total assets.

Considering the economic and financial crisis occurred during 2008-2010, we reasonably assume that readers of financial statements

expected significant impairment losses arising from probable downward revisions of CGUs recoverable values. Coherently a deeper disclosure is expected.

4.1. Description of variables

The specific and generic determinants assumed to influence the disclosure of goodwill are summarized in table 3.

Specific determinants	**Description**	**Measure adopted/Scores assigned**
CGUNUM	Comparison between the number of CGUs and operating segments	3 if Nr. CGUs > Nr. operating segments;
		2 if Nr. CGUs = Nr. operating segments;
		1 if Nr. CGUs < Nr. operating segments;
		0 if Information is not disclosed
LISTAGE	Listing Status Age	Date of IPO (Natural Logarithm)
MULTILIST	Nr. of listings	Nr. of listings
GOODVAR	Goodwill % Variation	$(Goodwill_{(y)} - Goodwill_{(y-1)})/Goodwill_{(y-1)}$
GOODINC	Goodwill Incidence	$Goodwill_{(y)}/Total\ Assets_{(y)}$
IMPLOSS	Incidence of impairment loss	$Impairment\ loss_{(y)}/Goodwill_{(y-1)}$
Traditional determinants	**Description**	**Measure adopted**
TURN	Size	Consolidated turnover
TOTASS	Size	Consolidated total assets
OWNC	Ownership Concentration	Sum of % of strategic stock quotes (≥5%) held by: companies; individuals, government; investment co.; pension funds; other holdings
FREEFL	Free float	Sum of % of not strategic stock quotes (<5%)
DEB	Level of debt	$Total\ Debt_{(y)}/Equity_{(y)}$
CAP	Level of capitalization	$Equity_{(y)}/Total\ Assets_{(y)}$
ROI	Profitability	$EBIT_{(y)}/Total\ Assets_{(y)}$
AUDQ	Audit Quality	0 - Company not audited by a Big4 1 - Company audited by a Big4

Table 3 - Summary of independent variables

Data have been manually collected for several measures (CGUNUM, GOODVAR, GOODINC, IMPLOSS, TURN, TOTASS), sourcing from the yearly consolidated statements and descriptive notes. The number of listings (MULTILIST) has been manually collected by searching the investor relation section of the company website. The remaining

variables (LISTAGE, OWNC, FREEFL, DEB, CAP, ROI, AUDQ), have been extracted from the Thompson Reuters' Datastream.

CGUNUM represents the number of CGU to which goodwill is allocated, in comparison with that of operating segments. It may assume alternatively the value of 1, 2 or 3 when the number of CGU is respectively lower, equal or higher than that of the operating segments. CGUNUM is equal to 0 when no information is disclosed in the annual report about the number of CGU.

LISTAGE and MULTILIST represent the listing status age and the number of listings, respectively. The former is measured by the natural logarithm of the date of IPO expressed as a number, so the lower is LISTAGE, the older is the listing age and vice versa.

GOODVAR is the percentage variation of goodwill on previous year, whereas GOODINC is the incidence of goodwill on total assets. IMPLOSS is the incidence of the recognized impairment loss, calculated on previous year goodwill.

The level of ownership concentration (OWNC) is calculated by summing the strategic stock quotes (not lower than 5%) held by: individuals, holding companies, government, investment companies, pension funds, other holdings. We also considered the percentage of free float (FREEFL), which allows to check the correctness of OWNC because it represents its residual quote (OWNC + FREEFL = 100%).

Two different measures are considered for both company size and level of debt. Turnover and total assets (TURN and TOTASS) are employed for size, whereas the debt-to-equity and the equity-to-total assets ratios (DEB and CAP respectively) are employed to measure the debt level. According to Khlifi & Bouri (2010) extant literature sometimes show contradictions due to the measures employed to represent the expected disclosure determinants. Consequently, the adoption of alternative measures for size and level of debt represents an additional test for the coherence of the results obtained.

Finally, profitability is measured by the Return on investment ratio (ROI) and audit quality is a dummy variable (AUDQ) which is 0 or 1 when the company is audited by a non-big 4 or by a big 4 audit company respectively.

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4.2. The extent of goodwill disclosure

Since the 1960s (Cerf, 1961), several alternative metrics have been proposed in the literature to describe the various attributes of financial disclosure (Beattie, McInnes, & Fearnley, 2004; Hassan & Marston, 2010; Marston & Shives, 1991). Each proposed metric is based on particular conjectures, which inevitably entails a degree of subjectivity.

Beattie et al. (2004) propose a subjective and a semi-objective approach to measure the extent and quality of voluntary disclosure. The subjective approach measures the perceptions of professional users and experts (Daske & Gebhardt, 2006). The approach has some limitations since it is based on personal judgments (Lang & Lundholm, 1993); furthermore it shows a lack of clarity (Healy & Palepu, 2001).

In the 'semi-objective' approach, the disclosure indexes detect the presence or absence (dichotomously 1 or 0) of a pre-determined list of information-items (Cooke, 1989; Street & Gray, 2002; Wallace & Naser, 1995).The semi-objective indexes are easy to calculate and reduce the subjectivity bias. On the other hand, they do not allow to assess the quality of information provided. To overcome these limitations, in some studies, different weights are assigned to information items, in order to take into account the quality or relevance of the information disclosed.

Anyway, several studies show that weighted and unweighted indicators often lead to converging results (Cooke, 1989; Barako, 2007).

In our work we adopt a self-constructed index, (Botosan, 1997; Prencipe, 2004), given the unavailability of alternative measures provided by third parties (Lang & Lundholm, 1996; Sengupta, 1998). The indicator is composed by a mix of unweighted and weighted items, with a prevalence of the formers.

The selection of the expected item list is the first step needed for the construction of the index (Botosan, 1997). The disclosure index has been constructed with the main purpose of measuring the extent of compliance with IAS 36 (Marston & Shrives, 1991), since the relevance of goodwill accounting is strictly connected to the level of accomplishment of the accounting standard's disclosure requirements (Baboukardos & Rimmel, 2014).

In order to maximize homogeneity of data, we considered only those requirements that should have been met even when a company did not recognize any impairment loss (§ 134-137).

Goodwill Allocation (min 0 - max 4)		**% frequencies**	**Average Score**	**Standard dev**
Goodwill is allocated:				
- to CGUs.	3	76.10%		
- to second level CGU (group of units).	2	4.40%		
- to entity level.	1	5.00%	3.14	1.37
- information are not disclosed.	0	14.50%		
Information about the dimension that CGUs correspond to (product line, market segment, etc.) are disclosed.	1	82.00%		
Recoverable Value: Fair value and Value in use (min 0 - max 4)				
Information about both Fair value and Value in use and their comparison are disclosed.	3	8.80%		
Information about only fair value or value in use are disclosed with description of the reasons underlying the choice.	2	2.70%		
Information about only fair value or value in use are disclosed.	1	81.40%	1.15	0.72
No information are disclosed.	0	7.10%		
The company adopted multiple methods in estimating Fair Value (if Fair Value is calculated).	1	2.0%		
Discounted cash Flow (min 0 - max 4)				
The company disclosed information about: 1) Cash flow projections' assumptions (source, time extension); 2) growth rate adopted to estimate projections exceeding the period covered by budget/business plan; 3) discount rate.	3	54.90%		
The company disclosed information about 2 of the 3 abovementioned items.	2	31.70%		
The company disclosed information about 1 of the 3 abovementioned items.	1	4.30%	2.75	1.21
No information are disclosed.	0	9.00%		
Information about reasonable changes in the assumptions and their impact on recoverable value (sensitivity analysis) are disclosed.	1	44.10%		
Overall Goodwill Disclosure Index			7.08	2.54

Table 4 Disclosure items considered for the construction of Goodwill Disclosure Index

Table 4 shows the details about the items considered and the scores assigned. The Goodwill Disclosure Index (GDI hereafter) considers three sections, and for each allows a maximum score of 4 points, so the maximum overall score is 12.

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The first section of items is used to assess the detail of goodwill allocation to CGUs, since we expect this to be in relation with the level of disclosure. According to the requirements of §134, information should be disclosed separately for each CGU or group of units to which goodwill is allocated.

Wines et al. (2007) show that companies tend to allocate goodwill at a general level in order to reduce the costs and time needed to accomplish the accounting standards requirements and to compensate opposite results arising from different acquisitions, then reducing the likelihood of a write-off recognition.

One additional point is attributed whether information are given about the criteria employed to define CGUs as required by §130 (d), (i).

The second section considers how the recoverable amount is determined. The recoverable amount is the higher of an asset's or cash-generating unit's fair value less costs to sell and its value in use. The §19 in IAS 36 determines that when either one of the two values exceeds the carrying amount is not necessary to calculate the second one. Consequently is largely diffused the tendency to calculate only value in use (see table 4), probably due to the difficulties required to determine fair value. We decided to assign: 3 points when the companies disclose information about both fair value and value in use; 2 points when they provide information about only one of the 2 items but describing the reasons underlying their choice; 1 point when companies provide information about only one of the two items without any reference to the second one.

The third section of items relates to the assumptions needed to estimate the value in use, or the fair value, with the discounted cash flows (DCF) method. The maximum score (3 points) is assigned if companies provide information about the three categories of assumptions required to adopt DCF: 1) managers' estimations (source of data, and time extension); 2) growth rate employed to estimate projections that exceed the period covered by budgets or business plans, 3) the discount rate applied to the cash flow projections. One additional point is assigned when companies perform the sensitivity analysis prescribed by §134 (f).

The data needed to calculate the GDI were manually collected by reading the descriptive notes of the consolidated financial statements in the yearly full annual reports. Three observation-years were removed because no goodwill was reported in the balance sheet, and a total of 297 observations were analyzed.

As shown in table 4, the average score of the total sample is 7.08 with a standard deviation of 2.54.

It's worth noting that the second section of items considered for the GDI shows the lowest score, due to the general tendency to not disclose information about the comparison between fair value and value in use, even when an impairment loss was recognized.

Nr. of financial statements in which a goodwill write-off was recognized.	78
Nr. of financial statements in which information about both fair value and value in use and their comparison were provided.	7
Nr. of financial statements in which information about only value in use were disclosed.	66
Nr. of financial statements in which information about only value in use were disclosed with description of the reasons underlying the choice.	0
Nr. of financial statements in which no information about fair value or value in use were disclosed	5

Table 5 Impairment loss and Recoverable amount determination

The data displayed in table 5 show that in 66 out of the 78 financial statements in which an impairment loss was recognized, only information about the value in use was disclosed, without any additional detail about the required comparison with fair value. A significant lack of compliance with IAS 36 is then documented, probably due to technical complexities, in line with Guthrie and Pang (2013).

4.3. Assessing GDI Validity

The validity of the GDI as a measure of disclosure had to be assessed before proceeding with the analysis.

Firstly, the internal consistency of items was examined using Cronbach's alpha coefficient (Botosan, 1997; Cronbach, 1951), which allows one to assess the reliability of a measurement scale and to understand whether a random error produces a significant bias in the correlation between items.

Year	Standardized alpha
2010	0.684
2009	0.643
2008	0.652

Table 6. Cronbach's standardized alpha. Year: 2008-2010

We calculated the standardized alpha, which is suitable since the items were quantified with different point scales. Table 6 shows the results obtained.

The scale reliability was also confirmed by calculating the correlations between each item and the score of the sums (excluding the item) and by assessing the resultant Cronbach's alpha if the respective item was deleted. As shown in table 7, the exclusion of anyone of the items would not result in a significant improvement of reliability.

	Mean if deleted	Var. if deleted	StDev. If deleted	Item-Tot Correl.	Alpha if deleted
item1	6.41	5.14	2.27	0.563	0.595
item2	4.91	3.24	1.80	0.430	0.643
item3	6.10	4.61	2.15	0.418	0.600
item4	7.22	6.13	2.48	0.132	0.676
item5	4.82	3.57	1.89	0.607	0.510
item6	6.74	5.11	2.26	0.389	0.618

Table 7. Cronbach's alpha alternative calculation

The interpretation of Cronbach's alpha is subject to rules of thumb, generally the results are considered acceptable when the coefficient is higher than 0.7 (Nunnaly, 1978). Be as it may, in our study the coefficient is consistent with the result obtained by Botosan (1997).

Additionally, the correlations between the GDI and the variables that in literature are largely considered to be significant determinants of disclosure (firm size, level of debt, audit quality) do represent a further test of validity (Botosan, 1997).

Summarizing, the combination of Cronbach's alpha coefficient and the significant correlations between GDI and traditional disclosure determinants, support the validity of our disclosure index.

5. Methodology

Our purpose is to test whether a set of recurring values in the expected determinants characterizes the profile of companies disclosing similar extents of information.

Before proceeding, a conversion of all quantitative variables into categorical variables is necessary. The conversion is accomplished by grouping the range of values associated with each variable into a finite number of classes. After the transformation, the dataset is homogeneous allowing us to consider all variables simultaneously and facilitating the interpretation of results.

Variables	Measure	Threshold values (25th, 50th, 75th percentiles)			
		Low	Medium-Low	Medium-High	High
TURN	€/billion	≤ 0.5	0.5 - 1.5	1.5 - 15	≥ 15
TOTASS	€/billion	≤ 0.45	0.45 - 1.5	1.5 - 20	≥ 20
DEB	%	≤ 30%	30% - 75%	75% - 150%	≥ 150%
CAP	%	≤ 45%	45% - 65%	65% - 85%	≥ 85%
OWNC	%	≤ 20%	20% - 45%	45% - 60%	≥ 60%
FREEFL	%	≤ 40%	40% - 60%	60% - 85%	≥ 85%
ROI	%	≤ 4%	4% - 8%	8% - 12%	≥ 12%
GOODVAR	%	≤ 1%	1% - 5%	5% - 10%	≥ 10%
GOODINC	%	≤ 3%	3% - 10%	10% - 25%	≥ 25%
CGUNUM	See table 7	0	1	2	3
		Low		High	
MULTILIST	nr. Listings	≤ 1		> 1	
LISTAGE	Ln(IPO date)	before May 1988		after May 1988	
IMPLOSS	%	0%		> 0%	
AUDQ	Non big 4/Big 4	Non Big 4		Big 4	

Table 8 – Thresholds adopted to convert quantitative into categorical variables

Table 8 shows the classes and thresholds employed for each variable. The division into classes has been completed by taking into account the distributions of data: for each variable the 25^{th}, 50^{th}, 75^{th} percentiles have been employed as thresholds to obtain four classes of value namely low, medium-low, medium-high and high, respectively.

A few variables (IMPLOSS, MULITILIST, LISTAGE) with interquartile range near to zero were divided into two classes, low and

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high, comprising values respectively smaller and greater than the median.

The companies analysed were grouped in 2 clusters, representing a medium-low and a medium-high level of disclosure. In particular, the medium-low cluster (M-L hereafter) grouped all the companies with a disclosure index ranging from 0 to 6, whereas companies with a disclosure index ranging from 7 to 12 were grouped in the medium-high cluster (M-H hereafter).

It's worth noting that the number of clusters employed to group the companies according to the extent of disclosure may influence the significance of the results. In our study the adoption of two cluster is reasonable, since, considering the small scale of the GDI, a higher number of clusters could hinder the assessment of meaningful differences.

We intend to analyse whether a set of determinants exhibit recurring values associated with a statistically significant low/high level of disclosure.

This research approach is usually ignored in studies investigating the existence of general relations between variables. We assume that for a given value of a given variable, the percentage frequency calculated on the entire sample represents the expected value in the case of a random partition of n companies in k cluster. Consequently, the more the frequency in the cluster differs from the expected value, the more the value characterizes the cluster.

If we denote by n_{jk} the companies showing the *j-th* value among the n_k companies of the *k* class, then the formula:

$$D_{jk} = \frac{n_{jk}}{n_k} - \frac{n_j}{n} \tag{4}$$

measures the significance of the j-th value's frequency and therefore its significance in characterizing the class k.

In the next step, the characterizing values in each cluster have been sorted based on the value-test (VT) obtained by calculating the differences between the percentage frequencies in the clusters and the global frequencies, weighed by the variance of the value and class size.

$$(5) \qquad VT_{jk} = D_{jk} \times \left(\sqrt{\frac{\frac{n_j}{n} \times \left(1 - \frac{n_j}{n}\right)}{n_k} \times \frac{n - n_k}{n - 1}} \right)^{-1}$$

Under the squared root in (5), the estimated variance of the *j*-proportion is weighted by the size of the *k* class. The weight is used to "correct" the variance (calculated in a binomial sampling situation) in the case of sampling without replacement from a finite population (hyper-geometric situation) as in the case of the calculation of VT.

VT can be used as an order of magnitude that allows to rank the characterizing variables (i.e. those showing a not null VT).

Variables	Classes of values	Thresholds	VT	p-value	% value/ group	% value_group/ value_total
DEB	low	<30%	3.94	0.000	41.9%	92.9%
OWNC	medium-high	45%-60%	3.25	0.001	29.0%	94.7%
TURN	medium-high	1,5-15 billion	2.94	0.002	33.9%	87.5%
CGU	0	-	2.76	0.003	27.9%	89.5%
CAP	high	>85%	2.60	0.005	33.9%	84.0%
ROI	high	>12%	2.60	0.005	33.9%	84.0%
AUDQ	low	-	2.55	0.005	21.0%	92.9%
MULTILIST	1	-	2.50	0.006	88.7%	67.9%
FREEFL	medium-low	40%-60%	2.27	0.012	37.1%	79.3%
GOODINC	medium-high	10%-25%	1.98	0.024	30.6%	79.2%
OWNC	low	<20%	-1.93	0.027	19.4%	46.2%
FREEFL	high	>85%	-2.08	0.019	16.1%	43.5%
CGU	2	-	-2.12	0.017	31.1%	48.7%
DEB	medium-high	75%-150%	-2.25	0.012	12.9%	40.0%
MULTILIST	>1	-	-2.50	0.006	11.3%	36.8%
AUDQ	high	-	-2.55	0.005	79.0%	57.0%
CAP	medium-low	45%-65%	-2.60	0.005	16.1%	40.0%
TOTASS	high	>20 billion	-2.90	0.002	17.7%	39.3%
TURN	high	>15 billion	-3.55	0.000	12.9%	32.0%

Table 9. Characterization of M-L cluster. Year: 2010

Table 9 shows the results obtained for M-L cluster: the 'value/group' ratio expresses the internal homogeneity for a value in the cluster (i.e. the percentage of companies showing the same value in the cluster), whereas the 'value_group/value_total' ratio expresses the selectivity of the cluster, measured as the number of companies in the cluster over the number of companies in the sample showing the same value.

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			2010		2009		2008	
variable	**value**	**interval**	**v-test**	**p-value**	**v-test**	**p-value**	**v-test**	**p-value**
CGUNUM (*)	0		2.764	0.003	3.715	0.000	4.342	0.000
OWNC	medium-high	45%-60%	3.250	0.001				
TURN	medium-high	1,5-15 billion	2.937	0.002				
LISTAGE	recent	> mag-88			2.788	0.003	2.592	0.005
MULTILIST (*)	1	-	2.498	0.006	2.985	0.001	2.576	0.005
DEB (*)	low	<30%	3.945	0.000	1.840	0.033	1.805	0.036
AUDQ (*)	low	-	2.552	0.005	2.135	0.016	2.057	0.020
GOODVAR	low	<1%			2.191	0.014		
ROI	high	>12%	2.604	0.005			1.675	0.047
GOODINC	low	<3%					2.089	0.018
IMPLOSS	high	>10%			2.085	0.019		
CAP (*)	high	>85%	2.604	0.005	1.792	0.037	1.726	0.042
FREEFL	medium-low	40%-60%	2.268	0.012	1.720	0.043		
CGUNUM	1	-			1.991	0.023	1.970	0.024
GOODINC	medium-high	10%-25%	1.977	0.024				
OWNC	low	<20%	-1.925	0.027			-2.172	0.015
IMPLOSS	low	<10%			-2.085	0.019		
FREEFL (*)	high	>85%	-2.075	0.019	-2.191	0.014	-2.203	0.014
GOODINC	medium-low	3%-10%	-1.798	0.036			-2.593	0.005
AUDQ (*)	high	-	-2.552	0.005	-2.135	0.016	-2.057	0.020
DEB	medium-high	75%-150%	-2.255	0.012				
CAP	medium-low	45%-65%	-2.604	0.005	-2.089	0.018		
CGUNUM (*)	2	-	-2.117	0.017	-2.223	0.013	-2.728	0.003
MULTILIST (*)	>1	-	-2.498	0.006	-2.985	0.001	-2.576	0.005
LISTAGE	old	< mag-88			-2.788	0.003	-2.592	0.005
TOTASS (*)	high	>20 billion	-2.904	0.002	-2.709	0.003	-2.627	0.004
TURN (*)	high	>15 billion	-3.551	0.000	-2.615	0.004	-2.724	0.003

Table 10. Significant characteristics M-L cluster, 2008-2010

The VT allows us to evaluate whether the differences between the percentage frequencies in the clusters and in the sample are statistically significant. We performed a one-sided test assuming, as alternative hypothesis, that the proportion of the value in the class is higher (or lower) than in the population. The results show that when the VT is greater than 1.64 (in modulus) a very low probability exists that the difference between the frequencies in the cluster and in the sample is casual, and therefore that particular value can be associated to the cluster.

Our analysis covered the triennium 2008-2010, in order to evaluate the stability over time of the discovered relationships. Table 10 summarizes the results obtained. In order to improve the readability of results, only the values greater than 1.64 (or lower than -1.64) are displayed.

The upper side of Table 10 shows the recurring values that characterize the M-L cluster, whose significance remains stable in all the three years: companies generally do not report information about the number of CGUs to which goodwill is assigned (CGUNUM = 0); are listed on a single stock exchange; show a low level of debt (< 30%) and a high level of capitalization (> 85%).

Since only two clusters were considered in the analysis, a specular reading of the results between the clusters is possible, therefore all the items characterizing the M-L cluster are assumed to not be recurring within the M-H cluster and vice versa. Therefore the items listed in the lower side of Table 10 do not recur in the M-L cluster (since they show a VT lower than -1,64), but conversely characterize the M-H Cluster. In detail, high free float (FREEFL > 85%), medium-high CGUNUM (Nr CGUs = Nr. of operating segments), multi-listings (>1), high turnover and total assets (> 20 and > 15 billion of €, respectively) can be associated to companies with medium-high extent of disclosure. The above mentioned items exhibit a significant association over the three year period.

5.1 GDI determinants at a general level

As additional step, we test the existence of general relations between the expected determinants and the extent of goodwill disclosure. The might evidences the differences in the relations between variables when analysed at a general level or within particular ranges of variation.

A ranking transformation was applied to all the variables (Lang & Lundholm, 1993), then the hypothesis of association between the GDI and the expected determinants was tested by performing three non-parametric tests: Spearman's ρ, Kendall's τ, and Goodman & Kruskal's γ.

The non-parametric tests are suitable since they do not require any simplistic assumption concerning the nature of the relation between dependent and independent variables (Chavent, Ding, Fu, Stolowy, & Wang, 2006; Khlifi & Bouri, 2010; Lang &Lundholm, 1993).

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Spearman's ρ is a rank-based version of the Pearson's correlation coefficient. Kendall's τ quantifies the discrepancy between the number of concordant and discordant pairs. The gamma statistic is similar to Kendall's τ, but it explicitly takes into account the ties of the distribution.

	Spearman □	**p-level**	**Gamma**	**p-level**	**Kendall** □	**p-level**
	SPECIFIC DETERMINANTS					
CGUNUM	0,441	0,00*	0,466	0,00*	0,361	0,00*
LISTAGE	-0,308	0,00*	-0,250	0,00*	-0,226	0,00*
MULTILIST	0,264	0,01*	0,421	0,00*	0,224	0,00*
GODVAR	0,122	0,23	0,099	0,19	0,090	0,19
GODINC	0,056	0,58	0,037	0,61	0,034	0,61
IMPLOSS	0,088	0,39	0,132	0,28	0,074	0,28
	GENERIC DETERMINANTS					
TURN	0,243	0,02*	0,189	0,01*	0,175	0,01*
TOTASS	0,292	0,00*	0,227	0,00*	0,210	0,00*
OWNC	-0,137	0,17	-0,115	0,12	-0,105	0,12
FREEFL	0,138	0,17	0,116	0,12	0,106	0,12
ROI	-0,066	0,52	-0,054	0,47	-0,050	0,47
DEB	0,222	0,03*	0,177	0,02*	0,163	0,02*
CAP	-0,229	0,02*	-0,178	0,02*	-0,165	0,02*
AUDITQ	0,371	0,00*	0,665	0,00*	0,324	0,00*

Table 11. Non-parametric correlations with level of goodwill disclosure. Year: 2010

Table 11 shows the results obtained for each test for the year 2010.

All the three coefficients measure the strength of the monotonic relationship between the level of goodwill disclosure and the variables listed in the rows. A value close to 1 (or -1) in magnitude indicates a high level of association, whereas a weak association is supposed to exist when the coefficient tends to 0. Since the dataset contains tied observations, the Gamma coefficient should be more accurate, although the three coefficients show similar results for the most.

The stability of results over time was checked using a methodology based on a pair-wise test for individual correlations (Snedecor & Cochran, 1976): each Gamma coefficient which resulted statistically

significant (see table 11), was first converted as Z, the Fisher transformation, which is defined as:

(1) $$z_i = \frac{1}{2} \times \ln\left(\frac{1+r_i}{1-r_i}\right)$$

where r_i is the Gamma coefficient between GDI and the i-variable. Under the null hypothesis, i.e. equal correlation coefficients over time, the Zi are estimates of the same mean μ but show different variances

(2) $$\sigma_i^2 = 1/(n_i - 3)$$

where n_i is the number of observations in the year *i*. The test of significance is based on the assumption that if a number k of normal deviances show the same mean μ but different variances σ_i^2, then the quantity Q follows a Chi-square distribution with k-1 degrees of freedom, where *k* is the number of years:

(3) $$Q = \sum_{i=1}^{k}(n_i - 3)z_i^2 - \frac{\left[\sum_{i=1}^{k}(n_i-3)z_i\right]^2}{\sum_{i=1}^{k}(n_i-3)}$$

As shown in Table 12, the p-value of all pair-wise correlation coefficients between GDI and its significant determinants is greater than 0.05 and therefore the null hypothesis of equal correlation over time cannot be rejected, thus we can conclude that the correlations between GDI and its significant determinants are stable over time.

The results in table 12 show that CGUNUM, LISTAGE and MULTILIST are significantly associated to the extent of disclosure. The sign of the coefficients for CGUNUM and MULTILIST suggests the existence of a positive relationship. LISTAGE shows a significant negative relation with the extent of goodwill disclosure which is consistent with the hypothesis formulated, since the date of IPO (converted as natural logarithm) quantifies the age of listing, therefore the more recent the listing, the higher the date, and the lower the extent of goodwill disclosure.

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	Z (2010)	Z (2009)	Z (2008)	Q	p-value
CGUNUM	0.513	0.553	0.588	0.270	0.126
LISTAGE	-0.429	-0.630	-0.615	2.441	0.705
MULTILIST	0.480	0.726	0.592	2.931	0.769
TURN	0.319	0.395	0.365	0.285	0.133
TOTASS	0.311	0.406	0.354	0.433	0.195
DEB	0.299	0.164	0.173	1.109	0.426
CAP	-0.254	-0.285	-0.141	1.125	0.430
AUDQ	0.945	0.787	0.742	2.192	0.666

Table 12. Test for stability of correlation over time. Year: 2008-2010

Conversely, the results do not support the existence of relations between GDI and GOODVAR, GOODINC and IMPLOSS, the specific determinants representing the relevance of goodwill.

The results for traditional determinants (included as control variables) are consistent with extant literature and show that size, level of debt and AUDQ produce significant impacts on the extent of goodwill disclosure.

6. Discussion of results

The analysis of clusters represents a novelty in this field of study. It is worth noting that, adopting a narrow spectrum of analysis, some of the variables that are not associated with the level of disclosure in general terms, appear nevertheless in relation to some extent with specific levels of disclosure. Table 13 summarizes all the expected determinants, showing whether the results support the existence of a general or particular relation with GDI within the MH and ML cluster.

The results about the incidence of goodwill recognized (GOODINC, H4b) are interesting, since while the existence of a general relation is not confirmed, surprisingly a relation exists between a medium-high level of GDI and a medium-low incidence (between 3% and 10%).

These hypotheses were formulated basing on the agency and signaling theories which assume that in presence of relevant goodwill, a more detailed disclosure may reduce potential information asymmetries (Francis et al. 2009; Petersen & Plenborg, 2006) and the risk of adverse selection (Spence, 1973).

	Significant general relations with GDI	**Significant relations in MH-Cluster**	**Significant relations in ML-Cluster**
Specific Determinants			
CGUNUM	Supported	nr of CGUs higher than operating segments	no disclosure provided
LISTAGE	Supported	old	recent
MULTILIST	Supported	>1	1
GOODVAR	Not supported	no	no
GOODINC	Not supported	3% -10%	no
IMPLOSS	Not supported	no	no
Generic Determinants			
TURN	Supported	high (>15 € billion)	no
TOTASS	Supported	high (>20 € billion)	no
OWNC	Not supported	low (<20%)	no
FREEFL	Not supported	high (>85%)	medium-low (40% - 60%)
ROI	Not supported	no	high (>12%)
DEB	Supported	medium-high (75% - 150%)	low (<30%)
CAP	Supported	medium-low (45% - 65%)	high (>85%)
AUDQ	Supported	high	low

Table 13. Profiles of companies with M-L and M-H level of disclosure

The results let us argue that the complexities and costs needed to meet the accounting standards requirements prevail on the opposite impulse to reduce information asymmetries in line with proprietary cost theory principles.

For what concern size (TURN and TOTASS, hypothesis H5), the results support the existence of general relations, but only the MH-Cluster is associated to big-sized companies. Consequently we, might argue that the magnitude of the impacts produced by size on GDI is greater within high volumes of turnover and total assets.

The determinants related to H6, ownership concentration (OWNC and FREEFL), are not associated to GDI, but high and low levels of free float characterize the MH and ML-Clusters respectively and a low level of ownership is associated to higher extents of disclosure. The assumptions coherent with agency theory are then partially confirmed.

Finally, the results show that high profitability (H7) occurs within the ML-cluster, thus contradicting the expectation prevalent in signalling

theory (Armitage & Marston, 2008; Lang & Lundholm 1993; Mazumdar & Segupta, 2005; Palmer, 2008).

7. Conclusions

The paper's goal was to shed lights on the determinants of goodwill impairment disclosure. The profiles of the recurrent characteristics associated with medium-low and medium-high levels of disclosure were identified. The methodology was applied to a sample of 100 European listed companies.

The results show that a medium-low level of disclosure is associated to: no information provided about the number of CGUs to which goodwill is allocated, mono-listing, low level of debt, medium-low free float, recent listing and high profitability.

Conversely allocation of goodwill at segment level, high free float, large size, low ownership concentration, medium-low incidence of goodwill, old listing age, medium-low capitalization are associated with medium-high levels of goodwill disclosure.

The results support the validity of the methodology. We tested the significance of expected relations for size, ownership concentration and level of debt, adopting two alternative measures. In all cases, the results are converging.

The results are compatible with the assumptions of proprietary cost theory in relation to the behaviour of companies in disclosing information characterized by high complexities and technical issues. Conversely the assumptions of signalling theory are not supported, suggesting that relevance is not a driver of goodwill disclosure.

The paper achieves several theoretical and practical results. To the best of our knowledge, the methodology adopted represents a novelty in this field of study. The analysis of clusters might be used as a complementary research approach to the methodologies usually employed in this field of study, allowing researchers to identify particular relations which exist only within a specific range of variation of the variables. The same approach could be adopted in similar studies examining specific sections of disclosure.

All the analyses were applied to a period of three years and the stability of results over time was checked.

From a practical point of view, the results could be useful for standard-setters and regulators to improve their policies concerning mandatory disclosure. The study shows that managers may take advantage of the discretionary power allowed them by the accounting standards when disclosing information on goodwill impairment in order to reduce information costs and the competitive risks. This may reduce the value relevance of both goodwill recognized and its related disclosure, resulting in disadvantages for financial analysts and investors. Furthermore the data collected clearly document the existence of two compliance issues caused by the technical complexity of IAS 36 concerning the determination of fair value at CGU level, and the sensitivity analysis on the changes in the assumptions used to assess the recoverable value §134 (f).

Standard-setters could try to reduce the managers' subjectivity through a revision of the disclosing requirements in a way to simplify some of the technical complexities. The recent document issued by ESMA (2013) and the amendments to IAS 1 formulated within the "Disclosure initiative" project of the IASB (effective by January 2016) confirm the growth of this tendency inspired by the general principle: too much detail can obscure useful information.

Additionally, more transparency and standardization in the key variables that heavily influence the impairment test could reduce the managers' subjectivity. A possible suggestion could be to force managers in providing an explanation in the notes when the internal estimates adopted in the impairment test are substantially different from the publicly available evaluations issued by third parties (Avallone & Quagli, 2015).

Notwithstanding the significance of the results obtained, the study has some limitations. As aforementioned, the number of clusters was subjectively chosen considering the limited scale of the disclosure index, since too many clusters might not put in evidence meaningful differences among them. Nevertheless this may produce some bias in the results.

Furthermore the size of the investigated sample is relatively small if compared with similar studies, although it is appropriate to guarantee the statistical significance of the results. The limited size is justified in consideration of the necessity to manual-collect all the data needed for the measurement of the extent of disclosure, for which a big effort and time consumption is required.

Finally the results obtained are generalizable only for companies holding characteristics similar to those included in the sample: specifically listed and non-financial European companies.

The replication of the same study on a recent period of time may provide evidences about how the disclosure about goodwill impairment is developing.

Additionally, the adoption of the methodology proposed in the paper on different categories of disclosure, may provide support to its validity.

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Appendix

1. Aalberts Industries	26. Diageo	51. Ict Automatisering	76. Sandvik
2. Agfa-Gevaert	27. D'ieteren	52. Impresa Sgps	77. Sapec
3. Altri Sgps	28. Dockwise	53. Inapa	78. Semapa
4. Alumasc Group	29. Duni	54. Inmobiliaria Colonial	79. Skanska
5. Ansaldo Sts	30. East Asiatic	55. It Way	80. Tecnocom Tc.Y Energia
6. Arcelormittal	31. Edp Energias De Portugal	56. Itesoft	81. Telenet Group Holding
7. Arseus	32. Elia System Operator	57. Jeronimo Martins	82. Teliasonera
8. Atea	33. Endesa	58. Jetter	83. Tivoly
9. Atlantia	34. Eni	59. Kentz Corporation	84. Tkh Group
10. Auriga Industries	35. Ericsson	60. Kryso Resources	85. Tod's
11. Basf	36. Falck Renewables	61. L'oreal	86. Tognum
12. Bayer	37. Fiat	62. Micronic Mydata	87. Total
13. British Petroleum	38. Finsbury Food Group	63. Mota Engil Sgps Sa	88. Vincenzo Zucchi
14. British American Tobacco	39. Flsmidth & Co.	64. Moury Construct	89. Vivendi
15. Carlsberg	40. Futebol Clube Do Porto	65. Nordic Shipholding	90. Volkswagen
16. Carrefour	41. Galp Energia Sgps	66. Novo Nordisk	91. Volvo
17. Ciccolella	42. Glaxosmithkline	67. P&I Personal & Informatik	92. Vtg
18. Colruyt	43. Grupo Modelo	68. Psi Group	93. Wacker Chemie
19. Columbus	44. Groupe Crit	69. Rational	94. Wessanen
20. Continental	45. Groupe Flo	70. Repsol Ypf	95. Wh Smith
21. Corticeira Amorim	46. Gruppo Editoriale L'espresso	71. Royal Dutch Shell	96. William Demant Holding
22. Damiani	47. Hampson Industries	72. Royal Unibrew	97. Wolters Kluwer
23. Danone	48. Heineken	73. Sacyr Vallehermoso	98. Xeikon
24. Dantherm	49. Hennes & Mauritz	74. Saf-Holland	99. Zardoya Otis
25. Delhaize Group	50. Iberdrola	75. Saint Gobain	100. Zenitel

Table A – List of sample-companies