The weighting of CSR dimensions:

Does one size fit all? [*]

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Abstract

The concept of CSR is fundamentally multidimensional. The same company might be environmentally friendly, while at the same time behave irresponsibly on social or corporate governance issues. Yet, this multidimensionality is often overlooked. Many studies have used composite scores, provided by extra-financial rating agencies which just sum the scores of different facets of CSR to provide an overall assessment. The aim of this paper is to draw attention to empirical problems arising when using such equally-weighted sums. Although alternative weighting schemes have been already proposed, they implicitly consider that the weights should be the same for all sectors. But does it make sense to give the same weight to environmental criteria when it comes to assessing banks and oil companies? In this paper, we propose an original weighting scheme, at a sectoral level, that is proportional to media and NGOs scrutiny, and based on a comprehensive database of news on CSR. Then, we provide evidence that environmental concerns have been under-weighted in the previous assessments of corporate social performance. Moreover, we show that the sectors that are exposed to the closest scrutiny are usually criticized on a single dimension: banks for bad corporate governance, while basic resources firms for environmental damages. Hence, a composite score based on equally weighted sums will misrepresent the differences of CSR between sectors.

1 Introduction

"If you lie with your head in the oven and your feet in the fridge, on average you'll

be comfortably warm."

Assessing the level of CSR for a given firm is notoriously difficult. First problem is related to the very qualitative nature of CSR: Environmental, Social or Corporate Governance issues (the so-called ESG factors) offer little opportunity for a quantitative evaluation. Still, there is a growing and promising academic literature on social and environmental accounting (see Mathews, 1997; Gray, 2002; Unerman, 2007). A second obstacle, much less discussed, arises when it comes to aggregate several criteria as the concept of corporate responsibility is fundamentally multidimensional. The same company might be environmentally-friendly but, at the same time, behave irresponsibly on other issues [1] and hence, any attempt to provide an overall score of CSR is a real challenge. The problem posed by the multidimensionality is often overlooked. Most of the extra-financial rating agencies aggregate the scores of different facets of CSR to provide a general assessment, regardless of the problems this can potentially cause. What is the relevance of such a composite ESG score? How can it be improved?

Aggregation between several criteria makes sense if we consider that a good score on one dimension may compensate a bad score on another. This is not trivial, but let us assume that this the case, i.e. good scores and bad scores, as well as scores on different facets of CSR, are fungible. Then, we should assign some weights to each criterion. Most of the previous papers assume equally-weighted scores. We claim that this is a very unsuitable assumption. Let us, for instance, consider the banking sector: Is it reasonable to give the same weight to environmental and to corporate governance issues? Furthermore, should these weights be the same for the banking sector and the oil & gas sector?

Two approaches can be considered to address this problem. The first one consist in using a non-parametric approach derived from multiple-criteria decision analysis. Recently, Chen and Dalmas (2001) have proposed to use the Data Envelopment Analysis (DEA) to provide a composite score of ESG efficiency. A more intuitive approach is to use a weighting scheme. Some previous papers have already proposed some schemes (Waddock and Graves, 1997; Ruf et al., 1998) based on questionnaire survey sent to experts on CSR. The main drawback is that they

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1. See Strike et al. (2006), Kotchen and Moon (2011) and Oikonomou et al. (2012) for empirical evidence.

all assume that the weights are the same across sectors.

In this paper, we propose an original weighting scheme based on media and NGOs scrutiny. For that purpose, we analyze thousands of ESG news concerning 100 listed firms over the period 2002-2010. These ESG news can be positive or negative, and they are released by media, NGOs or the firms themselves. This rich database has been provided by Covalence, an information provider that systematically collects ESG information displayed on Internet concerning the world's largest companies. We use this abundant information to provide a set of weights between E, S and G criteria which reflect the concerns of the society on CSR and which are different for each sector.

We show that previous composite scores, particularly KLD − widely used in the literature − have under-weighted environmental concerns and over-weighted controversial issues (such as South Africa, military or Human rights in a broad sense) which involve a minority of firms. Moreover, we provide evidence that the firms the most exposed to criticism on CSR are especially exposed on a single dimension. Banks are mainly criticized for their bad corporate governance, while they have good environmental reputation. Conversely, firms in the basic resources and oil & gas sectors are mostly exposed to criticism on environmental damages. Lastly, large retailers (included in the sector Consumer goods and services) have a poor social record. Hence, composite equally-weighted scores misrepresent the differences between sectors.

The reminder of the paper is organized as follows. Section 2 exposes the theoretical framework and presents the previous literature. In particular, we explain the assumptions needed to compute composite CSR scores. The methodology of the new weighting scheme and the data are described in Section 3. Empirical results are provided in Section 4. Section 5 concludes.

2   Operationalizing CSR: Problems raised by multiple objectives

2.1   What is the corporate objective function?

The primacy of shareholders has long been widely accepted by economists and this idea has been at the basis of research on corporate governance. The so-called shareholder value theory posits that firms should have the sole objective of profit maximization, while other stakeholders should be protected by contracts and regulation. In contract, advocates of CSR claim that firms

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may have to sacrifice profits in the interest of the society.

At first glance, the stakeholder theory is appealing, but in practice it raises serious concerns. Aspiring to serve the interests of all stakeholders is praiseworthy, but what should be done when these interests are contradictory? Which decision-making mechanism should be adopted? Who should make the final decision and to whose benefit? The problem is that, in contrast to shareholders, the prerogatives, rights and objectives of other stakeholders are not clearly defined (Tirole, 2001). Jensen (2002) summarizes this position with the following statement: "*Purposeful behavior requires the existence of a single-valued objective function*" and he concludes, albeit a little roughly: "*Multiple objectives is no objective*".

Recently, Reinhardt, Stavins and Vietor (2008) and Bénabou and Tirole (2009) have shown that it is possible to go beyond the fixed opposition between the shareholder and the stakeholder approaches. Firms might produce public goods efficiently under some conditions involving market imperfection and/or government failures. In particular, CSR is proved to be socially beneficial when preferences are heterogeneous or when regulation is bounded (because of the territoriality of jurisdiction, because of the government capture by interest groups, such as lobbies, etc.).

Newt, we turn to another problem of multiple objectives. Leaving aside the conflict between profits and social interest, we address the potential conflicts between the different facets of CSR.

2.2 Quantifiability, fungibility and commensurability

The multidimensionality of the CSR pose a serious problem when the aim is not only to measure the several dimensions of CSR, but also to obtain an overall assessment of firms' CSR.[2] Hirsch and Levin (1999, p. 200) consider that CSR is "*a broad concept or idea used loosely to encompass and account for a broad set of diverse phenomena*". Similarly, Rowley and Berman (2000, p. 397) are critical vis-á-vis studies that use a single-dimensional measure of CSR: "*Because measuring [CSR] is contingent on the operational setting (industry, issues, etc.), it is difficult to produce worthwhile comparisons across studies or generalizing beyond the boundaries of a specific study*". Chen and Delmas (2011) are less virulent but they also point out that "*because the full spectrum of [CSR] is broad, generating a proxy that can reflect its full scope is*

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2. This problem is not specific to CSR. Economists have long faced the challenges posed by aggregation of multiple criteria. Besides, it has given rise to a very large literature, known as the Multiple Criteria Decision Analysis (MCDA); see Wallenius et al. (2008) for a survey.

challenging".

To better grasp the problem, let us break it down into several successive questions (see Figure 1): i) Which objectives should be targeted? ii) Are these objectives quantifiable? iii) If so, are they fungible? iv) If so, are they commensurable? And, then, what are the weights for each criteria? Otherwise, how should these objectives be prioritized?
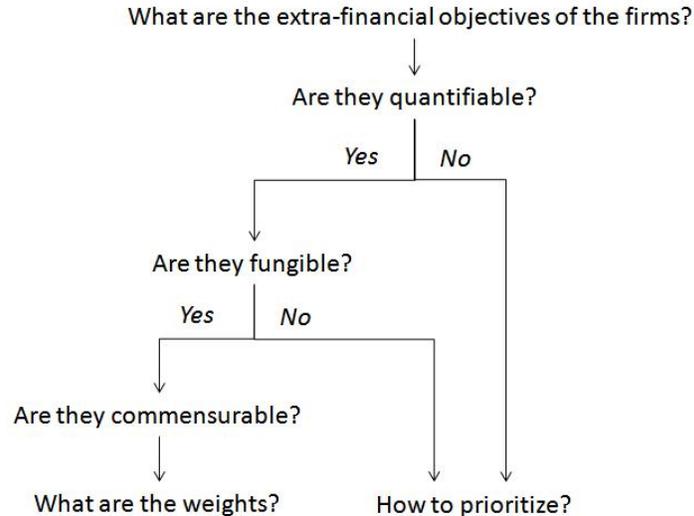

Figure 1: **Measuring CSR in practice. A few questions to ask.**

Provided that the firms should not only consider the maximization of their profit, the first question is the less problematic. Admittedly, the number of criteria related to CSR is potentially boundless, but there is a broad consensus around three key dimensions: E (environment), S (social), and G (corporate governance).

A more serious issue is the quantification of corporate social performance (CSP) − by opposition to corporate financial performance (CFP). Indeed, CSP relies mostly on "soft"measures (e.g. the compliance with social standards), rather than "harder" ones (e.g., the amount of toxic releases). However, there is a growing and promising literature on social and environmental accounting (see Mathews, 1997; Gray, 2002; Unerman, 2007), which is mainly concerned by ESG information produced on a voluntarily basis by firms. Social and environmental rating agencies strive also to provide quantitative measures of CSR, i.e. scores or rankings. These data are used extensively by academic researchers. Still, there is a debate on the quality of these data: do they really help stakeholders to identify responsible companies? Recently, Chatterji et al. (2009) have

tackled this issue and they find KLD ratings to be fairly good proxies of past and future environmental performance. This result is encouraging, but because of the very qualitative nature of CSR, the debate is far from over.

The main question addressed in the present paper is about the fungibility of the ESG criteria. The problem is the following: assuming that the objectives are clearly defined, consensual, and measurable, can we consider that a bad score on one dimension might be compensated by a good score on another? While it raises serious concerns, this question has not been extensively examined so far. Actually, the problem is twofold. First, can a good action offset a bad one? Second, can environmental, social and governance practices (whether good or bad) be combined? For scholars who have considered the question, the answer is negative. Thus, for Mattingly and Berman (2006, p. 20), "positive and negative social action are both empirically and conceptually distinct constructs and should not be combined".

Notwithstanding the theoretical problems that this can potentially cause, if you consider that the criteria are fungible (which is the implicit assumption of most of the papers), we still need a kind of "exchange rate" in order to have commensurable quantities. Indeed, it is very unlikely that all criteria have equal importance. Yet, this fundamental problem is usually overlooked. For instance, KLD (now MSCI ESG Research) used no less than thirteen positive or negative criteria.[3] They cover a wide spectrum: corporate governance, community, diversity, employees, environment, human rights, and products, plus exclusionary screens (alcohol, firearms, gambling, military, nuclear and tobacco). A score is given to every criterion from an aggregation of several sub-indicators, and the scores are then added up to calculate the final score. In other words, every criterion is weighted in the same way. As a result, to caricature, a major polluter could be included in the KLD (Domini) index, provided that the firm pampers its employees! Equally-weighted sum is the simplest multi-criteria decision making method when facing several criteria. But, of course, this is applicable only if all the data are expressed in a same unit (i.e. commensurable). Otherwise, it is equivalent to "adding apples and oranges".

Many studies use a single-dimensional measure of CSR (KLD or similar data), regardless of the aggregation problem. Hillman and Keim (2001), for instance, use the equal weights

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3. The KLD database is the most commonly used, but most of the other extra-financial information providers (SAM, Vigéo, etc.) apply, more or less, the same methodology. In contrast Jantzi (now, Sustainalytics) consider specific weights for each sector.

aggregation method, while they are aware of the limitations. By doing so, they assume that all criteria have similar importance. However, Bird et al. (2007) argue that CSR activities are not valued in the same way by investors. Moreover, priorities change over time. Consequently, this means that equally weighted sum should be rejected.

Some studies have proposed methods to circumvent the "apples and oranges" issue. From the early 1980s, Aupperle et al. (1983) and then Aupperle (1990) have relied on weights firms assign themselves to their economic, legal, ethical, and discretionary responsibilities. Later, Clarkson (1995) have developed a stepwise approach for determining a Stakeholder Satisfaction Index. Steg et al. (2003) have set up a similar approach. Pierick et al. (2004) compare these methods and provide a comprehensive operationalisation of CSR. Figure A in appendix is a good illustration of how it could be done to obtain an overall assessment of firms' CSR. But we still need a convenient way to assess the different weights.

Waddock and Graves (1997) and Ruf et al. (1998) generated weights for the different KLD dimensions based on survey questionnaires sent to experts on CSR. The two studies provide similar results: Employee relations and product/liability issues were found to be the most important categories (about 20% each), followed by community relations, women/minority and the environment (between 10% and 15% each). One question is, of course, who should weight the various scores: CEOs, a sample of stakeholders (which ones?) or academics (but what is their legitimacy?)? The answer depends on whether we want to gather data on business' expectations, to capture society's expectations, or a "neutral" view. Nevertheless, it is clear that the opinions — and so the answers — are likely to vary significantly from one group to another.

Recently, Chen and Delmas (2011), propose to use the Data Envelopment Analysis (DEA) to provide an overall measure of ESG efficiency. Their approach is very appealing since it does not require any assumption regarding the fungibility of the criteria and any explicit weights. These weights are generated automatically through an optimization procedure that maximizes the firm's ESG efficiency relative to the other firms in the sample.

Irrespective of the method, one crucial empirical question is whether we should consider the same weights for different industries. Previous academic papers implicitly consider that "one size fits all". Obviously, this is a very restrictive hypothesis: it is very likely that environmental issues are more important for the oil & gas sector than for the banking sector.

2.3 CSR and the Condorcet Paradox: A simple example

For the picture to be complete, we need to examine what happens when ESG objectives are not quantifiable or not fungible. In both cases, one common solution is to prioritize the criteria. Otherwise it may become impossible to obtain an overall assessment. The following (caricatural) example will illustrate how difficult it is to assess CSR and to establish a a general ranking (here, we consider ESG rankings, but the approach would be the same with non-fungible scores). Let us consider three hypothetical firms.

– Bigbank is a famous Wall Street investment bank. The bank is ranked first in environment (its activity is non-polluting and it recycles printer cartridges), second in social issues (the works council is richly endowed), but third in governance (despite of the crisis, very large bonuses have been distributed)

– Superoil is an oil company which operates offshore platforms. The firm is ranked third in environment, but first in social issues (employees receive a participation on profits, the CEO is very involved in the sponsorship of contemporary art), second in governance (the board of directors is composed of one third of women).

– Giantstore is a large retailer active in many countries. The firms is ranked second in environment, third in social (wages are very low, working hours are fragmented, etc.) and first in governance.

Each firm is ranked first once, second once, and third once. BigBank is preferred to Giantstore because it is better rated according to the criteria E and S, Giantstore is preferred to Superoil because it is better rated according to the criteria E and G, but Superoil is preferred to Bigbank because it is better rated according to the criteria S and G. In other words, BigBank is preferred to Giantstore which is itself preferred to Superoil which is itself preferred to Giantstore! Therefore, there is a complete indeterminacy. Although a caricature, this example illustrates the problem of aggregation criteria: the well-known Condorcet paradox.

In the previous example, the co-existence of several criteria lead to a deadlock of the selection process. One solution is to impose a lexicographic order, that is to prioritize the criteria. Weights previously computed on a subset of quantifiable and fungible criteria can help to identify such priorities.

3   Empirical methodology

We propose a new approach to generated weights for the different dimensions of CSR based on the number of articles published by the media or the NGOs. Our aim is to assign weights that can be different across sectors (and, eventually, that can change over time). We consider that the weight for each criteria should be propotional to public scrutiny. Precisely, a weight is defined as a number of articles on a specific dimension of CSR, divided by the total number of news on CSR. This ratio is computed at the sectoral level. By using news released by the media and the NGOs, we hypothesize that they reflects the degree of social concerns.

3.1   A comprehensive database on ESG news

3.1.1   Covalence *EthicalQuote*

We use an original database provided by Covalence SA. Created in 2001 in Geneva (Switzerland), Covalence has developed, in partnership with Datadoxa, a systematic collection of positive and negative ESG information concerning the world's largest companies. The news are collected on the web and their range is very broad. Table 1 provides some examples of ESG news collected by Covalence. Positive news (Good news) include, for instance, announcement of a social sponsoring program, the launch of new eco-innovative product, a green award, etc. Negative news (Bad news) relate to toxic release disclosure, rumors of downsizing, and the divulgation of bad labor practices in subcontractor factories, etc.

According to Covalence, each day 20 analysts perform a total of 80 hours of reading, screening 2,000 news items (in English, Spanish, German and French). As of 2010, their database includes more than 190,000 information items from more than 10,000 sources, covering more than 500 companies.

Table 1: **Some examples of ESG news (excerpts)**

This table reports some examples of ESG news extracted from the Covalence database.

Bayer 01/03/2002 E(−), Media	"Bayer was one of several multinationals to export highly toxic obsolete pesticides to Nepal, and abandon them there after they reached their expiry date or were banned. (...) The obsolete pesticides had been inadequately stored in rusting and rotting original packaging (...). The toxic waste threatens the health of residents, workers and livestock in the area as well as local water supplies, irrigation systems and soil. Despite requests to Bayer from the Royal Nepalese Government, the company has refused to help."
Coca-Cola 08/12/2002 E(−), Media	"A Coca-Cola bottling plant in Kerala (India) gets its water from 60 wells the plant has drilled in the area. Local villagers claim this is draining their water supply and leaving what is left contaminated. (...) Protesting villagers want the plant closed but Coke says (...) they 'have not found any change in the water situation'."
Procter & Gamble 12/20/2004 S(+), NGO	"A new water purification product developed by Procter & Gamble is being launched in Haiti, where diarrhea is a major killer of children under 5, by an initiative funded by the Global Development Alliance of the U.S. Agency for International Development (USAID)."
Wal-Mart 11/14/2003 S(−), Media	"Wal-Mart, the world's biggest company and the largest employer in the US, is being taken to court by a group of former immigrant employees. The workers have accused the US supermarket chain of conspiring with cleaning contractors to employ them in conditions that were "one step away from slavery" (...) foreign workers have told of working seven-night, 56-hour weeks at the budget stores for as little $325, well below the national minimum hourly wage."
Riggs Bank 01/27/2005 G(−), NGO	"Riggs Bank pleaded guilty to helping former Chilean dictator Augusto Pinochet and the leaders of oil-rich Equatorial Guinea hide hundreds of millions of dollars. The federal judge questioned whether a $16 million fine agreed to by prosecutors was enough. U.S. District Judge Ricardo Urbina in Washington today asked whether the penalty is "just a business expense" that wouldn't even cover the profits Riggs made on the suspect accounts. (...)"

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3.1.2 The sample

Covalence provides us with a sample of 191,881 ESG news items from January 2002 to December 2010 concerning 580 multinational listed companies; all of them belong to the Dow Jones Sector Titans Indexes. We consider only the 100 companies with the highest number of CSR announcements, which represent an initial sample of 128,281 news items.[4] We choose to keep only news items with an unambiguous source, which leaves 109,012 news items. As a given announcement can be classified by Covalence into different ESG criteria, we merge some news items to keep 80,792 non-redundant announcements. We drop also quasi-similar articles on a same event. This leaves 75,571 CSR announcements, positive or negative, from January 2002 to December 2010 concerning 100 multinational publicly listed companies.

Covalence collects ESG news from a large number of different sources that we aggregate into three categories. We consider that ESG news come from: i) media (press and specialized press), ii) NGOs, or iii) the firms themselves. Moreover, Covalence classifies news into 45 criteria depending on the topic.[5] We group them into three broad categories: i) environment (E), ii) social (S) and iii) corporate governance (G). To facilitate the comparison with the weighting schemes previously proposed in the literature, we also classify our news according to the KLD approach: employee relations, diversity (women/minority), environment, community, product, corporate governance, and Human rights.

Finally, firms are grouped into six industries: Banks (11 firms), Basic Resources − including Oil & Gas − (14), Chemicals − including Health Care − (16), Consumer goods and services − including Personal & Household Goods, Food & Beverages, and Retail − (18), Industrial Goods − including Automobiles & Parts − (15) and Technology (26).

3.2 Stylized facts on CSR announcements

Let $N_{s,\,k}^{i,\,j}$ be the number of positive or negative information (j = Good or Bad), related to the issue i = E, S or G, concerning the sector s, and released by the source k = Firms, Media, NGOs. When i, j, s, k is replaced by a dot, it means that we aggregate E, S and G news, good and bad news, news across sectors or news published by all sources of information, respectively.

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4. See Table A in appendix for the list of the firms included in the sample.
5. See Table B in appendix for a detailed description of the Covalence criteria.

Sometimes, we refer as External information, the news provided either by the media or the NGOs, that is $N_{s,\ ext}^{i,\ j} = N_{s,\ media}^{i,\ j} + N_{s,\ NGOs}^{i,\ j}$.

Before examining the weighing scheme derived from our sample of ESG news, we present a broad set of stylized facts on CSR announcements (the respective share of medias, NGOs and firms in ESG news, the proportion of good versus bad ESG news, etc.). In table 2, we provide the total numbers of ESG news by sectors. Good news and bad news are considered separately. We also distinguish announcements which relate to environmental, social and corporate governance issues.[6] Finally, we set apart news released by the firms (Panel A), the media (Panel B), and the NGOs (Panel C).

3.2.1 Who publishes ESG news?

Table 3 reports the percentage of good news and bad E, S and G news, breakdown by the publication source. The main provider of ESG news is the media which disclose about 85 percent of the ESG news available on the web. This percentage does not vary significantly across the E, S and G criteria or between good news and bad news. This regularity contrasts with the other sources of information. Indeed, the proportions of ESG news provided by the firms themselves or NGOs vary a lot depending on whether we consider good ESG news or bad ESG news. Unsurprisingly, firms publish hardly any negative information about themselves. On the contrary, NGOs are much more prone to announce bad ESG news than good ESG news.

As expected, the number of ESG news follows a growing trend (see figures B in appendix): the annual number of ESG news in our sample has increased from 3,000 to 14,000 approximately between 2002 and 2010. This represents an average annual growth of +21%.

3.2.2 E, S or G?

Before considering a breakdown by sector, let us examine the overall repartition of news across E, S and G concerns. Figure 2 provides information on the proportion of E, S and G news released either by the firms themselves, the media or the NGOs for all sectors. Good news and bad news are set apart. The proportions are computed as follow: $N_{.,\ k}^{i,\ Good}/N_{.,\ k}^{.,\ Good}$ for Panel A

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6. Some announcements may involve several criteria so the total number of announcements (column ESG) is lower than the the sum of announcements on E, S and G.

Table 2: **Number of ESG news breakdown by sectors**

This table reports the total number of good news and bad news on Environmental, Social and Corporate Governance issues, breakdown by sectors. ESG news released by the media, NGOs or firms are considered separately and presented on Panel A, B and C respectively. Data: Covalence. Sample period: 2002-2010. Author's computation.

	Environment		Social		Governance		ESG	
Panel A: Media								
Banks	883	159	1784	899	1100	1206	3191	2016
Basic Resources	1696	2294	1990	1919	1924	2592	4636	5402
Chemicals	1120	660	3103	2152	2138	1627	5377	3506
Consumer goods & services	3730	829	4533	2718	3782	1818	9924	4358
Industrial goods	5046	540	2101	1753	2832	1275	8406	3160
Technology	5467	624	3868	1860	4130	1698	11241	3704
All sectors	17942	5106	17379	11301	15906	10216	42775	22146
Panel B: NGOs								
Banks	70	92	115	83	64	136	202	246
Basic Resources	102	488	108	349	129	569	274	1006
Chemicals (incl. Health Care)	65	191	237	423	123	421	360	760
Consumer goods & services	194	167	275	507	190	369	532	806
Industrial goods	100	57	94	93	69	115	218	223
Technology	171	85	174	126	113	160	397	305
All sectors	702	1080	1003	1581	688	1770	1983	3346
Panel C: Firms								
Banks	101	10	320	32	153	26	478	55
Basic Resources	308	32	369	33	303	41	799	87
Chemicals (incl. Health Care)	174	9	644	31	418	29	1025	58
Consumer goods & services	275	21	412	52	341	27	815	91
Industrial goods	370	19	204	31	255	31	695	73
Technology	467	15	446	30	409	27	1089	56
All sectors	1695	106	2395	209	1879	181	4901	420

Table 3: **Who publishes ESG news?**

This table reports the percentage of good news and bad news on Environmental, Social and Corporate Governance issues, breakdown by the publication source. Data: Covalence. Sample period: 2002-2010. Authors' computation.

	Environment		Social		Governance		ESG	
	Good	Bad	Good	Bad	Good	Bad	Good	Bad
Media	88%	81%	84%	86%	86%	84%	86%	85%
NGOs	3%	17%	5%	12%	4%	15%	4%	13%
Firms	8%	2%	12%	2%	10%	1%	10%	2%
All sources	100%	100%	100%	100%	100%	100%	100%	100%

and $N^{i,\,Bad}_{\cdot,\,k}/N^{\cdot,\,Bad}_{\cdot,\,k}$ where $i =$ E, S or G and $k =$ firms, media, NGOs or all sources. Overall, our sample of news is well-balanced in terms of ESG criteria. The distribution of good news among E, S and G concerns is approximately uniform (about one third for each category), whatever the source. However, if we consider bad news, poor social and corporate governance practices are the issues the most frequently addressed; negative environmental news count only for less than one quarter of the total number of ESG news. It is likely that this is because firms are not equally exposed to criticisms on green issues. We examine further this intuition in the following.

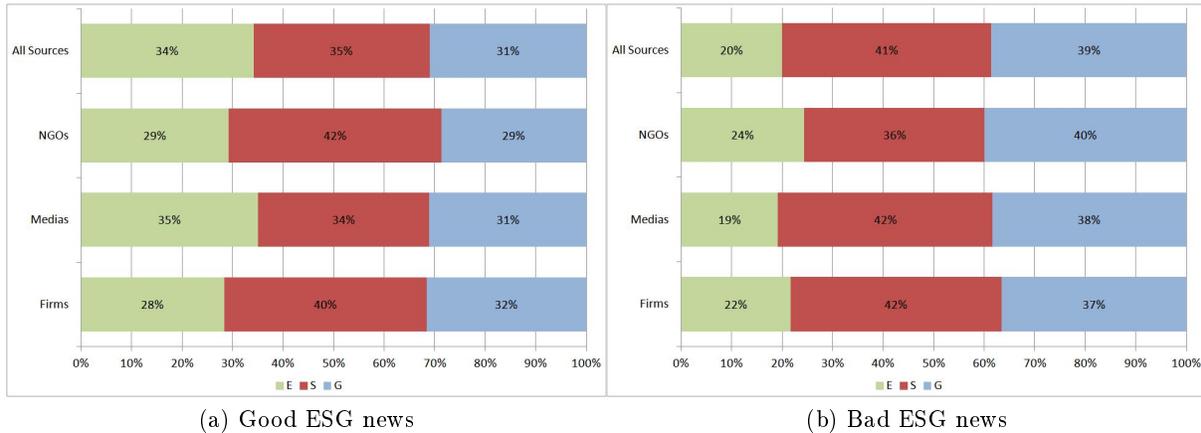(a) Good ESG news   (b) Bad ESG news

Figure 2: **Percentage of E, S, or G news, breakdown by sources.** This figure presents the number of E, S or G news divided by the total number of ESG news for a given source (the firms themselves, the media, the NGOs) or for all sources of information. Good news and bad news are set apart. Data: Covalence. Sample period: 2002-2010. Authors' computation.

Figure 3 presents, for each sector, and for the whole period, the average number of good news (top) and the average number of bad news (bottom) by firm and by distinguishing E, S and G. The average number of ESG news by firms varies from 562 (Banks) to 918 (Consumer Goods and Services). Actually, differences across sectors are more pronounced if we consider only bad news or environmental news. While the average number of good ESG news ranges from a ratio of 1 to 1.7, bad ESG news may triple from one sector (Technology) to another (Basic resources). More formally, the dispersion (computed as the standard deviation of the the average number of ESG news by firms across sectors, divided by the average number of ESG news for the whole sample) is twice as high for good news than for bad news (0.23 against 0.41). If we restrict to bad environmental issues, the average number of news may vary by a factor of eight depending on the sectors! This is not surprising as social or corporate governance issues is a concern for all

companies, irrespective of their sector of activity, while environmental issues are more a concern for some industries (such as "Basic resources") than for others (like "Banks").
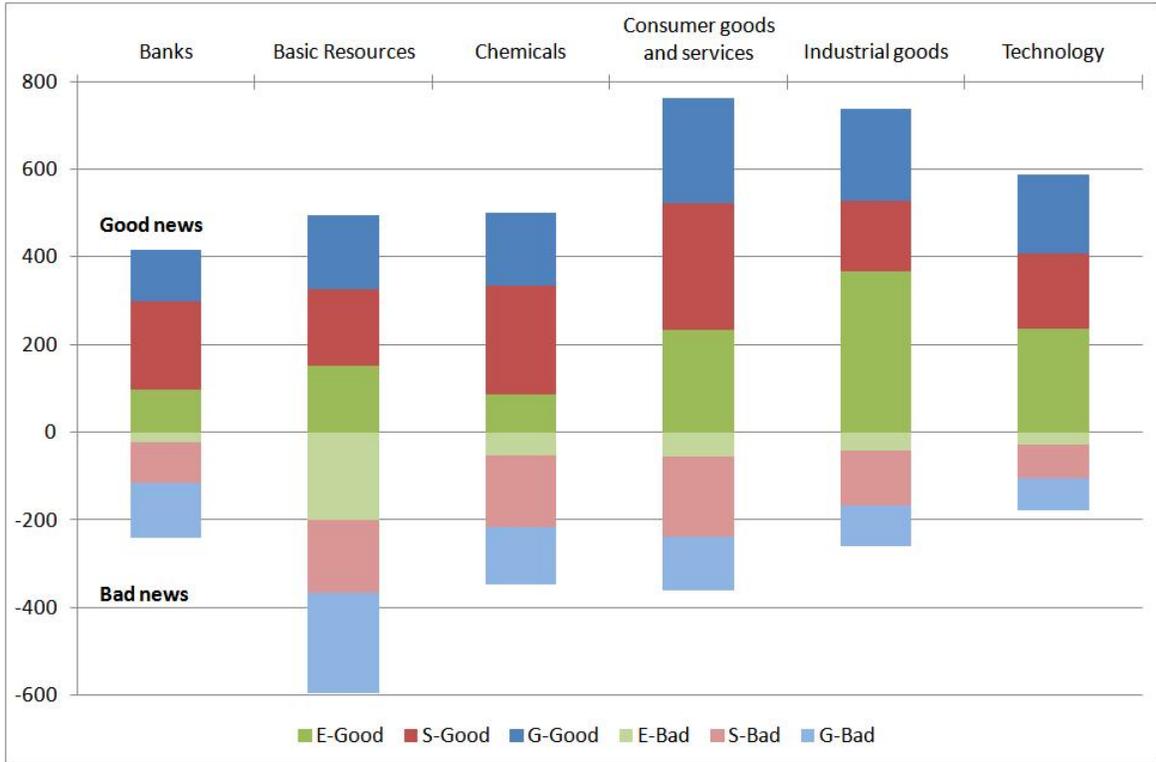

Figure 3: **Average number of ESG news, breakdown by sector.** This figure presents the total number of good (top) and bad (bottom) ESG news breakdown by sector, divided by the number of firms which belong to this sector. For each sector, E, S and G news are set apart and stacked. Data: Covalence. Sample period: 2002-2010. Authors' computation.

3.2.3 Which sectors are the most scrutinized?

Independently of the repartition between the different facets of CSR, the total number of ESG news (excluded firm's press releases), $N^{.,\ .}_{s,\ ext}/N^{.,\ .}_{.,\ ext}$, is a good proxy of the intensity of CSR scrutiny. Thus, ESG issues play the greatest role for Consumer goods and service (23% of the total number of ESG news published by external sources) and Technology (22%), and slightly smaller for Basic resources (17%), Industrial goods (17%), and Chemicals (14%). Finally, the banking sector (8%) is the least concerned by ESG issues. Of course, the picture is different if we consider only concerns, i.e. bad news ($N^{.,\ Bad}_{s,\ ext}/N^{.,\ Bad}_{.,\ ext}$). In this case, the sector under the closer scrutiny is Basic resources (26% of the total number of bad ESG news published by external sources), followed by Consumer goods and service (21%), Chemicals (18%), Technology (15%),

Industrial goods (12%) and Banks (8%).

Another way to assess whether a sector is more subject to criticism is to normalize the difference between good ESG news and bad ESG news. The aim is to compare, for each sector, the number of good ESG news and the number of bad ESG news. But because, as we have seen, the total number of news depends on the sector, we do not consider the absolute number of (good or bad) news per sector; instead, we normalize it with the number of (good or bad) news for all sectors. Hence, in figure 4, we represent the percentage of good news (the dotted line) and bad news (the solid line) for each sector over the whole sample. We only consider news released by media and NGOs. Formally, the proportions are computed as follows: $N_{s,\ ext}^{\cdot,\ j} / N_{\cdot,\ ext}^{\cdot,\ j}$ where $j =$ Good or Bad.
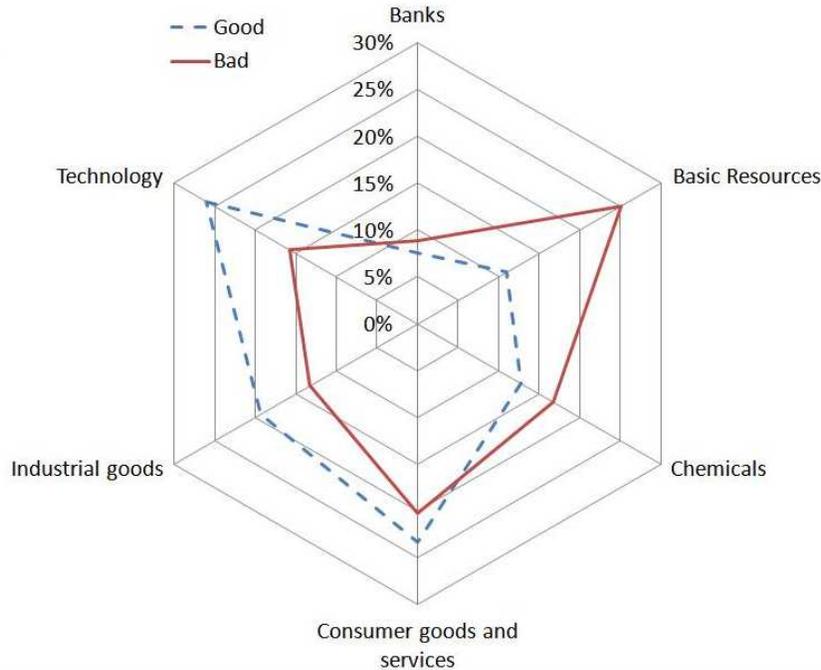
Figure 4: **Percentage of E, S, and G news, breakdown by sectors.** This figure presents the total number of ESG news for a sector divided by the total number of ESG news for all sectors. Only external news are considered. Data: Covalence. Sample period: 2002-2010. Authors' computation.

This figure allows to examine which sectors are (relatively) more criticized, independently of their size. We can distinguish three groups of firms depending on whether the number of good ESG news is lower, equal or higher than the number of bad ESG news. i) As we have seen previously, the number of ESG news on the banking sector is low, around 10% of the total

number of ESG news. This proportion is about the same either for good news or bad news. At the other extreme, firms included in the sectors Consumer goods & services attract a lot of attention from media and NGOs, for better and for worse. ii) Technology firms and, albeit to a lesser extent, firms which produce industrial goods attracted almost half of the good ESG news but relatively few bad ESG news. iii) Firms within the Basic resources and Chemicals sectors are those who are the most exposed to the criticism in relative terms.[7]

4   A weighting scheme based on media and NGOs scrutiny

In table 4, we present alternative weighting schemes proposed in the literature. It includes (i) equal weights, (ii) weights derived from expert opinions (Waddock and Graves 1997), (iii) weights derived from survey of public affairs officers, executives of non-profit organizations, and managerial accountants (Ruf et al. 1998), and (iv) weights generated by Jantzi Research. The first three are initially based on KLD categories and they are the same for all sectors. Weights used by Jantzi research depends on the sectors; these are not public and Bansal et al. (2008) provide only the minimum and the maximum weights for each category. Every CSR rating agency has its own set of categories, so we have to recombine them (see Table B in appendix for the correspondence of the criteria).[8] To facilitate the comparison, we re-scale the initial weights.

Table 4: **Previous weighting schemes**

Categories	KLD[a]	Waddock and Graves (1997)	Ruf et al. (1998)	Jantzi Research
Community	14.28%	14.8%	12.5%	11.11% - 30.77%
Corporate governance	14.28%			8.33% - 22.22%
Products (consumers)	14.28%	15.4%	22.8%	0% - 22.22%
Employees relation[b]	28.57%	30.4%	32.4%	16.67% - 33.33%
Environment	14.28%	21.6%[c]	23.0%[c]	11.11% - 32.00%
Human Rights	14.28%	13.6%[d]	15.2%[d]	0% - 26.67%

Notes: [a] Equal weigths based on the seven KLD (2011) categories. [b] Including Diversity; [c] Including Nuclear power; [d] South Africa + Military. *Sources*: KLD, Chen and Delmas (2011) and Bansal et al. (2008).

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7. If we consider ESG news published by the firms, the pattern is somewhat similar, but the gap between the percentage of good news and bad news across sector is not as exaggerated. However, this result should be interpreted with caution, as the number of bad news released by firms themselves is low.

8. It should be noted that the KLD categories have changed since the papers by Waddock and Graves (1997) and Ruf et al. (1998). In particular, KLD added a specific category Corporate Governance.

In table 5, we present the weighting schemes computed, according to the same previous categories, irrespective of the sectors. We consider, alternatively, the percentage of news for each dimension published by the media, the NGOs and the firms. Thus, the weights are simply equal to $N^{i}_{., k}/N^{.}_{., k}$ where i = Community, Corporate Governance, Products, Employees, Environment or Human Rights, and k = media, NGOs, and firms. Having ESG news released by media, NGOs, and firms allows us to compare, on a homogeneous database, society's expectations, social activists' expectation and business' expectations. In panel A we consider good news and bad news, while in Panel B we only consider concerns (i.e. bad news).

Table 5: **The weighting scheme, all sectors**

Categories	Media scrutiny	NGOs scrutiny	Firms Disclosure
Panel A: All news (good + bad)			
Community	21%	17%	28%
Corporate governance	13%	13%	8%
Products	15%	15%	18%
Employees	17%	16%	13%
Environment	31%	27%	29%
Human Rights	5%	11%	14%
Panel B: Concerns (bad news only)			
Community	13%	14%	15%
Corporate governance	16%	15%	13%
Products	14%	14%	14%
Employees	28%	16%	29%
Environment	20%	26%	22%
Human Rights	8%	14%	7%

Data: Covalence. Sample period: 2002-2010. *Source*: Authors'.
computation.

This table provides several interesting insights. The weights attributed to environmental issues are the highest: "green" news represent almost one third of the total number of ESG news. This percentage does not change significantly whether we consider news published by media, NGOs or firms. If we restrict the analysis to ESG concerns, environmental issues are still important, but to a lesser extent. This is the most important concern for NGOs, but only the second most important for media and firms. For the two latter, the most important concern is related to Employees; it is also the second most important concern for NGOs. Community, Corporate governance and Products have relatively homogeneous weights, around 15%, regardless of the

source. Finally, the weight associated to Human rights is typically low, except for NGOs.

Overall, our weighting scheme is consistent with Waddock and Graves (1997) and Rud et al. (1998) who based their weights on experts's responses to the survey questionnaires. The main differences are for the Environment which has been previously underestimated, and Human rights which have been over-estimated. Actually, it is not surprising that the concerns focus on topics that are directly related to business activities. Although the issue of Human rights is a major concern for society, firms are not directly involved.[9] This is not the case for environmental damages or social conflicts.

In table 6, we go back to the decomposition between E, S and G criteria, which is standard now. Because firms tempt to develop a positive social image by highlighting their commitment to CSR (see Maignan and Ralston, 2002; Schlegelmilch and Pollach, 2005; Oikonomou et al., 2012), we restrict our sample to bad ESG news published by external sources. Thus, the weights are defined as $N_{s,\,k}^{i,\,Bad}/N_{s,\,k}^{\cdot,\,Bad}$ where $i =$ Environment, Social and Corporate Governance, and $k =$ media (Panel A) or NGOs (Panel B).

Table 6: **The Weighting scheme, breakdown by sectors (concerns only)**

	Environment	Social	Governance
Panel A: Media scrunity			
Banks	7%	40%	53%
Basic Resources	34%	28%	38%
Chemicals	15%	48%	37%
Consumer goods and services	15%	51%	34%
Industrial goods	15%	49%	36%
Technology	15%	44%	41%
All sectors	19%	42%	38%
Panel B: NGOs scrunity			
Banks	29%	26%	44%
Basic Resources	35%	25%	40%
Chemicals	18%	41%	41%
Consumer goods and services	16%	48%	36%
Industrial goods	22%	35%	43%
Technology	23%	34%	43%
All sectors	24%	36%	40%

Data: Covalence. Sample period: 2002-2010.

Source: Authors' computation.

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9. Yet, in most of the study using KLD data and their composite score, the weight assigned to South Africa was 11%.

As we have seen in Figure 2b, the weight assigned to environmental issues is, overall, the lowest. This is not contradictory with the previous findings in table 5 as we have aggregated the other categories. More interesting are the differences between sectors. If we consider media scrutiny (Panel A), the weight assigned to environment is equal to 7% for the banking sector, while it is five times higher for the sector Basic resources. For the other sectors, the weight for environmental issues is rather uniform around 15%.

As expected, the differences across sectors are not so large for the other criteria, but they are still significant. For social concerns, the highest weights, almost 50%, are for the traditional industries and services, e.g. Consumer goods and services, Industrial goods and Chemicals. For corporate governance, the weight is the highest for industries that employed high-skill workforce, in particular the banking sector.

To illustrate the differences between sectors, we compute the following double ratio: $(N_{s,\ ext}^{i,\ Bad}/N_{s,\ ext}^{.,\ Bad})/(N_{.,\ ext}^{i,\ Bad}/N_{.,\ ext}^{.,\ Bad})$. This ratio is equal to the percentage of E, S or G news for a given sector, divided by the corresponding percentage for all sectors. The interpretation is straightforward: a ratio higher than one means that the sector s is proportionally more subject to the critics on a particular dimension of CSR: E, S or G. In figure 5 we present the results for three salient sectors: Banks, Basics resources and Consumer goods and services. We have already noted that the sector Basics resources is the target of many bad news on environmental issues: the firms which compose this sector receive 60% more criticism on environmental issues than the others. Consequently, the proportion of bad news on social issues is 40% lower than in average. Banks and firms which provide consumers goods and services are in a similar situation, albeit on different issues. Banks are especially criticized for bad corporate governance practices but very little on environment (of course, financial activities are low polluting), while Consumer goods and services are criticized on the social aspects and relatively less on governance.
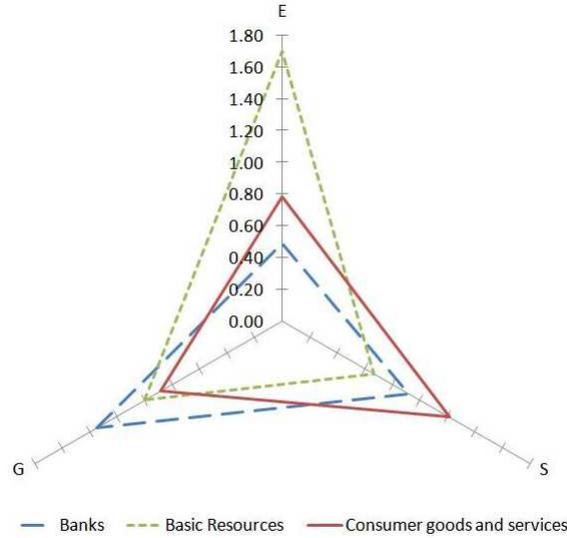
Figure 5: **Relative percentage of bad E, S and G news released by external sources.**
This figure presents the percentage of E, S or G news for a given sector, divided by the corresponding percentage for all sectors. We restrict our sample to bad ESG news published by external sources. Data: Covalence. Sample period: 2002-2010. Authors' computation.

5   Conclusion

In this paper, we propose a new weighting scheme to aggregate E, S and G criteria and to provide a composite CSR score. We first detail the theoretical conditions for such a composite score to be relevant (quantifiability, fungibility, commensurability). Then, we use a large database on ESG news to build a weighting scheme that is proportional to media and NGO scrutiny. The main advantage of our weighting scheme is that the weights are different across sectors, reflecting societal concerns. Thus, for instance, environmental issues are weighted more strongly for oil and gas firms than for the banking sector, while for the latter corporate governance concerns have more weight. Hence, this new weighting scheme can be used to better assess corporate social performance.

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Appendix

	Step	Description
1	Identification of stakeholders	The firm's relevant (groups of) stakeholders are determined.
2	Identification of interests of various stakeholders	The (groups of) stakeholders are asked to indicate their interests regarding the firm. To identify these interests, Maslow's (1954) hierarchy of needs, Carroll's (1979) categories of responsibility, and/or Elkington's (1997) triple bottom line may be helpful.

Note: The result of the first two steps should be (a) a list of stakeholder groups that are homogeneous regarding their interests and (b) a list of each group's interests.

3	Assessment of extent of satisfaction per stakeholder/interest-combination	Per stakeholder/interest-combination, the (groups of) stakeholders are asked to rate the extent to which they are satisfied with the firm's policies, programmes, and outcomes regarding the interest concerned.
4	Assessment of relative weight per stakeholder/interest-combination	The (groups of) stakeholders are asked to rate the relative importance of their interests. To determine these ratings, several techniques may be helpful such as pair-wise comparisons, conjoint analysis, and indifference curves.

Note: Steps 3 and 4 may be taken in reverse order.

5	Calculation of total score per stakeholder (group)	The total score for each stakeholder (group) can be calculated using the following formula: $TS_i = \Sigma (S_{ij} * W_{ij})$ with: - TS_i: total score for stakeholder (group) i (from 1 to n); - S_{ij}: score for interest j (from 1 to m_i) of stakeholder (group) i; - W_{ij}: weight of interest j (from 1 to m_i) of stakeholder (group) i.
6	Calculation of the Stakeholder Satisfaction Index	The Stakeholder Satisfaction Index can be calculated using the following formula: $SSI = \Sigma TS_i / n$ with: - SSI: Stakeholder Satisfaction Index; - TS_i: total score for stakeholder (group) i (from 1 to n).

Note: If desirable, weights may be assigned to the different (groups of) stakeholders.

Figure A: **An attempt of operationalisation of CSR.** A stepwise approach for determining the Stakeholder Satisfaction Index (SSI). *Source*: Pierick et al. (2004) based on Clarkson (1995).
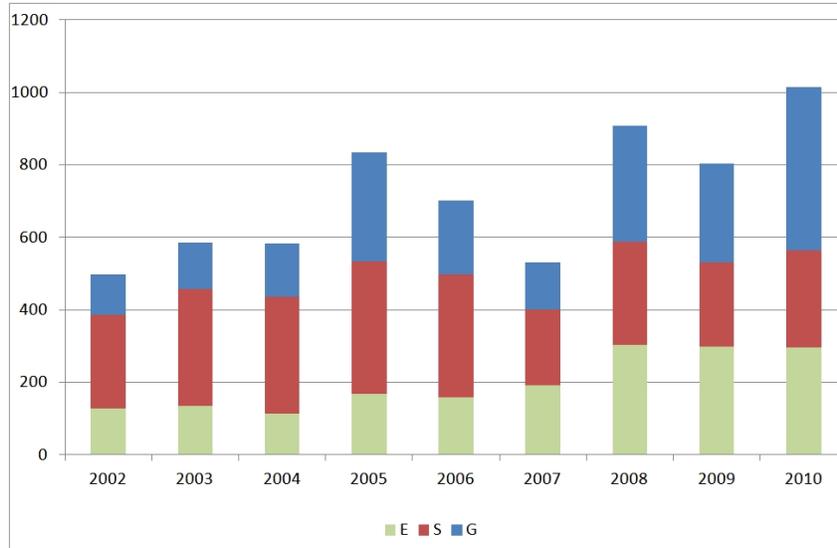
(a) Firms
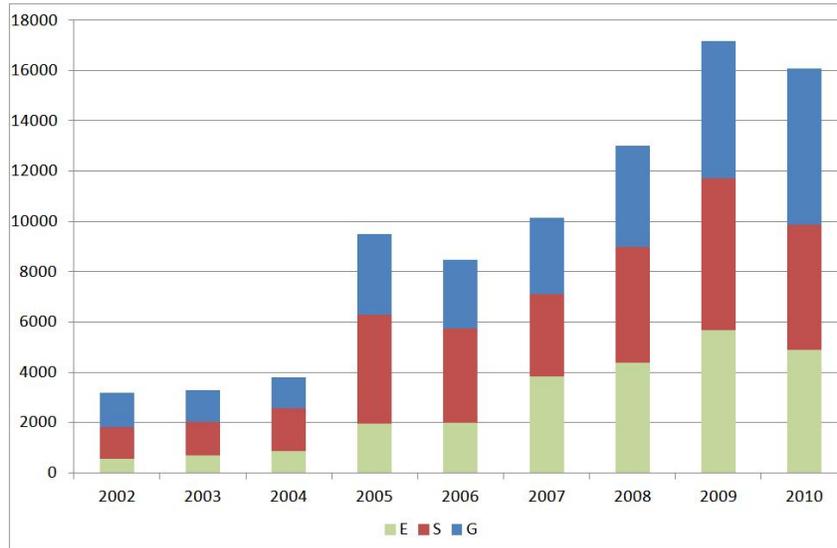
(b) Media+NGOs

Figure B: **Annual number of ESG news.** This figure reports the annual number of ESG news released by the firms (a), and the media or the NGOs (b). E, S and G news are set apart and stacked. The temporal patterns are qualitatively the same for good news and bad news, so their are combined. Data: Covalence. Sample period: 2002-2010. Authors' computation.

Table A: **List of companies and number of news (#)**

Sector	Company	#	Sector	Company	#
Banks	BNP Paribas	413	Industrial	BMW Group	704
	Bank of America Corporation	852	goods	Boeing Co.	470
	Barclays plc	587		Daimler AG	884
	Citigroup Inc.	700		Electricité de France	513
	Credit Suisse Group	407		Ford Motor Co.	1629
	Deutsche Bank AG	483		General Electric Co.	749
	Goldman Sachs Group Inc.	322		Honda Motor Co. Ltd.	886
	HSBC Holdings plc	936		Hyundai Motor Co.	421
	JPMorgan Chase and Co.	384		Nissan Motor Co. Ltd.	893
	UBS AG	540		PSA Peugeot Citroen	548
	Wells Fargo and Company	564		Renault SA	728
Basic	Alcoa Inc.	890		Siemens AG	1326
Resources	Anglo American plc	470		Toyota Motor Corp.	1688
	Arcelor Mittal	504		Veolia Environnement SA	442
	BHP Billiton plc	621		Volkswagen AG	894
	BP plc	1906	Technology	ABB Ltd.	325
	Barrick Gold Corporation	416		ATandT Inc.	486
	Chevron Corp.	1422		Alcatel-Lucent	424
	Exxon Mobil Corp.	1268		Apple Inc.	557
	Halliburton Company	423		Cisco Systems Inc.	642
	Newmont Mining Corp.	337		Dell Inc.	982
	Rio Tinto plc	1012		Fujitsu Ltd.	325
	Royal Dutch Shell plc	1881		Google Inc.	997
	Total SA	732		Hewlett-Packard Company	1571
	Xstrata plc	322		Intel Corporation	811
Chemicals	Abbott Laboratories	413		International Business Machines Corp.	1271
	AstraZeneca plc	381		Koninklijke Philips Electronics NV	393
	BASF SE	680		LG Electronics Inc.	325
	Bayer AG	897		LM Ericsson Telephone Co.	516
	Bristol-Myers Squibb Co.	463		Microsoft Corporation	1173
	EI DuPont de Nemours and Co.	789		Motorola Inc.	507
	Eli Lilly and Co.	484		Nokia Corp.	850
	GlaxoSmithKline plc	959		Oracle Corp.	405
	Johnson and Johnson	588		Panasonic Corporation	470
	Merck and Co. Inc.	850		Samsung Electronics Co. Ltd.	824
	Monsanto Co.	833		Sony Corporation	918
	Novartis AG	703		Toshiba Corp.	418
	Pfizer Inc.	1227		Verizon Communications Inc.	454
	Roche Holding AG	429		Vodafone Group plc	362
	Sanofi-Aventis	478		Xerox Corp.	471
	The Dow Chemical Company	912		Yahoo! Inc.	315
Consumer	Carrefour SA	524			
goods	Danone	386			
and	Gap Inc.	328			
services	Kraft Foods Inc.	1014			
	L'Oreal SA	371			
	Marks and Spencer Group plc	651			
	McDonald s Corp.	1004			
	Nestlé S.A.	1468			
	Nike Inc.	649			
	Pepsico Inc.	1069			
	Procter and Gamble Co.	779			
	Starbucks Corp.	863			
	Tesco PLC	940			
	The Coca-Cola Company	1933			
	The Home Depot Inc.	548			
	Unilever NV	1045			
	Wal-Mart Stores Inc.	2692			
	Walt Disney Co.	262			

Source: Covalence. Authors' computation

Table B: **Covalence criteria 1/2**

Criterion	Description	#	ESG	KLD	Jantsi
Working conditions					
1. Labour standards	covers labour issues taking place within the company.	4546	S	Emp	Emp
2. Wages	looks at how the company manages the level of wages paid to employees and executives.	2269	S	Emp	Emp
3. Social benefits	looks at measures regarding social benefits and advantages for employees and families.	1519	S	Emp	Emp
4. Training and insertion	looks at how the company takes measures regarding training employees, continued formation, stabilisation of jobs and social plans in case of lay-offs.	1133	S	Emp	Emp
5. Women	describes working conditions for women and the coordination of professional and private life.	902	S	Div	Emp
6. External working conditions	covers working conditions outside the analyzed company.	2504	S	Emp	Emp
Impact of production					
7. Sales	describes how companie's sales benefit people and the environment.	142	G	Com	Com
8. Link with official development aid	highlights when a company collaborates with, or benefits from, a governmental development aid program.	252	G	Com	Com
9. Export risk guarantee	describes a situation when a government covers the risks taken by a national company investing abroad.	14	G		G
10. International presence	describes the impact of the company's foreign direct investments and related policies.	5825	G		G
11. Joint ventures	receives information about multinational companies investing together with local investors. to create a new company and the economic, social and environmental of such joint ventures.	2440	G	Com	Com
12. Economic impact	deals with how a company's investments influence local industries in terms of job creation, access to markets, competition, economic growth.	2924	G	Com	Com
13. Social impact	receives information on how the company's operations influence the implementation of local laws relating to social areas.	3516	S	Com	Com
14. Job stability	looks at the turn-over of the company's employees.	77	S	Emp	Emp
15. Local employees	looks at the number and the proportion of local employees in the company.	330	G	Com	Com
16. Local executives	looks at the number and the proportion of local executives in the company.	22	G	Com	Com
17. Women employed	looks at the proportion of women among the company's employees and executives.	228	G	Div	Emp
18. Downsizing	is used to code information that relates to factory closures, the transfer of production to another country, and measures taken to minimize negative social effects of such decisions.	3633	S	Emp	Emp
19. Infrastructures	describes when a company is (co-) financing public infrastrutures.	174	G	Com	Com
20. Local sourcing	highlights when a company is buying / sourcing directly to a local producer, farmer.	256	G	Com	Com
21. Stability of prices	describes how a company manages prices of raw materials on international commodity markets.	184	G	Com	G
22. Technical assistance	highlights when a company transmits skills, knowledge, technologies to another company / partner.	475	G	Com	Com
23. Intellectual property rights	describes how a company manages its own intellectual propriety rights vis-a-vis other companies and countries.	867	G		G
24. Local innovation	highlights when a company helps another company to develop a new product.	136	G	Com	Com
25. Fiscal contributions	looks at the following questions: Does the company pay taxes ? Where ? How much?	598	G	Com	Com
26. Environmental impact	highlights how a company's production activities are impacting the environment.	14129	E	E	E

Table B: **Covalence criteria 2/2**

Criterion	Description	#	ESG	KLD	Jantsi
Impact of products					
27. Product human risk	describes when a product or service is perceived to be risky to man or nature.	2875	S	Pdt	Pdt
28. Product social utility	serves to describe when a company offers, or is being asked to provide, products or services that respond to needs related to human, social and economic development.	2464	S	Pdt	Pdt
29. Product relation to culture	describes the relation between a product and a culture.	220	G	Com	Com
30. Socially innovative product	reflect communications regarding the R & D of products or services that present a particular interest for responding to human needs and contributing to economic and social development.	1018	S	Pdt	Pdt
31. Product environmental risk	reflects communications found about a product or service described to be risky to nature and the environment by itself or by its implications.	4936	E	E	E
32. Waste management	describes action / lack of action in waste management.	4543	E	E	E
33. Eco-innovative product	covers information regarding new products or services that are environmentally friendly.	5862	E	E	E
34. Information to consumer	looks at how companies are, or aren't, providing the public and consumers with information.	7131	G	Pdt	Pdt
35. Pricing / needs	looks at which price does a company sell its products considering their social utility and capacity to respond to essential human needs.	1283	S	Pdt	Pdt
36. Cause related marketing	highlights when the support to social / environmental projects is linked to the selling of a product.	481	G	Pdt	Pdt
37. Social sponsorship	pertains to information about a company's donation of money or goods to an external organization in the pursuit of social or environmental objectives.	8763	S	Com	Com
Institutional impact					
38. Anti-corruption policy	covers material presenting how companies are acting, or failing to act, against corruption.	2773	G		G
39. Humanitarian policy	describes how a company behaves in and about emergency situations such as wars and natural disasters.	1268	G		HR
40. Human rights policy	is used to code information that pertains to how a company deals, or should deal, with the respect for, and promotion of human rights, internally and externally.	2581	G		HR
41. Relations with United Nations	describes how a company discusses and collaborates with programmes or agencies of the United Nations.	1683	G		G
42. Boycott policy	describes how a company deals with calls to boycott certain countries and governments because of the human rights situation.	736	G		HR
43. Social stability	describes when a company helps, or fails to help, promote local social stability.	3142	G	Com	G
44. Support to political actors	compiles information describing relations of a company with political actors, such as financial support.	878	G		G
45. Lobbying practices	covers material describing lobbying activities of companies: activities aiming at influencing decisions taken by governments at the national and international levels.	1391	G		G

The ESG classification includes E for Environment, S for Social and G for Governance. The KLD classification includes Emp for Employees relations, Div for Diversity, Com for Community, Pdt for Product and E for Environment. The Jantsi classification includes the last three criteria, Emp for Employees relations + Diversity and G for a Governance .