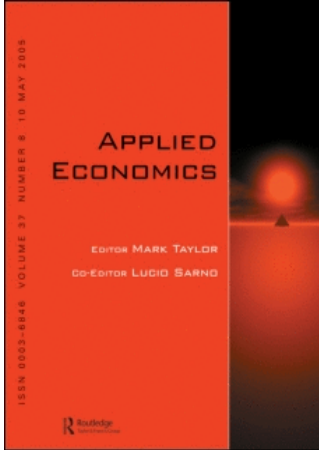


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Corporate social responsibility and corporate performance: evidence from a panel of US listed companies

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We investigate whether inclusion and permanence in the domini social index (DSI) affects corporate performance on a sample of around 1000 firms in a 13-year interval by controlling for size, industry, business cycle and time invariant firm idiosyncratic characteristics. Our results find partial support to the hypothesis that corporate social responsibility is a move from the shareholders wealth to a multi-stakeholders welfare target. On the one side, permanence into the domini index (DI) is shown to increase (reduce) significantly total sales per employee (returns on equity but not when large and R&D investing firms are excluded from the sample). On the other side, lower returns on equity for Domini firms seem nonetheless to be accompanied by relatively lower conditional volatility and lower reaction to extreme shocks with respect to the control sample. An explanation for these findings, suggested by the inspection of Domini criteria, is that social responsibility implies, on the one side, decisions leading to higher cost of labour and of intermediate output, but may, on the other side, enhance involvement, motivation and identification of the workforce with company goals with positive effects on productivity.

I. Introduction

A first minimal definition of social responsibility is generally related to the corporate choice of not breaching laws and regulations when pursuing shareholders' wealth maximization goals. A second approach considers that corporate social responsibility (CSR) is more than just following the law (McWilliams and Siegel, 2001), as it also involves actions that are expected to affect positively an identifiable social stakeholder's welfare. Our analysis

is aimed at measuring the impact of this second definition of CSR on corporate performance.

The debate on the relevance and effects of this second type of CSR is polarized around two opposite perspectives. A first one considers CSR as a violation of manager's mandatory duties, when it materializes into arbitrary management of 'free cash flow' and higher expenditures which reduce shareholders' wealth (Friedman, 1962).¹ The reasoning of Friedman (1962) implies an efficient balance of powers between profit maximizing firms and social welfare maximizing

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¹ 'Few trends could so thoroughly undermine the very foundations of our free society as the acceptance by the corporate officials of a social responsibility other than to make as much money for their shareholders as possible.' (..) *If businessmen do have social responsibility other than making maximum profits for stockholders, how are they to know what it is? Can self private individuals decide what the social interest is?* (Friedman, 1962)

institutions, which is far from the reality of our economic systems. Asymmetric information, agency costs and conflicts of interests are so widespread in our imperfect economic environment and institutions are distant from the benevolent planners depicted by theoretical models of some decades ago. All this considered, an important argument for the relevance of CSR comes from the observation that, in a society riddled by conflicts of interests and informational asymmetries, with weak institutions and incomplete contracts, the tenet of shareholders wealth maximization may be socially and environmentally untenable if corporate power is not offset by proper checks and balances from institutional action.

In the current 'three-pillar' (institutions, corporations and the civil society) system, what we observe are stakeholders creating bottom-up pressures on corporations in order to compensate institutional weaknesses in designing rules that should align firm behaviour to the goal of socially and environmentally sustainable development (Adriani and Becchetti, 2002). This pressure induces corporations to signal their social responsibility in order to minimize attrition with stakeholders. In this framework, CSR often originates not from an autonomous decision of managers, but from external pressures from consumers or institutions.

Well aware of these linkages between corporations, institutions and consumers, a different and broader view on CSR considers the social role of corporations and their relationship not just with shareholders, but with the larger set of firm stakeholders. In this perspective Freeman (1984) emphasizes that, if stakeholders have voice, the socially responsible behaviour of corporations may be a rational strategy to minimize conflicts and optimize synergies in their complex network of relationships with various stakeholders (local communities, consumers, environmentalist associations, subcontractors, etc.).

On this line, Tirole (2001) argues that the concept of stakeholder value recognizes that corporate activity may create negative externalities that need to be counterbalanced, either by institutional rules or by corporations themselves. In such case, creating shareholders value is not enough to maximize total welfare and management should aim at '*maximizing the sum of various stakeholder surpluses*'. He is, though, sceptical on the possibility of creating incentives which can induce managers to behave in a socially responsible way. First, he observes that the difficulty of measuring SR fosters managerial opportunistic behaviour. Second, he argues that a SR company, by definition, should shift its focus from the maximization of shareholders' wealth to a multi-stakeholders welfare approach. The

consequence of this move may be a relatively lower return on equity that may make her object of a takeover from a profit maximizing raider.

A first reply to Tirole (2001) is that several social labelling organizations have been born to overcome informational asymmetries in this field. Hence, a corporation is nowadays considered as being socially responsible not just when it claims to be as such, but only if it complies with a set of externally fixed behavioural criteria. Opportunistic behaviour is obviously always a temptation, but external monitoring and reputational costs from being caught cheating on SR may be a strong deterrent. The second Tirole's objection (takeover risk) is an interesting one and is somewhat related to our empirical research aimed at verifying whether SR firms create relatively more or less shareholder value than the rest of the economy.

Overall, an interesting issue in the aforementioned debate on CSR is that CSR may definitely be a superior corporate behaviour in terms of social welfare if the expected reduction of negative externalities is accompanied by a creation of aggregate economic value (and not merely shareholder return) equal or superior to that of nonsocially responsible firms. If this is true, a powerful incentive for corporations to adopt a SR attitude, beyond enlightened altruism, exists. This is why, the evaluation of the effects of SR on corporate performance is a relevant topic in the current literature on CSR.

Our article focuses on this issue and is divided into seven sections (including introduction and conclusions). The second section discusses the expected costs and benefits arising from the adoption of a SR behaviour. The third section briefly surveys the empirical literature on the effects of SR on corporate performance. The fourth section analyses SR criteria of a widely acknowledged standard [the domini index (DI) which will be the benchmark of our empirically analysis] focusing in particular on their potentially cost increasing and productivity enhancing characteristics. The fifth section presents and comments our descriptive and econometric findings on the impact of entry, permanence and exit from the DI of SR. The sixth section analyses whether the lower return on equity of SR firms is compensated by reduced conditional volatility of SR firms stock returns.

II. Expected Costs and Gains From Socially Responsible Behaviour

Before testing directly the impact of SR on corporate performance we briefly survey theoretical grounds

that might support the hypothesis of a nonnegative relationship between SR and corporate performance. As a starting point we must consider – as it will be clear from the analysis of the characteristics of Domini criteria – that SR involves the undertaking of a set of actions that are potentially cost increasing (such as higher attention to workers conditions within the firm and in subcontracting companies, adoption of more environmentally and often more costly, productive processes, etc.).

These sources of additional costs need to be compensated by some potential benefits to be economically sustainable. A first one, already mentioned, is represented by the creation of *reputational* capital which may help the company to obtain more favourable terms of trade when negotiating with various stakeholders (Cornell and Shapiro, 1987; Bowen *et al.*, 1995; Jones, 1995). A second one considers that SR may positively affect workers productivity if we move away from the standard microeconomic approach that regards labour productivity as solely related to individual skills, human capital and expected remunerations. In this perspective, a new strand of the literature starts modelling workers productivity as being affected not just by the usual set of individual worker variables, but also by intrinsic motivation, co-workers behaviour or working conditions and by the workers identification with the goals of their firm (Agell and Lundberg, 2003; Bewley, 1999; Campbell and Kamlani, 1999). Social preferences² (Fehr and Schmidt, 1999; Fehr and Schmidt, 2001; Sobel, 2002) and gift exchange models (Akerlof, 1982) are two leading fields in this literature.

In this perspective, it is possible that the move to (exit from) CSR may significantly increase (reduce) intrinsic workers motivation, thereby affecting positively (negatively) their productivity.

III. The Empirical Literature on The Impact of CSR

A huge number of empirical articles have tested in the past the relationship between social responsibility and corporate performance. Strangely enough, almost all of these articles have been published in the business and not in the economics literature, even though the topic of CSR is obviously relevant for both.

This ‘anomaly’ gives us the advantage of providing an original contribution to this specific field by

testing the relationship between the two variables with methodological approaches that are standard in economics, but are not always used in the business literature.

With some approximation we can divide the existing empirical articles into three groups.

The first finds a positive relationship between CSR and corporate performance. Soloman and Hansen (1985) find that the costs of having a high level of CSR are more than compensated by benefits in employee morale and productivity. Pava and Krausz (1996) and Preston and O’Bannon (1997) observe that CSR is positively associated with financial performance, while positive synergies between corporate performance and good stakeholders relationships are found by Stanwick and Stanwick (1998) and by Verschoor (1998). Ruf *et al.* (2001) find that change in CSR is positively associated with growth in sales and that returns on sales are positively associated with CSR for three financial periods. Simpson and Kohers (2002) document a positive link between social and financial performance on a sample of banking firms.

A second group of articles finds no significant direction in the link between CSR and corporate performance. McWilliams and Siegel (2001) observe that the financial performance of the DI constituents is not significantly different from that of a control sample when per capita R&D expenditure is added among regressors. Other articles finding inconclusive results are those of Anderson and Frankle (1980), Aupperle *et al.* (1985) and Freedman and Jaggi (1986).

A third group of contributions documents a negative relationship between CSR and corporate performance which is consistent with the managerial opportunism hypothesis. Preston and O’Bannon (1997) suggest that managers reduce expenditures on social performance to increase short-term profitability and their personal compensation, but, when financial performance is poor, they divert attention by expenditures on social programmes. Other articles documenting a negative relationship are those of Freedman and Jaggi (1982), Ingram and Frazier (1980) and Waddock and Graves (1997).

How to interpret these controversial results? In the well-known story about the blind men and the elephant, each blind man can get only part of the truth by touching a part of the body of the elephant. The group of blind men acquires reasonable knowledge of the phenomenon under investigation (the elephant) only when the partial and insufficient

² According to a definition of Fehr and Falk (2002) ‘a person exhibits social preferences if it does not only care about the material resources allocated to it but also cares about the material resources allocated to other relevant reference agents’.

information collected by each individual is pooled. The story suggests that the aforesaid differences in findings across the three groups of articles do not necessarily reflect mistakes or inaccuracies, but, most often, differences in perspective (observation periods, companies included in the sample, measures of corporate performance and methodological approaches adopted for the empirical analysis). It also suggests that the combination of them, or an empirical research broadening the scope of the analysis and integrating many of these perspectives, may give us a more complete picture of the effects of SR on corporate performance (our 'elephant').

Our article follows this direction as it aims to implement the existing research in the field from several points of view. First, it uses panel data and takes into account a significantly long time period, controlling for business cycle effects with year dummies and for spurious correlations between variables with cointegrating panel techniques. Second, it introduces firm specific intercepts (fixed effects), thereby separating the impact of CSR from time invariant, firm idiosyncratic, characteristics. Third, it explores the impact of exit from CSR with specific reference to a range of different motivations (labour relationships, sales of weapons, corporate governance and environment) on corporate performance. Fourth, it proxies the relative risk of holding CSR stocks by testing for the difference in conditional volatility and in its reaction to shocks between CSR and control sample stocks.

IV. The Social Domini Criteria

The Domini Social Index 400 (DSI 400) developed by Kinder, Lydenberger and Domini has created a series of widely acknowledged SR criteria which gradually

became an international standard.³ These criteria determine the inclusion of stocks into the index itself and, with it, the opportunity of being selected in portfolios of ethical funds.⁴

Social domini criteria are divided into eight big domains: (i) community; (ii) corporate governance; (iii) diversity; (iv) employee relations; (v) environment; (vi) human rights; (vii) product quality; (viii) controversial business issues. For each of them, the DI identifies strengths, and weaknesses and lists a series of corporate actions falling under one of the two (Appendix 1).

Domini requirements with cost increasing potential

The inspection of these criteria immediately shows that there are no 'free lunches' in SR, revealing how several SR actions are clearly cost-increasing. In the *community* section, we find as strengths *charitable giving, support for education and support for housing*. In the *diversity* section, we find work benefits (*the company has outstanding employee benefits or other programmes addressing work/life concerns, e.g. childcare, eldercare or flextime*). In the employee relations section, we find as strengths *cash profit sharing programmes, health and safety strength and strong retirement benefit programmes*. In the *environment* section, we find as strengths *clean air programmes*. This item is for companies that have *taken significant measures to reduce [their] impact on climate change and air pollution through use of renewable energy and clean fuels or through energy efficiency* or for companies that have *demonstrated a commitment to promoting climate-friendly policies and practices outside its own operations*. The impact of these measures on costs is not necessarily positive, but it is highly suspected to be so. In the *human right* section, we find the item of *Indigenous Peoples Relations Strength (the company has established relations with indigenous peoples near its proposed or current operations – either in or outside the US – that*

³The index methodology presents advantages and drawbacks. Its advantages are that it reflects historical concerns of investors, keeps track of CSR evolution in time and includes all dimensions identified as important in CSR. Its first limit is the absence of a measure of intensity in corporate performance. Another important problem with the index is in the adoption of a 'best in class process' in which relative, but not absolute, best SR performers in some industries have been included with the specific aim of keeping the index sufficiently diversified, thereby allowing ethical fund investors to adopt well-diversified passive investment strategies. Finally, a third limit is that the index must have a constant number of constituents. Therefore, for any exit a new entry is needed, with the effect that entry timing is determined not solely by firm progress on CSR, but also by rebalancing needs.

⁴The weight of these funds in financial markets is growing considerably. According to *2003 Report on Socially Responsible Investing Trends in the United States*, the industry of ethically managed mutual fund assets represented \$2.16 trillion dollars when including all US private and institutional ethically screened portfolios. Based on these figures one out of nine dollars under professional management in the United States was part of Socially Responsible portfolios. The same report illustrates that, from 1995 to 2003 the rate of growth of assets involved in social investing, through screening of retail and institutional funds, shareholder advocacy and community investing has been 40% higher than all professionally managed investment assets in the USA (240 against 174%).

respect the sovereignty, land, culture, human rights and intellectual property of the indigenous peoples) and Labor Rights Strength (the company has outstanding transparency on overseas sourcing disclosure and monitoring or has particularly good union relations outside the US). Here again, good relationships with local workers and stakeholders are expected to have some costs in terms of missed opportunities of labour cost reductions.

Domini requirements with cost decreasing (or productivity enhancing) potential

Against all these potentially cost increasing factors, we find only one clearly cost-decreasing SR initiative in the *corporate governance* section (the limited compensation of the manager) and a profit or productivity enhancing domain related to product quality.

On the other hand, our inspection of Domini affiliation also suggests that some of the same cost increasing items commented earlier may have a dual effect including, on the positive side, the capacity of increasing workers participation and productivity. First, limits to managerial compensation may increase workers' satisfaction if the latter have inequality aversion in their preferences. Second, the presence of a programme of *Work/Life Benefits* (the company has outstanding employee benefits or other programmes addressing work/life concerns, e.g. childcare, eldercare or flextime) may increase workers involvement with the company.

Last but not least, a positive reaction of workers in terms of productivity may also be generated by strength factors in the *employee relations* section. These are: (i) *Cash Profit Sharing* (the company has a cash profit-sharing programme through which it has recently made distributions to a majority of its workforce); (ii) *Employee Involvement* (the company strongly encourages worker involvement and/or ownership through stock options available to a majority of its employees, gain sharing, stock ownership, sharing of financial information or participation in management decision-making); (iii) *Health and Safety Strength* (the company is noted by the US Occupational Health and Safety Administration for its safety programmes); (iv) *Retirement Benefits Strength* (the company has a notably strong retirement benefits programme); (v) *Union Relations* (the company has a history of notably strong union relations); (vi) *Other Strength*

(the company has strong employee relations initiatives not covered by other KLD ratings).

The goal of our article is to test whether the cost increasing factors related to CSR (and, specifically, to Domini affiliation) prevail over the factors that should increase workers motivation and lead to higher productivity. Furthermore, we want to evaluate whether, as it is implicit in its same characteristics, CSR choice may lead to some forms of redistribution of corporate value from shareholders to stakeholders.

The econometric specification and descriptive findings

In order to test the impact of Domini affiliation on corporate performance, we choose the following specification:

$$Y_{it} = \alpha_0 + \gamma_i + \alpha_1 \log(\text{Size}) + \alpha_2 \text{Domini} + \alpha_3 \text{Entry} + \alpha_4 \log(\text{Postexit}) + \sum_{k=1}^{n-1} \beta_k \text{Reasexit}_k + \sum_{t=1}^{m-1} \delta_t \text{Year}_t + \varepsilon_{it} \quad (1)$$

where Y_{it} is a chosen performance variable (e.g. return on equity, return on investment, return on capital employed,⁵ total sales per employee), γ_i is the time invariant firm idiosyncratic (fixed) effect, Size is the number of firm employees, Domini is a (zero/one) dummy measuring affiliation to the Domini 400 index; Entry is a dummy that takes the value of one in the year of entry into the Domini 400 index and zero otherwise; Postexit is a variable measuring the number of years following exit from the Domini 400 index; Reasexit_k is the k th dummy taking the value of one in the year of exit when the specific exit rationale (*Military, Environment, Product quality, Bad govnce and Bad labour*) applies. Finally, Year_t is a year t dummy picking up year effects.

In our estimate, we, therefore try to disentangle the effects of CSR (proxied by Domini affiliation) from business cycle effects (year dummies) and idiosyncratic characteristics (e.g. management quality) of each firm (proxied by the fixed effect measured through the firm specific intercept component u_i).

⁵ Return on capital employed is equal to Operating income/(Shareholders' equity + Interest bearing liabilities). Its advantage is that it includes in the denominator and indicator which depends on firm indebtedness and therefore, does not suffer, like ROE, of sensitiveness to firm leverage (i.e. highly leveraged firms tend, by definition, to have significantly higher ROE than nonhighly leveraged ones).

Table 1. Distribution for the variables selected for the empirical analysis

Centile (%)	Total sales (millions of \$)	R&D	ROI	ROE	ROCE
1	6.678	0.055	-31.820	-72.540	-0.022
5	16.493	0.202	-5.200	-17.230	-0.001
10	30.917	0.387	1.100	-3.250	0.000
25	110.821	1.049	5.940	7.980	0.000
50	274.595	4.279	10.305	15.190	0.001
75	902.441	24.731	16.640	22.020	0.004
90	4415.063	120.051	24.580	33.300	0.012
95	11 724.880	592.727	31.690	45.250	0.027
99	56 790.850	3629.195	58.670	129.600	0.169

Notes: Legend of variables: Total sales, total sales per employee; R&D, Research and Development per employee; ROI, Return on Investment; ROE, Return on Equity; ROCE, Return on Capital Employed (where capital employed is shareholders' equity + interest bearing liabilities).

To provide an example of the relevance of this approach, it may happen that the association of Domini affiliation with a positive performance in a given dependent variable depends from the fact that high performers are more likely to search for Domini affiliation than low performers. In this case, the causation would be reversed with good performance causing Domini affiliation and not vice versa. In our estimate, fixed effects should capture differences in *ex ante* characteristics and the Domini variable should measure just the net effect of CSR.

The use of fixed effect controls for measurement errors arising from the use of industry dummies as well. The identification of firm specific characteristics goes in fact deeper than the identification of industry characteristics, since industry classifications are becoming always more imperfect taxonomies for firms with increasingly diversified product mix.

Table 1 presents preliminary descriptive findings on the distribution of variables used for the econometric analysis showing that the median value for ROI (ROE) is around 10 (15)% and that more than 5 (10)% of ROI (ROE) observations are negative.

Table 2 illustrates descriptive findings on the distribution of the dependent variables selected for the econometric analysis according to the three subgroups of firms which are never (*nondomini*), always (*sempredomini*) or, at some moment in the observation period, (*domini*) in the DI. The analysis is provided for the overall sample and for the size and R&D/nonR&D investing subsamples that we will consider also in the econometric analysis. A relevant

finding is that average *nondomini* total sales per employee (return on equity) are (is) always lower than in the *sempredomini* subgroup with the exception of the small cap (large cap) subsample. Overall, descriptive findings do not help much in obtaining a clear cut picture of the impact of SR on corporate performance and econometric analysis is needed to disentangle *ex ante* identity from Domini affiliation effects.

Results from econometric analysis

The standard techniques applied to time series require, before estimating a model, that series are $I(0)$ or, if not, that they have at least one cointegrating vector. This is to avoid that significant relationships between the dependent variable and the regressors are led by spurious correlations. These techniques are now being applied also to the time dimension of individuals in panels. The application of these techniques to panel data is complex and requires the formulation of joint hypotheses on the stationarity of the time series of each of the individuals (in our case firms), being part of the panel.

We first test for the stationarity of nondiscrete series in our estimates (firm size, net sales per worker, return on equity, on investment and on capital employed) by using the Fisher's test, developed by Maddala and Wu (1999), based on the p -values from N independent unit root tests. The null hypothesis assumes that all series are non-stationary. The test has two alternatives. The homogeneous alternative (all series are stationary) and the heterogeneous alternative (some series are

Table 2. Descriptive statistics of variables used in the empirical analysis

Variable	Mean	SD	25th percentile	Median	75th percentile
Overall sample					
<i>Sempredomini</i>					
TSA	2846.29	13 785.27	110.820	274.595	902.441
ROI	11.86	14.10	5.965	10.420	16.735
ROE	16.95	130.83	8.400	15.630	22.185
ROCE	0.01	0.05	0.000	0.001	0.004
<i>Domini</i>					
TSA	2592.07	12 715.38	123.147	279.125	844.246
ROI	11.54	14.32	5.940	10.305	16.640
ROE	19.10	222.12	7.975	15.190	22.020
ROCE	0.01	0.04	0.000	0.001	0.003
<i>Nondomini</i>					
TSA	2297.24	13 520.69	62.469	212.598	667.719
ROI	10.13	48.02	5.080	8.930	14.310
ROE	13.31	108.01	7.695	15.060	22.305
ROCE	0.00	0.12	0.000	0.001	0.003
Large capitalization					
<i>Sempredomini</i>					
TSA	5624.811	21 813.090	167.527	423.489	2635.587
ROI	11.798	15.581	5.720	10.170	17.270
ROE	16.488	212.249	9.440	16.900	23.490
ROCE	0.004	0.028	0.000	0.001	0.003
<i>Domini</i>					
TSA	4916.387	19 391.450	192.632	434.342	2403.724
ROI	11.652	16.285	5.710	10.380	17.030
ROE	24.919	372.343	8.640	16.220	22.887
ROCE	0.005	0.031	0.000	0.001	0.003
<i>Nondomini</i>					
TSA	4463.960	22 966.450	185.655	482.402	1405.051
ROI	11.132	32.120	4.960	9.240	15.370
ROE	21.703	71.852	9.365	17.450	24.085
ROCE	0.000	0.096	0.000	0.001	0.003
Small capitalization					
<i>Sempredomini</i>					
TSA	1465.073	8823.862	78.301	179.284	512.615
ROI	10.109	10.814	5.637	9.270	14.325
ROE	17.630	100.865	7.650	13.670	21.140
ROCE	0.005	0.013	0.000	0.002	0.006
<i>Domini</i>					
TSA	1359.96	8446.275	74.395	165.623	497.434
ROI	9.757	11.513	5.460	9.170	14.530
ROE	14.902	82.975	6.210	13.085	20.457
ROCE	0.006	0.020	0.000	0.002	0.006
<i>Nondomini</i>					
TSA	1665.788	8791.105	25.126	102.111	389.152
ROI	8.577	25.349	5.167	9.055	13.807
ROE	5.810	167.809	8.960	14.990	22.320
ROCE	0.008	0.035	0.000	0.001	0.004

(continued)

Table 2. Continued

Variable	Mean	SD	25th percentile	Median	75th percentile
R&D investing					
<i>Sempredomini</i>					
TSA	2844.207	10047.78	115.897	248.716	625.120
ROI	11.962	11.891	5.800	10.245	17.430
ROE	24.233	164.789	10.645	17.440	23.240
ROCE	0.006	0.032	0.000	0.001	0.003
<i>Domini</i>					
TSA	2553.322	9828.378	140.868	261.149	680.591
ROI	11.749	14.340	5.970	11.245	17.670
ROE	34.378	420.077	9.800	17.240	23.465
ROCE	0.006	0.033	0.000	0.001	0.003
<i>Nondomini</i>					
TSA	2345.778	12258.470	118.202	239.923	541.198
ROI	11.658	73.108	5.340	9.170	14.675
ROE	11.075	74.726	8.485	15.530	24.435
ROCE	-0.006	0.166	-0.001	0.001	0.004
NonR&D investing					
<i>Sempredomini</i>					
TSA	2846.977	14807.780	109.511	293.513	1001.300
ROI	11.822	14.731	6.020	10.480	16.550
ROE	14.769	118.764	8.060	14.985	21.935
ROCE	0.008	0.049	0.000	0.001	0.005
<i>Domini</i>					
TSA	2604.943	13540.090	116.210	294.169	927.001
ROI	11.463	14.316	5.890	9.990	16.392
ROE	14.393	100.644	7.610	14.650	21.455
ROCE	0.008	0.043	0.000	0.001	0.005
<i>Nondomini</i>					
TSA	2277.920	13993.800	44.423	202.749	719.731
ROI	9.553	34.084	5.065	8.790	14.185
ROE	14.055	117.025	7.440	14.890	21.710
ROCE	0.007	0.093	0.000	0.001	0.004

Notes: Legend of the dependent variables: Total sales, total sales per employee; R&D, Research and Development per employee; ROI, Return on Investment; ROE, Return on Equity; ROCE, Return on Capital Employed. Sempredomini, observations relative to firms being part of the DI throughout all the sample period; Nondomini, observations when sample firms are not part of the DI; Domini, observations when sample firms are part of the DI.

stationary and some others are not). The null hypothesis is rejected for our dependent variables (Table 3.1).

The problem is that with the Fisher test we cannot discriminate between the homogeneous and the heterogeneous alternative. For this reason, we add the Im *et al.* (2003) diagnostic in which the null hypothesis that all series are nonstationary is tested against the heterogeneous alternative.⁶ The test does

not lead to the rejection of this hypothesis for the net sales and net cash flow per employee series. The finding is consistent with the result of the Fisher test performed on individual (firm) series of the additional continuous variables (such as firm size) showing in some cases stationarity and in some others nonstationarity.⁷

Once verified the existence of nonstationarity in at least some of the time dimensions of our

⁶ Among authors emphasizing the importance of testing for panel cointegration to avoid spurious regressions in panel estimates see Okunade and Karakus (2001) and Gerdtham and Lothgren (2002). The latter also provide one of the earlier applications of the Im *et al.* (2003) test which is performed also in this article. For an application of panel cointegration to financial ratios see Peel *et al.* (2004).

⁷ Omitted for reasons of space and available from the authors upon request.

Table 3.1. Panel unit root test

		Size	Net sales per worker	Net cash flow per worker	ROI	ROE	ROCE
Fisher <i>t</i> -test	<i>p</i> -value	0.001	0.001	0.001	0.001	0.001	0.001
IPS test	<i>t</i>-bar	-0.774	-1.631	-3.312	-2.112	-2.691	-2.331
	Critical value 10%	-1.64	-1.64	-1.64	-1.64	-1.64	-1.64
	Critical value 5%	-1.67	-1.67	-1.67	-1.67	-1.67	-1.67
	Critical value 1%	-1.73	-1.73	-1.73	-1.73	-1.73	-1.73
	<i>W</i>-bar	17.286	-2.584	-24.924	-35.23	-32.23	-41.14
	<i>p</i> -value	1.000	0.005	0.000	0.000	0.000	0.000

Notes: Fisher *t*-test: the null hypothesis is that all series are nonstationary against the homogeneous alternative (all series are stationary) and the heterogeneous alternative (some series are stationary and some others are not). IPS, Im, Pesaran and Shin (2003). The null hypothesis of the test is that all series are nonstationary ($H_0: \rho_i = 1$) against the alternative heterogeneous hypothesis ($H_1: \rho_i < 1$ for each $i = 1, \dots, N_1$ and $\rho_i = 1$ for each $i = N_1 + 1, \dots, N$ for some N_1).

Table 3.2. Panel cointegration test by Nyblom and Harvey (2000)

		Size	Net sales per worker	Net cash flow per worker	ROI	ROE	ROCE
Fixed effects	NH- <i>t</i>	7.4667	8.412	7.153	9.152	8.195	9.003
	NH adj- <i>t</i>	44.800	41.230	38.450	47.250	41.330	41.360
	Critical value 10%	18.36	18.36	18.36	18.36	18.36	18.36
	Critical value 5%	19.01	19.01	19.01	19.01	19.01	19.01
	Critical value 1%	20.25	20.25	20.25	20.25	20.25	20.25
	<i>N</i>	>100	>100	>100	>100	>100	>100

Notes: The null hypothesis of the test is no cointegration ($H_0: \text{rank}(\text{var-cov}) = K = 0$) against the alternative hypothesis of cointegration ($H_1: \text{rank}(\text{var-cov}) = K \neq 0$). NH-*t*: the test is performed under the hypothesis of iid errors. NH adj-*t*: errors are allowed to be serially correlated and the test is performed using an estimate of the long-run variance derived from the spectral density matrix at frequency zero.

individual firm series, we can still perform a regression in levels with these variables if we find the presence of common stochastic trends (i.e. of cointegration). To check for it, we use the Nyblom and Harvey (2000) test which has the advantage of allowing for serial correlation in residuals and of not requiring any model to be estimated.⁸ The test rejects the null hypothesis of absence of common stochastic trends under the assumption of nonIID SEs (NH adj. *t* in Table 3.2), thereby identifying the presence of cointegrating vectors that allow us to estimate the model in levels.

A first important result of the estimates presented in Tables 4.1–4.4 shows that the joint insignificance of the fixed effects is rejected, confirming that idiosyncratic factors matter and their omission is likely to bias empirical findings.

Our empirical findings document that permanence into DI is associated with 13% higher total sales per employee after controlling for size, business cycle effects and idiosyncratic firm characteristics (Table 4.1, column 1). The positive total sales performance is consistent (even though not coincident) with findings from Stanwick and Stanwick (1998), Verschnoor (1998) and Ruf *et al.* (2001) mentioned in Section III. In the same estimate we find that doubling the years after Domini exit reduces total sales per employee by 23% in the overall sample and is associated with a significantly reduced performance (around 21, 23 and 23%, respectively for each of the three profitability indicators, ROI, ROE and ROCE) (Table 4.1, columns, 2, 3 and 4). These findings are not at odds with the Freeman (1984) hypothesis that CSR helps to reduce transaction costs with stakeholders but may be also

⁸ The test does not require model estimates because is based on the rank of covariance matrix of the disturbances driving the multivariate random walk. If this rank is equal to a certain number of common trends, this implies the presence of cointegration and vice versa. If the rank is equal to zero, as in the null hypothesis, then there are no common trends among the variables. Thus, failure to reject the null hypothesis of zero common trends is also an indication that the variables do not form a cointegrated combination.

Table 4.1. The impact of Domini affiliation on performance indicators

Dep var.	Tot sales		ROI		ROE		ROCE	
Domini	0.129	(4.98)	-0.096	(-2.46)	-0.064	(-1.50)	-0.096	(-2.63)
Entry	0.017	(0.41)	0.039	(0.65)	0.047	(0.69)	0.074	(1.26)
log(postexit)	-0.231	(-4.53)	-0.211	(-2.59)	-0.233	(-2.83)	-0.234	(-3.26)
Military	0.453	(2.67)	-0.026	(-0.11)	-0.064	(-0.21)	0.128	(0.55)
Environment	0.123	(0.88)	0.140	(0.69)	0.242	(1.10)	0.245	(1.27)
Product quality	0.246	(1.85)	-0.046	(-0.23)	-0.306	(-1.46)	-0.242	(-1.37)
Bad govce	-0.036	(-0.26)	0.134	(0.69)	-0.054	(-0.27)	0.119	(0.69)
Bad labour	0.152	(1.24)	0.332	(1.85)	0.400	(1.90)	0.407	(2.30)
Log(size)	-0.705	(-78.80)	-0.048	(-3.67)	-0.074	(-4.95)	-0.029	(-2.27)
Constant	10.903	(140.01)	2.665	(7.72)	3.466	(26.58)	2.735	(25.07)
R^2 within	0.428		0.032		0.021		0.033	
R^2 between	0.402		0.001		0.001		0.000	
R^2 overall	0.393		0.007		0.002		0.010	
Joint insignificance of the fixed effects [†]	95.13		6.70		5.21		6.90	
p -value	(0.000)		(0.000)		(0.000)		(0.000)	
Number of obs.	11 986		9792		10 357		10 472	
Average fixed effects								
Domini sample	0.070*		0.030*		0.007		0.030*	
Nondomini sample	-0.184*		-0.084*		-0.019		-0.081*	
Average fixed effects net of industry and size								
Domini sample	0.034*		0.025*		0.007		0.024*	
Nondomini sample	-0.089*		-0.070*		-0.018		-0.065*	

Notes: Legend of the dependent variables: Tot sales, total sales per worker; R&D, Research and Development per worker; ROI, Return on Investment; ROE, Return on Equity, ROCE, Return on Capital Employed. Legend of the regressors, Domini, dummy for affiliation in the Domini 400 index; Entry, dummy for entry into the Domini 400 index; Postexit, number of years after exit from the Domini 400 index; Military, Environment, Product quality, Bad govnce and Bad labour, dummies taking value of one the year of exit when the exit rationale (Military, Environment, Product quality, Bad govnce and Bad labour) applies, size, Number of firm employees. Coefficients and t -statistics of year dummies are omitted for reasons of space and available upon request.

*Subgroup means are significantly different at 95%.

[†] F -test. Null hypothesis that all $u_i=0$.

explained by a distress factor which affect both performance and exit from the Domini.

Columns 2 to 4 (Table 4.1) show that Domini affiliation is associated with a reduction of return on investment, return on equity and return on capital employed of around 10, 6 and 10%, respectively. Note that the effect of Domini affiliation on ROE is not significant in the overall sample estimate but that it becomes so when large or R&D investing firms are excluded from the sample (Tables 4.2–4.4). This negative effect is compensated by the positive impact of entry into the DI on ROI and ROCE in the estimates in which large caps are excluded from the sample (Table 4.2). More generally, estimates in Table 4.2 in which large caps are excluded from the sample reveals an overall deterioration of the Domini effect since the positive impact on total sales disappears and the negative effect on profitability indicators become stronger.

Moreover, negative post exit effects on profitability indicators seem to exist (and to be stronger) for

nonlarge capitalization firms (around 62% lower return on capital employed and 60% lower return on investment) (Table 4.2).

When we re-estimate the model for nonR&D investing firms only the results of the overall sample are confirmed with some slight differences: (i) Domini affiliation has a significant effect on total sales per worker even when large caps are excluded from the sample (16% with large caps and 9% without large caps) (Tables 4.3 and 4.4, column 1); (ii) the negative effects of Domini affiliation on profitability indicators tends to be larger in these subsamples (Tables 4.3 and 4.4, columns 2–4).

Overall findings reported in Tables 4.1–4.4 outline a picture in which SR seems consistent with the shift in focus from shareholders wealth maximization to a multistakeholders welfare approach. The SR firms productivity is equal or, in some cases, significantly higher than in the control sample while, at the same time, return on equity is significantly lower. These findings clearly match with our interpretation of SR criteria described in Section IV. Such criteria are

Table 4.2. The impact of Domini affiliation on performance indicators (large capitalization firms excluded from the sample)

Dep var.	Tot sales		ROI		ROE		ROCE	
Domini	0.050	(1.45)	-0.172	(-3.33)	-0.156	(-2.83)	-0.119	(-2.53)
Entry	0.061	(1.11)	0.170	(2.15)	0.081	(0.95)	0.137	(1.86)
log(postexit)	-0.147	(-1.58)	-0.596	(-3.46)	-0.164	(-1.17)	-0.617	(-4.38)
Military	0.628	(2.84)	-0.227	(-0.77)	-0.391	(-1.18)	-0.212	(-0.73)
Environment	0.009	(0.05)	0.205	(0.88)	0.181	(0.75)	0.426	(2.00)
Product quality	0.185	(0.98)	-0.052	(-0.17)	-0.592	(-2.10)	-0.315	(-1.28)
Bad govce	-0.121	(-0.83)	0.070	(0.34)	-0.125	(-0.59)	0.109	(0.60)
Badlabour	-0.367	(-0.67)	-	-	-0.345	(-0.44)	-	-
Log(size)	-0.734	(-66.90)	-0.056	(-3.58)	-0.080	(-4.42)	-0.034	(-2.27)
Constant	10.743	(113.26)	2.910	(21.67)	3.530	(22.79)	2.739	(21.07)
R^2 within	0.435		0.035		0.024		0.036	
R^2 between	0.483		0.000		0.000		0.002	
R^2 overall	0.478		0.007		0.004		0.011	
Joint insignificance of the fixed effects [†]	60.10		6.31		4.82		6.56	
p -value	(0.000)		(0.000)		(0.000)		(0.000)	
Number of obs.	8361		6862		7345		7334	
Average fixed effects								
Domini sample	0.044*		0.043*		0.019*		0.038*	
Nondomini sample	-0.105*		-0.109*		-0.045*		-0.092*	
Average fixed effects net of industry and size								
Domini sample	-0.024*		0.032*		0.016*		0.026*	
Nondomini sample	0.057*		-0.079*		-0.039*		-0.063*	

Notes: Legend of the dependent variables: Tot sales, total sales per worker; R&D, Research and Development per worker; ROI, Return on Investment; ROE, Return on Equity, ROCE, Return on Capital Employed. Legend of the regressors, Domini, dummy for affiliation in the Domini 400 index; Entry, dummy for entry into the Domini 400 index; Postexit, number of years after exit from the Domini 400 index; Military, Environment, Product quality, Bad govnce and Bad labour, dummies taking value of one the year of exit when the exit rationale (Military, Environment, Product quality, Bad govnce and Bad labour) applies, size. Number of firm employees. Coefficients and t -statistics of year dummies are omitted for reasons of space and available upon request.

*Subgroup means are significantly different at 95%.

[†] F -test. Null hypothesis that all $u_i=0$.

shown to generate transfers of wealth to stakeholders and workers, but are also interpreted as having the potential effect of increasing workers motivation and productivity.

To control further for endogeneity and reverse causation we wonder whether some permanent characteristics distinguish Domini affiliated firms from the control sample or, in other terms, if firms which will be included in the DI are idiosyncratically different in quality with respect to the control sample.

We, therefore, test whether average fixed effects for the control sample and for firms that are in the DI at some moment in our sample interval are significantly different. Our findings (last rows of Tables 4.1–4.4) show that SR firms have significantly higher net sales and return on investment fixed effects before and after controlling for size and industry effects (in all of the six estimated samples) in the overall and in all subgroup estimates. The difference between fixed effects of Domini and nonDomini firms is not significant in the return

on equity estimate. Our interpretation is that Domini affiliation significantly reinforces traits of corporate identity that were already in place before entry. Summing up all our findings, we are led to conclude that: (i) SR firms have *ex ante* higher total sales per worker and higher return on investment. (ii) their permanence into the DI generates a new significant independent effect in one case consistent (higher total sales per worker) and in another not consistent (lower return on equity) with *ex ante* characteristics.

V. Domini Affiliation and Conditional Stock Return Volatility

The relatively lower ROE of SR firms does not necessarily mean that SR stocks are not a good business. The comparative performance of equities must be obviously evaluated on the risk-return perspective. In this perspective, relatively lower

Table 4.3. The impact of Domini affiliation on performance indicators (nonR&D investing firms)

Dep var.	Tot sales		ROI		ROE		ROCE	
Domini	0.158	(5.11)	-0.150	(-3.05)	-0.085	(-1.63)	-0.148	(-3.34)
Entry	-0.015	(-0.31)	0.048	(0.64)	0.053	(0.64)	0.164	(2.35)
log(postexit)	-0.017	(-0.20)	-0.331	(-1.92)	0.0001	(1.21)	-0.219	(-1.91)
Military	0.542	(2.42)	0.298	(0.77)	-0.196	(-0.47)	0.043	(0.13)
Environment	-0.362	(-1.53)	-0.023	(-0.06)	0.362	(0.97)	-0.065	(-0.20)
Product quality	-0.168	(-0.99)	0.055	(0.21)	-0.372	(-1.43)	-0.354	(-1.57)
Bad govce	0.112	(0.73)	0.180	(0.79)	-0.020	(-0.09)	0.138	(0.69)
Bad labour	0.263	(1.39)	0.623	(2.05)	0.451	(1.54)	0.547	(1.92)
Log(size)	-0.789	(-70.20)	-0.028	(-1.64)	-0.067	(-3.61)	-0.014	(-0.89)
Constant	11.517	(118.66)	2.723	(18.61)	3.391	(21.19)	2.675	(19.43)
R ² within	0.462		0.032		0.020		0.035	
R ² between	0.408		0.003		0.000		0.001	
R ² overall	0.426		0.011		0.002		0.012	
Joint insignificance of the fixed effects [†]	69.11		6.13		3.96		5.37	
<i>P</i> -value	(0.000)		(0.000)		(0.000)		(0.000)	
Number of obs.	8287		6563		7267		7307	
Average fixed effects								
Domini sample	0.055*		0.045*		0.010		0.045*	
Nondomini sample	-0.138*		-0.119*		-0.025		-0.113*	
Average fixed effects net of industry and size								
Domini sample	0.014		0.043*		0.012*		0.041*	
Nondomini sample	-0.036		-0.114*		-0.031*		-0.104*	

Notes: Legend of the dependent variables: Tot sales, total sales per worker; R&D, Research and Development per worker; ROI, Return on Investment; ROE, Return on Equity, ROCE, Return on Capital Employed. Legend of the regressors, Domini, dummy for affiliation in the Domini 400 index; Entry, dummy for entry into the Domini 400 index; Postexit, number of years after exit from the Domini 400 index; Military, Environment, Product quality, Bad govnce and Bad labour, dummies taking value of one the year of exit when the exit rationale (Military, Environment, Product quality, Bad govnce and Bad labour) applies, size. Number of firm employees. Coefficients and *t*-statistics of year dummies are omitted for reasons of space and available upon request.

*Subgroup means are significantly different at 95%.

[†]*F*-test. Null hypothesis that all $u_i=0$.

returns on equity of SR firms may be compensated by relatively lower risk. Following Boccardelli and De Santo (2004) we test the relative risk of a buy-and-hold investment strategy on our SR stocks *vis à vis* the same strategy on our control sample by building an index of stock returns for the two subsamples and estimate their conditional volatility with a simple Generalised Autoregressive Conditional Heteroschedasticity (GARCH) (1, 1)⁹ (Nelson, 1989; Engle, 1990; Engle and Ng, 1993).

The chosen specification for stock return behaviour (mean equation) is:

$$R_t = \alpha_0 + \sum_i \gamma_i R_{t-i} + \sum_j \beta_j DW_j + \delta DJ + \varepsilon_t \quad (2)$$

where R_t is the average subgroup (SR or control sample) one-day compounded return, DW_j is the j th dummy measuring 'day of the week' effects, DJ is a

dummy for 'January' effect and $\varepsilon_t \approx (0, h_t)$ is the error term.

The standard specification adopted for testing the asset market volatility in the second (variance) equation of a GARCH (1, 1) model is given by:

$$h_t = b_0 + b_1 \varepsilon_{t-1}^2 + b_2 h_{t-1} \quad (3)$$

where h_t is the conditional variance of the error term in (2), ε_{t-1}^2 measures the impact of news on conditional variance and h_{t-1} is the conditional variance autoregressive component that measures persistence of the dependent variable.

Mean equations for the two (Domini and control sample) indexes (Table 5) have some common elements. One period lagged daily log returns have small but significant effects on the dependent variable.

⁹ Preliminary tests on normality and Autoregressive Conditional Heteroschedasticity (ARCH) LM tests show that observed returns are nonnormal and have an ARCH structure. More complex (asymmetric, nonlinear) conditional heteroskedasticity models have also been estimated giving results which are not substantially different in terms of the effect of SR. Results are omitted for reasons of space and available upon request.

Table 4.4. The impact of Domini affiliation on performance indicators (nonR&D investing firms – large capitalization firms are excluded from the sample)

Dep var.	Tot sales		ROI		ROE		ROCE	
Domini	0.090	(2.32)	-0.202	(-3.37)	-0.177	(-2.76)	-0.146	(-2.71)
Entry	0.020	(0.34)	0.193	(2.12)	0.075	(0.77)	0.182	(2.19)
log(postexit)	0.035	(0.28)	-0.405	(-1.75)	0.163	(0.78)	-0.532	(-3.25)
Military	0.689	(2.49)	0.290	(0.75)	-0.246	(-0.58)	-0.166	(-0.45)
Environment	-0.548	(-1.92)	-0.124	(-0.25)	0.208	(0.48)	0.059	(0.16)
Product quality	-0.351	(-1.61)	-0.047	(-0.14)	-0.554	(-1.70)	-0.445	(-1.59)
Bad govce	0.051	(0.32)	0.115	(0.48)	-0.111	(-0.45)	0.161	(0.77)
Log(size)	-0.786	(-57.58)	-0.057	(-2.78)	-0.067	(-3.01)	-0.030	(-1.57)
Constant	11.090	(94.40)	2.966	(17.05)	3.212	(16.55)	2.600	(15.61)
R^2 within	0.455		0.037		0.023		0.040	
R^2 between	0.500		0.005		0.001		0.003	
R^2 overall	0.505		0.011		0.006		0.015	
Joint insignificance of the fixed effects [†]	45.92		5.93		3.84		5.29	
p -value	(0.000)		(0.000)		(0.000)		(0.000)	
Number of obs.	5975		4792		5308		5312	
Average fixed effects								
Domini sample	0.029		0.054*		0.022*		0.050*	
Nondomini sample	-0.068		-0.129*		-0.051*		-0.115*	
Average fixed effects net of industry and size								
Domini sample	-0.039*		0.044*		0.020*		0.039*	
Nondomini sample	0.090*		-0.107*		-0.045*		-0.090*	

Notes: Legend of the dependent variables: Tot sales, total sales per worker; R&D, Research and Development per worker; ROI, Return on Investment; ROE, Return on Equity, ROCE, Return on Capital Employed. Legend of the regressors, Domini, dummy for affiliation in the Domini 400 index; Entry, dummy for entry into the Domini 400 index; Postexit, number of years after exit from the Domini 400 index; Military, Environment, Product quality, Bad govnce and Bad labour, dummies taking value of one the year of exit when the exit rationale (Military, Environment, Product quality, Bad govnce and Bad labour) applies, size. Number of firm employees. Coefficients and t -statistics of year dummies are omitted for reasons of space and available upon request.

*Subgroup means are significantly different at 95%.

[†] F -test. Null hypothesis that all $u_i=0$.

Moreover, the control sample (nonSR firms) exhibits also a negative and significant Monday effect, consistently with several previous results in literature (Taylor, 1986).

Kurtosis and skewness tests, performed on the residuals obtained from the best estimation of the base equations, show that the distribution is not normal. The existence of excess kurtosis confirms the 'stylized fact' of thick tails for financial time series, which was first observed by Mandelbrot (1963a, b). The sum of the ARCH and GARCH coefficients is very close to one, indicating that volatility shocks are quite persistent (but lower than one).

A relevant finding is that 95% confidence intervals of the first equation intercept overlap and therefore, we find no difference in excess returns between the SR and the nonSR portfolios. The main differences between the two indexes are that the Monday effect is significant and negative only in the control sample index and that the intercept in the second equation is significantly lower (at 90%) for the DI.

Figure 1 plots conditional volatility for the two indexes and confirms that the conditional volatility of the DI is almost always lower than that of the control sample index.

The quality of the SR index is not just that of having relatively lower conditional volatility but also that of having a significantly reduced volatility reaction to large shocks. In Table 6, the model is reestimated by adding a dummy which tests the change in conditional volatility after the burst of the Nasdaq stock market bubble in March 2000. The approach used for evaluating the impact of changes in stock price volatility after news' releases or regime shifts follows previous research from Crain and Lee (1996), Becchetti and Caggese (2000), Choi and Kim (1991) and Wang *et al.* (2002). Our findings show in this case that the impact is significantly lower in the SR index.

A possible interpretation of this result hinges upon the different nature of those investing SR and nonSR portfolios. According to the *2003 Report on Socially Responsible Investing Trends in the United States*,

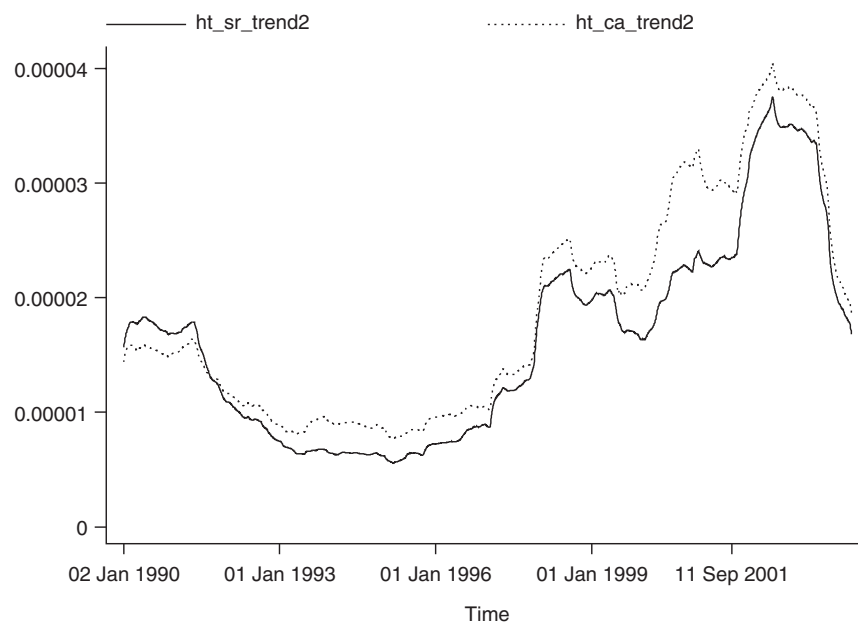
Table 5. GARCH (1, 1) estimated conditional volatility for SR firms and the control sample

Mean return equation			
Dependent variable: R_T			
Variables	Domini index constituents	Variables	Control group
R_{t-1}	0.1283** (7.4931)	R_{t-1}	0.1250** (7.0795)
DJun	-7.75E-05 (-0.4258)	DJun	-0.0002 (-0.8587)
DMonday	-0.0002 (-1.2607)	DMonday	-0.0004** (-2.3157)
DThursday	-0.0002 (-1.3785)	DThursday	-0.0003* (-1.6532)
DWednesday	7.80E-05 (0.4824)	DWednesday	0.0002 (1.0250)
DFriday	-4.60E-05 (0.3026)	DFriday	-4.35E-05 (-0.2566)
Constant	0.0003** (2.9580)	Constant	0.0004** (3.4081)
Variance equation			
Dependent variable: h_t			
ε_{t-1}^2 -SR	0.0883** (5.9167)	ε_{t-1}^2 -CA	0.0864** (13.699)
h_{t-1} -SR	0.9026** (147.909)	h_{t-1} -CA	0.8979** (126.947)
Constant-SR	1.84E-07** (5.9168)	Constant-CA	2.97E-07** (7.2819)
Wald χ^2	10 352.3	Wald χ^2	9904.3
Obs.	3651	Obs.	3651

Notes: Legend of the variables: h_t , conditional variance estimated in the GARCH (1, 1) model; ε_{t-1}^2 : lagged square residual of the mean equation.

t -statistics are in square brackets.

**95% significance, *90% significance.

**Fig. 1. Conditional variance (SR firms vs. control sample)**

Legend: ht_sr_trend2: conditional variance of Domini constituents index stock returns; ht_ca_trend2: conditional variance of control group index stock returns.

the highest growth component (80%) in the growth of assets involved in social investing from 1995 to 2003 has been that of community investing.¹⁰ The nature

of the latter and generally of most SR investors, is therefore expected to be 'more patient' and long-term oriented with respect to nonSR investors.

¹⁰ Community development financial institutions primarily provide loan financing to businesses in areas that need economic development. CDFIs make loans that are generally 'unbankable' by traditional industry standards because of past credit problems, the size of the loan request, limited equity from founders or limited collateral.

Table 6. The impact of the speculative bubble burst on stock volatility in a GARCH model (the event date is 10 March 2000)

Variables	Domini index	Control sample
Dependent variable: R_T		
R_{t-1}	0.1315** (7.3757)	0.1281** (7.0439)
DJanuary	-5.89E-05 (-0.3212)	-0.0001 (-0.7688)
DMonday	-0.0001 (-1.1273)	-0.0003** (-2.1652)
DThursday	-0.0001 (-1.3059)	-0.0002* (-1.6288)
DWednesday	9.50E-05 (0.5886)	0.0002 (1.1074)
DFriday	-3.67E-05 (-0.2425)	-3.41E-05 (-0.2019)
Constant	0.0003** (2.7696)	0.0004** (3.2301)
Dependent variable: h_t		
ε_{t-1}^2	0.0914** (14.0605)	0.0926** (12.7800)
h_{t-1}	0.8870** (106.9555)	0.8678** (75.5598)
DBubble	4.16E-07** (4.9226)	8.31E-07** (5.0562)
Constant	2.55E-07** (6.0761)	4.90E-07** (6.9037)
Wald χ^2	9342.3	9432.21
F-test on the significance in the difference of DBubble coefficient in the SR and non-SR sample (<i>p</i> -value)	(0.01)	(0.01)
Obs.	3651	3651

Notes: Legend of the variables: h_t , conditional variance estimated in the GARCH (1, 1) model; ε_{t-1}^2 , lagged square residual of the mean equation. DBubble, dummy which takes the value of 1 after the 10 March 2000 and zero otherwise.

t-statistics are in square brackets.

**95% significance, *90% significance.

An indirect evidence of it is provided in the same report by the comparison of the accumulated equity fund flows of SR and nonSR funds in the USA between January 2001 and May 2003, where we assist to a constant growth in the stock of SR fund assets compared with a sharp drop in the nonSR funds in the mid of this period.

VI. Conclusions

Corporate social responsibility is a multifaceted complex phenomenon involving a set of actions that are expected to affect significantly cost structures and workers participation to productive activity. As a consequence, the scope of empirical investigations on the effects of CSR on corporate performance must be such that the highest number of hidden dimensions of the problem can be discovered and analysed.

This article tries to do so by enlarging the observed estimation period, by discriminating among different reasons for entry or exit from a selected measure of CSR and by controlling for business cycle effects and for time invariant idiosyncratic characteristics of the observed firms. Our empirical approach allows us to

disclose many unexplored dimensions of the CSR/corporate performance relationship.

Our findings are consistent with the hypothesis that CSR is expected, in principle, to redirect the focus of corporate activity from the maximization of shareholders to that of stakeholders interests. We observe in fact that workers in SR firms produce 'larger cakes' (total sales per employee are significantly higher), but a smaller portion of these cakes goes to shareholders (returns on equity are significantly lower when large caps or R&D investing firms are not in the sample and returns on capital invested and on investment are always lower). The 'penalty' that SR imposes on shareholders (relatively lower return on equity) seems to be compensated by reduced conditional volatility of SR *vis à vis* the control sample. In fact, if the ROE of socially responsible firms is significantly lower when we exclude large firms from the sample, risk adjusted returns of the SR portfolio are not significantly different from those of the control sample.

A second robust finding is the significantly negative impact (both in terms of productivity and return on equity) of exit from the DI. This result documents negative consequences arising when a

CSR stance is abandoned. Limits of our information do not allow to verify whether the event reveals an exogenous negative shock on firm competitiveness that also leads to exclusion from the Domini or whether the shock depends on reduced productivity of workers or on sanctions imposed by socially responsible consumers.

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Appendix 1: Criteria of KLD Social Ratings

Social issue ratings

Community. *STRENGTHS Charitable Giving.* The company has consistently given over 1.5% of trailing 3-year net earnings before taxes (NEBT) to charity, or has otherwise been notably generous in its giving.

Innovative Giving. The company has a notably innovative giving programme that supports nonprofit organizations, particularly those promoting self-sufficiency among the economically disadvantaged. Companies that permit nontraditional federated charitable giving drives in the workplace are often noted in this section as well. *NonUS Charitable Giving.* The company has made a substantial effort to make charitable contributions abroad, as well as in the USA. To qualify, a company must make at least 20% of its giving, or have taken notably innovative initiatives in its giving program, outside the US.

Support for Housing. The company is a prominent participant in public/private partnerships that support housing initiatives for the economically disadvantaged, e.g., the National Equity Fund or the Enterprise Foundation. *Support for Education.* The company has either been notably innovative in its support for primary or secondary school education, particularly for those programmes that benefit the economically disadvantaged, or the company has prominently supported job-training programmes for youth. *Other Strength.* The company

has either an exceptionally strong volunteer programme, in-kind giving programme, or engages in other notably positive community activities.

CONCERNS Investment Controversies. The company is a financial institution whose lending or investment practices have led to controversies, particularly ones related to the Community Reinvestment Act. *Negative Economic Impact.* The company's actions have resulted in major controversies concerning its economic impact on the community. These controversies can include issues related to environmental contamination, water rights disputes, plant closings, 'put-or-pay' contracts with trash incinerators, or other company actions that adversely affect the quality of life, tax base, or property values in the community. *Other Concern.* The company is involved with a controversy that has mobilized community opposition, or is engaged in other noteworthy community controversies.

Corporate governance. *STRENGTHS Limited Compensation.* The company has recently awarded notably low levels of compensation to its top management or its board members. The limit for a rating is total compensation of less than \$500 000 per year for a CEO or \$30 000 per year for outside directors. *Ownership Strength.* The company owns between 20 and 50% of another company KLD has cited as having an area of social strength, or is more

than 20% owned by a firm that KLD has rated as having social strengths. When a company owns more than 50% of another firm, it has a controlling interest and KLD treats the second firm as if it is a division of the first. **Other Strength.** The company has an innovative compensation plan for its board or executives, a unique and positive corporate culture, or some other initiative not covered by other KLD ratings.

CONCERNS High Compensation. The company has recently awarded notably high levels of compensation to its top management or its board members. The limit for a rating is total compensation of more than \$10 million per year for a CEO or \$100 000 per year for outside directors. **Tax Disputes.** The company has recently been involved in major tax disputes involving more than \$100 million with the Federal, state, or local authorities. **Ownership Concern.** The company owns between 20 and 50% of a company KLD has cited as having an area of social concern, or is more than 20% owned by a firm KLD has rated as having areas of concern. When a company owns more than 50% of another firm, it has a controlling interest and KLD treats the second firm as if it is a division of the first. **Other Concern.** The company restated its earnings over an accounting controversy, has other accounting problems, or is involved with some other controversy not covered by other KLD ratings.

Diversity. STRENGTHS CEO. The company's chief executive officer is a woman or a member of a minority group. **Promotion.** The company has made notable progress in the promotion of women and minorities, particularly to line positions with profit-and-loss responsibilities in the corporation. **Board of Directors.** Women, minorities and/or the disabled hold four seats or more (with no double counting) on the board of directors, or one-third or more of the board seats if the board numbers less than 12. **Work/Life Benefits.** The company has outstanding employee benefits or other programmes addressing work/life concerns, e.g. childcare, elder care, or flextime. **Women & Minority Contracting.** The company does at least 5% of its subcontracting, or otherwise has a demonstrably strong record on purchasing or contracting, with women- and/or minority-owned businesses. **Employment of the Disabled.** The company has implemented innovative hiring programmes, other innovative human resource programmes for the disabled, or otherwise has a superior reputation as an employer of the disabled. **Gay and Lesbian Policies.** The company has implemented notably progressive policies towards its gay

and lesbian employees. In particular, it provides benefits to the domestic partners of its employees. **Other Strength.** The company has made a notable commitment to diversity that is not covered by other KLD ratings.

CONCERNS Controversies. The company either has paid substantial fines or civil penalties as a result of affirmative action controversies, or has otherwise been involved in major controversies related to affirmative action issues. **NonRepresentation.** The company has no women on its board of directors or among its senior line managers. **Other Concern.** The company is involved in diversity controversies not covered by other KLD ratings.

Employee relations. STRENGTHS Cash Profit Sharing. The company has a cash profit-sharing programme through which it has recently made distributions to a majority of its workforce. **Employee Involvement.** The company strongly encourages worker involvement and/or ownership through stock options available to a majority of its employees, gain sharing, stock ownership, sharing of financial information or participation in management decision-making. **Health and Safety Strength.** The company is noted by the US Occupational Health and Safety Administration for its safety programmes. **Retirement Benefits Strength.** The company has a notably strong retirement benefits programme. **Union Relations.** The company has a history of notably strong union relations. **Other Strength.** The company has strong employee relations initiatives not covered by other KLD ratings.

CONCERNS Union Relations. The company has a history of notably poor union relations. **Health and Safety Concern.** The company recently has either paid substantial fines or civil penalties for willful violations of employee health and safety standards, or been otherwise involved in major health and safety controversies. **Workforce Reductions.** The company has reduced its workforce by 15% in the most recent year or by 25% during the past 2 years, or it has announced plans for such reductions. **Retirement Benefits Concern.** The company has either a substantially underfunded defined benefit pension plan, or an inadequate retirement benefits programme. **Other Concern.** The company is involved in an employee relations controversy that is not covered by other KLD ratings.

Environment. STRENGTHS Beneficial Products and Services. The company derives substantial revenues from innovative remediation products, environmental services, or products that promote

the efficient use of energy [costa], or it has developed innovative products with environmental benefits. (The term 'environmental service' does not include services with questionable environmental effects, such as landfills, incinerators, waste-to-energy plants and deep injection wells.) **Clean Energy.** The company has taken significant measures to reduce its impact on climate change and air pollution through use of renewable energy and clean fuels or through energy efficiency. The company has demonstrated a commitment to promoting climate-friendly policies and practices outside its own operations. **Communications.** The company is a signatory to the CERES Principles, publishes a notably substantive environmental report, or has notably effective internal communications systems in place for environmental best practices. **Pollution Prevention.** The company has notably strong pollution prevention programmes including both emissions reductions and toxic-use reduction programmes. **Recycling.** The company is either a substantial user of recycled materials as raw materials in its manufacturing processes, or a major factor in the recycling industry. **Other Strength.** The company has demonstrated a superior commitment to management systems, voluntary programmes, or other environmentally proactive activities.

CONCERNS Hazardous Waste. The company's liabilities for hazardous waste sites exceed \$50 million (vantaggio per le SR), or the company has recently paid substantial fines or civil penalties for waste management violations. **Regulatory Problems.** The company has recently paid substantial fines or civil penalties for violations of air, water, or other environmental regulations, or it has a pattern of regulatory controversies under the Clean Air Act, Clean Water Act or other major environmental regulations. **Ozone Depleting Chemicals.** The company is among the top manufacturers of ozone depleting chemicals such as HCFCs, methyl chloroform, methylene chloride or bromines. **Substantial Emissions.** The company's legal emissions of toxic chemicals (as defined by and reported to the EPA) from individual plants into the air and water are among the highest of the companies followed by KLD. **Agricultural Chemicals.** The company is a substantial producer of agricultural chemicals, i.e. pesticides or chemical fertilizers. **Climate Change.** The company derives substantial revenues from the sale of coal or oil and its derivative fuel products, or the company derives substantial revenues indirectly from the combustion of coal or oil and its derivative fuel products. Such companies include electric utilities, transportation companies with fleets of vehicles, auto and truck manufacturers and other

transportation equipment companies. **Other Concern.** The company has been involved in an environmental controversy that is not covered by other KLD ratings.

Human rights. STRENGTHS Indigenous Peoples Relations Strength. The company has established relations with indigenous peoples near its proposed or current operations (either in or outside the USA) that respect the sovereignty, land, culture, human rights and intellectual property of the indigenous peoples. **Labor Rights Strength.** The company has outstanding transparency on overseas sourcing disclosure and monitoring, or has particularly good union relations outside the USA. **Other Strength.** The company has undertaken exceptional human rights initiatives, including outstanding transparency or disclosure on human rights issues, or has otherwise shown industry leadership on human rights issues not covered by other KLD human rights ratings.

CONCERNS Burma Concern. The company has operations or investment in, or sourcing from, Burma. **Labor Rights Concern.** The company's operations outside the USA have had major recent controversies related to employee relations and labor standards or its USA operations have had major recent controversies involving sweatshop conditions or child labour. **Indigenous Peoples Relations Concern.** The company has been involved in serious controversies with indigenous peoples (either in or outside the USA) that indicate the company has not respected the sovereignty, land, culture, human rights and intellectual property of indigenous peoples. **Other Concern.** The company's operations outside the USA have been the subject of major recent human rights controversies not covered by other KLD ratings.

Product. STRENGTHS Quality. The company has a long-term, well-developed, company-wide quality programme, or it has a quality programme recognized as exceptional in US industry. **R&D/Innovation.** The company is a leader in its industry for research and development (R&D), particularly by bringing notably innovative products to market. **Benefits to Economically Disadvantaged.** The company has as part of its basic mission the provision of products or services for the economically disadvantaged. **Other Strength.** The company's products have notable social benefits that are highly unusual or unique for its industry.

CONCERNS Product Safety. The company has recently paid substantial fines or civil penalties, or is involved in major recent controversies or regulatory actions, relating to the safety of its products

and services. **Marketing/Contracting Controversy.** The company has recently been involved in major marketing or contracting controversies, or has paid substantial fines or civil penalties relating to advertising practices, consumer fraud, or government contracting. **Antitrust.** The company has recently paid substantial fines or civil penalties for antitrust violations such as price fixing, collusion, or predatory pricing, or is involved in recent major controversies or regulatory actions relating to antitrust allegations. **Other Concern.** The company has major controversies with its franchises, is an electric utility with nuclear safety problems, defective product issues, or is involved in other product-related controversies not covered by other KLD ratings.

Controversial business issues

Adult entertainment. Distributors. The report includes publicly traded US companies that derive 15% or more of total revenues from the *rental, sale or distribution* (wholesale or retail) of adult entertainment media products. **Owners and Operators.** The report includes publicly traded US companies that own and/or operate adult entertainment establishment. **Producers.** The report includes publicly traded US companies that produce adult media products including movies, magazines, books, calendars and websites. **Providers.** The report includes publicly traded US companies that offer pay-per-view adult entertainment. **Ownership of an Adult Entertainment Company.** The company owns more than 20% of another company with adult entertainment involvement. (When a company owns more than 50% of company with adult entertainment involvement, KLD treats the adult entertainment company as a consolidated subsidiary.) **Ownership by an Adult Entertainment Company.** The company is more than 50% owned by a company with adult entertainment involvement.

Alcohol. Licensing. The company licenses its company or brand name to alcohol products. **Manufacturers.** Companies that are involved in the manufacture alcoholic beverages including beer, distilled spirits or wine. **Manufacturers of Products Necessary for Production of Alcoholic Beverages.** Companies that derive 15% or more of total revenues from the supply of raw materials and other products necessary for the production of alcoholic beverages. **Retailers.** Companies that derive 15% or more of total revenues from the distribution (wholesale or retail) of alcoholic beverages. **Ownership of an Alcohol Company.** The company owns more than

20% of another company with alcohol involvement. (When a company owns more than 50% of company with alcohol involvement, KLD treats the alcohol company as a consolidated subsidiary.) **Ownership by an Alcohol Company.** The company is more than 50% owned by a company with alcohol involvement.

Firearms. Manufacturers. The company is engaged in the production of small arms ammunition or firearms, including, pistols, revolvers, rifles, shotguns or sub-machine guns. **Retailers.** The company derives 15% or more of total revenues from the distribution (wholesale or retail) of firearms and small arms ammunition. **Ownership of a Firearms Company.** The company owns more than 20% of another company with firearms involvement. (When a company owns more than 50% of company with firearms involvement, KLD treats the firearms company as a consolidated subsidiary.) **Ownership by a Firearms Company.** The company is more than 50% owned by a company with firearms involvement.

Gambling. Licensing. The company licenses its company or brand name to gambling products. **Manufacturers.** Companies that produce goods used exclusively for gambling, such as slot machines, roulette wheels, or lottery terminals. **Owners and Operators.** Companies that own and/or operate casinos, racetracks, bingo parlors, or other betting establishments, including casinos; horse, dog or other race tracks that permit wagering; lottery operations; on-line gambling; pari-mutuel wagering facilities; bingo; Jai-alai; and other sporting events that permit wagering. **Supporting Products or Services.** Companies that provide services in casinos that are fundamental to gambling operations, such as credit lines, consulting services or gambling technology and technology support. **Ownership of a Gambling Company.** The company owns more than 20% of another company with gambling involvement. (When a company owns more than 50% of company with gambling involvement, KLD treats the gambling company as a consolidated subsidiary.) **Ownership by a Gambling Company.** The company is more than 50% owned by a company with gambling involvement.

Military. Manufacturers of Weapons or Weapons Systems. Companies that derive more than 2% of revenues from the sale of conventional weapons or weapons systems, or earned \$50 million or more from the sale of conventional weapons or weapons systems, or earned \$10 million or more from the sale of nuclear weapons or weapons systems. **Manufacturers of Components for Weapons or Weapons Systems.**

Companies that derive more than 2% of revenues from the sale of customized components for conventional weapons or weapons systems, or earned \$50 million or more from the sale of customized components for conventional weapons or weapons systems, or earned \$10 million or more from the sale of customized components for nuclear weapons or weapons systems. **Ownership of a Military Company.** The company owns more than 20% of another company with military involvement. (When a company owns more than 50% of company with military involvement, KLD treats the military company as a consolidated subsidiary.) **Ownership by a Military Company.** The company is more than 50% owned by a company with military involvement.

Nuclear power. Ownership of Nuclear Power Plants. Companies that own nuclear power plants. **Ownership of a Nuclear Power Company.** The company owns more than 20% of another company with nuclear power involvement. (When a company owns more than 50% of company with nuclear power involvement, KLD treats the nuclear power company as a consolidated subsidiary.) **Ownership by a Nuclear Power Company.** The company is more than 50% owned by a company with nuclear power involvement.

Tobacco. Licensing. The company licenses its company name or brand name to tobacco products. **Manufacturers.** The company produces tobacco products, including cigarettes, cigars, pipe tobacco and smokeless tobacco products. **Manufacturers of Products Necessary for Production of Tobacco Products.** The company derives 15% or more of total revenues from the production and supply of raw materials and other products necessary for the production of tobacco products. **Retailers.** The company derives 15% or more of total revenues from the distribution (wholesale or retail) of tobacco products. **Ownership of a Tobacco Company.** The company owns more than 20% of another company with tobacco involvement. (When a company owns more than 50% of company with tobacco involvement, KLD treats the tobacco company as a consolidated subsidiary.) **Ownership by a Tobacco Company.** The company is more than 50% owned by a company with tobacco involvement.

Maintenance of the Domini 400 SocialSM Index (DS 400 Index)

Through its DS 400 Index Committee (the Committee), KLD maintains the Index at 400 companies at all times. The Committee makes all decisions about additions and removals for the DS 400, adding a company to the index at the same time that another company is removed. The Committee also creates, reviews and maintains the Working Guidelines, publishes additional background materials and responds to public inquiries about the maintenance of the DS 400. The Committee meets at least once a month, but may meet more frequently as needed.

Companies may be removed from the DS 400 Index at any time for one of four reasons: Corporate Actions; Failure of Exclusionary Screens;¹¹ Failure of Qualitative Screens; or Lack of Social and Financial Representation. In cases of corporate actions or failure of an exclusionary screen, a company is removed at the time the action occurs or when the company is added to one of KLD's exclusionary reports. In cases of qualitative screen failure or lack of social and financial representation, the removal generally occurs immediately after the monthly Committee meeting when the decision to remove the company is made.

The Committee maintains a ranked list of companies for addition to the DS 400 Index. The Committee seeks out companies for addition to the Index that fall into at least one of the following three categories: companies with particularly strong social stories; companies that enable the DS 400 Index to approximate the industry diversification and market capitalization of the S&P 500; and/or companies that allow the Committee to maintain the DS 400 Index with approximately 250 S&P companies, 100 NonS&P companies for sector diversification and market capitalization and 50 NonS&P companies with exceptional social stories.

List of firms which are always in the DI in the estimation period

ADVDMICRO DEVC, AIR PRDS & CHEMS, ALBERTO CULVER 'B', ALBERTSONS, AMERICAN, EXPRESS, AMERICAN INTLGP, AMR (AMERICAN AIRLINES), ANADARKO PETROLEUM, ANALOG DEVICES, ANGELICA, APACHE, APPLE COMPUTERS,

¹¹ Exclusionary screens include military-weapons, alcohol, tobacco, firearms, nuclear power and gambling.

APPLIED MATS, AUTODESK, AUTOMATIC DATA PROC, AVERY DENNISON, AVON PRODUCTS, BALDOR ELECTRIC, BANK OF AMERICA, BANK ONE, BASSETT FRTR, BECTON DICKINSON & CO, BELLSOUTH, BEMIS, BIOMET, BOB EVANS FARMS, CABOT, CALGON, CARBON, CAMPBELL SOUP, CENTEX, CHUBB, CHURCH & DWIGHT, CIGNA, CINCINNATI FIN, CINTAS, CIRCUIT, CITY STORES, CITIZENS COMMS, CLAIRE'S STORES, CLARCOR, CLOROX, COCA COLA, COCA COLA ENTS, COMCAST 'A', COMCAST SPECIAL 'A', CONSOL EN, COOPER INDS, CPI, CROSS A T, CUMMINS, CVS, CYPRESS SEMICON, DANA, DELUXE, DIONEX, DOLLAR GENERAL, DONNELLEY R R, DOW JONES & CO, EDWARDS AG, ENERGEN, EQUITABLE RESOURCES, FASTENAL, FLEETWOOD ENTS, FOOT LOCKER, FOREST LABS, FULLER 'H' 'B', GAP, GATX, GENMILLS, GENUINE PARTS, GERBER SCIEN, GOLDEN WEST FINL, GRACO GRAINGER W W, HARLAND JOHN, H HARMAN INTLINDS, HARTMARX, HEALTH CARE REIT, HEINZ HJ, HELMERICH PAYNE, HERSHEY FOODS, HILLENBRAND, HNI, HOME DEPOT, HUBBELL 'B', HUMANA, IDA CORPINCHDG, IKON OFFICE SLTN, ILLINOIS TOOL WKS, INTEL, IONICS, ISCO, JEFFERSON PILOT, JP MORGAN CHASE & CO, KB HOME, KELLY SERVICES 'A', KEYSpan, KROGER, LAWSON PRODUCTS, LEEENTERPRISES, LEGGETT & PLATT, LIMITED BRANDS, LINCOLN ELECTRIC HDG, LINCOLN NAT, LIZ CLAIBORNE, LONGS DRUG STRS, LOWE'S COMPANIES, LUBY, MANOR CARE, MARSH & MCLENNAN, MATTEL, MAY DEPTSTORES, MAYTAG, MCDONALDS, MCGRAW HILL CO, MCKESSON, MEADWESTVAC, O MEDIA GENERAL, MEDTRONIC, MELLON FINL, MERCK & CO, MEREDITH, MERRILL LYNCH & CO, MICRON TECH, MILACRON, MILLER (HERMAN), MILLIPORE, MODINE, MNFG, MYLAN LABORATORIES, NCR, NEW ENGLBUSSE, NEW YORK TIMES 'A', NEWELL RUBBERMAID, NORDSON, NORDSTROM, NORFOLK SOUTHERN, NUCOR, OMNICOM GP, OSHKOSH, TRUCK 'B', PENNEY JC, PEP BOYS MANNY, PEPSIAMERICA, PEPSICO, PHILLIPS V HEUSN, PITNEY BOWES, PNC FINLSVSGP, PROCTER & GAMBLE, PROVIDIAN FINL, RADIOSHACK, REEBOK INTL, ROUSE, ROWAN COS, RYDER SYSTEM, SAFECO,

SCOTTS 'A', SEALED AIR, SEARS ROEBUCK & CO, SIGMA ALDRICH, SKY FINLGP, SMITH INTL, SMUCKER JM, SNAP ON SOUTHERN, SOUTHWEST AIRLINES, SPRINT FON, SPX STANLEY WORKS, STDREGISTER, STJUDE MED, STPAUL TRAVELLERS, STRIDE RITE, STRYKER, STUDENT LN, SUN MICROSYSTEMS, SUNOCO, SUNTRUST BANKS, SUPERVALU, SYSCO, TARGET, TEKTRONIX, TELEPHONE & DATA SYS, TELLABS, TENNANT, THERMO ELECTRON, THOMAS INDS, TJX COS, TOOTSIE ROLL, TORO, TOYS R, US HOLDINGS CO, UNUMPROVIDENT, V F, VALUE LINE, VERIZON COMMS, WALGREEN, WALT DISNEY, WASHINGTON PST 'B', WELLMAN, WELLS FARGO & CO, WENDY'S INTL, WESCO FINANCIAL, WGL HDG, WHIRLPOOL, WILLIAMS COS, WRIGLEY, WILLIAM JR, XEROX, YELLOW ROADWAY.

List of firms which are always in the DI in the estimation period by industry

Utilities: ENERGEN, EQUITABLE RESOURCES, IDACORP INCHDG, KEYSpan, PEP BOYS MANNY, SOUTHERN, WGL HDG. **Basic Materials:** AIR PRDS & CHEMS, AVERY DENNISON, BEMIS, CABOT, CALGON CARBON, FULLER 'H' 'B', MEADWESTVACO, NUCOR, SIGMA ALDRICH, WELLMAN. **Consumer Cyclical:** AMR (AMERICAN AIRLINES), BOB EVANS FARMS, CENTEX, CIRCUIT CITY STORES, CLAIRE'S STORES, COMCAST 'A', COMCAST SPECIAL 'A', CVS, DANA, DOLLAR GENERAL, DONNELLEY R R, DOW JONES & CO, FASTENAL, FLEETWOOD ENTS, FOOT LOCKER, GAP, GENUINE PARTS, HARMAN INTLINDS, HARTMARX, HNI, HOME DEPOT, KB HOME, LEEENTERPRISES, LEGGETT & PLATT, LIMITED BRANDS, LIZ CLAIBORNE, LONGS DRUG STRS, LOWE'S COMPANIES, LUBY, MATTEL, MAY DEPTSTORES, MAYTAG, MCDONALDS, MCGRAW HILL CO, MCKESSON, MEDIA GENERAL, MEREDITH, MILLER (HERMAN), MODINE, MNFG, NEW YORK TIMES 'A', NORDSTROM, OMNICOM GP, PENNEY JC, PHILLIPS V HEUSN, RADIOSHACK, REEBOK INTL, RUSSELL SEARS, ROEBUCK & CO, STRIDE RITE, TARGET, TJX COS, TOYS R, US HOLDINGS CO, V F, |WALGREEN, WALT DISNEY, WASHINGTON PST 'B', |WENDY'S INTL, WHIRLPOOL. **Non Cyclical Consumer:**

ALBERTO, ALBERTSONS, AVON PRODUCTS, BASSETT FRTR, CAMPBELL SOUP, CHURCH & DWIGHT, CLOXOX, COCA COLA, COCA COLA ENTS, CROSS A T, GENMILLS, HERSHEY FOODS, KROGER, LAWSON PRODUCTS, NEW ENGLBUSSE, NEWELL RUBBERMAID, PEPSIAMERICA, PEPSICO PROCTER & GAMBLE, SCOTTS 'A', SNAP ON, STANLEY WORKS, SUPERVALU, SYSCO, TOOTSIE ROLL. **Financial:** AMERICAN EXPRESS, AMERICAN INTLGP, BANK OF AMERICA, BANK ONE, CHUBB, CINCINNATI FIN, GOLDEN WEST FINL, HEALTH CARE REIT, JEFFERSON PILOT, JP MORGAN CHASE & CO, LINCOLN NAT, MARSH & MCLENNAN, MELLON FINL, MERRILL LYNCH & CO, PNC FINLSVSGP, PROVIDIAN FINL, ROUSE, SAFECO, SKY FINLGP, SOUTHWEST AIRLINES, STPAUL TRAVELLERS, SUNTRUST BANKS, UNUMPROVIDENT, VALUE LINE, WELLS FARGO & CO, WESCO FINANCIAL. **Industrial:** ANGELICA, AUTOMATIC DATA PROC, BALDOR ELECTRIC, CINTAS, CLARCOR, COOPER INDS, CPI, CUMMINS, DELUXE, DIONEX, GATX, GRACO, GRAINGER W W, HARLAND JOHN H, HUBBELL 'B', ILLINOIS TOOL WKS, IONICS, ISCO, KELLY SERVICES 'A', LINCOLN ELECTRIC HDG, MILACRON, MILLIPORE, NORDSON, NORFOLK SOUTHERN, OSHKOSH TRUCK 'B', RYDER SYSTEM, SEALED AIR, SPX, STDREGISTER, TEKTRONIX, TENNANT, THERMO ELECTRON, THOMAS INDS, TORO, YELLOW ROADWAY. **Chemicals:** AIR PRDS & CHEMS, AVERY DENNISON, CABOT, CALGON CARBON, FULLER 'H' 'B', SIGMA ALDRICH, WELLMAN. **Energy:** ANADARKO PETROLEUM, APACHE, CONSOL EN, HELMERICH PAYNE, ROWAN COS, SMITH INTL, SUNOCO, WILLIAMS COS. **Health Care:** BECTO, BIOMET, CIGNA, FOREST LABS, HILLENBRAND, HUMANA, MANOR CARE, MEDTRONIC, MERCK & CO, MYLAN LABORATORIES, STJUDE MED, STRYKER. **Technology:** ADVDMICRO DEVC, ANALOG DEVICES, APPLE COMPUTERS, APPLIED MATS, AUTODESK, CYPRESS SEMICON, GERBER SCIEN, IKON OFFICE SLTN, INTEL, MICRON TECH, NCR, PITNEY BOWES, SUN MICROSYSTEMS, TELLABS, XEROX. **Telecommunications:** BELLSOUTH, CITIZENS COMM, SPRINT FO, TELEPHONE & DATA SY, VERIZON COMMS.

List of firms which are always in the DI in the estimation period by size

Large Cap: AIR PRDS & CHEMS, ALBERTSONS, AMERICAN EXPRESS, AMERICAN INTLGP, ANADARKO PETROLEUM, ANALOG DEVICES, APACHE, APPLIED MATS, AUTOMATIC DATA PROC, AVON PRODUCTS, BANK OF AMERICA, BECTON DICKINSON & CO, BELLSOUTH CAMPBELL SOUP CHUBB CLOXOX COCA COLA COCA COLA ENTS COMCAST 'A' COMCAST SPECIAL 'A', CVS FOREST LABS, GAP, GENMILLS, GOLDEN WEST FINL, HOME DEPOT, ILLINOIS TOOL WKS, INTEL, JP MORGAN CHASE & CO, KROGER, LAWSON PRODUCTS, LIMITED BRANDS, LOWE'S COMPANIES, MARSH & MCLENNAN, MATTEL, MCDONALDS, MCGRAW HILL CO, MCKESSON, MEDTRONIC, MELLON FINL, MERCK & CO, MERRILL LYNCH & CO, OMNICOM GP, PITNEY BOWES, PNC FINLSVSGP, PROCTER & GAMBLE, SEARS ROEBUCK & CO, SOUTHERN, SOUTHWEST AIRLINES, SPRINT FON, STJUDE MED, STPAUL TRAVELLERS, STRYKER, SUN MICROSYSTEMS, SUNTRUST BANKS, SYSCO, TARGET, TJX COS, VERIZON COMMS, WALGREEN, WALT DISNEY, WELLS FARGO & CO, WESCO FINANCIAL, XEROX. **Small Cap:** AMR (AMERICAN AIRLINES), BOB EVANS FARMS, CHURCH & DWIGHT, CLAIRE'S STORES, CLARCOR, CYPRESS SEMICON, DIONEX, DONNELLEY R R, ENERGEN, EQUITABLE RESOURCES, FLEETWOOD ENTS, GATX, GERBER SCIEN, GRACO, HARLAND JOHN H, HELMERICH PAYNE, HNI, IDACORP, INCHDG, IKON OFFICE SLTN, IONICS, KELLY SERVICES 'A', LEEENTERPRISES, LONGS DRUG STRS, MEDIA GENERAL, MEREDITH, MILACRON, MILLER (HERMAN), MILLIPORE, MODINE, MNFG, NORDSON, OSHKOSH TRUCK 'B', PHILLIPS V HEUSN, REEBOK INTL, RUSSELL, RYDER SYSTEM, SCOTTS 'A', SKY FINLGP, SNAP ON, STRIDE RITE, THOMAS INDS, TOOTSIE ROLL, TORO, VALUE LINE, WELLMAN, WGL HDG, YELLOW ROADWAY. **Mid Cap:** ADVDMICRO DEVC, ALBERTO CULVER 'B', ANGELICA, APPLE COMPUTERS, AUTODESK, AVERY DENNISON, BALDOR ELECTRIC, BANK ONE, BASSETT FRTR, BEMIS, BIOMET, CABOT, CALGON CARBON, CENTEX, CIGNA, CINCINNATI FIN, CINTAS, CIRCUIT,

CITY STORES, CITIZENS, COMMS, CONSOL EN, COOPER INDS, CUMMINS, DANA, DELUXE, DOLLAR GENERAL, DOW JONES & CO, FASTENAL, FOOT LOCKER, GENUINE PARTS, GRAINGER W W, HARMAN INTLINDS, HEALTH CARE REIT, HERSHEY FOODS, HILLENBRAND, HUBBELL 'B', HUMANA, JEFFERSON PILOT, KB HOME, KEYSpan, LEGGETT & PLATT, LINCOLN NAT, LIZ CLAIBORNE, MANOR CARE, MAY DEPTSTORES, MAYTAG, MEADWESTVACO, MICRON TECH, MYLAN LABORATORIES, NCR, NEW YORK TIMES 'A', NEWELL RUBBERMAID, NORDSTROM, NORFOLK SOUTHERN, NUCOR, PENNEY JC, PEPSIAMERICA, PEPSICO, PROVIDIAN FINL, RADIOSHACK, ROUSE, ROWAN COS, SAFECO, SEALED AIR, SIGMA ALDRICH, SMITH INTL, SPX, STANLEY WORKS, SUNOCO, SUPERVALU, TEKTRONIX, TELEPHONE & DATA, SYS TELLABS, THERMO ELECTRON, TOYS R, US HOLDINGS CO, UNUMPROVIDENT, V F, WASHINGTON PST 'B', WENDY'S INTL, WHIRLPOOL, WILLIAMS COS, ANGELICA, BALDOR ELECTRIC, BASSETT FRTR, CALGON, CARBON, CP, I CROSS A T, FULLER 'H' 'B', HARTMARX, LINCOLN ELECTRIC, HDG LUBY, NEW ENGLBUSSER, PEP BOYS, MANNY.

Control sample

ABBOTT LABS, ACCREDO HEALTH, ACE, ADOBE SYSTEMS, ADOLPH COORS 'B', ADAUTO PARTS, AES, AGILENT TECHS, AGL RES, AKAMAI TECHS, ALLEGHANY, ALLERGAN, ALLIANT ENERGY CORP, AMEREAGOUTFITTERS, AMERICREDIT, AMGEN, AMYLIN PHARMS, ANDRX GP, ARAMARK 'B', ARDEN REALTY, ASSDBANCORP, AUTONATION, BANCORPSOUTH, BANK OF HAWAII, BANKNORTH GPNEW, BB & T, BRISTOL MYERS SQUIBB, BUNGE, CAESARS ENTM, CARDINAL HEALTH, CATELLUS DEV, CENTERPOINT PR, CERTEGY, CH ROBINSON WWD, CHASRVRLABSINTL, CHIMERCEXHDG, CHIRON CORP, CITY NATIONAL, COLGATE PALM, COMPUTER SCIS, COUNTRYWIDE FINL, COVENTRY HLTHCR, CRESCENT REAL ESTATE EQ, CROWN, CASTLE INTL, DARDEN RESTAURANTS, DELPHI AUTVSYS, DENTSPLY INTL, DEVON ENERGY, DOLLAR

TREE STORES, DORAL FINANCIAL, DOW CHEMICALSE, DUCATION MANAGEMENT, EDWARDS LIFE SCIENCES, EL PASO, EMULEX NEW, ENDO PHARMSHDG, ENTERCOM COMMS, ENTERGY, EQUITY OFFEPROPSTST, FEDERATED INVRS 'B', FIRST MARBLEHEAD, FIRSTMERIT, FISERV, FISHER SCIENINTLNEW, FLORIDA ROCK INDS, GATEWAY, GEN PROBE, GENDYNAMICS, GENENTECH, GREAT PLAINS EN, GREENPOINT FINL, HARRIS, HARSCO, HAWAIIAN ELECINDS, HEALTH NET, HIBERNIA 'A', HORMEL FOODS, HOST MARRIOTT, HOVNANIAN ENTS 'A', INAMED, INDEPENDENCE CMTYBK, INGRAM MICRO 'A', INSTINET GROUP, INTERSIL 'A', INTLPAPER, INTUIT, IRON MNT, ISTAR FINL, JEFFERIES GP, JUNIPER NETWORKS, KING PHARMS, KLA TENCOR, LAFARGE NORTH AMERICA, LEGG MASON, LEXMARK INTLGPA, LUCENT TECHNOLOGIES, MACERICH, MACK CALI RLTY, MARVEL ENTS, MARVELL TECHGP, MAXTOR, MBNA, METRO GOLDWYN, MAYER, MGM, MIRAGE, MOHAWK INDS, MOLEX, MOLEX 'A', MONSANTO, MONSTER WORLDWIDE, NATIONAL OILWELL, NATIONAL SEMICON, NATIONWIDE FINLSVS, NETWORK ASSOCIATES, NEWMONT MINING, NEXTEL COMMSA, NORTH FORK BANCORP, NSTARCOM NTL, OCCIDENTAL PTL, OXFORD HEALTH, PLANS, PACKCORPOF AM, PACRHLTHSYS, PACTIV, PENTAIR, PINNACLE WEST CAP, PIONEER NATRES, PIXAR, PLAINS ALL AMERPIPELP, PLUM CREEK TIMBER, POLARIS INDS, POLYCOM, POPULAR, PPG INDUSTRIES, PPL PROLOGIS, PRUDENTIAL FINL, PUBLIC STORAGE, PUBLIX SUPER MARKETS, PUBSERENTERGP, RAMBUS, RAYMOND JAMES FINL, RAYONIER, RED HAT, REGENCY CENTERS, RENAISSANCERE HDG, RENAL CARE GP, RENT A CTR, RITE AID, ROHM & HAAS, ROPER INDSNEW, ROSS STORES, RPM INTL, RUBY TUESDAY, SABRE HDG, SAFEWAY, SANMINA, SCI, SCANA, SCIENTIFIC ATLANTA, SERVICEMASTER, SIMON PRGP, SIRVA, SMITHFIELD FOODS, SONOCO PRDS, SOVEREIGN BANC, SPECTRASITE, STAPLES, STARBUCK, S STHFINLGP, SUNGARD DATA, SYSTEMS, SYNOVUS FINL, TROWE PRICE GP, TALBOTS TCF FINANCIAL, TECH DATA, TECO ENERGY, TELEFLEX, TEMPLE INLAND, TENET HLTHCR, TEPPCO PARTNERS L P,

TERADYNE, TEREX, TEXAS GENCO HDG, TEXAS INSTS, TEXTRON, THE DIRECTV GROUP, THORNBURG MGE, TIBCO SOFTWARE, TIDEWATER, TIFFANY & CO, TIME WARNER, TIMKEN TOLL BROS, TRANSATLANTIC HDG, TRANSOCEAN, TRI CONTINENTAL, TRIAD HOSPITALS, TRIBUNE, TRIZEC PROPS, TRUSTMARK, TRW AUTVHDG, TXU, TYCO INTL, TYSON FOODS 'A', UCBH, UNION PACIFIC, UNION PLANTERS, UNIONBANCAL, UNISYS, UNITED PARCEL SER 'B', UNITED TECHNOLOGIES, UNITEDGLOBALCOM 'A', UNITEDHEALTH GP, UNITRIN, UNIVERSAL HEALTH, SVS 'B', UNOCAL, USCELLULAR, USSTEEL, UTDDOMINION REALTY TST, VENTAS, VERISIGN, VERITAS SOFTWARE, VISHAY INTERTECH, VORNADO REALTY TST, VULCAN MATERIALS, W HOLDING COMPANY, WACHOVIA, WASTE MAN, WATSON PHARMS, WEATHERFORD INTL, XILINX XL CAP 'A', YAHOO, ZIMMER HDG.

Control sample by industry

Energy: DEVON ENERGY, EL PASO, NATIONAL OILWELL, OCCIDENTAL PTL, TIDEWATER, TRANSOCEAN, UNOCAL, WEATHERFORD INTL. **Financial:** ACE, AMERICREDIT, ARDEN REALTY, ASSDBANCORP, BANCORPSOUTH, BANK OF HAWAII, BANKNORTH GPNEW, BB & T, CATELLUS DEV, CENTERPOINT PR, CITY NATIONAL COUNTRYWIDE FINL, CRESCENT REAL ESTATE EQ, DORAL FINANCIAL, EQUITY OFFPROPSTST, FEDERATED INVRS 'B', FIRSTMERIT, GREENPOINTFINL, HIBERNIA 'A', HOST MARRIOTT, INDEPENDENCE CMTYBK, ISTAR FINL, JEFFERIES GP, LEGG MASON, MACERICH, MACK CALI RLTY, MBNA, NATIONWIDE FINLSVS, NORTH FORK BANCORP, PLUM CREEK TIMBER, POPULAR, PROLOGIS, PRUDENTIAL FINL, PUBLIC STORAGE, RAYMOND JAMES FINL, RAYONIER, REGENCY CENTERS, RENAISSANCERE HDG, SIMON PRGP, STHFINLGP, SOVEREIGN BANC, SYNOVUS FINL, T ROWE PRICE GP, TCF FINANCIAL, THORNBURG MGE, TRANSATLANTIC HDG, TRIZEC PROPS, TRUSTMARK, UCBH, UNIONBANCAL, UTDDOMINION REALTY TST, UNITRIN, VENTAS, VORNADO REALTY TST, W HOLDING COMPANY, WACHOVIA,

XL CAP 'A'. **Industrial:** AGILENT TECH, CERTEGY, FISERV, FLORIDA ROCK INDS, GENDYNAMICS, HARSCO, INGRAM MICRO 'A', IRON MNT, LAFARGE NORTH AMERICA, MOLEX, MOLEX 'A', MONSTER WORLDWIDE, PACKCORPOF AM, PACTIV, PENTAIR, ROPER INDSNEW, SABRE HDG, SANMINA SCI, SONOCO PRDS, TECH DATA, TECO ENERGY, TELEFLEX, TEMPLE INLAND, TEREX, TEXTRON, TIMKEN, TYCO INTL, UNION PACIFIC, UNITED PARCEL SER 'B', UNITED TECHNOLOGIES, VISHAY INTERTECH, VULCAN MATERIALS, WASTE MAN, WATERS. **Technology:** ADOBE SYSTEMS, AKAMAI TECHS, COMPUTER SCIS, CROWN CASTLE INTL, EMULEX NEW, GATEWAY, HARRIS, INTERSIL 'A', INTUIT, JUNIPER NETWORKS, KLA TENCOR, LEXMARK INTLGA, LUCENT TECHNOLOGIES, MARVELL TECHGP, MAXTOR, NATIONAL SEMICON, POLYCOM, RAMBUS, RED HAT, SCIENTIFIC ATLANTA, SPECTRASITE, SUNGARD DATA SYSTEMS, TERADYNE, TEXAS INSTS, TIBCO SOFTWARE, UNISYS, VERISIGN, VERITAS SOFTWARE, XILINX, YAHOO. **Health Care:** ABBOTT LAB, ACCREDO HEALTH, ALLERGAN, AMGEN, AMYLIN PHARMS, ANDRX GP, BRISTOL MYERS SQUIBB, CHIRON CORP, COVENTRY HLTHCR, DENTSPLY INTL, EDWARDS LIFESCIENCES, FISHER SCIENINTLNEW, GEN PROBE, GENENTECH, HEALTH NET, INAMED, KING PHARMS, MONSANTO, OXFORD HEALTH PLANS, PACRHLTHSYS, RENAL CARE GP, TENET HLTHCR, TRIAD HOSPITALS, UNITEDHEALTH GP, UNIVERSAL HEALTH SVS 'B', WATSON PHARMS, ZIMMER HDG. **Telecommunications:** NEXTEL COMMS, USCELLULAR. **Utilities:** AES, AGL RES, ALLIANT ENERGY CORP, ENTERGY, GREAT PLAINS EN, HAWAIIAN ELECINDS, NSTARCOM, PINNACLE WEST CAP, PPL, PUBSERENTERGP, SCANA, TEXAS GENCO HDG.

Control sample by size

Large Cap: ABBOTT LABS, ACE, ADOBE SYSTEMS, AGILENT TECHS, ALLERGAN, AMGEN, BB & T, BRISTOL MYERS SQUIBB, BUNGE, CARDINAL HEALTH, COLGATE PALM, COUNTRYWIDE FINL, DEVON ENERGY, DOW CHEMICALS, ENTERGY, EQUITY OFFPROPSTST, GENDYNAMICS, GENENTECH, INTLPAPER, INTUIT, JUNIPER

NETWORKS, KLA TENCOR, LEXMARK INTL GPA, LUCENT TECHNOLOGIES, MBNA, NEWMONT MINING, NEXTEL COMMSA, OCCIDENTAL PTL, PIONEER NATRES, PPG INDUSTRIES, PRUDENTIAL FINL, SAFEWAY, STAPLES, STARBUCKS, TEXAS INSTS, TIME WARNER, TRIBUNE, TYCO INTL, UNION PACIFIC, UNITED PARCEL SER 'B', UNITED TECHNOLOGIES, UNITEDHEALTH GP, VERITAS SOFTWARE, WACHOVIA, WASTE MAN, XILINX, XL CAP 'A', YAHOO, ZIMMER HDG. *Small Cap:* ACCREDO, AGL RES, AKAMAI TECHS, AMEREAGOUTFITTERS, ARAMARK 'B', ARDEN REALTY, BANCORPSOUTH, BANK OF HAWAII, CATELLUS DEV, CENTERPOINT PR, EDUCATION MANAGEMENT, EDWARDS LIFESCIENCES, FIRSTMERIT, FLORIDA ROCK INDS, GATEWAY, GEN PROBE, HARSCO, HAWAIIAN ELECINDS, HOVNANIAN ENTS 'A', INAMED, INDEPENDENCE CMTYBK, INGRAM MICRO 'A', JEFFERIES GP, MACERICH, MACK CALI RLTY, MAXTOR, NATION WIDE FINLSVS, POLARIS INDS, RAYMOND JAMES FINL, RAYONIER, RENAL CARE GP, RENT A CTR, ROPER INDSNEW, RPM INTL, RUBY TUESDAY, STHFINLGP, TALBOTS, TECH DATA, TELEFLEX, TEREX, THORNBURG MGE, TIBCO SOFTWARE, TIMKEN, TRUSTMARK, UCBH, USCELLULAR, UTDDOMINION REALTY TST, VENTAS, W HOLDING COMPANY. *Mid Cap:* ADOLPH COORS 'B', AES, ALLIANT ENERGY CORP, AMERICREDIT, AMYLIN PHARMS, ANDRX GP, ASSDBANCORP, AUTONATION, BANKNORTH GPNEW, CAESARS ENTM, CERTEGY, CHIRON CORP, CITY NATIONAL, COMPUTER SCIS, COVENTRY HLTHCR, CRESCENT REAL ESTATE EQ, CROWN CASTLE INTL, DARDEN RESTAURANTS, DELPHI AUTVSYS, DENTSPLY INTL, DOLLAR TREE STORES, DORAL

FINANCIAL, EL PASO, EMULEX NEW, ENTERCOM COMMS, FEDERATED INVRs 'B', FISERV, FISHER SCIENINTLNEW, GREAT PLAINS EN, GREENPOINT FINL, HARRIS, HEALTH NET, HIBERNIA 'A', HORMEL FOODS, HOST MARRIOTT, INTERSIL 'A', IRON MNT, ISTAR FINL, KING PHARMS, LAFARGE NORTH AMERICA, LEGG MASON, MARVEL ENTS, MARVELL TECHGP, METRO GOLDWYN MAYER, MGM MIRAGE, MOHAWK INDS, MOLEX, MOLEX 'A', MONSANTO, MONSTER WORLDWIDE, NATIONAL OILWELL, NATIONAL SEMICON, NORTH FORK BANCORP, NSTARCOM, NTL, OXFORD HEALTH PLANS, PACKCORPOF AM, PACRHLTHSYS, PACTIV, PENTAIR, PINNACLE WEST CAP, PIXAR, PLUM CREEK TIMBER, POLYCOM, POPULAR, PPL, PROLOGIS, PUBLIC STORAGE, PUBLIX SUPER MARKETS, PUBSERENTERGP, RAMBUS, RED HAT, REGENCY, CENTERS, RENAISSANCERE HDG, RITE AID, ROHM & HAAS, ROSS, STORES, SABRE HDG, SANMINA, SCI, SCANA, SCIENTIFIC ATLANTA, SERVICEMASTER, SIMON PRGP, SMITHFIELD FOODS, SONOCO PRDS, SOVEREIGN BANC, SPECTRASITE, SUNGARD DATA, SYSTEMS, SYNOVUS FINL, TROWE PRICE GP, TCF FINANCIAL, TECO ENERGY, TEMPLE INLAND, TENET HLTHCR, TERADYNE, TEXAS GENCO HDG, TEXTRON, THE DIRECTV GROUP, TIDEWATER, TIFFANY & CO, TOLL BROS, TRANSATLANTIC HDG, TRANSOCEAN, TRIAD HOSPITALS, TRIZEC PROPS, TYSON FOODS 'A', UNIONBANCAL, UNISYS, UNITEDGLOBALCOM 'A', UNITRIN, UNIVERSAL, HEALTH SVS 'B', UNOCAL, USSTEEL, VERISIGN, VISHAY INTERTECH, VORNADO REALTY TST, VULCAN MATERIALS, WATERS, WATSON PHARMS, WEATHERFORD INTL.

Appendix 1A. Entries (into) an exits (from) the DI by year and motivation

Entries	Community	Corporate governance	Diversity	Employee relations	Environment	Human Rights	Product	Controversial issues
1990	1	4	1	2	–	–	2	–
1991	–	2	3	–	1	–	–	–
1992	1	5	2	2	1	–	1	–
1993	1	11	1	1	2	–	–	–
1994	1	3	–	3	2	–	1	–
1995	6	5	2	2	–	–	–	–
1996	3	8	3	2	–	–	1	–
1997	2	6	2	3	4	–	7	–
1998	2	19	17	15	5	–	3	–
1999	3	11	11	8	3	–	1	–
2000	3	32	5	3	2	–	2	–
2001	4	22	3	1	1	–	4	–
2002	2	1	11	1	3	1	7	–
2003	3	10	1	1	–	–	10	–
2004	1	–	1	1	–	1	–	–

Appendix 1B. Exits from the DI by year and motivation

Exit	Community	Corporate governance	Diversity	Employee relations	Environment	Human Rights	Product	Controversial issues
1990	–	6	–	–	–	–	–	4
1991	–	5	–	1	–	–	–	1
1992	–	8	–	–	1	–	1	1
1993	1	12	–	–	1	–	2	–
1994	–	9	–	–	1	–	–	–
1995	–	15	–	–	–	–	–	–
1996	–	13	–	–	2	–	–	1
1997	1	20	–	–	–	–	–	1
1998	–	45	–	–	1	–	–	2
1999	1	34	–	–	–	–	–	2
2000	–	48	–	–	–	–	–	2
2001	–	34	–	–	–	–	1	2
2002	1	16	1	1	1	1	2	3
2003	–	20	–	–	–	–	–	5
2004	–	1	1	–	–	–	1	1