



## Ethical Stock Indexes: Does Sustainability Pay Off?

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### Abstract

The increased scrutiny of investors regarding the non-financial aspects of corporate performance have placed portfolio managers in the position of having to weigh the benefits of “holding the market” against the cost of having even token positions in companies that are subsequently found to have questionable business practices.

The availability of index products makes it increasingly viable for institutional investors to transition to a portfolio based on a SRI benchmark at relatively low cost. There are currently indices directly available from Dow Jones, FTSE and others that use MSCI and S&P as benchmarks. This use of index constituents should help make rebalancing costs relatively low, while it is possible for investors to remain within a family of existing recognised benchmarks.

Despite the theoretical framework issued by Stakeholder Theory on the role played by a corporate social responsible behaviour on shareholders’ wealth, empirical studies on the relation between Corporate Social Performance (CSP) and Corporate Financial Performance (CFP) found no conclusive evidence. Nevertheless, several studies show that ethical indexes seem to over perform the return of their benchmarks (ethical indexes are usually a subset of traditional market indexes, whose constituents respect socially responsible screening criteria).

Focusing on one of the most important ethical indexes, the Domini Social Index, the paper investigates whether inclusion and permanence in the social index affects corporate performance on a sample of around 1,000 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 multistakeholders welfare target. Permanence into the Domini index 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).

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.

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## 1. Introduction

A first definition of Corporate Social Responsibility (CSR) is generally related to the corporate choice of not breaching laws and regulations when pursuing shareholders' wealth maximisation goals. A second approach considers that CSR is more than just following the law (McWilliams & Siegel, 2001), as it also involves actions which 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 corporate social responsibility is polarised around two opposite perspectives. A first one considers CSR as a violation of manager's mandatory duties, when it materialises into arbitrary management of "free cash flow" and higher expenditures which reduce shareholders' wealth (Friedman, 1962). The reasoning of Friedman (1962) implies an efficient balance of powers between profit maximizing firms and social welfare maximizing 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 which should align firm behaviour to the goal of socially and environmentally sustainable development.

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 optimise 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 which 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 CSR fosters managerial opportunistic behaviour. Second, he argues that a socially responsible company, by definition, should shift its focus from the maximisation of shareholders’ wealth to a multi-stakeholders welfare approach. The consequence of this move may be a relatively lower return on equity which may make her object of a takeover from a profit maximising raider. A first reply to Tirole (2001) is that several social labelling organisations 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 CSR may be a strong deterrent.

The second Tirole’s objection (i.e. takeover risk) is an interesting one and is somewhat related to our empirical research aimed at verifying whether being socially responsible leads corporation through a relative higher shareholder value creation.

Our paper focuses on this issue and is divided as follows. The second section briefly surveys the empirical literature on the effects of CSR on corporate performance. The third section analyses socially responsible criteria of a widely acknowledged standard (the Domini index which will be the benchmark of our empirically analysis) focusing in particular on their potentially cost increasing and productivity enhancing characteristics. The fourth section presents and comments our descriptive and econometric findings on the impact of entry, permanence and exit from the Domini index of CSR.

## **2. The empirical literature on the impact of CSR**

Before testing directly the impact of CSR on corporate performance we briefly survey theoretical grounds which might support the hypothesis of a non negative relationship between the two variables. As a starting point we must consider that pursuing a socially responsible behaviour involves the undertaking of a set of actions which are potentially cost increasing (i.e. higher attention to workers conditions within the firm and in subcontracting companies, adoption of more environmentally, and often more costly, productive processes, etc.). To be economically sustainable, these sources of additional costs need to be compensated by some potential benefits. A



first one, is represented by the creation of *reputational* capital which may help the company to obtain better conditions when negotiating with various stakeholders (Cornell and Shapiro, 1987; Bowen et al., 1995; Jones, 1995). A second one considers that CSR may positively affect workers productivity once it is considered as being affected by a wider set of variables than the ones considered by the standard microeconomic approach (i.e. intrinsic motivation, coworkers behaviour, working conditions and identification with the goals of the firm) (Agell and Lundberg, 1999; Bewley, 1999, Campbell and Kamlani, 1999). 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.

A huge number of empirical papers have tested in the past the relationship between social responsibility and corporate performance.

With some approximation we can divide the existing empirical papers 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 moral 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 papers finds no significant direction in the link between CSR and corporate performance. Mc Williams and Siegel (2001) observe that the financial performance of the Domini index constituents is not significantly different from that of a control sample when per capita R&D expenditure is added among regressors. Other papers finding inconclusive results are those of Anderson and Frankle (1980), Freedman and Jaggi (1986) and Aupperle, Carroll and Hatfield (1985). 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 programs. Other papers documenting a negative relationship are those of Freedman and Jaggi (1982), Ingram and Frazier (1983), Waddock and Graves (1997).

How to interpret these controversial results ?



We think that the above described differences in findings across the three groups of papers 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). Therefore, 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 CSR on corporate performance.

Our paper 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, environment) on corporate performance.

### **3. The Social Domini criteria**

The Domini Social Index 400 (DSI 400) developed by Kinder, Lydenberger and Domini has created a series of widely acknowledged socially responsible criteria which gradually became an international standard. These criteria determine the inclusion of stocks into the index itself and, with it, the opportunity of being selected in portfolios of ethical funds. 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 Domini index identifies strengths and weaknesses, and lists a series of corporate actions falling under one of the two.

The inspection of these criteria immediately shows that there are no “free lunches” in CSR, revealing how several socially responsible 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 programs addressing work/life concerns, e.g. childcare, eldercare or flextime*). In the employee relations section we find as strengths *cash profit sharing programs, health and safety strength and strong retirement benefit programs*. In the *environment* section we find as strengths *clean air programs*. This item is for companies which 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 U.S- that 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 U.S.)*. Here again, good relationships with local workers and stakeholders are expected to have some costs in terms of missed opportunities of labour cost reductions.

Against all these potentially cost increasing factors we find only one clearly cost-decreasing socially responsible 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 above 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 program of *Work/Life Benefits (the company has outstanding employee benefits or other programs 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 program 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 programs)*; iv) *Retirement Benefits Strength (the company has a notably strong retirement benefits program)*; 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 paper is to test whether the cost increasing factors related to CSR (and, specifically, to Domini affiliation) prevail over the factors which should increase corporate financial performance.



#### 4. Data and methodology

In order to test the impact of Domini affiliation on corporate financial performance (CFP) we choose the following specification:

$$CFP_{it} = \alpha_0 + \alpha_1 SIZE + \alpha_2 DOMINI + \alpha_3 ENTRY + \alpha_4 POSTEXIT + \sum_{k=1}^{n-1} REASEXIT_k + \sum_{t=1}^{m-1} YEAR_t + \varepsilon_{it}$$

where  $CFP_{it}$  is a chosen financial performance variable (eg. return on equity, return on investment, return on capital employed, total sales per employee),  $Size$  is the natural logarithm of the number of firm employees,  $Domini$  is a (zero/one) dummy measuring affiliation to the Domini 400 index;  $Entry$  is a dummy which 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 dummy taking the value of one in the year of exit when the specific exit rationale (*Military, Environment, Productquality, Badgovnce and Badlabour*) applies. Finally,  $Year_t$  is a year  $t$  dummy picking up year effects. In our estimate we therefore try to disentangle the effects of corporate social responsibility (proxied by Domini affiliation) from business cycle effects (year dummies) and idiosyncratic characteristics (e.g. management quality) of each firm. 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) percent and that more than 5 (10) percent 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 (*non domini*), always (*sempredomini*) or, at some moment in the observation period, (*domini*) in the Domini index. The analysis is provided for the overall sample and for the size and R&D/non R&D investing



subsamples which we will consider also in the econometric analysis. A relevant finding is that average *non domini* 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.

## 5 Results

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 non discrete 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 stationary and some others are not). The null hypothesis is rejected for our dependent variables (see 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-Pesaran-Shin (2003) diagnostic in which the null hypothesis that all series are nonstationary is tested against the heterogeneous alternative.<sup>7</sup> 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 non stationarity.<sup>8</sup> Once verified the existence of nonstationarity in at least some of the time dimensions of our 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. The test rejects the null hypothesis of absence of common stochastic trends under the



assumption of non IID standard errors (NH adj. t in Table 3.2), thereby identifying the presence of cointegrating vectors which 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 Domini index is associated with 13 percent 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 3. In the same estimate we find that doubling the years after Domini exit reduces total sales per employee by 23 percent in the overall sample and is associated with a significantly reduced performance (around 21, 23 and 23 percent 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 Friedman (1984) hypothesis that CSR helps to reduce transaction costs with stakeholders but may be also 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 percent 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 4.2-4.6). This negative effect is compensated by the positive impact of entry into the Domini index 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 non large capitalisation firms (around 62 percent lower return on capital employed and 60 percent lower return on investment) (table 4.2). When we reestimate the model for non R&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 percent with large caps and 9 percent 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 to 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 maximisation to a multistakeholders welfare approach. Socially responsible 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 socially responsible criteria described above. Such criteria are 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 Domini index 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 which are in the Domini index at some moment in our sample interval are significantly different. Our findings (last rows of tables 4.1-4.6) show that socially responsible 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 non Domini firms is not significant in the return on equity estimate. Our interpretation is that Domini affiliation significantly reinforces traits of corporate identity which 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 Domini index 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.

## 6. Conclusions

Corporate social responsibility is a multifaceted complex phenomenon involving a set of actions which 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 paper 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 total sales per employee are significantly higher in socially responsible



firms, 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). A second finding is the significantly negative impact (both in terms of productivity and return on equity) of exit from the Domini index. 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 which 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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**Table 1 Distribution for the variables selected for the empirical analysis**

| Centile | TOTALSALES (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%     | 11724.880                   | 592.727  | 31.690  | 45.250  | 0.027  |
| 99%     | 56790.850                   | 3629.195 | 58.670  | 129.600 | 0.169  |



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

**Overall sample**

| variable     | Mean    | Std. Dev. | 25 <sup>th</sup> percentile | Median  | 75 <sup>th</sup> percentile |
|--------------|---------|-----------|-----------------------------|---------|-----------------------------|
| Sempredomini |         |           |                             |         |                             |
| TSA          | 2846.29 | 13785.27  | 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                       |
| Domini       |         |           |                             |         |                             |
| TSA          | 2592.07 | 12715.38  | 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                       |
| non domini   |         |           |                             |         |                             |
| TSA          | 2297.24 | 13520.69  | 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**

| Variable     | Mean     | Std. Dev. | 25 <sup>th</sup> percentile | Median  | 75 <sup>th</sup> percentile |
|--------------|----------|-----------|-----------------------------|---------|-----------------------------|
| Sempredomini |          |           |                             |         |                             |
| TSA          | 5624.811 | 21813.090 | 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                       |
| Domini       |          |           |                             |         |                             |
| TSA          | 4916.387 | 19391.450 | 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                       |
| non domini   |          |           |                             |         |                             |
| TSA          | 4463.960 | 22966.450 | 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                       |



**Table 2 Descriptive statistics of variables used in the empirical analysis (follows)**

**Small Capitalization**

| Variable            | Mean     | Std. Dev. | 25 <sup>th</sup> percentile | Median  | 75 <sup>th</sup> percentile |
|---------------------|----------|-----------|-----------------------------|---------|-----------------------------|
| <b>Sempredomini</b> |          |           |                             |         |                             |
| 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                       |
| <b>Domini</b>       |          |           |                             |         |                             |
| 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                       |
| <b>non domini</b>   |          |           |                             |         |                             |
| 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                       |

**R&D investing**

| Variable            | Mean     | Std. Dev. | 25 <sup>th</sup> percentile | Median  | 75 <sup>th</sup> percentile |
|---------------------|----------|-----------|-----------------------------|---------|-----------------------------|
| <b>Sempredomini</b> |          |           |                             |         |                             |
| 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                       |
| <b>domini</b>       |          |           |                             |         |                             |
| 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                       |
| <b>non domini</b>   |          |           |                             |         |                             |
| 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                       |



**Table 2 Descriptive statistics of variables used in the empirical analysis (follows)**

**Non R&D investing**

| variable     | Mean     | Std. Dev. | 25 <sup>th</sup> percentile | Median  | 75 <sup>th</sup> percentile |
|--------------|----------|-----------|-----------------------------|---------|-----------------------------|
| sempredomini |          |           |                             |         |                             |
| 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                       |
| domini       |          |           |                             |         |                             |
| 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                       |
| non domini   |          |           |                             |         |                             |
| 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                       |





**Table 4.1 The impact of Domini affiliation on performance indicators**

| Var\Dep.                                       | 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) |
| Badgov.ce                                      | -0.036 (-0.26)  | 0.134 (0.69)   | -0.054 (-0.27) | 0.119 (0.69)   |
| Badlabour                                      | 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 <sub>2</sub> within                          | 0.428           | 0.032          | 0.021          | 0.033          |
| R <sub>2</sub> between                         | 0.402           | 0.001          | 0.001          | 0.000          |
| R <sub>2</sub> overall                         | 0.393           | 0.007          | 0.002          | 0.010          |
| P-value  | (0.000)         | (0.000)        | (0.000)        | (0.000)        |
| Number of obs.                                 | 11986           | 9792           | 10357          | 10472          |
| Average fixed effects                          |                 |                |                |                |
| Domini sample                                  | 0.070*          | 0.030*         | 0.007          | 0.030*         |
| Non domini 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*         |
| Non domini sample                              | -0.089*         | -0.070*        | -0.018         | -0.065*        |



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

| Var\Dep.                                       | 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) |
| Badgov.ce                                      | -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 <sub>2</sub> within                          | 0.435           | 0.035          | 0.024          | 0.036          |
| R <sub>2</sub> between                         | 0.483           | 0.000          | 0.000          | 0.002          |
| R <sub>2</sub> overall                         | 0.478           | 0.007          | 0.004          | 0.011          |
| 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*         |
| Non domini 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*         |
| Non domini sample                              | 0.057*          | -0.079*        | -0.039*        | -0.063*        |



**Table 4.3 The impact of Domini affiliation on performance indicators (non R&D investing firms)**

| Var\Dep.                                       | 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) |
| Badgov.ce                                      | 0.112 (0.73)    | 0.180 (0.79)   | -0.020 (-0.09) | 0.138 (0.69)   |
| Badlabour                                      | 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 <sub>2</sub> within                          | 0.462           | 0.032          | 0.020          | 0.035          |
| R <sub>2</sub> between                         | 0.408           | 0.003          | 0.000          | 0.001          |
| R <sub>2</sub> overall                         | 0.426           | 0.011          | 0.002          | 0.012          |
| P-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*         |
| Non domini 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*         |
| Non domini sample                              | -0.036          | -0.114*        | -0.031*        | -0.104*        |



**Table 4.4 The impact of Domini affiliation on performance indicators (non R&D investing firms -large capitalisation firms are excluded from the sample)**

| Var\Dep.                                       | 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) |
| Badgov.ce                                      | 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 <sub>2</sub> within                          | 0.455           | 0.037          | 0.023          | 0.040          |
| R <sub>2</sub> between                         | 0.500           | 0.005          | 0.001          | 0.003          |
| R <sub>2</sub> overall                         | 0.505           | 0.011          | 0.006          | 0.015          |
| 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*         |
| Non domini 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*         |
| Non domini sample                              | 0.090*          | -0.107*        | -0.045*        | -0.090*        |