Corporate Social Responsibility and Latin American firm performance

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Abstract (structured)

Abstract
Purpose – The purpose of this paper is to analyse the impact of Corporate Social Responsibility (CSR) on firm performance in six Latin American economies. Firm performance comprises the following five distinct dimensions: firm turnover, labour productivity, innovativeness, product differentiation and technological transfer. The countries under scrutiny are Argentina, Bolivia, Chile, Colombia, Ecuador and Mexico.
Design/methodology/approach – Propensity Score Matching techniques are employed to identify the causal effect of CSR on firm performance. To this end, the World Bank Enterprise Survey (2006 wave) is employed. This dataset collects relevant firm-level data
Findings – CSR has a positive impact on the outcome variables analysed, suggesting that corporate goals are compatible with conscious business operations. The results also vary across countries.
Research limitations/implications – The pattern that emerges from the analysis seems to suggest that the positive effects of CSR depend on a country's stage of industrialisation. In particular, the less developed the economy, the wider the scope of CSR. Nonetheless, the relationship among conscious business operations, firm performance and countries' levels of development is not directly tested in the present work.
Practical implications – The main practical implication of the study is that Latin American firms should adopt CSR. This is because corporate responsible practices either improve firm performance or are not shown to have a detrimental effect.
Social implications – The major policy implication is that emerging countries' governments as well as international organisations should provide meaningful incentives for CSR adoption.
Originality/value – The paper makes three major original contributions. First, it furnishes new descriptive evidence on CSR practices in Latin America. Second, it employs a broader and novel definition of firm performance intended to capture business dynamics in developing countries, as well as to overcome data limitations. Finally, it reassesses and extends the empirical evidence on the impact of CSR on firm performance.
Keywords - Corporate Social Responsibility, Firm Performance, Propensity Score Matching, Latin America
Paper type - Research paper

1. Introduction

In the past decade, both business practitioners and policy makers have paid increasing attention to firms' socially responsible practices because these are of interest not only to firms but also to society as a whole (McWilliams and Siegel, 2000; Margolis and Walsh, 2003; Orlitzky et al 2003). Visser (2008) defines Corporate Social Responsibility (henceforth CSR) as "the formal and informal ways in which business makes a contribution to improving the governance, social, ethical, labour and environmental conditions of the developing countries in which they operate, while remaining sensitive to prevailing religious, historical and cultural contexts". One of the main issues in this context concerns the "global credibility" of CSR and, thus, the integration of socially and environmentally conscientious practices into the ordinary business of developing countries' firms (see, for example, Adeyeye, 2011; Berliner and Prakash, 2014; and Moratis, 2015)

To date, the main research efforts on CSR have concentrated on developed countries (Orlitzky et al, 2003; Jamali, 2008; Bird et. al., 2007). This is primarily because CSR originated in Western companies and information on such firms' practices is mainly available in advanced economies. However, the pressures to adopt socially responsible practices have dramatically increased in emerging markets (Visser, 2008). On the one hand, this is due to the effects that developing countries' industrialisation is likely to have on their environments (Grossman and Krueger, 1995; Dasguptaet. al, 2002) as well as on their social norms (Lall, 2002). On the other, it is due to the fact that CSR is now considered to be intertwined with poverty alleviation and sustainable development (Blowfield, 2005 and Moon, 2007).

Historically, firms in both developed and developing countries have had a mixed reaction to the increasing popularity of CSR. While some firms have devoted more resources to social and environmental activities, others have resisted the trend because of the concern that growing expenditure in this area may negatively affect the economic viability of the business. It is therefore crucial to assess how CSR affects firm performance in laggard economies and whether the goals of private enterprises can be aligned with those of conscientious business as well as with sustainable development. Empirical research on developed countries has analysed the impact of CSR on firms' performance, but the results have been mixed. The conflicting empirical findings may be the consequences of using different proxies for CSR or different samples. However, with the sole exception of Cheng and Shan (2009), the great majority of studies have failed to consider that CSR is likely to be endogenous. That is, firms with better performances or with certain characteristics are systematically more likely to adopt CSR practices. Hence any empirical exercise that does not tackle the endogeneity issue provides non-consistent results.

The aim of this paper is to investigate the causal effect of CSR on firm performance in six Latin American middle-income economies, taking into account the likely endogeneity of CSR as well as the peculiarities of business dynamics in developing countries.

More in detail, we take advantage of the 2006 World Bank Enterprise Surveys (WEBS) on Bolivia, Argentina, Chile, Colombia, Mexico and Ecuador, and we employ Propensity Score Matching techniques (henceforth PSM) to conduct a consistent assessment of the CSR/firm performance nexus.[1] In particular, PSM enable us to adjust for observable differences in

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[1] In employing the term "developing countries" we follow the World Bank's definition according to which the set of developing countries encompasses all Low and Middle income economies. In particular, in 2006, three of our sampled countries were classified as Lower Middle Income (i.e. Bolivia, Colombia and Ecuador) while the rest were Upper Middle Income (i.e. Argentina, Chile and Mexico).

characteristics between firms that adopt CSR practices and those that do not, thus making an adequate 'like-for-like' comparison possible.

Our intention to study CSR in the Latin American context is motivated by the observation that, although Latin America is the developing region least covered in terms of CSR research, there is an increasing trend of CSR adoption by Latin American firms (Visser, 2008). Hence a better understanding of the impact that CSR has on firm performance appears extremely important.

This study makes three main contributions. First, we provide new descriptive evidence on CSR in Latin America. Second, we move beyond the narrow definition of firm performance as financial success. In particular, in order to highlight the peculiarities of business dynamics in developing countries, as well as to overcome data limitations, we formulate five distinct theoretical hypotheses on the CSR/performance link, and we examine the causal effects of socially responsible practices on firm turnover, labour productivity, innovativeness, product differentiation and technological transfer. Third, overall, our work reassesses and extends the empirical evidence on the impact of CSR on firm performance.

Turning to the results, our descriptive analysis shows that the majority of firms engage in CSR; and that environmental practices, such as water optimisation programmes, are the most common, followed by those aimed at supporting communities as well as workers. Moreover, we document that firms engage in more than one type of CSR simultaneously: that is, the majority of the firms that have environmental programmes also have labour or community supportive policies. Finally, we highlight that CSR adopters have distinct intrinsic characteristics. In particular, such firms tend to be large, well-established, engaged in Research and Development, and foreign owned.

In regard to the matching exercise, overall our results provide supportive evidence for the theoretical hypotheses that we have formulated. They thus show that corporate goals are

compatible with conscious operations in developing countries. However, it should also be noted that our findings exhibit great variability across countries. In particular, we find that poorer countries, such as Bolivia and Colombia, display the highest numbers of links between CSR and the outcome variables analysed, while in the richer ones, such as Mexico and Argentina, CSR has a sizeable effect only on innovativeness. Finally, no effect is found in Chile, the most developed country in our sample. Hence, it seems advisable for governments and international organisations to provide meaningful incentives for CSR adoption, especially in least developed economies.

The remainder of the paper is organised as follows. Section 2 briefly reviews the relevant literature. Section 3 discusses the methodology. The fourth part presents the data employed and provides a preliminary analysis by considering some descriptive statistics. Finally we discuss the results of the matching exercise, and we conclude with final remarks and policy implications.

2. Literature Review

In this section we first consider the literature on CSR practices in developing countries. We then explore current theory on the relationship between CSR and firm performance, and we assess the available empirical evidence based on the experiences of advanced economies. Finally, we discuss the hypotheses to be tested in the remainder of the paper in light of the relevant theoretical literature.

2.1 CSR in developing regions: coverage and evidence

Most of the literature on CSR and firm performance in developing countries is qualitative in nature, and it is often based on case studies.

In terms of regional coverage, a large part of the literature has focused on Asia (Visser, 2008).[2] A comparative analysis by Welford (2005) shows, perhaps unsurprisingly, that Asian countries, such as Hong Kong, Malaysia and Thailand, consistently underperform developed countries on several aspects of CSR. However, it is important to note that there is some regional variation in CSR reporting: 75% of large Indian companies have some CSR policies compared to only 32% of firms in Malaysia and 30% in the Philippines. Finally, Luken and Stares (2005) use the United Nations information on 22 small and medium enterprises in four developing Asian countries to show that environmental and social practices are correlated with financial savings, environmental, social and product improvement.

Turning to studies investigating CSR practices in Africa, the majority of them concentrate on South Africa and Nigeria. Moreover, most of the studies focus on critical sectors such as agriculture (e.g. Blowfield, 2003), mining (e.g. Kapelus, 2002) and petrochemicals (e.g. Acutt et al., 2004). Finally, CSR debates in the region have been centred on ethical issues related to apartheid, colonialism and corruption.

For what concerns Latin America, which is the continent of interest for our study, Visser (2008) points out that, among all developing regions, Latin America is the one least covered in terms of CSR research. Moreover, the available evidence is concentrated on Argentina (e.g. Newell and Muro, 2006), Brazil (e.g. Vivarta and Canela, 2006) and Mexico (e.g. Weyzig, 2006). Nevertheless, the most recent literature reports that CSR is increasing in the region. For example, Araya (2006) documents that 34% of large companies publish a report on sustainability. Further, Vives (2006) provides insights on the importance of specific CSR

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[2] For instance, Zhuang and Wheale (2004) on China, Blowfiel?d (2004) on Indonesia, Lund-Thomsen (2004) on Pakistan, and Kaufmann et al. (2004) on Thailand.

practices in small and medium enterprises (SMEs) in eight Latin American countries. He finds that most CSR by SMEs is focused on internal activities, such as employee welfare, whereas philanthropic and environmental activities are less common. Finally, Amini and Dal Bianco (2015) show that Latin American firms which engage in environmental or community projects are no less efficient than firms that do not adopt such practices. They thus suggest that corporate goals, such as productivity, are compatible with conscious operations.

2.2 CSR and firm performance: theoretical background and evidence from developed countries

Research on CSR is mainly focused on developed countries, or on the activities of Western multinational companies (MNC) in emerging markets (Muller and Kolk, 2008).

The theoretical literature has formulated two competing hypotheses concerning the effect of CSR on firm performance. The first is called the "social impact hypothesis"; the second one the "shift of focus view". While the former claims that CSR has a positive effect on firms' financial performance, the latter suggests the opposite.

According to the social impact hypothesis, three channels may explain the positive relationship between CSR and firm performance. They are: improving employee productivity by providing a better working environment (Turban and Greening, 1997); increasing managerial know-how and thus enhancing organizational efficiency (Orlitzky et al., 2003); increasing social reputation, trust (Bowman and Haire, 1975), brand image and product competitiveness (Porter and Van derLinde, 1995). This last channel works principally through the media, which make firms responsible to stockholders and consumers (Chen and Shang, 2009).

The shift of focus view instead argues that activities such as building employee and community relationships and providing environmental protection cause a shift of focus from the traditional corporate goals to the interests of a wider set of stakeholders which increases firms' costs (Becchetti, Ciciretti and Hasan, 2007). Moreover, some studies also argue that corporations engaged in CSR activities have lower market competitiveness and worse performance because they may use resources inefficiently (Friedman, 1970), limit product developments (Bragdon and Marlin, 1972) and push unprofitable social activities (Aupperle et al., 1985; Vance, 1975; Ullmann, 1985).

Turning to the empirical literature, the bulk of existing studies examine the relationship between some measure of CSR and the long-term firm performance, which is proxied by accounting or financial measures of profitability. Typically, these studies estimate the effect of CSR by regressing firm performance on corporate social performance and various control variables. Firm performance is usually associated with firm financial performance. It is consequently measured in terms of price per share, return on assets or on equity (Orlitzky et al., 2003). Four common ways to measure CSR are: (a) disclosures, such as annual reports, letters to shareholders and other corporate disclosures to the public; (b) reputation ratings; (c) social audits; and (d) managerial principles and values (Orlitzky et al., 2003).

Existing empirical studies on the CSR/firm performance nexus in advanced economies report mixed results. For example, Newgren et al. (1985) and Brammer et al. (2005a) find that firms that engage in environment protection and community relationships have significantly lower stock returns. In contrast, Cochran and Wood (1984), Waddock and Graves (1997), and Tsoutsourz (2004) find that the CSR reputation index positively affects firms' performance. Further, Orlitzky et al (2003) conduct a meta-analysis of 52 studies and show that social responsibility, and to a lesser extent environmental responsibility, is likely to have a positive effect on firm performance.

Finally, the empirical evidence on CSR and firm financial performance remains inconclusive even when the likely endogeneity of CSR practices is taken into account, as in the recent work by Cheng and Shang (2009). In particular, these authors employ propensity score matching to tackle the endogeneity issues, and they investigate the relationship between CSR and financial performance by using Taiwanese firms' quarterly data from 2005 to 2006. In this instance, CSR is measured by the reputation rating given by the *Global View Monthly*, which is a leading commercial magazine in Taiwan. Firm financial performance, instead, is proxied by the return on investment and equity, pre-tax income to net sales, gross profit to net sales and earnings per share. Cheng and Shang's (2009) results show that firms engaging in CSR activities obtain significantly higher values of pre-tax income and profit margin, but there is no significant difference between returns on investment and earnings per share. Although admitting that this non-univocal result may be due to the matching exercise, Chen and Shang's (2009) interpretation is that CSR is not detrimental to firm performance, in the sense that it never has a significant and negative effect.

2.3 Broadening the concept of firm performance and testable hypotheses

So far our literature review has highlighted two main facts. First, the bulk of the research on the relationship between CSR and firm performance is focused on developed economies' experiences. Second, the available evidence on that link is inconclusive because the empirical results have been mixed. Since our goal is to shed light on the impact of CSR on aspects of the firm that are crucial for the process of development, this paper moves beyond the narrow definition of firm performance as financial success. Thus, in order to take developing countries' business dynamics into account, as well as to deal with current data limitations, we explore five dimensions of firm performance: firm turnover, labour productivity,

innovativeness, product differentiation, and technological transfer. For each dimension, we formulate five distinct theoretical hypotheses which can shed some light on how CSR affects the performance of firms in developing countries.

Starting with firm turnover, this variable is measured by firms' revenues. Our consideration of firm turnover as a firm performance indicator has a twofold rationale. First, we assume that firms' managements aim to maximise profits (Jensen, 1988) but, as we lack data on standard financial performance indicators, we rely on sales data[3]. Finally, a possible (positive) relationship between CSR and revenues can be justified in light of the traditional demand and supply model of McWilliams and Siegel (2001). On the demand side, the consumers and other stakeholders demand CSR and its attributes. On the supply side, firms that are willing to satisfy such a demand must devote resources to CSR. Eventually, such firms will experience an increase in revenues, as predicted by Jones (1995) or McWilliams and Siegel (2010). These considerations lead to the following hypothesis:

Hypothesis 1: CSR has a positive impact on firms' revenues.

Turning to labour productivity, this variable is defined as the sales per employee ratio. This measure has been extensively used in the literature (see the recent review by Sanchez and Benito-Hernandez, 2013). Following the arguments put forward by Stuebs and Sun (2010), we presume that CSR improves business reputation and that good business reputation can enhance labour productivity, for example because socially responsible firms attract and retain more skilled employees (Lado and Wilson, 1994; Turban and Greening, 1997) or because CSR practices are often directly related to promoting employee empowerment (McWilliams et al., 2006). Another possible channel through which CSR can boost labour productivity is

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[3] This approach is similar to Baumol (1962) and McGuire et al. (1962)

the one related to social capital building and lower employee turnover (Russo and Perrini, 2010).

Thus, our next hypothesis is:

Hypothesis 2: CSR has a positive impact on firms' labour productivity.

In regard to firm innovativeness, according to Moore (2005), CSR and ethical practices can be drivers of innovation because they favour the formation of innovation networks, as well as confidence in cooperative processes. More recently, Brodhag (2013) has intertwined CSR practices with the classic debate on innovation driving forces (i.e. "market pull" *versus* "technology push"). His review highlights that responsible practices can boost innovation from both the pull perspective, as in the case of sustainability-oriented innovations (Hansen et al., 2009), and from the push one, as when innovation is regulation-induced (Porter and Van derLinde, 1995; Ashford and Hall, 2011). Thus, our third hypothesis is:

Hypothesis 3: CSR is a driving force for innovation; hence it has a positive effect on firms' innovative activities.

Before turning to the next hypothesis, we point out that we measure firm innovativeness with a dummy variable taking the value of one if the firm invests in Research and Development (henceforth RnD) within the establishment or through a third party. The inclusion of Outdoor RnD is motivated by the nature of technological progress in developing countries, which is characterised by the innovation-imitation dynamic (DalBianco, 2010; 2015). This point will be fully clarified in the discussion of Hypothesis (5).

We then explore the relationship between CSR and product differentiation or RnD intensity, which is measured as the ratio of RnD expenditures to sales. This is motivated by the argument of McWilliams and Siegel (2001) that CSR features embedded in firm products can be conceived as new products. Thus, our testable hypothesis is:

Hypothesis 4: CSR has a positive impact on the level of product differentiation.

Finally, we explicitly assume that technological advances in developing countries are related to the transfer of ideas from the technological leaders (see Nelson and Phelps (1966) and Baumol (1986) for seminal contributions). In particular, drawing on Griliches (1979) and on the results of Griffith et al. (2006), we envisage a link between firm innovative activities and outdoor RnD. Then, as in the discussion related to Hypotheses (3) and (4), we assess the relationship between CSR and technological transfer, measured as the third party-RnD expenditures to sales ratio. Hence, our last hypothesis is:

Hypothesis 5: CSR has a positive effect on technological transfer, that is, the third-party RnD to sales ratio

3. Methodology

3.1 The causal effect of CSR on firm performance: estimable equations and methodological issues

The primary goal of our analysis is to evaluate the causal effect of CSR adoption on different measures of firm performance by using observational data (i.e. non-experimental data).

Following Becerril and Abdulai (2010), we employ an empirical specification that captures the firm's decision to adopt socially responsible practices. In particular, we assume that firm performance is a linear function of the firm's characteristics as well as CSR, and that the decision to adopt CSR depends on the firm's characteristics. [4] Two inter-related methodological issues arise in a non-experimental causal analysis like the current one (see for reviews Blundell and Costas Dias, 2000; 2002). First, we do not observe the counterfactual. This means that we have information on firm performance of CSR adopters and non-adopters only, but there is no information on the counterfactual (i.e. CSR adopters' performance in the case of non-adoption and vice-versa). The second problem is that the decision to adopt CSR (i.e. the treatment assignment) may depend on firms' characteristics and thus it is non-random. In other words, the group of adopters can be *systematically* different from non-adopters. This,

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3. We assume that the data generating process can be described by two relations. The first, Equation (1) below, is an extended production function which describes the linear relationship between the i-th firm's performance (i.e. yi) and the firm's characteristics (i.e. Xi) as well as CSR and a normally distributed idiosyncratic error term. Equation (2) is instead an index function that models CSR adoption as a function of firms' characteristics. Formally:

$$\ln y_i = \beta_0 + \beta_1 \ln(X_i) + \beta_2 CRS_i + \mu_i \qquad (1)$$

$$CSR^*_i = \gamma X_i + \varepsilon_i \qquad (2)$$

In particular, CSR* is a latent variable representing the difference in utility between CSR adoption and non-adoption, where the difference is estimated by the term. Although we will not estimate Equations (1) and (2) in our empirical exercise, clarifying the specific characteristics of the data-generating process is of fundamental importance in order to adopt the right econometric techniques.

4. Referring to the notation employed in the previous footnote, the selection bias arises when the error terms of the production function (i.e. μ in Equation 1) and the CSR choice (i.e. ε in Equation 2) are correlated.

in turn, implies a causality issue in the specific form of a selection bias, in the case that some unobservable factors influence both firm performance and the choice of engaging in CSR.[5]

The traditional methodologies employed to control for the selection bias have been the Instrumental Variables (IV) approach and the Heckman two-steps estimator (Heckman, 1979). However, both approaches present some drawbacks. The main challenge of the IV approach is finding suitable identifying instruments that are correlated with the selection variable (i.e. CSR) but not with the outcome (i.e. firm performance). Moreover, IV procedures imply that the coefficients of the control variables are similar for adopters and non-adopters, an assumption which is unlikely to be satisfied since their coefficient may differ (Jalan and Ravallion, 2003). The main problem with the Heckman-two steps method, instead, is that it relies on the restrictive assumption of normally distributed errors (Becerril and Abdulai, 2010).

In order to investigate the causal relationship between CSR and firm performance, we adopt the Propensity Score Matching (PSM) approach. Unlike the aforementioned parametric methods, PSM has the advantage of not imposing any specific requirements on the functional form specifying the relationship between outcomes and predictors of outcomes[6]. Moreover, this paper employs survey-data, hence the problem of measurement error may arise as well.

3.2 Propensity Score Matching

PSM entails forming matched sets of treated and untreated subjects who share a similar value of the propensity score (Rosembaum and Rubin, 1983a, 1985). Following Rosembaum and Rubin (1983), the propensity score is defined as the probability of treatment assignment

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5. For a full derivation of the ATT, the interested reader can refer to Becerril and Abdulai (2010), p.1026.

conditional on observed baseline covariates. Formally: $e_i = Pr(Z_i = 1|X_i)$. The propensity score is a balancing score: conditional on the propensity score, the distribution of measured baseline covariates is similar between treated and untreated subjects. Thus, in a set of subjects all of whom have the same propensity score, the distribution of observed baseline covariates will be the same between the treated and untreated subjects. In particular, PSM summarizes the pre-treatment characteristics of each subject into a single index variable, and then uses the propensity score to match similar individuals (Rosenbaum and Rubin, 1983a). Hence, PSM makes it possible to estimate the Average Treatment Effect for the Treated (henceforth ATT) (Imbens, 2004). The ATT is the average effect of treatment on those subjects who ultimately received the treatment. Formally, the ATT can be written as: $E[Y_i(1) - Y_i(0) |Z = 1]$.[7]

The crucial assumption that underlies propensity score analyses is that the assignment to the treatment has been properly modelled or, as Rosenbaum and Rubin (1983a) put it, that the treatment assignment is "strongly ignorable". In particular, Rosenbaum and Rubin (1983a) demonstrate that if treatment assignment is strongly ignorable, conditioning on the propensity score allows one to obtain unbiased estimates of the ATT. Two assumptions are needed for a strongly ignorable treatment effect. The first is the Conditional Independence Assumption (CIA). CIA implies that selection into the treatment group is based solely on observable characteristics (selection on observables). Thus there are no unmeasured confounders that can affect the probability of treatment assignment. The second condition states that every subject has a non-zero probability of receiving or non-receiving the treatment. This hypothesis is called the "common support" or "overlap condition" because the common support is the area where the balancing score has positive density for both treatment and control units (Caliendo and Kopeinig, 2005).

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6. For a full derivation of the ATT, the interested reader can refer to Becerril and Abdulai (2010), p.1026.

The main drawback of PSM is that the CIA may be non-satisfied. As rightly noted by Smith and Todd (2005), there may be systematic differences in the treatment assignment between treated and untreated because of unmeasured confounders. However, Jalan and Ravallion (2003) convincingly argue that the assumption of selection on observables is no more restrictive than assuming away problems of weak instruments, when the Heckman two-steps estimator or the IV approach are employed in cross-sectional data analysis. Thus, with these caveats in mind, we rely on PSM for our exercise.

3.3 Calculation of the propensity score, matching algorithms and ATT interpretation

In order to choose the covariates to be included in the calculation of the propensity score, we draw on the existing literature on firm performance (e.g. Raiser, Allan and Steves, 2008; Johnson, McMillan and Woodruff, 1999; Carlin, Schaffer and Seabright, 2004). Moreover, we take into account the trade-off between omitted factors and over-parameterisation. If, on the one hand, omitting important factors can increase the selection bias (Heckman et al., 1998), on the other hand, over-parameterized models reduce the likelihood of finding a common support (Bryon et al., 2002). Thus, in order to ensure that the common support condition is satisfied, we follow Dehejia and Wahba (2002) and Diprete and Gangl (2004) and we include only a limited number of covariates. In light of these considerations, we calculate the propensity score by employing the level of inputs used (labour and capital) and some selected firms characteristics, such as ownership, export intensity, size and RnD.

Once the propensity score has been calculated, different matching techniques can be employed to build the artificial and non-observed counterfactual.

There are several matching methods available. Asymptotically, all matching algorithms should generate the same results, although there are trade-offs in terms of bias and efficiency

involved with each algorithm (Caliendo and Kopeining, 2005). In this paper we compare estimates of three different types of matching: kernel matching, nearest neighbour matching, and radius matching.

The kernel matching method is one of the most commonly used matching approaches. In particular, it is a non-parametric matching estimator that uses weighted averages of all individuals in the control group to construct the counterfactual. The weight assigned to each control observation depends on how close it is, in terms of propensity score, to a treated individual (Caliendo and Kopeinig, 2008).

The second matching method employed here is the Radius Matching with Calliper. A common issue with PSM is that matching may be of poor quality if the distance between controls and treated observations is large. The calliper imposes a maximum propensity score distance requirement. Calliper is often used with radius matching so that the algorithm uses the nearest neighbour for all the comparison members within the calliper, but it allows for larger distances when good matches are not available (Caliendo and Kopeinig, 2008).

The last matching method is the Nearest Neighbour Matching, also known to be one of the most straightforward methods. Matching between control and treated firms is done on the basis of the closest propensity score. The k-nearest neighbour matching allows the use of k units in the control group as matching partners for a treated individual. In this paper we set k equal to 3. Thus we use just the three nearest neighbours.

Having formed the matched sample, the treatment effect can be estimated. This paper identifies the ATT of social and environmentally-oriented policies on selected measures of firms' performance. In particular, if the outcome variable is continuous (e.g. firms' turnover), the treatment effect can be interpreted as the average effect of treatment on those subjects who ultimately received the treatment (i.e. the increase or decrease in firms' sales due to CSR adoption). If, instead, the outcome variable is dichotomous (e.g. engaging or not in RnD), the

effect of the treatment can be estimated as the difference between the proportion of subjects experiencing the event in each of the two groups (treated vs. untreated) in the matched sample. With binary outcomes, the effect of the treatment can also be described using the relative risk or the Number Needed to Treat (Rosenbaum and Rubin, 1983a).[8]

Finally, we point out that all the estimations reported here have been performed in STATA 12.0 using the software provided by Leuven and Sianesi (2004).

4. Data and Descriptive Statistics

4.1 CSR adoption, range of activities and perceived impact

The data employed in this paper are drawn from the World Bank Enterprise Surveys (WEBS). WEBS is a firm-level survey conducted by experts on behalf of the World Bank. The survey is answered by top mangers of mainly service and manufacturing companies, and it covers a wide range of topics including characteristics of managers, perception of institutional constraints, and some basic financial information.[9] These surveys have been used to investigate firms' performances by many well-known scholars (e.g. Djankov et al, 2008 and Beck et al. 2005). However, to the best of our knowledge, no one has made use of the information on CSR. The data are available for domestic and foreign-owned firms in Argentina, Bolivia, Chile, Colombia, Ecuador and Mexico.

The 2006 round of WBES contains 10 questions on CSR which give information on the following: whether the firm has any CSR-related practice; how CSR affects the establishment; if the firm has any energy, recycling or water optimisation programme; if the firm has a community support group; if the firm receives pressure to be socially responsible; if the firm

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6. The number needed to treat (NNT) is an epidemiological measure used to communicate the effectiveness of a health-care intervention, typically a treatment with medication.

[9] Further details are available from http://www.enterprisesurveys.org.

has any explicit policy on hiring women or handicapped persons or supporting the balance between family and work.

The 10 questions allow exploring three different dimensions of CSR, i.e. the environmental, social and labour ones. The survey also contains information on firms' turnover, size, sector of activity, export intensity, ownership and Research and Development (RnD) activities. This section analyses CSR practices across the six countries analysed, as well as the characteristics of firms engaged in CSR.

Table 1 summarises the WBES questions related to CSR for the six countries analysed. The table contains the percentage of firms that responded positively to the questions reported in the first column. The results are grouped according to the three CSR dimensions analysed, i.e. Environmental CSR (4 questions in WBES survey); Community CSR (1 question), and Labour CSR (2 questions).

The first row of Table 1 shows that between 44.38% and 78.59% of the firms surveyed have some oral or written CSR policies, with Mexico being the country with the lowest share and Ecuador the highest.

In regard to environmental practices, the survey contains 4 different questions (i.e. on the adoption of energy or water optimisation, recycling, and water/air pollution control). In order to summarize the information on Environmental CSR, we have generated a dummy variable, "CSR Environment", that is equal to 1 if the establishment adopts at least of one these practices. The fifth row in Table 1 shows that the majority of the firms have some environment-related practices. The minimum value of "CSR Environment" is 67% in Argentina, and the maximum is 87% in Ecuador.

WBES 2006 provides one question on the adoption of community support programmes. Thus, we can investigate the prevalence of CSR in the social dimension. In all countries the frequency of community projects seems lower than that of environmental practices. Ecuador

again has the highest share of firms adopting community programmes, with 55%, while Mexico has the lowest share with 22.54%.

The questions related to the labour dimension of CSR provide information on two aspects: first, whether firms have explicit policies on hiring women or handicapped persons; second, whether they have programmes supporting the balance between family and work. We have repeated the same exercise done for Environmental CSR and built a dummy variable called "CSR Labour". The tenth row of Table 1 shows that, in all countries, the prevalence of labour-related practices is even lower than the adoption of community programmes. In particular, Argentina has the lowest share of firms engaged in Labour CSR (14.29 %) while Ecuador is again the best performing country (37.2%).

Overall, the data show that, in all the Latin American countries surveyed, there is a high share of firms engaged in some type of CSR. This is in line with Visser's (2008), which documents a trend of increasing CSR for Latin American countries. However, our data show that there is large variation in terms of the prevalence of various types of CSR. Environmental practices are the most common, while social and labour practices are less frequent. This finding is in consistent with Baskin's (2006) analysis, which notes that emerging markets lag behind the OECD for business ethics and equal opportunities, but are roughly on a par for environmental reporting.

For what concerns the prevalence of CSR in the countries analysed, Ecuador is the country with the highest share of firms engaged in CSR, for all the CSR dimensions analysed. Perhaps surprisingly, richer countries, such as Chile, Mexico and Argentina, perform poorly in relative terms. For instance, Mexico has the lowest share of firms engaged in CSR, in particular as regards community support projects (22%). Ecuador, Colombia and Bolivia outperform Argentina, Mexico and Chile in terms of the share of firms engaged in environmental and labour CSR. This points to a weak correlation between a country's level

of development (i.e. GNI per capita) and firm behaviour.[10] Existing research shows that the adoption of CSR is contingent on the industry (Bansal and Roth, 2000; Strike, Gao and Bansal, 2006), societal culture (Waldam et al., 2006), and institutions (Frynas, 2005; Amaeshiet al., 2006). For instance, Ite (2005) identifies corruption, poor governance, and the lack of accountability to be the main hindrances to adopting CSR practices in Nigeria. Hence, an in-depth comparative legal and institutional analysis can help in identifying the drivers of the observed cross-counties differences. Because such analysis falls outside the scope of this paper, future research can shed light on this aspect.

Finally, the last two rows of Table 1 highlight that external pressures to adopt CSR practices are extremely low in all countries. Only 5% of Mexican firms receive pressure to be socially/environmentally responsible, while the share is around one quarter in both Ecuador and Bolivia (25% and 23% respectively). However, in all countries, the majority of the firms agree that CSR has a positive impact on competitiveness. As much as 87% of Mexican firms believe that being socially responsible has a positive effect on the firm's competitiveness.

Overall, the descriptive statistics presented in Table 1 show that most companies do engage in some CSR activities, although there is a higher share of firms that adopt environmental programmes rather than labour practices or community projects. However, WBES data allow identifying only the type of CSR activities but not firms' expenditures on CSR performance.

Insert table 1 here

4.2 Simultaneous CSR practices

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7. According to World Bank World Development Indicators, the three richest countries among the ones sampled are Chile, Argentina and Mexico, which have a GNI per capita in current US dollars equal to 15,245, 14,680 and 9,818, respectively. The poorest are Bolivia, Ecuador and Colombia, with a GNI per capita equal to 2,576, 5,425 and 7,763 dollars respectively.

As Muller and Kolk (2008) note, it is important to assess not only the prevalence of the various CSR practices but also the extent to which companies engage in them simultaneously. Table 2 shows the share of firms engaged in more than one type of CSR. In particular, it shows the pair-wise correlation between CSR-Environment, which is taken as the reference category, and CSR-Labour as well as CSR-Social, one at a time. The data shows that firms tend to adopt one or more aspect of CSR simultaneously. So, for example, the majority of firms that have environmental programmes also have labour policies or community projects. For instance, in Argentina only 10% of firms that have a community project do not have any environmental programme, while 24.36% of firms that adopt some labour standards fail to engage in environmental practices. Similarly in Colombia 89.88% of firms with CSR-Labour also has CSR-Environment, while 91.36% of firms with CSR-Social also have CSR-Environment. This pattern holds for all the countries examined.

Insert table 2 here

4.3 CSR adoption and firms' characteristics

We now explore the characteristics of the firms that adopt some CSR practices. Table 3 reports the descriptions of all the variables employed in this paper, while Table 4 summarises, for each country analysed, relevant firms' characteristics for two groups of establishments: CSR adopters and non-adopters, where CSR adopters are defined as firms that adopt at least one of the social, environmental or labour practices (see subsection 4.1 for details). Table 4 also reports the difference between the two groups of firms and the significance of such discrepancy. In particular, to assess the difference in the mean for adopters and non-adopters, we use the t-test for continuous variables and proportion test for dummy variables (in both cases the null hypothesis is that there is no statistically significant difference between the two groups analysed).

Table 4 shows the differences in both the performance indicators related to our hypothesis and other key firm characteristics. In regard to the performance indicators, the data show that, in most countries, firms engaged in CSR tend to have higher sales and sales per employee, and this difference although small is significant. Moreover, there is a significantly higher share of firms engaged in RnD in the CSR adopters group compared to the non-adopters. Also CSR firms have significantly higher proportions of RnD expenditure to third parties compared to their counterparts. However, the ratio of total RnD expenditure to sales is not significantly different in the two groups. Interestingly, we also observe systematic differences in firms' characteristics between two groups of firms, at least on average. Within the CSR group there is a higher percentage of foreign, larger and older firms. For instance, in Argentina 12% of CSR firms are foreign-owned against 2% of foreign firms. Ownership does not appear to be significantly different in Colombia, Ecuador and Bolivia. Export intensity is usually higher for CSR firms; again this characteristic is not significantly different for Bolivia and Colombia. In regard to firm's size, small firms are more likely not to engage in CSR. In line with this observation, CSR firms have greater capital and a larger number of employees (labour), and such differences are significant. The prevalence of social and environmental practices also varies across sectors. This is not surprising since the pressures on companies to take up CSR depend on the social and economic impact of the economic activities carried out by the firm. Our data show that CSR practices are more common in the food and chemical sector, less common in clothing and textiles. This difference may be partly due to the fact that both the chemical and food industry are likely to have a strong impact on the environment. One factor that possibly explains the higher adoption of CSR practices in the food sector is that bargaining power often rests with large foreign processors and retailers, with the consequence that suppliers in developing countries are at a disadvantage (Jones et al., 2005; Maloni and Brown, 2006). However, the prevalence of CSR across sectors is again likely to

be linked to firms' characteristics. In our sample, firms operating in the chemical sector are mainly foreign-owned, and establishments in the food sector are mainly large firms. By contrast, clothing and textile firms are mainly small and domestic-owned.

Besides the analysis of CSR adopters and non-adopters, Table 5 presents the correlation between our CSR index and some of the key covariates of interest. In line with the previous discussion, the table shows that the adoption of socially responsible practices is positively correlated with firms' size and experience, although the correlation is small. Moreover, firms that export, innovate and operate in the food and chemical sectors are also associated with greater CSR.

It should now be clear that, because of the observed differences, it is not possible to attribute the better performance of CSR firms to the their engagement in philanthropic activities. As our descriptive analysis seems to suggest, it may be that more productive firms are more likely to engage in such activities because, for example, they have more resources available. Hence, we adopted PSM in order to take these issues into account and thus obtain a purer identifiable effect of firms' socially responsible behaviour on their performance.

Insert table 3 here

Insert table 4 here

Insert table 5 here

5. Results

The results of our PSM exercise are reported in Tables 6, 7 and 8. The first column of each table reports the country under analysis as well as the matching procedure employed (i.e. Kernel, three nearest neighbours, or Radius). The second column shows the ATT which summarises the effect of the treatment (i.e. CSR adoption) on the treated. The third column

shows the value of the t-statistics associated with the ATT.[8] The last two columns report the firms pertaining respectively to the groups of CSR adopters (i.e. Treated) and non-adopters (i.e. Control) in the matched sample.

Table 6 presents the results on Hypothesis 1 and Hypothesis 2, which are related respectively to the impact of CSR on firms' revenues and labour productivity.

According to our first hypothesis, CSR should have a positive impact on firms' turnover (Jones, 1995; McWilliams and Siegel 2010). Panel A shows the causal impact of CSR on firms' revenues, expressed in thousands of current US dollars, where the matching exercise has been based on firms' ownership, age, export intensity, RnD, capital and employment. Our results show that in Bolivia, Colombia and Ecuador the ATT is positive and significant. For instance, in 2006, in Bolivia, sales by CSR adopters were almost 2 million dollars higher than those by non-adopters, while in Ecuador the difference amounted to only 650 dollars. In Colombia the ATT is significant only with three nearest neighbours matching, in which case it is 1 million 277 thousand dollars. The ATT is negative but not significant for Argentina and Chile, while in Mexico it is positive but not significant. Hence there seems to be some support for Hypothesis 1, although there is great variation in terms of ATT across the countries analysed.

Panel B in Table 6 reports the effect of CSR on sales per employee, expressed in current US dollars. According to our second hypothesis we expect CSR to have a positive impact on labour productivity because it promotes business reputation and employee empowerment. Similarly to what is reported in panel A, we find that the ATT is positive and significant for Bolivia and Colombia. For the former country, this effect is estimated at between $19,308 and $19,808, while for the latter the ATT is around $20,107 and $20,597.

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[8]It might be useful to recall the critical values associated with Student's T, in a two tails test: 1.645 for 10% significance; 1.96 for 5% and 2.576 for 1%.

*** Insert table 6 here***

Table 7 analyses the impact of CSR on innovation, as defined by the presence of investments in RnD, either within the establishment or through a third party. Because the outcome variable is a dichotomous one, the ATT should be interpreted as the difference between the proportion of firms that engage in RnD in each of the two groups (CSR vs. non-CSR firms) in the matched sample. According to our third hypothesis, we should expect CSR to have a positive impact on innovation. This is because social and environmental practices may promote innovation networks, which may be linked to sustainability-oriented and/or regulation-induced innovations. In this instance there seems to be less variability across countries. In particular, the share of firms that engage in RnD activities is always higher for adopters of CSR than it is for non-adopters. The effect is significant in Argentina, Bolivia, Colombia and Mexico. It is the highest for Colombia, at around 32%-34%, and the lowest for Bolivia, at around 20%-23%. In Chile and Ecuador the ATT is again positive although not significant.

*** Insert table 7 here***

In Table 8, we explore the link between CSR product differentiation (i.e. RnD to sales ratio) as well as CSR and technological transfer (i.e. RnD through a third party to sales ratio).

Panel A in Table 8 shows the results of the matching exercise when the outcome variable is RnD to sales ratio. Because CSR features embedded in firm products can be conceived as new products and thus constitute a form of technological advancement, we can expect a positive impact of CSR on product differentiation. Our results confirm this prediction, as the effect of CSR on product differentiation is positive in all countries. However, the effect is only significant in Mexico, where the share of RnD to sales is about 3.5 % higher for CSR adopters. But we should note that the control group in all the matching exercises reported in Panel A of Table 8 is very small, and this is likely to have affected our results.

Moving to Panel B, we analyse the impact of CSR activities on technological transfer. Interestingly, we find a positive and significant effect in Argentina and Bolivia. In the former country, the share of RnD to third party to sales is 0.2% higher in the adopters group, while for the latter country the effect is around 1.1%. Our results thus show that CSR can boost technological transfer to developing countries, so that our fifth hypothesis seems to be supported. We should note that, in Colombia, Ecuador and Mexico, we fail to find any significant effect in both panel A and B. However, the control groups are very small and this is likely to have affected our results.

*** Insert table 8 here***

We now summarise our results by country. In Argentina, CSR has a positive and significant impact on firms' innovativeness and technological transfer. In Bolivia, we find a positive effect on firms' turnover, labour productivity, innovativeness, as well as technological transfer. In Chile, we do not find any significant effect on any of the variables analysed. In Colombia, CSR has a positive and significant impact on both labour productivity and innovation activities. In Ecuador, CSR firms have significantly higher turnover but there is no discernible effect on innovation activities. In Mexico, we only find a significant effect on firms' innovativeness and product differentiation.

Overall, our empirical analysis provides support for the hypotheses formulated in Section two, but with great variability across countries. Interestingly, poorer countries, such as Bolivia and Colombia, display the highest numbers of links between CSR and the outcome variables analysed. Here we find scope for a sizeable effect of CSR on firms' innovativeness, turnover, as well as labour productivity. Moreover, the strongest relationship between conscious business operation and innovation is found in the two largest countries analysed: Mexico and Argentina.

Thus, our matching exercise shows that firms that engage in environmental or community projects never underperform firms that do not adopt such practices. The advocates of CSR claim that responsible firms' behaviour, towards both shareholders and stakeholders, is essential to compete in the global market. Our results suggest that corporate goals, such as productivity, sales and innovation, are compatible with conscious operations.

6. Diagnostic Tests

We can conjecture that, in many instances, insignificant results are driven by the small samples created in the matching process. In order to assess whether the quality of the matching is poor, and therefore whether the results are biased, we conducted two common diagnostic tests in the context of PSM.

The first test is known as the balancing propensity (of matched firms, in this specific case).

In particular, following Rosenbaum and Rubin (1985), we employed the t-test to assess the equality of the mean of each covariate between the treatment and comparison groups. This diagnostic test therefore enabled us to check whether the observations with the same propensity scores had the same distribution of observable covariates or, more technically, whether the propensity score was an adequate balancing score. The results reported in Tables A1-A3 (in the Appendix) show that, after matching, in 91% of cases the covariates of the treated and untreated groups were similar, indicating that the quality of the matching was good. Thus, we are confident that our exercise ensured an adequate "like-for-like comparison".

The second diagnostic test is the propensity score histogram (of the treated and untreated firms, in this specific case) developed by Yang and Mallik (2010). This graph helps in assessing the quantity of matched and unmatched firms within a given number of intervals of

the propensity score range. Thus, this diagnostic is useful for testing the common support hypothesis. Figures A1-E6 (in the Appendix) show that most of the observations in the treated group could find matched firms in the untreated group with a similar propensity score. Table A4 summarises the number of observations on and off support for each matching exercise and country. This robustness check shows that for what concerns sales, sales per employee and RnD (measured as a dummy variable), Ecuador has the highest share of off-support observations, respectively 39% and 44%. The results for total RnD to sales and RnD to third party show that both Ecuador and Colombia have high shares of off-support observations. For conciseness, we only report this check for the Kernel matching, but the use of other algorithms leads to similar results. It is not surprising that when we have a high share of off-support observations, the matching exercise yields insignificant results.

To sum up, the t-test of covariate balancing after matching and propensity score histogram analysis demonstrates that the quality of matching is efficient.

7. Conclusions

Attention to the social and environmental roles of firms is not new. However, in the past decade there has been renewed interest in such issues. In the context of globalisation, firms are increasingly expected to play a positive role in society and thus contribute to sustainable development (Kolk and Tolder, 2010; Lozano, 2011). The empirical evidence on the link between responsible behaviour and firms' performance shows mixed results. Moreover, existing research on CSR remains focused on developed economies, and there is scant evidence on the extent and the type of CSR practices adopted in emerging markets.

In this paper, we have employed the firm-level data collected by the 2006 World Bank Enterprise Surveys (WEBS) on Bolivia, Argentina, Chile, Colombia, Mexico and Ecuador, and we have adopted PSM techniques to assess the causal relationship between CSR and firm performance. In particular, in order to highlight the peculiarities of business dynamics in

developing countries, as well as to overcome data limitations, we have formulated five distinct theoretical hypotheses on the CSR/performance link, and we have examined the causal effects of socially responsible practices on firm turnover, labour productivity, innovativeness, product differentiation, and technological transfer.

Overall, our results provide supportive evidence for the theoretical hypotheses that we have formulated. They thus suggest that corporate goals are compatible with conscious operations in developing countries. However, the results tend to vary across countries and an interesting pattern emerges from our analysis: the strongest relationship between conscious business operations and innovativeness is found in the two largest middle-income countries analysed, namely Mexico and Argentina. In poorer countries, such as Bolivia and Colombia, we find that CSR has a positive and significant impact on firms' turnover, labour productivity, as well as innovativeness. Finally, no effect is found in Chile, the most developed country in our sample.

We can speculate that the positive effects of CSR depend on the country's stage of industrialisation. In particular, our analysis suggests that the less industrialised the economy, the wider the scope of CSR as a development booster. This may be related to the lower costs associated with imitation rather than innovation, as well as to the greater efficiency of more recent vintages of capital. As countries industrialise and begin to close the technological gap with technologically advanced economies, CSR fosters innovative activities and, most probably, it directs such technological advancement towards high international standards. Finally, once the country has industrialised, the developmental advantages of backwardness related to CSR disappear, although CSR can still play a very important role, in particular as a strategic factor.

The relationship among conscious business operations, firms' performance, and the country's level of development has not been directly tested in this paper. However, this opens up an

interesting line of research. Further, it would be of extreme importance to assess the role that national policies play in shaping the relationship between CSR and firm performance (see for instance: Sobczak and Coelho Martins, 2010; Midttun et al. 2006). Narrative evidence suggests that the extent to which Latin American governments have actively promoted CSR varies across countries and sectors. In the majority of the cases, only few industries, such as the extractive one, and big companies have been targeted. Last but not the least, more research is required on what is meant by CSR in developing countries and what is its most suitable categorization (McIntyre et al. 2015, Schmidheiny, 2006 and Moir 2001). As for this study, its policy implications are of great relevance. In particular, it seems advisable that firms in least developed economies adopt CSR practices. Consequently, governments in emerging countries as well as international organisations should provide meaningful incentives for CSR adoption.

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Table 1: CSR adoption, range of activities and perceived impact

	Argentina	Bolivia	Chile	Colombia	Ecuador	Mexico
CSR Adoption						
The firm has written/oral CSR policies	65.83	77.84	75.12	63.69	78.59	44.38
Observations	641	361	623	633	355	1105
Environmental CSR						
The firm has an energy use optimization program	39.07	47.53	47.32	45.81	63.16	56.94
The firm has an water use optimization program	33.75	52.88	39.81	50.4	64.54	48.38
The firm has recycling program	33.28	38.95	43.06	63.03	59.62	36.47
Use any standardized water and air pollution control system?	53.2	46.69	48.89	40.63	63.97	39.43
CSR Environment*	67.45	77.26	73.23	79.78	87.26	70.15
Community CSR						
The firm has a community support program	46.39	53.95	45.37	39.65	55.52	22.54
Labour CSR						
Have explicit policy about hiring women or handicapped persons	6.34	13.7	7.13	6.8	18.01	12.71
Have programs supporting balance between family and work	11.2	23.22	15.61	20.48	28.89	11.32
CSR Labour**	14.29	29.32	18.82	24.13	37.22	20.49
External Pressures and Perceived impact						
Receive pressure to be socially/environmentally responsible	13.34	23.16	18.08	11.85	25.14	5.7
Being socially responsible has a positive effect on the firm competitiveness	59.95	78.21	67.9	81.33	81.72	86.34

*CSR Environment takes value 1 if the firm engages in one of the environmental practices surveyed.

** CSR Labour takes value 1 if the firm has answered yes to one of the two questions on labour practices.

Table 2: Simultaneous CSR Practices

	Argentina				Bolivia			
	CSR-Labour		CSR-Social		CSR-Labour		CSR-Social	
CSR-Environment	0	1	0	1	0	1	0	1
0	142	57	4	6	45	22	12	4
%	45.81%	24.36%	13.33%	10%	33.58%	17.89%	35.29%	5.56%
1	168	177	26	54	89	101	22	68
%	54.19%	75.64%	86.67%	90%	66.42%	82.11%	64.71%	94.44%
Tot Observations	310	234	30	60	134	123	34	72

	Chile				Colombia			
	CSR-Labour		CSR-Social		CSR-Labour		CSR-Social	
CSR-Environment	0	1	0	1	0	1	0	1
0	112	40	7	9	92	17	9	7
%	37.58%	19.51%	16.28%	12%	29.77%	10.12%	12.86%	8.64%
1	186	165	36	66	217	151	61	74
%	62.42%	80.49%	83.72%	88%	70.23	89.88%	87.14	91.36%
Tot Observations	298	205	43	75	309	168	70	81

	Ecuador				Mexico			
	CSR-Labour		CSR-Social		CSR-Labour		CSR-Social	
CSR-Environment	0	1	0	1	0	1	0	1
0	18	17	7	3	261	16	36	3
%	14.88%	16.19%	17.95%	3.16%	38.33%	9.58%	25.35%	3.90%
1	103	88	32	92	420	151	106	74
%	85.12%	83.81%	82.05%	96.84%	61.67%	90.42%	74.65%	96.10%
Tot Observations	121	105	39	95	681	167	142	77

Notes: See Table 1 for the definitions of CSR-Environment and CSR-Labour. CSR-Social takes value 1 if the firm has a community support project.

Table 3: Variables' description

Variable	Description
Sales	Last complete fiscal year's total annual sales
CSR	Dummy variable equal to 1 if the firm engages in AT LEAST one CSR practice
Foreign	Dummy variable equal to 1 if the foreign ownership is greater than 10%
Export	% of sales exported directly and indirectly
RnD	Dummy variable equal to 1 if the firm invested in RnD within the establishment or through a third party
RnDSales	Share of total RnD to sales
RnDExternal	Share of RnD through a third party to sales
Age	firm age in 2006
Size1	Dummy variable equal to 1 for small size firms (5-19 employees)
Size2	Dummy variable equal to 1 for medium size firms (20-99 employees)
Size3	Dummy variable equal to 1 for large size firms (>99 employees)
Female owners	Dummy variable equal to 1 if any of the principal owners are female

Skilled/Unskilled L	Ratio of skilled to unskilled workers
Capital	Net book Value of machinery, vehicles and equipment
Labour	Number of full-time permanent workers at the end of last fiscal year
Industry dummies	Equal to 1 if the firm pertains to a certain industry (i.e. Food, Clothes, Textiles, Machinery, Chemicals and Other Manufacturing)
CSR	Dummy variable equal to 1 if the firm engages at least in one CSR activity (i.e. Environmental, labour or social).
CSR Environment	Dummy variable equal to 1 if the firm engages in one of the environmental practices surveyed.
CSR Labour	Dummy variable equal to 1 if the firm has answered yes to one of the two questions on labour practices.
CSR Social	Dummy variable equal to 1 if the firm has a community support project.

Table 4: Firms' characteristics: CSR adopters and non-adopters

	Argentina			Bolivia			Chile		
	CSR	No CSR	Proportion/t-test (p-value)	CSR	No CSR	Proportion/t-test (p-value)	CSR	No CSR	Proportion/t-test (p-value)
Sales per employee	11.65	11.46	.0479	11.26	10.86	.096	16.88	16.62	.072
Sales	15551777	1236229	.022	2384038	218412	.0821	1178633728	14426476	.647
Foreign	.123	.028	.001	.102	.088	.776	.091	.017	.008
Export	14.6	6.68	.002	11.65	16.82	.239	10.39	3.919	.005
RnD	.561	.288	.000	.476	.177	.002	.365	.205	.001
RnDSales	.0074	.00209	0.086	.01373	.00638	0.537	.0046	.0058	.719
RnDExternal	.0288	.02050	0.086	.03653	.07949	0.055	.3561	.0247	.710
Age	33.74	26.02	.001	22.61	15.86	.010	30.55	25.9	.036
Size1	.361	.605	.000	.496	.6	.195	.257	.482	.000
Size2	.416	.336	.279	.347	.333	.848	.465	.428	.474
Size3	.222	.028	.000	.155	.066	.113	.276	.089	.000
Capital	5860564	207398	.079	1997100	284829	.342	8146716	3205888	.272
Labor	192	26.3	.0320	54.51	22.64	.071	136.33	37.95	.013
Female owners	.341	.366	.586	.436	.511	.347	.375	.432	.276
Skilled/unskilled L	2.46	2.12	.74	1.57	1.80	.616	1.40	2.11	.032
Food	.303	.077	.000	.354	.2	.040	.261	.187	.100
Clothes	.138	.33	.000	.282	.666	.000	.099	.169	.031
Textile	.174	.204	.4182	.180	.022	.006	.059	.160	.003

	CSR	No CSR	Proportion/t-test (p-value)	CSR	No CSR	Proportion/t-test (p-value)	CSR	No CSR	Proportion/t-test (p-value)
Machinery	.178	.225	.2084	.059	.022	.308	.055	.035	.395
Chemical	.109	.007	.0001	.124	.088	.494	.129	.053	.022
Other Manufacturing	.0952	.1549	.043	n/a	n/a	n/a	n/a	n/a	n/a

	Colombia			Ecuador			Mexico		
	CSR	No CSR	Proportion/t-test (p-value)	CSR	No CSR	Proportion/t-test (p-value)	CSR	No CSR	Proportion/t-test (p-value)
Sales per employee	17.57	17.24	.003	10.28	9.34	.0026	12.38	12.04	.001
Sales	3612662	427759	.087	226	16	.092	31286580	776528	.052
Foreign	.0241	.010	.425	.125	.166	.608	.104	.026	.001
Export	9.24	8.68	.806	8.57	1.11	.077	8.42	.498	.000
RnD	.4935	.1648	.000	.504	.222	.019	.268	.022	.000
RnDSales	.0075	.00057	0.308	.0061	.0001	0.695	.006	.001	.709
RnDExternal	.0286	.03503	0.655	.0288	.0207	0.736	.0424	.007	.689
Age	19.13	11.38	.000	24.39	17.94	.069	20.8	15.5	.000
Size1	.491	.663	.002	.402	.666	.026	.408	.716	.000
Size2	.402	.293	.047	.277	.341	.579	.326	.237	.006
Size3	.105	.043	.061	.256	.055	.053	.264	.045	.000
Capital	1719508	210068	.279	61	11	.320	2559811	691200	.041
Labor	69.48	18.47	.057	80.75	20.94	.126	125	23	.000
Female owners	.532	.510	.824	.342	.277	.573	.248	.235	.663
Skilled/unskilled L	1.35	1.20	.700	1.69	1.19	.555	442	103	.056
Food	.257	.163	.050	.294	.222	.510	.135	.145	.689
Clothes	.256	.358	.040	.072	.055	.781	.120	.210	.003
Textile	.207	.358	.001	.064	.055	.884	.135	.157	.338
Machinery	.276	.119	.001	.005	0	.745	.230	.149	.005
Chemical	.001	0	.679	.274	.111	.127	.180	.065	.000
Other Manufacturing	n/a	n/a	n/a	.5	.265	.030	n/a	n/a	n/a

Table 5: Correlation Between CSR and Firms Characteristics

CSR	Argentina	Bolivia	Chile	Colombia	Equador	Mexico
Sales per employee	0.0936	0.0928	0.0197	0.0592	0.0848	
Sales	0.0911	0.1659	0.0705	0.1087	0.1784	

Foreign	0.1334	0.0436	0.1102	0.0373	0.0061
Export	0.1502	-0.066	0.1191	0.0015	0.0931
RnD	0.2316	0.1531	0.1375	0.2389	0.1584
Age	0.1258	0.1118	0.077	0.1658	0.0915
Size1	-0.2061	-0.0896	-0.1732	-0.1161	-0.1464
Size2	0.0393	0.0115	0.0051	0.0758	0.0565
Size3	0.2142	0.112	0.1784	0.0717	0.1054
Skilled/unskilled L	0.0182	-0.0851	-0.1073	0.0297	0.0105
Capital	0.2891	0.0979	0.1681	0.1057	0.1386
Labor	0.0862	0.1135	0.1055	0.0786	0.0912
Food	0.2132	0.1451	0.0799	0.0808	0.0546
Clothes	-0.1976	-0.3234	-0.1116	-0.0767	-0.0084
Chemical	0.1533	0.1672	0.0987	0.1288	0.0901
Machinery	-0.0513	0.0698	0.0395	.	0.0204
Other Manufacturing	-0.0736	0.0193	-0.0148	.	-0.075 .

Table 6 PSM: CSR, Sales Revenue and Sales per Employees

	Panel A: CSR & Sales Revenue				Panel B: CSR &Sales per employees			
Matching Estimator	ATT	t-ratio ATT	Treated	Control	ATT	t-ratio ATT	Treated	Control
Argentina								
Kernel	-415.65	-0.64	313	75	-467.45	-0.08	313	75
3 Nearest Neighbours	-575.30	-0.84	313	75	-342.77	-0.06	313	75
Radius	-331.92	-0.54	313	75	-9.50	-0.00	313	75
Bolivia								
Kernel	1764.08	2.43	199	27	19808.16	3.60	199	27
3 Nearest Neighbours	1706.84	2.35	199	27	19691.11	3.57	199	27
Radius	1783.06	2.46	199	27	19308.91	3.58	199	27
Chile								
Kernel	-17390.56	-0.70	335	59	-665048.08	-0.75	335	59
3 Nearest Neighbours	-34575.47	-1.25	335	59	-1276064.3	-1.29	335	59
Radius	-18786.60	-0.8	335	59	-722818.44	-0.86	335	59
Colombia								
Kernel	860.85	1.02	182	17	20196.92	2.18	182	17
3 Nearest Neighbours	1277.56	2.03	182	17	20487.94	2.49	182	17
Radius	1354.09	1.80	182	17	20597.08	2.34	182	17
Ecuador								
Kernel	0.657	2.03	230	10	8.37	1.46	230	10
3 Nearest	0.635	1.95	230	10	8.28	1.40	230	10

Neighbours								
Radius	0.673	2.08	230	10	8.03	1.45	230	10
Mexico								
Kernel	689.97	1.49	536	187	11130.93	1.34	536	187
3 Nearest Neighbours	740.72	1.56	536	187	12110.10	1.4	536	187
Radius	700.67	1.54	536	187	11580.43	1.45	536	187

In panel A the outcome variable is 2006 US dollar in thousands. Matching based on ownership, age, export intensity, RnD, capital and employment. In Panel B the outcome variable is sales per employees in 2006 US dollar. Matching is based on ownership, age, export intensity, RnD, capital and employment.

Table 6 PSM: CSR, Sales Revenue and Sales per Employees

	Panel A: CSR & Sales Revenue				Panel B: CSR &Sales per employees			
Matching Estimator	ATT	t-ratio ATT	Treated	Control	ATT	t-ratio ATT	Treated	Control
Argentina								
Kernel	-415.65	-0.64	313	75	-467.45	-0.08	313	75
3 Nearest Neighbours	-575.30	-0.84	313	75	-342.77	-0.06	313	75
Radius	-331.92	-0.54	313	75	-9.50	-0.00	313	75
Bolivia								
Kernel	1764.08	2.43	199	27	19808.16	3.60	199	27
3 Nearest Neighbours	1706.84	2.35	199	27	19691.11	3.57	199	27
Radius	1783.06	2.46	199	27	19308.91	3.58	199	27
Chile								
Kernel	-17390.56	-0.70	335	59	-665048.08	-0.75	335	59
3 Nearest Neighbours	-34575.47	-1.25	335	59	-1276064.3	-1.29	335	59
Radius	-18786.60	-0.8	335	59	-722818.44	-0.86	335	59
Colombia								
Kernel	860.85	1.02	182	17	20196.92	2.18	182	17
3 Nearest Neighbours	1277.56	2.03	182	17	20487.94	2.49	182	17
Radius	1354.09	1.80	182	17	20597.08	2.34	182	17
Ecuador								
Kernel	0.657	2.03	230	10	8.37	1.46	230	10
3 Nearest Neighbours	0.635	1.95	230	10	8.28	1.40	230	10
Radius	0.673	2.08	230	10	8.03	1.45	230	10
Mexico								
Kernel	689.97	1.49	536	187	11130.93	1.34	536	187
3 Nearest Neighbours	740.72	1.56	536	187	12110.10	1.4	536	187

| Radius | 700.67 | 1.54 | 536 | 187 | 11580.43 | 1.45 | 536 | 187 |

In panel A the outcome variable is 2006 US dollar in thousands. Matching based on ownership, age, export intensity, RnD, capital and employment. In Panel B the outcome variable is sales per employees in 2006 US dollar. Matching is based on ownership, age, export intensity, RnD, capital and employment.

Table 7 PSM: CSR and RnD

Matching Estimator	ATT	t-ratio ATT	Treated	Control
Argentina				
Kernel	.2220	3.22	315	76
3 Nearest Neighbours	.2585	3.29	315	76
Radius	.2202	3.35	315	76
Bolivia				
Kernel	.2030	2.39	202	32
3 Nearest Neighbours	.2362	2.58	202	32
Radius	.2070	2.5	202	32
Chile				
Kernel	.0040	0.06	339	60
3 Nearest Neighbours	.0208	0.28	339	60
Radius	.0424	0.66	339	60
Colombia				
Kernel	3417	3.61	182	17
3 Nearest Neighbours	.3285	3.21	182	17
Radius	.3379	3.61	182	17
Ecuador				
Kernel	.20489	1.55	232	11
3 Nearest Neighbours	.1827	1.32	232	11
Radius	.22947	1.77	232	11
Mexico				
Kernel	.2309	9.47	548	191
3 Nearest Neighbours	.2270	8.80	548	191
Radius	.2319	9.71	548	191

The outcome variable RnD is a dummy variable which takes value 1 if Firm Invested in RND, within the establishment or through a third party. Matching is based on firm age, export orientation, capital and employment.

Table 8 PSM: CSR and Total RnD to sales ratio and RnD to Third party to sales ratio.

	Panel A: CSR and RnD		Panel B: CSR and RnD to third Party

Matching Estimator	ATT	t-ratio ATT	Treated	Control	ATT	t-ratio ATT	Treated	Control
Argentina								
Kernel	.03153	1.36	151	19	.00281	2.73	160	20
3 Nearest Neighbours	.03153	1.22	151	19	.00284	2.66	160	20
Radius	.03153	0.98	151	19	.00754	2.72	160	20
Bolivia								
Kernel	.04883	1.06	88	11	.01181	2.91	90	5
3 Nearest Neighbours	.04883	1.15	88	11	.01181	2.91	90	5
Radius	.04883	1.08	88	11	.01181	2.91	90	5
Chile								
Kernel	.86167	1.00	89	10	-.0069	-0.84	107	13
3 Nearest Neighbours	.8616	0.99	89	10	-.0074	-0.85	107	13
Radius	.86167	1.00	89	10	-.0059	-0.73	107	13
Colombia								
Kernel	.03460	-0.01	90	2	.0152	1.03	90	2
3 Nearest Neighbours	.03460	-0.01	90	2	.0152	1.03	90	2
Radius	.0346	-0.01	90	2	.01523	1.03	90	2
Ecuador								
Kernel	.0412	1.73	123	3	.0175	1.16	113	2
3 Nearest Neighbours	.0412	1.74	123	3	.0175	1.16	113	2
Radius	.0412	1.74	123	3	.0175	1.16	113	2
Mexico								
Kernel	.03584	1.85	91	3	.00402	1.54	101	3
3 Nearest Neighbours	.03584	2.53	91	3	.00684	1.74	101	3
Radius	.03584	2.53	91	3	.00684	1.74	101	3

The outcome variable in panel A is the share of total RnD to sales. The outcome variable in panel B is the share to RnD to third Party to Sales. In both panels matching is based on firm age, export orientation, capital and employment.