Corporate Social Responsibility and Financing Decisions

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Abstract:

This paper examines (i) whether corporate social responsibility (CSR) performance affects capital structure and (ii) debt-equity choice, and (iii) whether CSR performance has an impact on the size of equity issuances. Using a worldwide dataset of 5,859 firm-year observations, we find that (i) CSR performance impacts negatively firms' leverage. Moreover, we show through probit models that (ii) firms with a high CSR performance issue equity more frequently. Finally, we argue that (iii) firms with high CSR performance issue equity in larger amounts, and are less dependent on market conditions for their equity issuances. Taken together, our results reveal that firms take into account financial consequences of implementing CSR policies in their financing decisions. These findings are consistent with recent works establishing a negative impact of CSR performance on information asymmetry and cost of equity.

Keywords: Corporate Social Responsibility, Capital structure, Debt-equity choice, Market timing theory

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JEL classification: G32, M14

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1- Introduction

In the last decades, a growing number of investors incorporate environmental and social considerations into their investment decisions (El Ghoul et al., 2011). The increasing attention on corporate social responsibility (CSR) from investors has raised the question of its financial impact. In the academic literature, there are many arguments which support that CSR performance would have an impact on firms' market value. From a theoretical point of view, a good CSR performance may increase productivity and financial performance because it implies a good relation with key firm's stakeholders (Waddock and Graves, 1997). Moreover, Hart (1995), Porter and Linde (1995) and Russo and Fouts (1997) explain that a good CSR performance can provide a competitive advantage, increasing innovation capacity. CSR performance may also create value by developing intangible assets (Gardberg and Fombrun, 2006). By meeting stakeholders' expectations induced by the increasing awareness about CSR, firms generate a reputational capital and enhance their social legitimacy, which can contribute to ameliorate sales and to increase customers' loyalty (Fombrun et al., 2000; McWilliams and Siegel, 2001) or permits to attract more high quality employees (Turban and Greening, 1997; Greening and Turban, 2000).

Several empirical works have attempted to observe whether CSR performance matters for stock market investors. In an American context, Galema et al. (2008) argue that firms with a good CSR performance tend to have higher market-to-book-ratio. Jiao (2010) also finds a positive effect of CSR performance, but on Tobin's Q. Focused on environmental policies, Lioui and Sharma (2012) find a negative direct relationship between environmental KLD scores and Tobin's Q, but a positive indirect effect. Indeed, through a simultaneous equation methodology, they show that environmental performance increases research and development expenses, which enhances market value. Others authors use an event study methodology to investigate how stock market investors react to information related to CSR performance. Consolandi et al. (2009) study stock price movements after an inclusion of a stock in a socially responsible index or a deletion from such an index. They conclude that firms deleted from the Dow Jones Sustainability Index because of their bad CSR performance exhibit

negative cumulative abnormal returns. Godfrey et al. (2009) reveal for their part that CSR performance mitigates negative market reactions in case of lawsuit. Also, Capelle-Blancard and Laguna (2010) indicate that petrochemical companies subject to industrial disasters are experiencing a decrease of their market value of 1.3% two days after.

Following these works which tend to prove that information about CSR performance matters for stock market investors, several authors have studied financial consequences of this increasing integration of information about CSR performance in investment decision-making. Sharfman and Fernando (2008) and El Ghoul et al. (2011) show that a good CSR performance decreases the cost of capital, because of a reduction of a firm's risk and a larger firm's investor base. For their part, Dhaliwal et al. (2011) and Cho et al. (2012) indicate that firms with a good CSR performance reduce information asymmetry. If there are numerous and recent evidence of financial consequences of the increasing attention on corporate social responsibility from investors, few studies analyze the effect of CSR performance on firms' financial policies. But, if we consider that CSR performance has a negative impact on cost of equity and reduces information asymmetry, socially responsible firms would have more advantages than others to issue equity, and would be less leveraged. Therefore, our work investigates whether firms adapt their financing decisions according to their CSR performance.

In this article, we expand the previous academic literature that mostly examines the relationship between CSR performance and financial performance. Our goal is to focus on the relatively unexplored relation between CSR and financing decisions. More precisely, our work addresses two research questions: does the CSR performance affect the choice between debt and equity? Does the CSR performance affect the size of equity issuances? We seek to understand to what extent firms adapt their financing decisions according to their CSR performance. We intend to show that CSR performance, through some financial consequences highlighted by recent works, has an impact on firms' financing decisions. We postulate that because of a lower cost of capital and a lower information asymmetry, firms with a good CSR performance tend to prefer equity over debt when they finance their activities, and tend to exhibit lower leverage. Moreover, we expect that firms with high CSR ratings issue larger equity volume than others, in order to exploit a low asymmetry information situation. Indeed, according to the market timing theory, managers issue larger equity volume when information asymmetry is low, because information asymmetry makes equity issuance more costly. As

some recent studies have shown that CSR performance reduces information asymmetry, we can expect a positive relation between CSR performance and size of equity issues. We also postulate that the relation between stock returns and the volume of equity size is mitigated by CSR performance, and that firms with high CSR ratings are less inclined to time the market because these firms suffer from less information asymmetry concerns.

Based on a worldwide dataset of 5,859 firm-year observations, our work provides several interesting findings. First, firms with high CSR performance tend to exhibit lower leverage. This result is robust to a potential reverse causality concern. In addition, we use disaggregate CSR performance measures to understand deeper the link between CSR performance and capital structure. We conclude that environmental and social performances are negatively linked to firms' leverages, but only social performance has a significant effect. Second, we establish that firms with good CSR performance prefer equity over debt when they have to finance their activities. Third, we find that socially responsible companies tend to issue larger volume of equity. Fourth, we show that firms exhibiting a good CSR performance are less dependent on market conditions when they decide to issue equity. We extend in this way a large literature which explores determinants of financing decisions. This literature show among others that personal taxes (Miller, 1977), non-debt tax shields (DeAngelo and Masulis, 1980), agency costs (Jensen, 1986), stock returns (Welch, 2004), analyst coverage (Chang et al., 2006), liquidity (Lipson and Mortal, 2009), information asymmetry (Autore and Kovacs, 2010; Bessler et al., 2011) and relation with employees (Verwijmeren and Derwall, 2010; Bae et al., 2011) have an impact on firms' financing decisions. We establish for our part that CSR performance is also a significant determinant of firms' financing choice. Our paper makes also several contributions to the recent literature about the link between CSR performance and capital structure. First, we complement the work of Verwijmeren and Derwall (2010) and Bae et al. (2011), who focus on the influence of the well-being of employees in financial decisions in an American context. Second, our article is also closed to, but differs from Girerd-Potin et al. (2012), who study the link between CSR ratings and capital structure. Contrary to these authors, our work is based on a worldwide sample, whereas they only study European companies. Finally, we go further by studying for the first time the impact of CSR performance on debt-equity choice and on the size of equity issuances on an international context. We are also the first to study the impact of CSR performance on the dependence on market conditions for their equity issuances.

This article is organized as follows. The next section discusses the literature about determinants of capital structure on the one hand, and about some financial consequences of CSR performance on the other hand. Then, we develop our research hypotheses in section 3. In section 4, we describe our data and our control variables that we use in our empirical works. Section 5 provides our empirical results and some robustness tests. We conclude in section 6.

2- Related literature

In this section, we briefly present the main theories that might explain firms' financing decisions. Then we try to see how, from a theoretical perspective, financial decisions can be influenced by CSR performance. Accordingly, we discuss findings of recent papers dealing with some financial consequences of CSR performance. These works suggest that investors offer a reward in terms of risk premium for socially responsible behaviors, and show that a good CSR performance helps to reduce information asymmetry between investors and managers. Finally, we present the scarce empirical studies that have addressed the relation between CSR performance and capital structure.

2.1. - Financing decisions

Since the seminal work of Modigliani and Miller (1958, 1963) many authors have tried to understand capital structure determinants. Currently, the literature about the determinants of financing choice is meanly dominated by two competing theories, the trade-off theory and the pecking order theory. First, trade-off theory postulates the existence of an optimal capital structure. This optimal capital structure reflects a tradeoff between the costs and benefits associated with debt and equity. These cost and benefits may come from tax benefits of debt and from bankruptcy costs and overhang problem associated with excessive level of debt (Myers, 1977). In addition, DeAngelo and Masulis (1980) explain that non-debt tax shields can be a substitute for tax benefits of debt. Jensen and Meckling (1976) and Jensen (1986) emphasize the role played by conflicts of interest between and shareholders. Debt is seen by these authors as a means of disciplining managers. In this framework, debt benefits are thus related to the reduction of agency problems. In line with this theory, many authors have attempted to show the existence of a target capital structure. For example, Hovakimian et al.

(2001), Flannery and Rangan (2006) or Frank and Goyal (2009) confirm that firms adjust their capital structure and make financing choices to move toward an optimal debt ratio.

By contrast, the pecking order theory (Myers, 1984; Myers and Majluf, 1984) assumes that information asymmetry between investors and managers is the most important driver for firms' financing decisions. Myers and Majluf (1984) suggest that managers have information on the true value of firm's assets that investors do not have. This information asymmetry leads to a preference for debt to avoid adverse selection costs. According to theses authors, firms always prefer debt over equity because of the existence of adverse selection costs. In this theory, target debt ratios do not exist. Specifically, debt ratios is rather seen here a consequence of past financial decisions, which taken in order to reduce information asymmetry. An extension of this theory, the market timing theory, postulates that firms issue more equity when information asymmetry is low and when market conditions are favorable (Lucas and McDonald, 1990; Baker and Wurgler, 2002).

In the past, many studies have tried to compare the tradeoff theory and the pecking order theory. Currently, there is no consensus on the superiority of one theory over the other. Among many studies comparing main capital structure theories, we can cite Shyam-Sunder and Myers (1999), who argue pecking order theory explains firms' financing choices better than the trade-off theory. But many authors show evidence that the pecking order theory fail to explain alone the capital structure (Fama and French, 2002; Frank and Goyal, 2009; Leary and Roberts, 2010; de Jong et al., 2011).

2.2. - CSR, risk and cost of capital

Our main hypothesis is that CSR performance of a firm impacts its financing decisions. Accordingly, we provide here some theoretical and empirical arguments to expose that socially responsible firms have more advantages than others to issue equity because of a lower cost of equity and lower information asymmetry.

From a theoretical point of view, Heinkel et al. (2001) develop an equilibrium model, in which two types of investors ("green" and "non-green" investors) and three types of firms ("non-polluting, "neutral" and "polluting" firms) coexist. These authors support that the boycott of polluting firms' securities from green investors limited opportunities for risk

sharing. As a result, these securities have lower prices, and higher cost of capital. Their conclusions are in line with the capital market equilibrium model with incomplete information of Merton (1987). In this model, investors only buy stock if they have information on it. It implies that, because of reduction of investors' base, firms for which information is incomplete have a higher cost of equity capital. In line with the article of Heinkel et al. (2001), El Ghoul et al. (2011) conduct a study on the impact of CSR performance on the cost of equity of U.S. companies. Using KLD scores, these authors confirm that companies with high CSR ratings have a lower cost of equity. This is especially true for companies that improve their employee relations and their environmental policies. In addition, they also underline that companies in tobacco and nuclear power industries have a higher cost of equity. For their part, Sharfman and Fernando (2008) focus on environmental performance. They find that the improvement of environmental risk management is associated with a reduction of the cost of capital. They argue that the environmental performance signals to the market that the firm is a less risky investment. So, investors claim a lower premium in return for lower risk. Dhaliwal et al. (2011) show that firms which publish voluntarily CSR reports have a lower cost of equity capital. In addition, they say that disclosure of CSR information does not in itself reduce the cost of equity capital. There is a reward by financial markets only if the firm has indeed a high CSR performance compared to its competitors.

Moreover, many authors find a negative relationship between CSR performance and financial risk, which are in line with a lower cost of equity for firms with high CSR performance. Hong and Kacperczyk (2009) point out that sin stocks, i.e. firms involved in controversial activities like tobacco, gaming and alcohol, face with higher litigation risks because of social norms. Firms with a good CSR performance have better relations with their stakeholders, which allow them to anticipate stakeholders' claims like non-government organizations, employees or customers. It induces a lower variability of their financial performance (Orlitzky and Benjamin, 2001), because a good relation with stakeholders reduces some sanctions (boycotts, lawsuits, etc.). In a similar vein, Godfrey et al. (2009) explain that a good CSR performance signals to investors that the firm considers stakeholders' expectations, and generates a moral capital for firms. This moral capital mitigates negative investors' reaction induced by legal of regulatory actions, because investors anticipate a less important stakeholders' sanction (boycott, strikes, etc.). In addition, Boutin-Dufresne and Savaria (2004) in a Canadian context, and Lee and Faff (2009) in an American context, both show that socially responsible

firms tend to have lower idiosyncratic risks. These results suggest that investors require an additional premium to compensate this higher risk.

2.3. - CSR, information asymmetry and agency costs

Some recent papers also show that a CSR performance leads to a reduction in information asymmetry. Dhaliwal et al. (2011) emphasize that the publication of a CSR report coupled with a good CSR performance reduces information asymmetry. To explain this relation, these authors study the impact of a CSR report publication on analysts' forecasts. They find that when such information is disclosed, it reduces errors of their forecasts. This information increases transparency around companies, playing a complementary role to the financial information, and thus allows analysts to better predict future firms' earnings. In a similar vein, Hong and Kacperczyk (2009) argue that sin stocks receive less attention from financial analysts, and are less held by institutional investors, because these investors are more subject to what these authors called "social norm pressures". In addition, these authors demonstrate that firms with high CSR performance are more likely to disclose information relative to their CSR policies. Likewise, Dhaliwal et al. (2011) establish that a good CSR performance can attract a greater number of institutional investors. These investors are known for their monitoring role (Shleifer and Vishny, 1986), which is also in line with the reduction of agency problems and information asymmetry. Moreover, because socially responsible companies tend to be more transparent (Gelb and Strawser, 2001), some studies support that these firms are less likely to manage earnings (Chih et al., 2008; Hong and Andersen, 2011; Kim et al., 2012). These findings are also consistent with a negative impact of CSR performance on information asymmetry, because socially responsible seems to provide higher quality financial information, which improves firms' transparency. More recently, Cho et al. (2012) find that CSR performance improves market liquidity and decreases bid-ask spreads. Finally, CSR performance can also contribute to reduce agency costs. Cheng et al. (2013) explain that firms with better CSR performance are more engaged with their stakeholders, limiting the likelihood of opportunistic behavior and reduce overall contracting costs.

2.4. - CSR and capital structure

Since the CSR performance of a firm has an influence on cost of equity and on the level of information asymmetry, it would impact its capital structure. At our best knowledge, very few

studies examine the link between CSR performance and capital structure. The most important work in this area of research is undoubtedly Girerd-Potin et al. (2012). Their theoretical model is in line with trade-off theory of capital structure. Indeed, they develop a financial management model, in which the optimal capital structure is determined by the trade-off between costs (bankruptcy costs) and benefits of the debt (tax gains) on the one hand, and the costs and benefits of equity on the other hand. Based on the assumption that socially responsible firms have a lower cost of equity than socially irresponsible one, the benefits and costs of issuing equity include a penalty (or premium) for social irresponsibility (or responsibility). Girerd-Potin et al. (2012) assume in their model that companies can choose their level of CSR investment freely, that banks are not sensitive to CSR performance, and finally that investors seek to maximize their utility function, which depends both on their wealth and on CSR performance of firms in which they invest. The main conclusion of this model is that CSR performance determines to some extent the financial structure of firms. Socially responsible companies will be more likely to issue more equity than their socially irresponsible, to benefit from the reduction of their cost of equity. Subsequently, Girerd-Potin et al. (2012) confirm empirically their assumptions, showing a weak but significant negative link between leverage and CSR performance, as measured by Vigeo ratings. Their results are in line with Hong and Kacperczyk (2009), who find that sin companies tend to have higher leverage due to sin stocks' underpricing.

Recently, two papers have focused on the link between human capital investments, which are a dimension of CSR performance, and financing decisions (Verwijmeren and Derwall, 2010; Bae et al., 2011). These works are related to several theoretical models that analyze the impact of relation with non-financial stakeholders like workers, suppliers or customers on capital structure (Titman, 1984; Titman and Wessels, 1988; Maksimovic and Titman, 1991). The theoretical model developed by Maksimovic and Titman (1991) support that firms with high quality products have encouraged to exhibit low debt ratios to signal to their customers their ability to honor implicit contracts to provide such products. By analogy, this model can be extended to other non-financial stakeholders, like employees. Thus, in order to preserve their reputational capital, firms that implement employee-friendly policies have low debt ratios to signal to their employees the firm's ability to treat them fairly (Bae et al., 2011). For their part, Verwijmeren and Derwall (2010) explain that bankruptcy is particularly costly for employees, because they lose their jobs, their incomes and "non-pecuniary benefits of working for the firm". Because debt increases the probability of bankruptcy, firms strongly

involved in employee well-being policies maintain lower debt ratios to prevent their employees from bearing bankruptcy costs. These authors establish that firms in which the well-being of employees is high have lower leverages, and issue more frequently equity instead of debt when they finance their activities.

Our goal in this article is to complement this recent stream of research. At the best of our knowledge, no work studies the link of CSR performance and leverage in an international context. Previous works focus on either a specific geographic area (Girerd-Potin et al., 2012), or on one specific dimension of CSR performance (Hong and Kacperczyk, 2009; Verwijmeren and Derwall, 2010; Bae et al., 2011). Moreover, we go further than earlier literature by investigating the direct impact of CSR performance on choice between debt and equity when firms modify their capital structure. We also analyze the effect of the reduction of information asymmetry induced by a high CSR performance on the size of equity issuances and on the dependence on market conditions when firms choose to issue equity.

3- Hypothesis development

As we seen earlier, previous literature suggests that the increasing integration of CSR-related criteria from investors in their investment decisions have several financial consequences. First, Heinkel et al. (2001), Sharfman and Fernando (2008) and El Ghoul al. (2011) demonstrate that firms can have a financial incentive to implement CSR policies, because a good CSR performance decreases the cost of equity. Moreover, Dhaliwal et al. (2011) and Cho et al. (2012) argue that a good CSR performance conducts to a reduction of information asymmetry. Based on these findings, we follow Hong and Kacperczyk (2009) or Girerd-Potin et al. (2011) by hypothesizing that advantages to issue equity are more important for firms with high CSR performance. We therefore expect that CSR performance has a negative impact on leverage.

It is important to note here that one of the main assumptions of Girerd-Potin et al. (2012) and Hong and Kacperczyk (2009) to justify that CSR performance impacts negatively firms' leverage is that there is no significant relationship between CSR performance and cost of debt. Girerd-Potin et al. (2012) explains that "financial arbitrage on bond markets precludes the existence of a socially responsibility premium on these assets." For their part, Hong and Kacperczyk (2009) argue that debt markets are less transparent than equity markets, so social

norms do not matter in these markets. This seems to be confirmed by several empirical studies. For their part, Girerd-Potin et al. (2012) check in their empirical study that there is no significant relationship between cost of debt and CSR rating. This result is in line with those of Menz (2010), who focus on European corporate bonds. He rejects any significant relationship between CSR and bond spreads. We can also cite Goss and Roberts (2011), who analyze the potential effect of CSR performance on the cost of bank loans. Using a sample of 3,996 US loans between 1991 and 2006, they observe a very small impact of CSR performance on loan spreads. They also find that the impact of CSR performance on the cost of debt depends on the quality of the borrowers. Actually, banks penalize low-quality borrowers for social irresponsibility, but they do not consider CSR performance for high-quality borrowers. They finally say that "the modest impact of CSR on spreads suggests that banks view CSR as a second-order determinant of spreads". The literature studying the link between CSR ratings and cost of debt seems to show an absence of a significant relationship between the cost of debt and CSR performance, or a very weak link. Anyway, our argument is valid even in the presence of a negative relationship. It may only mitigate the expected relationship between CSR performance and financial decisions in decreasing the advantage to issue equity.

Moreover, as we seen previously, there are several approaches to explain firms' capital structure decisions. Our goal is clearly not to choose between one and the other, but only to study the likely impact of the degree of CSR commitments on companies' financing decisions. If our work can be considered in a trade-off theory framework, our first hypothesis does not come in contradiction with arguments advanced by the pecking order theory. Indeed, if we consider this theory, we can claim that a good CSR performance reduces information asymmetry and therefore adverse selection costs. So, it would increase the likelihood that a firm issue equity. Second, as we have seen, several studies state that although pecking order theory may be relevant in some respects, it cannot alone explain firms' financing choices (Fama and French, 2002; Frank and Goyal, 2003; Leary and Roberts, 2010; de Jong et al., 2011). According these arguments, our first hypothesis is:

Hypothesis 1: Firms with good CSR performance have lower leverage than firms with bad CSR performance.

To complement our analysis, we also focus on financing choice instead of capital structure. Many authors underline that firms do not rebalance their capital structure frequently because of adjustment costs (Baker and Wurgler, 2002; Leary and Roberts, 2005; Flannery and Rangan, 2006). So, it is interesting to observe debt-equity choices when capital structure changes, to better examine whether CSR performance is a factor which influences the choice between different financing sources. If CSR performance is a determinant of capital structure, this factor would logically affect the choice between equity and debt when firms finance their activities. As we expose earlier, socially responsible firms would issue equity more frequently than others, because of reduction of their cost of equity and of information asymmetry. According to these arguments, our second hypothesis is:

Hypothesis 2: Firms with a good CSR performance issue equity more frequently than firms with bad CSR performance.

Next, we want to examine the impact of CSR performance on the size of equity issuances. Some authors (Choe et al., 1993; Bayless and Chaplinsky, 1996; Chang et al., 2006) show that size of equity issues is larger when information asymmetry is low. In fact, information asymmetry makes equity issuances more expensive, so managers exploit some windows of opportunities where information costs are reduced to issue larger equity volumes. As we argue earlier, CSR performance can reduce information asymmetry between managers and external investors (Hong and Kacperczyk, 2009; Dhaliwal et al., 2011; Cho et al., 2012). Thereby, we suppose that there is a positive link between the size of equity issuances and CSR performance. We expect that firms with good CSR performance issue larger volumes of equity to exploit the reduction of asymmetry information induced by an ethical behavior. Our third hypothesis is then:

Hypothesis 3: When firms issue equity, firms with a good CSR performance issue larger volume than firms with bad CSR performance.

Consistent with the market timing theory, (Lucas and McDonald, 1990) develop a theoretical model of firms' capital structure decisions. They include in the pecking order model of Myers (1984) time-varying adverse selection costs. In their model, managers have information that investors will have only in the next period. They are supposed to act in the interest of existing shareholders, and they have to finance a profitable project. Because of information

asymmetry, firms can be undervalued or overvalued by financial markets. If the firm is undervalued, managers do not issue equity immediately, waiting for the correction of this undervaluation. During this waiting period, stock prices will increase, because investors receive news about the true value of firm's assets in the following periods. If the firm is overvalued, managers issue equity, before this overvaluation is corrected. Lucas and McDonald (1990) conclude that equity issues are thus preceded by a stock price increase. Because of information asymmetry, firms cannot issue equity as they want and when they want, and therefore engage in market timing to choose between debt and equity, and to choose their volume of equity issuances. Companies will also seek to take advantage of their possible overvaluation by issuing larger volumes of equity after a stock run-up. In line with these theoretical predictions, several empirical studies establish a positive and significant relationship between stock returns and equity issuances (Hovakimian et al., 2001; Baker and Wurgler, 2002; Welch, 2004; Elliott et al., 2008). Moreover, whether a company is facing with problems of information asymmetry, the firm will be more sensitive to market conditions when it must take financing decisions, because its assets are less often misvalued. This idea is especially confirmed by Chang et al. (2006) and Bessler et al. (2011), who argue that the relation between stock returns and the volume of equity size is more pronounced for firms more subject to information asymmetry' concerns. These arguments lead us to expect that, considering the information asymmetry' reduction induced by a good CSR performance, the relationship between stock market returns and size of equity issuances would be less pronounced for firms with a good CSR performance. So our fourth testable hypothesis is:

Hypothesis 4: A good CSR performance mitigates the link between market conditions and size of equity issuances.

4- Data and summary statistics

4.1. – CSR data

The variable of interest of our study is CSR performance of firms. Our CSR data come from MSCI ESG Research. We use the IVA (Intangible Value Assessment) ratings to proxy firms' CSR performance. The IVA rating methodology is a process divided into four steps. The first is an in-depth analysis of the industry of the focal firms. The second is a data collection on the concerned firm from media, government, NGOs or company disclosures. In addition,

interviews with companies' executives are realized. The third is the evaluation of the CSR performance company. The final step is a reality check by analysts to ensure the consistence of the measure. At the end, evaluations of firms are aggregated in a score, ranging from AAA (highest scores) to CCC (lowest scores). MSCI ESG ratings have already used by Marsat and Williams (2011), who study the link between firms' CSR ratings and their financial valuations. We follow their methodology by converting these ratings into numerical scores, from 1 to 7. In addition, MSCI provides an ECO rating and a SOCIAL rating, which respectively measure the environmental and the social performance of firms. We also use these two independent ratings in our models to study the impact of these different aspects of CSR performance on firms' financing decisions.

4.2. - Variables

To study the link between CSR performance and capital structure, we use leverage as dependent variable. Leverage is defined as the ratio of total debt to total assets at their market value. We consider that total assets at their book value do not permit to investigate appropriately the link between CSR performance and leverage, because it cannot reflect the trade-off between equity and debt. Our data on CSR performance cover the period 2005-2009. Accounting and financial data are from the Factset database. After matching CSR and financial data and removing outliers, our sample consists of 5,859 firm-years observations, representing 1,579 firms between 2005 and 2009.

In addition to CSR performance, we include in our models control variables frequently encountered in the literature (Rajan and Zingales, 1995; Hovakimian et al., 2001; Hovakimian et al., 2004; Gaud et al., 2007; Elliott et al., 2008; Frank and Goyal, 2009; Lipson and Mortal, 2009; Verwijmeren and Derwall, 2010).We present here these variables:

Size: we measure the firms' size by the natural logarithm of total assets. According to Rajan and Zingales (1995) and Frank and Goyal (2009), firm size is an inverse proxy for asset volatility and costs of bankrupcty. We expect a positive relationship between size and leverage. Many studies show such a relation (Rajan and Zingales, 1995; Hovakimian et al., 2001; Elliott et al., 2008; Frank and Goyal, 2009; Lipson and Mortal, 2009).

Market-to-book: we calculate the market-to-book ratio (MTB) as:

$$market\text{–}to\text{–}book\ ratio = \frac{total\ assets + market\ value\ of\ equity - book\ value\ of\ \ equity}{total\ assets}$$

MTB is a proxy of growth opportunities (Rajan and Zingales, 1995; Elliott et al., 2008; Lipson and Mortal, 2009). Growth opportunities reduces free cash flow problems (Jensen, 1986) and increase financial distress costs, so firms with high growth opportunities would be less leveraged. Moreover, MTB is also a proxy of overvaluation of equity. We can expect that firms issue more equity when MTB is overvalued. On the other side, firms with more investments have a higher leverage if we consider the pecking order theory. Finally, the sign of this relationship is controversial.

ROA: we define ROA as earnings before interest, taxes, depreciation and amortization (EBITDA) divided by total assets. According to Jensen (1986), profitable firms are more exposed to severe free cash flow problems, so these companies are more likely to use debt to discipline managers. Moreover, according to Gaud et al. (2007) and Frank and Goyal (2009), interest tax shields is more valuable for profitable firms. However, despite profitable firms have more debt capacity, which leads to a higher debt, these firms may increase retained earnings, which reduces leverage (Hovakimian et al., 2001; Elliott et al., 2008; Lipson and Mortal, 2009). Finally, the sign of this relationship is also unpredictable.

Tangibility: to assess asset tangibility of a firm, we calculate the ratio of fixed assets, defined as net property, plants and equipment to total assets. High tangibles assets provide more collateral to lenders (Myers, 1977; Rajan and Zingales, 1995; Frank and Goyal, 2009). We expect that companies that have more tangible assets have more debt.

Cash: we define this variable as the ratio of cash and cash equivalents to total assets. As Gaud et al. (2007) and Verwijmeren and Derwall (2010), we argue that firms with important financial slack requires less debt.

Stock return: this variable is annual stock returns. According to (Baker and Wurgler, 2002) and the market timing theory, firms issue more equity when stock market conditions are favorable. We expect a positive relation between stock returns and leverage.

Depreciation: we also include in our regressions the ratio between amortizations and depreciations to total assets to proxy non-debt tax shields (Gaud et al., 2007; Frank and Goyal, 2009). In their theoretical model of corporate leverage choice, DeAngelo and Masulis (1980)shows that depreciation expenses may be a tax shield substitute for debt. Accordingly, the relationship between depreciation and leverage would be negative.

Research and development expenses : following Lipson and Mortal (2009) and Verwijmeren and Derwall (2010), we include in our models a R&D dummy, which takes the value of 1 for firms those reporting R&D expenditures, and 0 otherwise. This variable proxies asset specificity. The underlying idea is that firms whose assets are highly specific have more important financial distress costs, and therefore less debt.

Dividend-paying behavior: this variable is a dummy one. It takes the value of one if the firm pays a dividend and zero otherwise. As Fama and French (2002), Verwijmeren and Derwall (2010) and Bae et al. (2011), we argue firms that pay dividends are less financially constrained. According to the pecking order theory (Myers and Majluf, 1984), these firms would be less dependent on debt.

[Insert Table 1]

Table 1 provides summary statistics for CSR ratings and for control variables. According the MSCI methodology, which is a best-in-class one, the median IVA, ECO and SOCIAL rating is equal to 4. The firms in our sample have an average a leverage of 29%, and on average a ROA of 6%. To ensure that we are not confronted with a problem of multicollinearity, we calculated correlation matrix, which is reported in table 2. Showing this table, we can reasonably assume that we are not exposed to such a problem.

[Insert Table 2]

5- Empirical results

This section presents our results related to the impact of CSR performance on firms' financing decisions. We first analyze the relationship between CSR performance and firms' leverage. Then, we study how CSR performance has an impact on choice between equity and debt

when firms change their capital structure. Finally, we explore the relation between CSR performance and size of equity issuances.

5.1. - CSR and capital structure

Our first step in our empirical investigation is to study the link between CSR performance and capital structure. We use fixed effects ordinary least squares (OLS) regressions. Indeed, we control for year and industry fixed effects to address unobserved heterogeneity thanks to dummy variables. Industry fixed effects are based on ICB code. Following Petersen (2009), we also use robust standard errors clustered at firm level. First, we regress leverage on CSR ratings (IVA, ECO and SOCIAL) and control variables described above. Our three models are therefore specified as follows:

$$Leverage = \alpha_0 + \alpha_1 IVA_{i,j} + \alpha_2 Size_{i,j} + \alpha_3 MTB_{i,j} + \alpha_4 ROA_{i,j} + \alpha_5 Tang_{i,j} + \alpha_6 Cash_{i,j} + \alpha_7 \mathrm{Re}turn_{i,j} + \alpha_8 Depreciation_{i,j} + \alpha_9 DividendPaying_{i,j} + \alpha_{10} RDdummy_{i,j} + \sum_{n=1}^{9} \beta_n Industry_{i,j,n} + \sum_{n=1}^{4} \gamma_n Year_{i,j,n} + \varepsilon_{i,j} \quad (1.a)$$

$$Leverage = \alpha_0 + \alpha_1 ECO_{i,j} + \alpha_2 Size_{i,j} + \alpha_3 MTB_{i,j} + \alpha_4 ROA_{i,j} + \alpha_5 Tang_{i,j} + \alpha_6 Cash_{i,j} + \alpha_7 \mathrm{Re}turn_{i,j} + \alpha_8 Depreciation_{i,j} + \alpha_9 DividendPaying_{i,j} + \alpha_{10} RDdummy_{i,j} + \sum_{n=1}^{9} \beta_n Industry_{i,j,n} + \sum_{n=1}^{4} \gamma_n Year_{i,j,n} + \varepsilon_{i,j} \quad (1.b)$$

$$Leverage = \alpha_0 + \alpha_1 SOCIAL_{i,j} + \alpha_2 Size_{i,j} + \alpha_3 MTB_{i,j} + \alpha_4 ROA_{i,j} + \alpha_5 Tang_{i,j} + \alpha_6 Cash_{i,j} + \alpha_7 \mathrm{Re}turn_{i,j} + \alpha_8 Depreciation_{i,j} + \alpha_9 DividendPaying_{i,j} + \alpha_{10} RDdummy_{i,j} + \sum_{n=1}^{9} \beta_n Industry_{i,j,n} + \sum_{n=1}^{4} \gamma_n Year_{i,j,n} + \varepsilon_{i,j} \quad (1.c)$$

Where our dependent variable is *Leverage*, defined as the ratio of total debt to total assets at their market value, *IVA*, *SOCIAL* and *ECO* are respectively our CSR, environmental and social performance, *Size* is the natural logarithm of total assets, *MTB* is market value of assets divided by book value of assets, *ROA* is EBITDA divided by total assets, *Tang* is net property, plants and equipments divided by total assets, *Cash* is cash and cash equivalents divided by total assets, *Return* is annual stock returns, *Depreciation* is amortizations and depreciations divided by total assets, *DividendPaying* is a dummy variable which takes the value of 1 if the firm pays a dividend and 0, *RDdummy* is a dummy variable which takes the

value of 1 otherwise for firms those reporting R&D expenditures, and 0 otherwise. The results of our estimations of these three equations are provided in Table 3.

[Insert Table 3]

Most of our control variables are significant at the 1% level. In particular, we find a negative and significant relationship between leverage and profitability. In addition, we observe that firms with a high level of tangible assets have more debt, because they can offer more guarantees to their creditors. Concerning the impact of CSR performance on capital structure, we find, consistent with our first hypothesis, that CSR performance has a negative relationship with leverage. This result is consistent with main results of the previous literature (Hong and Kacperczyk, 2009; Girerd-Potin et al., 2012) and with our first hypothesis. We show here that financial consequences of CSR performance, like a reduction of cost of equity or information asymmetry, conducts firms to have lower debt ratios.

It is also important to investigate the relation between different aspects of CSR performance and capital structure, to have a deeper understanding of the relation between CSR performance and capital structure. We therefore substitute in (1.a) IVA rating by a social rating (1.b) and an environmental rating (1.c). It allows us to study the impact of the two main components of CSR performance on capital structure, and to state whether different dimensions of CSR performance have the same effect on financing decisions. The estimation which is reported in the second column of table 3 is performed for the environmental performance. We find a negative but insignificant relationship. This result confirm that of Girerd-Potin et al. (2012), who also conclude that environmental performance has no significant impact on capital structure. This result could be due to the fact that environmental policies are less important or are less recognized than others CSR dimensions for stock market investors. The third column presents results for social performance. The relationship is here negative and highly significant. This result is in line with those of Verwijmeren and Derwall (2010) and Bae et al. (2011). Overall, our results demonstrate in an international setting that CSR policies have a small but significant impact on firms' capital structure. Firms with good CSR performance tend to have lower leverage, because of the greater reliance on equity financing for socially responsible companies. More precisely, we find that only social aspect of the CSR performance has a significant impact.

5.2. - Endogeneity issue

Although CSR performance influences the capital structure, the opposite might also be true. According to the slack resource hypothesis developed by McGuire et al. (1988) and Waddock and Graves (1997), firms that have a high level of available resources can easily invest in CSR policies, and therefore have higher CSR ratings than their counterparts. Moreover, managers can be more encouraged to over-invest in CSR policies to increase their own reputation when firms have a lot of slack resources (Barnea and Rubin, 2010). Consistent with the agency theory (Jensen, 1986), Barnea and Rubin (2010) argue that debt can be a disciplinary mechanism that allows shareholders to limit CSR-related expenses. In line with this assumption, Barnea and Rubin (2010) find a negative relation between leverage and CSR performance.

To check that our results do not suffer from a potential endogeneity of CSR ratings, we run a Durbin-Wu-Hausman test of exogeneity. This test consists of two steps. The first step is to regress the variable suspected to be endogenous on instruments and exogenous variables of the baseline model. Then, the second step is to include residuals of this regression on the baseline model. If residuals are insignificant, the null hypothesis of exogeneity cannot be rejected. To run this test, we have to choose an appropriate instrument. We follow El Ghoul et al. (2011); Cheng et al. (2013), and Hmaittane et al. (2011) in using the industry mean CSR ratings to instrument CSR performance. We hypothesize that CSR performance of a firm is linked with CSR performance of others firms within the same industry, following Cheng et al. (2013). Moreover, we can reasonably assume that the industry average CSR does not influence a firm's leverage. Our results for Durbin-Wu-Hausman tests are presented in Table 4.

[Insert Table 4]

Our results lead us to conclude that the hypothesis of exogeneity cannot be rejected. It demonstrates that debt is not used by firms as a disciplinary mechanism to discourage investment in CSR policies, as supposed by Barnea and Rubin (2010). We can also claim that results of Section 5.1. are not driven by a simultaneous relationship between CSR performance and leverage.

5.3. - CSR and debt-equity choice

To go further in our analysis of the impact of CSR performance on capital structure, we now focus on changes of capital structure. To this end, we rely on many studies which examine debt-equity choice (Hovakimian et al., 2001; Chang et al., 2006; Gaud et al., 2007; Lipson and Mortal, 2009; Autore and Kovacs, 2010; Verwijmeren and Derwall, 2010). We argue like these many authors that it is interesting to focus on debt-equity choice when capital structure changes to better isolate the impact of CSR performance on financing decisions. If, as we established before, CSR performance is a determinant of capital structure, this factor would affect the choice between equity and debt when firms finance their activities. We expect that the more companies have a high CSR performance, the more they have a high probability of issuing equity, because of the benefits they get from equity markets in terms of reduction of the cost of equity and of information asymmetry.

To check our assumption, we estimate binary probit models. We want to show whether a good CSR performance decrease the probability for a firm to issue debt. So, we estimate following models:

$$DebtIssue_{i,j} = f(\alpha_0 + \alpha_1 IVA_{i,j} + \alpha_2 Devt\arg et_{i,j} + \alpha_3 Leverage_{i,j} + \alpha_4 Volatility_{i,j} \alpha_5 Size_{i,j} + \alpha_6 MTB_{i,j} + \alpha_7 ROA_{i,j} + \alpha_8 Tang_{i,j} + \alpha_9 Cash_{i,j} + \alpha_{10} \mathrm{Re}turn_{i,j} + \alpha_{11} Depreciation_{i,j} + \alpha_{12} DividendPaying_{i,j} + \alpha_{13} RDdummy_{i,j} + \sum_{n=1}^{9} \beta_n Industry_{i,j,n} + \sum_{n=1}^{4} \gamma_n Year_{i,j,n} + \varepsilon_{i,j}) \quad (2.a)$$

$$DebtIssue_{i,j} = f(\alpha_0 + \alpha_1 ECO_{i,j} + \alpha_2 Devt\arg et_{i,j} + \alpha_3 Leverage_{i,j} + \alpha_4 Volatility_{i,j} \alpha_5 Size_{i,j} + \alpha_6 MTB_{i,j} + \alpha_7 ROA_{i,j} + \alpha_8 Tang_{i,j} + \alpha_9 Cash_{i,j} + \alpha_{10} \mathrm{Re}turn_{i,j} + \alpha_{11} Depreciation_{i,j} + \alpha_{12} DividendPaying_{i,j} + \alpha_{13} RDdummy_{i,j} + \sum_{n=1}^{9} \beta_n Industry_{i,j,n} + \sum_{n=1}^{4} \gamma_n Year_{i,j,n} + \varepsilon_{i,j}) \quad (2.b)$$

$$DebtIssue_{i,j} = f(\alpha_0 + \alpha_1 SOCIAL_{i,j} + \alpha_2 Devt\arg et_{i,j} + \alpha_3 Leverage_{i,j} \alpha_4 Volatility_{i,j} + \alpha_5 Size_{i,j} + \alpha_6 MTB_{i,j} + \alpha_7 ROA_{i,j} + \alpha_8 Tang_{i,j} + \alpha_9 Cash_{i,j} + \alpha_{10} \mathrm{Re}turn_{i,j} + \alpha_{11} Depreciation_{i,j} + \alpha_{12} DividendPaying_{i,j} + \alpha_{13} RDdummy_{i,j} + \sum_{n=1}^{9} \beta_n Industry_{i,j,n} + \sum_{n=1}^{4} \gamma_n Year_{i,j,n} + \varepsilon_{i,j}) \quad (2.c)$$

Where our dependent variable, *DebtIssue*, is a dummy variable which takes the value of one if the net change of debt is greater than 5% of total assets, and takes the value of zero if the net change of equity is greater than 5% of total assets. We calculate net change of equity and net change of debt from statement of cash flows. We define net changes of equity as the difference between equity issues and equity repurchases divided by total assets, and net change of debt as the difference between long-term debt issuances and long-term debt reductions divided by total assets. We only retain cases in which net change of equity and net change of debt is significant, is to say for the case where the equity or debt issue is higher than 5% of total assets. This cutoff is in accordance with Hovakimian et al. (2001), Chang et al. (2006) and Autore and Kovacs (2010). Moreover, we exclude dual cases, in which firms issue both equity and debt. Finally, we consider 909 cases.

Control variables are the same for models estimated in the section 5.1. and 5.2. (*Size*, *MTB*, *ROA*, *Tang*, *Cash*, *Return*, *Depreciation*, *DividendPaying* and *RDdummy*). We also include *DevTarget*, which is the deviation of a firm's leverage from the average leverage in the firm's industry. Using average leverage in industry as a proxy for target debt ratio, we follow several authors like Hovakimian et al. (2001), Gaud et al. (2007) or Verwijmeren and Derwall (2010). According to the trade-off theory, firms make financial choices to move toward an optimal capital structure. So the more a firm is under-levered (over-levered) comparing to its target debt ratio, the more (the less) the probability that firm is issuing debt is high. We also include *Leverage* as a control variable. We expect that firms consider their current leverage when they choose between equity and debt. Finally, we insert in our model *Volatility*, which is the annual volatility of firms' stock return. We follow Autore and Kovacs (2010) who argue that firms with higher volatility have higher financial distress costs, and thus are less inclined to issue debt.

In our regressions, signs of coefficients must be interpreted as follows: a positive sign means that the variable is positively related to the probability of issuing debt compared to issuing debt, and negatively related to the probability of issuing equity compared to issuing debt. We note that we control again for year and industry fixed effects thanks to dummy variables. Results of these estimations are reported in Table 5. Standard errors are robust for heteroskedasticity, clustered at the firm level.

[Insert Table 5]

Among our control variables, we find that *Size* and *MTB* are positively and significantly associated with a higher probability of issuing debt. More importantly, our three CSR performance proxies are negatively related to the probability of issuing debt. In line with our second hypothesis, firms with bad CSR performance avoid the financial penalty inflicted by investors by issuing debt instead of equity. In other words, a good CSR performance increases the probability of issuing equity. CSR performance appears to be a significant determinant of firms' financing choices, because it modifies costs and advantages of different source of financing. In lowering cost of equity and information asymmetry, CSR performance makes equity issuance more attractive, and therefore increases the likelihood of using this funding.

5.4. - CSR and equity issues size

Finally, we study the impact of the CSR performance on the size of equity issuances, testing our hypothesis three and four. We expect that the size of equity issues is larger when firms have a high CSR rating, according to the authors' arguments defending the market timing theory. Socially responsible firms are in a lower information asymmetry situation, which would lead to a larger volume of equity issuances. We also hypothesize that firms with a high CSR rating are less sensitive to market conditions when they issue equity. To test these hypotheses, we estimate the following models:

$$EquitySize_{i,j} = \alpha_0 + \alpha_1 IVA_{i,j} + \alpha_2 IVA * \mathrm{Re}turn_{i,j} + \alpha_3 \mathrm{Re}turn_{i,j} + \alpha_4 Volatility_{i,j} + \alpha_5 Size_{i,j} + \alpha_6 MTB_{i,j} + \alpha_7 ROA_{i,j} + \sum_{n=1}^{9} \beta_n Industry_{i,j,n} + \sum_{n=1}^{4} \gamma_n Year_{i,j,n} + \varepsilon_{i,j} \quad (3.a)$$

$$EquitySize_{i,j} = \alpha_0 + \alpha_1 ECO_{i,j} + \alpha_2 ECO * \mathrm{Re}turn_{i,j} + \alpha_3 \mathrm{Re}turn_{i,j} + \alpha_4 Volatility_{i,j} + \alpha_5 Size_{i,j} + \alpha_6 MTB_{i,j} + \alpha_7 ROA_{i,j} + \sum_{n=1}^{9} \beta_n Industry_{i,j,n} + \sum_{n=1}^{4} \gamma_n Year_{i,j,n} + \varepsilon_{i,j} \quad (3.b)$$

$$EquitySize_{i,j} = \alpha_0 + \alpha_1 SOCIAL_{i,j} + \alpha_2 SOCIAL * \mathrm{Re}turn_{i,j} + \alpha_3 \mathrm{Re}turn_{i,j} + \alpha_4 Volatility_{i,j} + \alpha_5 Size_{i,j} + \alpha_6 MTB_{i,j} + \alpha_7 ROA_{i,j} + \sum_{n=1}^{9} \beta_n Industry_{i,j,n} + \sum_{n=1}^{4} \gamma_n Year_{i,j,n} + \varepsilon_{i,j} \quad (3.c)$$

Where our dependent variable, *EquitySize*, is defined as the net equity issuance scaled by total assets. We again restrict our sample for the case in which net equity issuance is greater than 5% of total assets. To test our fourth hypothesis, we have included in our models interaction variables (IVA*return, ECO*return and SOCIAL*return) to examine whether the relation between size of equity issuances and market conditions are weaker (stronger) for firms with high (low) CSR performance.

It is obvious that our sample is not randomly selected, because we only observe size of equity issuances when firms take the decision to issue equity. To avoid a potential selection bias, we use a selection model developed by Heckman (1979). In a first step, we estimate with a probit model the probability that a firm issue equity. Then in a second step we estimate the determinants of the size of equity issues, taking into account the probability that firms has issued equity. This methodology have already used by authors which analyze the impact of analyst coverage (Chang et al., 2006) and of the dispersion of analysts' forecast (Bessler et al., 2011) on financing decisions. Our selection equation is specified as follows:

$$EquityIssue_{i,j} = f(\alpha_0 + \alpha_1 IVA_{i,j} + \alpha_2 Devt\,\mathrm{arg}\,et_{i,j} + \alpha_3 Leverage_{i,j} + \alpha_4 Volatility_{i,j}\,\alpha_5 Size_{i,j} + \alpha_6 MTB_{i,j} + \alpha_7 ROA_{i,j} + \alpha_8 Tang_{i,j} + \alpha_9 Cash_{i,j} + \alpha_{10}\,\mathrm{Re}\,turn_{i,j} + \alpha_{11} Depreciation_{i,j} + \alpha_{12} DividendPaying_{i,j} + \alpha_{13} RDdummy_{i,j} + \sum_{n=1}^{9} \beta_n Industry_{i,j,n} + \sum_{n=1}^{4} \gamma_n Year_{i,j,n} + \varepsilon_{i,j}) \quad (4)$$

Where *EquityIssue* is a dummy variable which takes the value of one if the net change of equity is greater than 5% of total assets and takes the value of zero if the net change of debt is greater than 5% of total assets. Control variables are the same of those used in our probit regressions in section 5.3.

[Insert table 6]

Results of the second step are reported in Table 6. We find that IVA, ECO and SOCIAL ratings have the expected signs, and a significant impact on size of equity issues. We have here some evidence that socially responsible firms issue larger volume of equity when they choose this source of financing. In accordance with the market timing theory, these companies take advantage of the momentary reduction of the asymmetry of information generated by their good CSR performance to issue larger volume of equity. Finally, we interpret our

interaction variables. In our three models, these variables are negative, and significant at less at the 5% level. It conducts us to consider that the more firms have a high CSR performance, the less they depend on market conditions when they decide to issue equity. Consistent with our fourth hypothesis, we establish that the relation between stock returns and the volume of equity issuances is less pronounced for firms exhibiting high CSR performance.

6- Conclusion

In this work, we analyze the relationship between CSR performance and financing decisions. Based on a worldwide sample of 5,859 observations, we have shown that socially responsible companies have a lower debt ratio than less socially responsible one, which is consistent with those of Hong and Kacperczyk (2009) and of Girerd-Potin et al. (2012). Contrary to these works, we check that this relationship is not subject to a potential endogeneity issue that we raised. We administrate Durbin-Wu-Hausman test which conduct us to reject the hypothesis of endogeneity of CSR performance. We also establish that two of the main aspects of CSR performance, i.e. social performance and environmental performance, are negatively related to the level of debt, but we find that only social performance have a negative impact on leverage. Then, our binary probit models indicate that socially responsible firms issue more frequently equity. Socially responsible firms can also have an easier access to equity markets. A high CSR performance reduces information asymmetry, which allows companies to issue larger volumes of equity when they use this type of financing, and to mitigate their dependence on market conditions for their financing decisions.

Taken together, our results strongly demonstrate that firms determine to some extent their financing decisions according to their level of CSR, social and environmental performance. Socially responsible companies are aware of the advantage for them to issue equity more frequently and in larger amounts, because of a reduction in information asymmetry and a lower cost of capital. We thus complement several studies examining determinants of capital structure decisions (Miller, 1977; DeAngelo and Masulis, 1980; Hovakimian et al., 2001; Chang et al., 2006; Frank and Goyal, 2009; Lipson and Mortal, 2009; Autore and Kovacs, 2010; Verwijmeren and Derwall, 2010; Bae et al., 2011; Bessler et al., 2011). We also contribute to enhancing comprehension of financial consequences for firms of their CSR policies. While previous research has only studied the impact on financial performance, we argue that CSR performance can also influence debt-equity-choice.

Our work has also some interesting managerial implications. Indeed, it enables managers to better understand the implications of their social and environmental policies for their financing decisions. It also shows that managers could reduce their dependence on market conditions for their equity issuances decisions by improving their CSR performance. Managers should be aware that CSR performance of their firms has financial consequences, and should incorporate these effects highlighted by the academic literature in their financing decisions to effectively manage their organizations. Clearly, our study opens interesting future research. We consider debt as a whole, but future research could study the impact of CSR performance on the source of the debt, private or public.

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Table 1: summary statistics

This table provides summary statistics for our sample. Data are collected from MSCI and Factset from 2005 to 2009. Leverage is the total debt divided by total assets at their market value. Size is the logarithm of total assets. ROA is earnings before interest, taxes, depreciation and amortization (EBITDA) divided by total assets. MTB is defined as (total assets + market value of equity – book value of equity)/total assets. Tang is net property, plants and equipment divided by total assets. Cash is cash and cash equivalents divided by total assets. Return is annual stock returns. Depreciation is amortizations and depreciations divided by total assets. RDdummy is a dummy variable that equals one for firms those reporting R&D expenditures, and zero otherwise. DividendPaying is a dummy variable that equals one if the firm pays a dividend and zero otherwise.

Variables	N	Mean	Standard deviation	Q1	Median	Q3
Dependent variables						
Leverage	5,859	0.29	0.21	0.12	0.24	0.42
CSR measures						
IVA	5,859	3.88	1.75	3.00	4.00	5.00
ECO	5,859	3.98	1.81	3.00	4.00	5.00
SOCIAL	5,859	3.87	1.76	3.00	4.00	5.00
Control variables						
Size	5,859	9.02	1.22	8.18	8.99	9.87
MTB	5,859	1.92	1.33	1.36	1.67	2.17
ROA	5,859	0.06	0.09	0.02	0.05	0.09
Tang	5,859	0.31	0.24	0.12	0.27	0.46
Cash	5,859	0.07	0.07	0.02	0.05	0.10
Return	5,859	0.08	0.50	-0.22	0.05	0.32
Depreciation	5,859	0.03	0.02	0.02	0.03	0.05
DividendPaying	5,859	0.97	0.17	1.00	1.00	1.00
RDdummy	5,859	0.48	0.50	0.00	0.00	1.00

Table 2: Correlation matrix

This table shows the correlations between continuous variables. Leverage is the total debt divided by total assets at their market value. Size is the logarithm of total assets. ROA is earnings before interest, taxes, depreciation and amortization (EBITDA) divided by total assets. MTB is defined as (total assets + market value of equity – book value of equity)/total assets. Tang is net property, plants and equipment divided by total assets. Cash is cash and cash equivalents divided by total assets. Return is annual stock returns. Depreciation is amortizations and depreciations divided by total assets. * Statistical significance at the 10% level, ** Statistical significance at the 5% level, *** Statistical significance at the 1% level.

	Leverage	Size	MTB	ROA	Tang	Cash	Return
Size	0.22***						
MTB	-0.38***	-0.18***					
ROA	-0.42***	-0.09***	0.35***				
Tang	0.13***	0.03**	-0.05***	0.02			
Cash	-0.27***	-0.17***	0.17***	0.16***	-0.22***		
Return	-0.26***	0.00	0.15***	0.13***	0.03*	0.07***	
Depreciation	-0.03**	0.00	0.01	0.02	0.43***	0.03***	0.01

Table 3: CSR performance and firms' leverage

This table presents the relation between CSR ratings and firm leverage. We estimate ordinary least squares regressions. Control variables are those described in section 4. T-statistics are in parentheses. They are based on panel-robust standard errors. * Statistical significance at the 10% level, ** Statistical significance at the 5% level, *** Statistical significance at the 1% level.

	Dependent variable : Leverage		
	Model 1.a	Model 1.b	Model 1.c
IVA	-0.004 **		
	(-2.08)		
ECO		-0.001	
		(-0.35)	
SOCIAL			-0.005 **
			(-2.54)
size	0.025 ***	0.024 ***	0.025 ***
	(5.21)	*(4.98)*	*(5.25)*
MTB	-0.026	-0.026	-0.026
	(-1.46)	*(-1.45)*	*(-1.46)*
ROA	-0.602 ***	-0.603 ***	-0.602 ***
	(-6.10)	*(-6.08)*	*(-6.11)*
Tang	0.096 ***	0.095 ***	0.096 ***
	(4.49)	*(4.46)*	*(4.50)*
Cash	-0.317 ***	-0.312 ***	-0.318 ***
	(-5.82)	*(-5.75)*	(-5.86)
Return	-0.074 ***	-0.074 ***	-0.074 ***
	(-8.24)	*(-8.18)*	*(-8.25)*
Depreciation	-0.289	-0.291	-0.291
	(-1.37)	*(-1.37)*	*(-1.38)*
DividendPaying	-0.083 ***	-0.084 ***	-0.083 ***
	(-4.49)	*(-4.53)*	*(-4.48)*
Rddummy	-0.025 ***	-0.026 ***	-0.025 ***
	(-2.84)	*(-2.87)*	*(-2.86)*
Intercept	0.242 ***	0.235 ***	0.246 ***
	(3.83)	*(3.66)*	*(3.90)*
Year effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	5,859	5,859	5,859
R-squared	38.57%	38.45%	38.64%

Table 4: Durbin-Wu-Hausman test for CSR ratings' endogeneity

This table presents first stage regressions of our Durbin-Wu-Hausman test. We estimate OLS regressions of various CSR ratings (IVA, ECO, and SOCIAL) on our instruments described in section 5.2 (industry mean of CSR ratings), and exogenous determinants of leverage. We then insert residuals of these estimations in models reported in table 3. We report Durbin-Wu-Hausman statistics and p-value. T-statistics are in parentheses. They are based on panel-robust standard errors. * Statistical significance at the 10% level, ** Statistical significance at the 5% level, *** Statistical significance at the 1% level.

	Dependent variable : CSR ratings (IVA, ECO and SOCIAL)		
	IVA	ECO	SOCIAL
Industry mean IVA	0.831 ***		
	(3.56)		
Industry mean ECO		1.203 ***	
		(7.14)	
Industry mean SOCIAL			0.882 ***
			(4.40)
size	0.318 ***	0.352 ***	0.289 ***
	(8.82)	*(10.18)*	*(7.86)*
MTB	0.018	-0.019	0.020
	(0.51)	*(-1.04)*	*(0.49)*
ROA	0.282	0.531	0.338
	(0.74)	*(1.44)*	*(0.86)*
Tang	0.136	0.045	0.144
	(0.65)	*(0.21)*	*(0.69)*
Cash	-1.038 *	-0.171	-1.111 **
	(-1.96)	*(-0.32)*	*(-2.09)*
Return	-0.038	-0.020	-0.011
	(-0.74)	*(-0.39)*	*(-0.21)*
Depreciation	1.113	4.162 **	0.502
	(0.55)	*(2.05)*	*(0.24)*
DividendPaying	0.108	0.119	0.123
	(0.79)	*(0.91)*	*(0.90)*
Rddummy	0.169 *	0.533 ***	0.113
	(1.72)	*(5.40)*	*(1.14)*
Intercept	-1.537	-4.037 ***	-1.477
	(-1.45)	*(-5.04)*	*(-1.59)*
Year effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	5,859	5,859	5,859
R-squared	7.93%	12.64%	6.88%
Durbin-Wu-Hausman statistics	1.12	1.93	0.06
p-value	0.29	0.17	0.81

Table 5 : CSR performance and debt-equity choice

Our dependent variable, *DebtIssue*, is a dummy variable which takes the value of one if the net change of debt is greater than 5% of total assets, and takes the value of zero if the net change of equity is greater than 5% of total assets. We define net change of equity as the difference between equity issues and equity repurchase divided by total assets, and net change of debt as the difference between long-term issuances and long-term debt reductions divided by total assets. We only retain cases in which net change of equity and net change of debt is significant, is to say for the case where the equity or debt issue is higher than 5% of total assets. T-statistics are in parentheses. * Statistical significance at the 10% level, ** Statistical significance at the 5% level, *** Statistical significance at the 1% level.

	Dependent variable : DebtIssue		
	Model 2.a	Model 2.b	Model 2.c
IVA	-0.089 **		
	(-2.40)		
ECO		-0.080 **	
		(-2.36)	
SOCIAL			-0.091 **
			(-2.50)
Devtarget	0.810	0.910	0.801
	(0.99)	*(1.09)*	*(0.98)*
Leverage	1.728 **	1.667 **	1.715 **
	(2.06)	*(1.97)*	*(2.06)*
Volatility	-1.253 ***	-1.225 ***	-1.230 ***
	(-3.45)	*(-3.32)*	*(-3.43)*
Size	0.224 ***	0.229 ***	0.218 ***
	(3.78)	*(3.83)*	*(3.75)*
MTB	0.477 ***	0.469 ***	0.473 ***
	(2.70)	*(2.63)*	*(2.69)*
ROA	0.246	0.210	0.265
	(0.31)	*(0.26)*	*(0.34)*
Tang	-0.455 *	-0.470 *	-0.440 *
	(-1.74)	*(-1.81)*	*(-1.68)*
Cash	-1.185	-1.193	-1.175
	(-1.22)	*(-1.24)*	*(-1.21)*
Return	-0.207 *	-0.207 *	-0.206 *
	(-1.66)	*(-1.66)*	*(-1.65)*
Depreciation	3.376	3.758	3.393
	(1.12)	*(1.25)*	*(1.12)*
DividendPaying	0.267	0.274	0.290
	(1.00)	*(1.01)*	*(1.10)*
Rddummy	-0.167	-0.160	-0.166
	(-1.15)	*(-1.10)*	*(-1.15)*
Intercept	-1.325	-1.451	-1.306
	(-1.47)	*(-1.58)*	*(-1.45)*
Year effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	909	909	909
Pseudo-R^2	26.44%	26.35%	26.49%

Table 6: CSR performance and size of equity issues

We estimate Heckman selection models. Our dependent variable is *EquitySize*. This variable is defined as the net equity issuance scaled by total assets. We restrict our sample for the case in which net equity issuance is greater than 5% of total assets. Our selection variable is *EquityIssue*. This variable takes the value of one if the net change of equity is greater than 5% of total assets and takes the value of zero if the net change of debt is greater than 5% of total assets. Control variables are the same of those used in our probit regressions in section 5.3.T-statistics are in parentheses. * Statistical significance at the 10% level, ** Statistical significance at the 5% level, *** Statistical significance at the 1% level.

	Dependent variable : EquitySize		
	Model 3.a	Model 3.b	Model 3.c
IVA	0.008 **		
	(2.19)		
ECO		0.007 *	
		(1.94)	
SOCIAL			0.006 *
			(1.72)
CSR rating * return	-0.011 ***	-0.010 ***	-0.018 ***
	(-2.79)	*(-2.78)*	*(-4.04)*
Return	0.032 *	0.028 *	0.065 ***
	(1.84)	*(1.71)*	*(3.19)*
Volatility	0.070 **	0.073 **	0.073 ***
	(2.44)	*(2.52)*	*(2.60)*
Size	-0.014 **	-0.015 **	-0.014 **
	(-2.39)	*(-2.36)*	*(-2.34)*
MTB	0.024 **	0.024 **	0.024 **
	(2.36)	*(2.34)*	*(2.44)*
ROA	-0.083	-0.077	-0.088
	(-1.26)	*(-1.15)*	*(-1.36)*
Intercept	0.215 ***	0.224 ***	0.211 ***
	(2.91)	*(3.02)*	*(2.91)*
Mills ratio	-0.032 *	-0.035 *	-0.033 *
	(-1.77)	*(-1.90)*	*(-1.82)*
Year effects	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes
Observations	137	137	137