The effect of national culture on the association between profitability and corporate social and environmental disclosure: a meta-analysis

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Abstract:

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Purpose: This paper aims to investigate the moderating effect of cultural dimensions (masculinity; individualism; and long term orientation) on the association between profitability and corporate social and environmental disclosure (CSED).

Methodology: We apply the meta-analysis technique developed by Hunter, Schmidt and Jackson (1982) and Hunter and Schmidt (2000) for a sample of 48 published studies over the period of the last twenty years.

Findings: We find that masculinity, individualism and long term orientation moderate the association between profitability and CSED. Given the weight of US studies on the overall sample, we conduct a sensitivity analysis to examine how this factor may affect the findings. After excluding these studies, only long term orientation and individualism remain strong moderators of the association between profitability and CSED.

Originality/value: Our study provides further evidence on the impact of institutional frameworks on CSED. It has, also, policy implications for managers of multinational corporations.

Key words: Corporate social and environmental disclosure (CSED); Profitability; Cultural dimensions; Meta-analysis.

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1. Introduction

In recent years, corporate social and environmental disclosure (hereafter referred to as CSED) has become a central theme of debate amongst several economic actors. Richardson, Welker and Hutchinson (1999, p. 17) defined corporate social and environmental behaviours as "*discretionary actions undertaken by companies intended to advance social and environmental issues*". During the last decade, environmental, social information has been

gaining momentum in accounting disclosure literature (Cormier, Magnan, and Van Velthoven, 2005; Branco and Rodrigues, 2008; Reverte, 2009; Siregar and Bachtiar, 2010).

Recent literature related to the determinants of CSED (Chih, Chih and Chen, 2010; Williams and Zinkin, 2008) called for more cross-national studies to explore the effect of cultural dimensions on CSED. Using a cross-national sample, Orji (2010) examined the relationship between cultural dimensions and CSED. Accordingly, we extend his study by considering the moderating effect of cultural dimensions on the association between corporate performance and CSED.

Our work is motivated by the recent review on the determinants of CSED by Fifka (2013).[1] Fifka (2013, p. 25) suggests that "*only for the relation between financial performance and reporting are conclusions more difficult since only slightly over half of all studies, 56% have found a positive correlation*". Similarly, Guidry and Patten (2012) review the literature dealing with financial control variables for CSED. They note that corporate performance was most often used as a control variable for CSED and results are mixed. Similarly, Lee and Hutchison (2005) note also the inconclusive empirical evidence concerning the same relationship. They argue that (p. 99) this inconsistency across previous empirical findings "*leaves the role of profitability in environmental disclosure incompletely explained*". Accordingly, in the present paper we focus our meta-analysis on profitability as an explanatory variable of CSED because of the mixed evidence provided in social and environmental disclosure literature (Hackston and Milne, 1996; Branco and Rodriguez, 2008)[2]. Our work complements Orlitzky, Schmidt and Rynes (2003) by being the first to use

[1] Previous meta-analyses, dealing with the effect of corporate characteristics on voluntary disclosure, have excluded particular aspects of disclosure especially CSED. For instance, Ahmed and Courtis (1999, p. 43) suggested that their meta-analysis "*excluded those that examined only a particular disclosure aspect, for example….. environment and social disclosure*". Similarly, Khlif and Souissi (2010) focused on financial and non-financial information dealing with strategic and forward-looking information.

[2] In their empirical analysis, Branco and Rodriguez (2008) state that "*In view of the existence of these results and different interpretations, the association between this variable and SRD is tested without making any a priori assumption about the sign of such association*".

the meta-analysis technique to examine the impact of cultural dimensions on the association between profitability and CSED. Lee and Hutchison (2005) argue that culture factors play a critical in the decision to disclosure environmental information. They call for more future investigation of the effect of culture on CSED across national boundaries.

The meta-analysis technique constitutes a statistic tool which enables researchers to overcome the limitations of any narrative review and summarises a large collection of results in a statistic systematic manner (Ahmed and Courtis, 1999). According to Lipsey and Wilson (2001) meta-analysis can make significant contributions to general knowledge by developing a robust framework of the whole body of research on a given topic. It allows a cross-national investigation of a specific topic.

Cross-cultural research suggests that culture can influence leadership concepts and behaviour (House, Wright and Aditya, 1997). However there is no solid empirical evidence that examines this topic. For instance, Ringov and Zollo (2007, p. 476) suggest that "*unfortunately, as of today, we do not have a solid empirical base to link national culture to corporate responsibility, most of the debate being fueled by conceptual arguments or anecdotal evidence from cross-country case studies*". Therefore, our meta-analysis attempts to fill the gap and tests for the moderating effects of national culture on the association between corporate profitability and CSED. To the best of our knowledge, by integrating cultural dimensions as moderating variables, this is the first meta-analysis devoted specifically to examining the effect of profitability on CSED.

Ullmann (1985) suggests that society-related determinants, like culture, are crucial in explaining CSED. In the same vein, Van der Laan Smith et al. (2005, p. 125) posit that "*For preparers (i.e. companies) it is important to understand the differential pressures for CSD in different countries in order to condition their CSD disclosure strategy accordingly as they enter foreign markets*". Therefore, understanding the effect of national culture on CSED will

benefit managers of multinational firms when implementing social and environmental strategies in foreign markets to reduce public scrutiny and legitimacy gap.

In our meta-analysis, we consider three culture dimensions including masculinity; individualism; and long term orientation. We find that the association between profitability and CSED is moderated by masculinity, individualism and long term orientation. In this regard, in settings characterised by low (high) individualism, low (high) masculinity and high (low) long term orientation there is a significant (non-significant) association significant between corporate profitability and CSED. Given the weight of US studies on the overall sample, we conduct a sensitivity analysis to examine how this factor may affect the findings. After excluding these studies, only long term orientation and individualism remain strong moderators of the association between profitability and CSED.

Our paper contributes to the literature as follows. On the one hand, it represents an extension of previous meta-analysis studies related to voluntary disclosure (Fifka, 2013; Ahmed and Courtis, 1999; Khlif and Souissi, 2010) by focusing only on CSED. On the other hand, this meta-analysis may inform multinational companies since cultural-specificity will require high investments in understanding and implementing decisions and strategies rather than in adopting a standard approach applicable in all cultural settings.

The rest of the paper is structured as follows. In section 2, we present the theoretical framework linking CSED to profitability and we develop the hypotheses. Section 3 describes the data and their characteristics. Section 4 presents the meta-analysis technique and the methodology used in this paper. Section 5 reports the results. Finally, section 6 concludes.

2. Literature review

2. 1. Theoretical framework

Corporate financial profitability is viewed as a key factor that can influence CSED. For instance, Hackston and Milne (1996) suggest that profitability is the factor that allows

management the freedom and the flexibility to undertake and reveal to stakeholders more extensive social and environmental actions. Similarly, Roberts (1992) posits that in periods of low financial profitability, priority is given to economic demands over discretionary social and environmental responsibility expenditures. Operating under satisfactory financial performance has a definite effect on the level of commitments of top corporate management towards future social and environmental responsibility actions (Ullmann, 1985). Empirical literature dealing with the determinants of CSED generally predicts a positive and significant association between profitability and CSED based on three theoretical frameworks including stakeholders, legitimacy and proprietary costs theories.

Stakeholder theory suggests that companies try to manage their relationships with different stakeholders (e.g. employees, consumers) in order to gain competitive advantages. This should lead to an improvement in the financial performance. Profitable firms have the duties to contribute to the welfare of different stakeholders interacting with them. Therefore, high disclosure quality represents a positive response to social pressure and the self-regulation mechanism undertaken by the firm (Naser et al., 2006). Firms, which achieve a good performance, are more exposed to public pressures and scrutiny. Consequently, they try to increase CSED in order to gain more legitimacy in the eyes of several stakeholders including customers, employees and social and environmental organizations

Legitimacy theory suggests that companies try to seek an approval of their activity from the society in which they operates (Branco and Rodriguez, 2008). Firms realising high profitability are subject to more political visibility and public scrutiny. Therefore, making CSED is regarded as a crucial tool used by managers to send a legitimacy signal, decrease public scrutiny and reduce the legitimacy gap between company and its stakeholders (Naser et al., 2006).

Finally, proprietary costs theory suggests that poor financial conditions reduce the firms' abilities to withstand stakeholders' pressures. In a corporation with low economic performance and fewer economic resources, management places more emphasis on activities which have a more direct effect on the corporation's earnings and profitability than in disclosing CSE information (Ullman, 1985; Roberts, 1992). According to Cormier and Magnan (2003: 49) "*The ability of a firm to incur proprietary costs as a result of its environmental reporting strategy is dependent upon its financial condition. Hence, it appears that only firms that are financially sound may be able to trade off the benefits from additional environmental disclosure with the costs of revealing potentially damaging information with respect to their environmental performance*".

Based on the theoretical frameworks presented above, we formulate that:

H_0: there is a positive association between profitability and CSED.

2.2. The effect of cultural dimensions on the association between profitability and CSED

Hofstede (1984: 23) defines culture as "*the collective programming of the mind which distinguishes the members of one human group from another*". He identify five cultural dimensions including individualism; masculinity and long term orientation. Culture has been hypothesized to affect financial disclosure (Hope, 2003; Hussein, 1996). Orij (2010) uses cultural dimensions to explain the variability in social and environmental practices. More recently, Jia, Van Lent and Zeng (2014) examine the effect of masculinity on financial misreporting. This stream of accounting research suggests that culture may play a critical role in determining management behaviour with respect to financial and non-financial reporting.

Cross-cultural research suggests that culture can influence leadership concepts (House, Wright, & Aditya, 1997). Ringov and Zollo (2007, 467) state that "*concept of corporate responsibility is inherently context-specific, with national culture playing an important part in influencing how society expects businesses to behave*". Stulz and Williamson (2003) suggest

that culture affects how resources were allocated. Goodenough (1970) posits that the relationship of an economic state of affairs to a social one was often largely or entirely affected by human action which was guided, also, by the cultures of the actors. In same vain, Schneider and DeMeyer (1991) and Luthans, Welsh and Rosenkrantz, (1993) suggest that national culture orientations influence leadership styles and the way of resources management. Firm's business culture generally affects the way of resources (e.g. profits) allocation and depends on management cultural orientations (Tsoutsoura, 2004). This is particularly true when a firm is characterised by good financial performance and management may have to choose between implementing corporate social and environmental actions and satisfying stakeholders' needs or focusing on wealth maximization of shareholders as a sole goal of a corporation (Tsoutsoura, 2004). In this regard, Vitell, Nwachukwu and Barnes, (1993) suggest that cultural norms may affect management moral philosophy and thus ethical decision-making.

The above discussion implies that national culture is a decisive factor in shaping management behaviour with respect to financial resources allocation and thus social and environmental responsibility. Thus we expect that cultural dimensions may moderate the effect of profitability on CSED.

We focus on three cultural dimensions namely individualism, masculinity and long term orientation[3] since they are more linked to social and environmental behaviour (Orji, 2010). In the same vein, Vitell et al. (1993) state that cultural values play an important role in shaping individual behaviour with respect to the ethical decision making within a business context.

[3] Other cultural dimensions exist which are uncertainty avoidance and power distance. We do not consider them since uncertainty avoidance is more linked to risk and financial disclosure (Khlif and Hussainey, 2014), while power distance deals more with hierarchical concerns inside the company. In addition, for these two cultural dimensions, Orij (2010) provides empirical evidence that uncertainty avoidance and power distance are less linked to CSED compared to individualism, masculinity and long term orientation (for more details, see table 3, p. 878 in Orij, 2010).

This implies cultural values may influence the way of firm's resources are allocated and the manner that firm shares its financial profitability with stakeholders.

(i) Individualism

Individualism measures the degree of integration between members of a society (Hope, 2003). Everyone is expected to prioritise himself/ herself or his/her immediate family (Hussein, 1996). In highly individualistic societies, firm's management may demonstrate less concern about the broader impact of business on society and focus more in maximizing their own compensations and investors' needs (Ringov and Zollo, 2007). According to Vitell et al. (1993), persons operating in high "individualist" societies, will be more concerned with their own self interest and tend to be less influenced by group norms.

By contrast, collectivism pertains to societies where people are integrated strongly in groups which protect their interests. In collectivist societies, people have to show strong loyalty (Hope, 2003). According to Hussein (1996: 99) "*individualist societies will be geared to individual users while in collectivist societies it will be geared to institutional needs*". Vitell et al. (1993) suggest that persons operating in high collectivist societies can not distance themselves from various groups to which they belong (employees, customers, shareholders, business group) and expect in turn permanent loyalty. This implies that, in collectivist societies, managers deal more with stakeholders' needs, whilst, in individualist societies, companies consider only investors' interests. Therefore, management operating in low individualist society will devote more effort to support sustainability actions especially when it has sufficient financial resources generated by good financial performance. Accordingly, it is expected that, in collectivist societies, profitability has a more significant effect on CSED. Thus, the following hypothesis is tested:

H_1: There is a significant positive (non-significant) association between profitability and CSED in settings characterized by low (high) individualism.

(ii)Masculinity/femininity

Masculine culture puts more emphasis on economic growth and it is less related to social and environmental orientations (Hofstede, 2001; Hussein, 1996; Orji, 2010). Jia et al. (2014) posit that masculinity is characterised by a complex of masculine behaviours including aggression and egocentrism. Highly masculine societies, firm's management attributes less importance for inclusion, cooperation, and solidarity and managers focus on advancement and material success (Ringov and Zollo, 2007). For instance, Tice and Baumeister (2004) provide evidence that masculinity inhibits helping behaviours. In the same vein, Vitell et al. (1993, p. 758) state that "*societies that are characterized as masculine encourage individuals, especially males, to be ambitious, competitive and to strive for material success. These factors may contribute significantly to one's engagement in unethical behaviour*".

By contrast, feminine society is more oriented towards social equality and solidarity (Hussein, 1996). In feminine society, people tend to emphasize on the quality of the "whole" life rather than money (Dartey-Baah, 2013). Accordingly, especially when they achieve good performances, it is expected that companies, operating in feminine societies, communicate more CSED in order to be in line with stakeholders' expectations. Thus, the following hypothesis is formulated:

H_2: There is a significant positive (non-significant) association between profitability and CSED in settings characterised by high (low) femininity.

(iii) Long term orientation

This dimension captures the perspectives of a person to the time dimension of decisions (Salter, Sharp and Chen, 2013). Long term orientation refers to the fact that, in both the short and long term horizons, companies want to preserve their good performances (Hussein, 1996). This implies that in the long term orientation culture, managers need to establish good relationships with their stakeholders including customers, employees, social and

environmental organisations and investors. These good relationships between company and its stakeholders imply more products' acceptance among consumers and more motivations among employees which translate into more productivity and thus higher financial performance. Firms operating in high long term orientation countries need to be in line with social and environmental norms to preserve their reputation among stakeholders and build long term and strategic competitive advantages (Orji, 2010). This is particularly true when companies realise good performances and implies more capability to spend financial resources in social and environmental issues and to disclose information about them to build strong ties with diverse stakeholders. Therefore, it is expected that, for companies operating in countries with high long term orientation perspectives, corporate profitability has a significant positive effect on CSED. Thus, we formulate the following hypothesis:

H_3: There is a significant positive (non-significant) association between profitability and CSED in settings characterised by high (low) long term orientations.

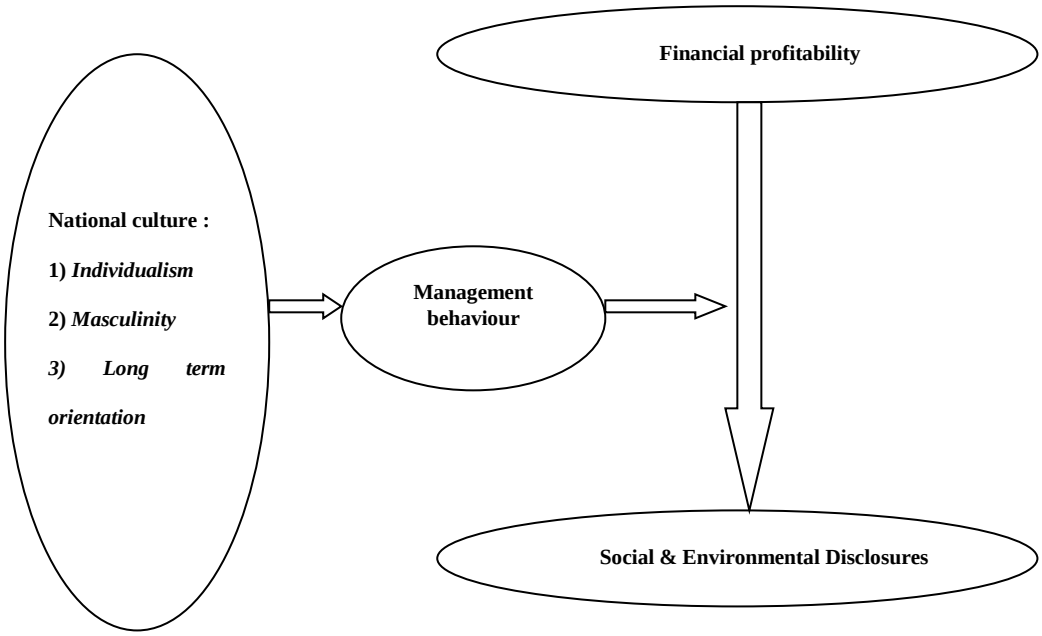

Figure 1. Conceptual framework

3. Sample of studies included in the meta-analysis

Since the pioneering work of Moskowitz (1972) dealing with CSED and corporate performance, the determinants of CSED empirical literature has proliferated. According to Fifka (2013), during the 1970s and 1980s empirical studies mostly originated from North American countries (e.g. USA and Canada) and Western European countries (e.g. UK, Germany). During the last two decades, several empirical enquiries have been conducted to examine the determinants of CSED in developing and emerging economies. Accordingly, we choose a large period of investigation spanning from 1972 to 2013 to reduce the bias of omitted studies in our meta- analysis. The main topics of the selected papers were the determinants of CSED[4]. Keywords, used in the database search and which included "determinants of CSED", " factors influencing CSED" and "the association between financial performance and CSED", were taken from different editorial sources such as Science Direct; EJSEbsco; Blackwell; Springer; Emerald; ABI Inform; and SSRN,. We consult specialised journals including *Accounting; Organization and Society*; *Accounting; Accountability; Auditing Journal; Corporate Social Responsibility and Environmental Management; and Journal of Business Ethics*. The main criterion, used to include a study in the meta-analysis, is that financial performance is examined as an explanatory or control variable. Given this criterion, we exclude several studies if they do not include financial performance when explaining the variation of CSED. In addition, we exclude all studies which provided only descriptive statistics. Finally, we exclude all studies examining more than one setting since our objective is to test the effect of country's culture dimensions score on the association between corporate performance and CSED. Based on these criteria, our final sample

[4] To try to get the maximum number of papers, we consult the two meta-analyses conducted by (Orlitzkyet al,, 2003) and Fika (2013) (for more details see: table 1 from page 6 to page 14 for Fifka (2013) and appendix A from page 428 to page 432 for Orlitzky et al,, 2003).

encompasses 48 empirical studies yielding 49 independent samples[5]. Table 1 provides more information about the sample selection process.

Insert table 1 about here

Table 2 presents detailed information about each study including the year of publication; reporting years; country; scores for cultural dimensions; proxies used to measure financial performance; and the Pearson coefficient of correlation between profitability and CSED.

Insert table 2 about here

[5] Since Chau and Gray (2002) separately consider two settings in their empirical enquiries (Hong Kong and Singapore).

4. Meta-analysis technique

In accounting and finance literature, a crucial research question is how to reconcile conflicting findings. The meta-analysis technique represents a statistical systematic tool which combines the results of several studies that address a set of related research topics. It constitutes, also, an attempt to overcome the problem of reduced statistical power in studies with small sample sizes and allows for more accurate data analysis. In our paper, we use the meta-analysis technique, developed by Hunter, Schmidt, and Jackson (1982) and Hunter and Schmidt (2000), in order to draw logical conclusions from papers, related to the determinants of CSED, which were undertaken over the last thirty years. According to Glass (1976) meta-analysis is the statistical analysis of a large set of mixed findings in order to reconcile contradictory results and to draw logical conclusions.

4.1. Effect size

The meta-analysis technique requires the use of the effect size to measure the magnitude of the association between the dependent variable (CSED) and corporate profitability. In studies where the coefficient of correlation *r* is reported, such a statistical tool is used to measure the effect size. When only the t-statistic or Z-statistic results are reported, r is computed as $\sqrt{\frac{t^2}{(t^2+df)}}$ [6] or $\frac{Z}{\sqrt{N}}$.

According to Hunter and Schmidt (2000), three steps should be followed to determine the mean correlation ($\bar{r}$) and the estimate of the population variance. These are as follows.

(*i*) Firstly, the mean correlation ($\bar{r}$) is computed as:

$$\bar{r} = \frac{\sum (r_i \,.\, N_i)}{\sum N_i} \qquad (1)$$

[6] This formula generates positive numbers. According to Green (2008, cf. Chapter 3), if the regression coefficient is negative, it is necessary to convert the effect size to a negative number.

N_i : Sample size for study *i*,

r_i : Pearson correlation coefficient for study *i*.

(*ii*) Secondly, the observed variance (S_r^2) and the sampling error variance (S_e^2) are calculated using the following formulas:

$$S_r^2 = \frac{\sum N_i \ (r_i - \bar{r})^2}{\sum N_i} \quad (2)$$

$$S_e^2 = \frac{(1-\bar{r}^2)^2 K}{\sum N_i} \quad (3)$$

Whereby K is the number of individual studies included in the meta-analysis.

(*iii*) Finally, the variance, used to estimate a confidence interval, is (S_r^2/K).

Normally, the estimates of population mean ($\bar{r}$) and the standard deviation $\sqrt{S_r^2/K}$ are used to construct a 95 per cent confidence interval. In addition, the Z-statistic, computed as ($\frac{\bar{r}}{\sqrt{S_r^2/K}}$), is used, also, to assess the significance of the relationship between the dependent and explanatory variables.

To test for moderating effects, a chi-square statistic test is suggested to determine whether the observed variance is trivial or higher than expected (heterogeneous) (Ahmed & Courtis, 1999).

$$\chi^2_{K-1} = \frac{N \ S_r^2}{(1-\bar{r}^2)^2} \quad (4)$$

The homogeneity test is developed to determine whether the likelihood of variance amongst the effect sizes is due only to sampling error. If the chi-square statistic is deemed to be significant for a group of studies, a procedure, analogous to analysis of variance, can be used. Studies are divided repeatedly into subgroups according to study features until the within-group variation is non-significant or until all of moderating variables have been considered.

4.2. Moderating factors

In order to test the moderating effect of the three cultural dimensions (individualism; masculinity; and long term orientation) on the relationship between financial performance and corporate profitability, we compute the median for each dimension. We classify a cultural dimension as high (low) if the country's score is superior (inferior or equal) to the median. With respect to the three cultural dimensions, we obtained each country's score from the following website (http://geert-hofstede.com/countries.html). In this study, we use the scores for each country for the three culture dimensions identified by Hofstede including individualism; masculinity; and long term orientation. This approach has been also applied in other empirical studies including Orij (2010), Hope (2003), and Hope, Kang, Thomas and Yoo (2008). Baskerville (2003) criticizes the approach adopted by Hofstede to measure culture. She suggests that anthropology and sociology reject of the theoretical basis for Hofstede's approach. She adds that the variables used to proxy for the five dimensions are more connected with socio-economic aspects rather than culture. In his response to these criticisms, Hofstede (2003) states clearly that the arguments advanced by Baskerville (2003) are "*largely irrelevant to cross-cultural accounting research*" (p. 811). Similarly, Minkov and Hofstede (2011, p. 10), suggest that "*the key strength of Hofstede's work has been its ability to adapt and remain progressive*".

It should be noted here that restricting to only cultural dimensions may be criticisable since other factors that may intervene on the association between profitability and social and environmental disclosure such as country's sustainability level, the level of legal enforcement, stakeholders' power and economic development. Furthermore, the use of different measures of profitability over a period of thirty years characterised accounting reforms dealing with revenues and expenses recognition may also introduce a bias into the results since

profitability proxy is influenced the accounting principles used to compute firms' earnings during this period.

4.3. Additional and sensitivity meta-analytic analysis[7]

The first sensitivity analysis takes into account the weight of US studies in our analysis. For instance our sample encompasses 12 studies conducted in USA that represent (12/49 = 24.489 % of the overall sample). Given this important weight, we try to test the same hypotheses by excluding US setting from the analysis.

The second test represents a classic test in meta-analytic literature since we study whether the proxy, used to measure profitability, affects the association between profitability and CSED (Ahmed and Courtis, 1999). Accordingly, profitability is divided into three groups: net profit/equity (ROE); net profit/total assets (ROA); and net profit/total sales (ROS).

The third test consists of examining how a period of time affects the examined relationship (Ahmed and Courtis, 1999). This test is performed given the increased awareness on CSED due to the emergence of several social and environmental organizations (e.g. green funds) (Richardson and Welker, 2001). Therefore, we divide our meta-analytic sample into two groups: pre-2000; and post-2000 including 2000. We excluded studies with samples spanning from the pre-2000 period to the post-2000 period (e.g. of Pahuja, 2009).

The fourth classic meta-analytic test consists of examining the effect of the publication quality on the relationship between profitability and CSED. Meta-analysis may be affected by the publication bias (Moller and Jennions, 2001). Generally, quality journals prefer to publish papers with significant results since editors do not like 'no results' papers. Therefore, we divide our overall sample into two groups, namely, quality journals studies and low quality journals papers. The first group includes all published papers which appear in journals ranked

[7] In the studies included in our meta-analysis, disclosure index is constructed using a number of items dealing with social and environmental concerns. The content analysis approach is applied to determine CSED score. Only, in Toms (2002), a dummy variable is used to proxy for CSED disclosure. Given the lack of divergence between studies in measuring CSED, we don't control for this issue.

as A* and A by Australian Business Dean Council (ABDC) journal ranking in 2013. The second group includes all identified studies published in other journals.

Finally, we assess the stability of results by testing for publication bias. Stanley (2005) suggests that publication bias, or the 'file drawer problem', has long been a major concern to meta-analysts. According to Hay, Knechel and Wong (2006), including only published studies increases the quality of meta-analytic results but it has potential weaknesses since it does not account for unpublished studies either in a journal or in SSRN that are not available for accumulation in the meta-analysis. Rosenthal (1979) refers to this problem as the 'file drawer problem'. We apply Orwin's (1983) method to show the number of studies failing to report significant results that would be needed to reverse a significant association. This method requires the estimation of the fail-safe N being the number of unreported studies with insignificant results which are required to reduce the mean effect size to a specified criterion[8]. The fail-safe N is calculated using equation (5).

$$K_0 = K\left[\frac{ES_k}{ES_0} - 1\right] \quad . \quad (5)$$

K_0 Fail-safe N or the number of non -significant, unpublished studies

K Number of studies included in the meta-analysis

ES_k Effect size of studies included in the analysis

ES_0 The criterion effect size of 0.05 significance level which will reduce the effect size to a specified criterion.

5. Results

5.1. The moderating effect of cultural dimensions on the association between profitability and CSED

Table 3 presents the results for the overall sample and, then, for each cultural dimension. For the overall sample, the profitability variable has a mean correlation of 0.072 (Z = 3.619) with a 95 per cent confidence interval between 0.033 and 0.112. These statistics indicate that there

[8] In meta-analytic accounting research, two main approaches were used to compute the fail safe-N: *(i)* Orwin's (1983) method and *(ii)* Rosenthal's (1991) approach. The first approach has been used in meta-analytic accounting research when authors use Hunter and Schmidt's (2000) approach (e.g. Ahmed, Chalmers and Khlif, 2013; García-Meca and Sánchez-Ballesta, 2010; Khlif and Hussainey, 2014), while the second has been applied under Stouffer combined test (Hay et al., 2006; Lin and Hwang, 2010). Since our meta-analysis is based on Hunter and Schmidt's (2000) approach, we follow the same methodology used to compute the fail safe-N in prior meta-analytic accounting research.

is a significant relationship between voluntary disclosure and profitability. Thus, H_0 is supported and the meta-analytic results confirm that there is a positive association between profitability and CSED. However, the computed chi-square statistic accounts for 180.557 and it is significant at 1 per cent significance level. This indicates the need to undertake further analysis to reduce heterogeneity and tests for the moderating effects of cultural dimensions (individualism, masculinity and long term orientation).

Findings show that individualism moderates the association between profitability and CSED since the association is significant only for countries classified in the low individualism group with a mean correlation of 0.145 (Z = 5.066), whilst it is non-significant for high individualist countries with a mean correlation of 0.012 (Z = 0.538). Therefore, hypothesis H_1 is accepted. Companies realising good financial performance in low individualist countries share their profits with all stakeholders by undertaking social and environmental actions and disclose information about them to increase their legitimacy. This means that, in collectivist societies, managers will spend money to deal with stakeholders' needs, whilst, in individualist societies, companies consider only investors' interests.

Masculinity affects the relationship between profitability and CSED since the association is non-significant for high masculinity countries (0.045; Z= 1.717) and significant for low masculinity settings (0.105; Z= 3.577). Therefore, hypothesis H_2 is accepted. These findings are in line with those reported by Tice and Baumeister (2004) and confirm that high masculinity inhibits helping behaviours. In highly masculine societies, management will put more emphasis on their own material success and investors' needs when realising good financial performance. By contrast, in feminine society (low masculinity), management will be more oriented towards social equality and solidarity to satisfy all stakeholders' needs and signal its legitimacy by undertaking social and environmental actions and communicate information about them under high financial profitability.

Finally, the long term orientation cultural dimension exerts a significant effect on the relationship between profitability and CSED since, with a mean correlation of 0.118 (Z = 3.702), the association is significant in settings characterised by high long term orientation, whilst it not significant for low long term orientation countries with a mean correlation of 0.019 (Z = 0.700). Therefore, hypothesis H_3 is accepted. This result implies that profitable companies, operating in long term orientation settings, try to build long term relationship with stakeholders (employees, customers, social and environmental organizations) by undertaking more social and environmental actions and that, in order to increase their long term performance, they disclose information to signal their legitimacy and to preserve strong ties with their stakeholders.

Insert table 3 about here

5.2. Additional and sensitivity meta-analytic analysis

Table 4.A presents the results without the effect of US studies. After excluding US studies for the analysis, long term orientation and individualism moderate the association between CSED and profitability. For instance, the relationship between profitability and CSED is only significant for high long term orientation settings with a mean correlation of 0.164 (Z = 4.343), while it is not significant for low long term orientation countries (0.038; Z = 1.317). Similarly, low individualist settings show a significant positive association between profitability and CSED (0.158; Z = 4.645), while it is not significant for high individualism countries (0.037; Z = 1.701)[9].

Contrary to the results generated for the overall meta-analytic sample, the association between profitability and CSED is not moderated by masculinity when we exclude the US setting from the analysis. Therefore, the sensitivity analysis confirms the moderating effect of individualism and long term orientation on the association between profitability and CSED.

[9] The confidence interval ranges from -0.005 to 0.079.

In the second sensitivity test (Table 4.B), we examine how the proxy used to measure profitability affects the examined relationship. As shown in Table 4, the association remains significant regardless of the proxy used to measure profitability (ROE, ROA, ROS).

The third sensitivity test examines how the time period affects the association between profitability and CSED. Our results show that the relationship is negative and non-significant for the pre-2000 period with a mean correlation of 0.006 (Z = 0.232), whilst it significant for the post-2000 period with a mean correlation 0.112 (Z = 4.254). This confirms that the increased awareness about CSE actions and the emergence of several social and environmental organizations during the last decade have contributed to the improvement of CSED especially when firms realize good financial performance.

The fourth classic meta-analytic test consists of examining the effect of the quality of publication on the relationship between profitability and CSED. Our results show that the association is significant only for quality journals with a mean correlation of 0.083 (Z = 3.520), whilst it is non-significant for low quality journals with a mean correlation of 0.052 (Z = 1.486).

Finally, we test for the stability of the obtained results by using the fail-safe for each reported significant association. The fail-safe N, computed in tables 4 (A & B), show that the reported significant associations do not suffer from a file-drawer problem given the large number of unreported studies with insignificant results required to reduce the mean effect size to a specified criterion. For instance, in table 4, the fail-safe N ranges from 34 for long term orientation to 69 for the overall meta-analysis. By contrast, in tables 5.A and table.5.B, the fail-safe Ns computed for significant associations indicate a lower stability of the meta-analytic results compared to findings reported in table 4 since the numbers of unreported studies that would be required to change the results are not really large.

Insert table 4 about here

6. Conclusion

The association between profitability and CSED was very controversial in social and environmental disclosure literature (Branco and Rodriguez, 2008; Fifka, 2013). Accordingly, we apply a meta-analysis to integrate the results; to detect the causes of the variability of results across studies; and to draw conclusions. More specifically, we explore the moderating effects of cultural dimensions on the association between profitability and CSED.

Our findings show that individualism, masculinity and long term orientation moderate the relationship between profitability and CSED. For instance, companies, operating in settings characterized by low individualism, low masculinity or high long term orientation, are more likely to disclose more CSED when they realize good financial performance. When excluding US studies from the analysis, only individualism and long term orientation remain strong moderators of the association between profitability and CSED.

Our meta-analytic findings add to the extant literature on the determinants of CSED by focusing on the moderating effects of three cultural dimensions on the association between profitability and CSED. They highlight the importance of culture when one analyses CSED practices. They provide, also, evidence that the applicability of stakeholder and legitimacy theories is linked to the cultural values prevailing in one country. Our findings can help, also, regulators and policy makers who have to take into account cultural dimensions characteristics when adopting new legislations and making reforms dealing with social and environmental laws. Meta-analytic results are useful, also, to the managers of multinational corporations, when preparing social and environmental reports. Managers need to consider the national cultures and the social orientation of countries in relation with the level of social and environmental information disclosed when achieving good financial performance.

This meta-analysis has a number of limitations. For instance, our study does not take into account the problem of endogeneity between profitability and CSED. However, since the

primary data in the collected studies do not control for this problem, we are unable to control for endogeneity in our statistical analysis. In addition, this study focuses only on cultural dimensions without taking into account other factors that may also affect the association between profitability and social and environmental disclosure such as country's sustainability level, the level of legal enforcement, stakeholders' power and economic development. Furthermore, the use of different measures of profitability over a period of thirty years may bias the results given the fact that several accounting reforms have been undertaken which may influence the accounting principles used to compute firm's profitability during this period. Finally, the cultural dimensions developed by Hofsede may receive several critics since they relate more to investors' perceptions and they do not take into account the possibility of coexistence of several cultural orientations in companies such multinationals.

Further meta-analysis can examine, also, the moderating effect of cultural and political dimensions on the relationship between specific ownership attributes (ownership concentration; foreign ownership) and social and environmental reporting practices. In addition, Al-Tuwaijri et al. (2004) suggest that endogeneity represents a serious problem in CSED and corporate performance relationship. However, the majority of empirical studies do not control for this issue. Accordingly, future empirical investigations have to take into account the simultaneous associations between CSED and corporate performance. Finally, since meta-analysis cannot be exhaustive in collecting studies, future research may build on our meta-analytic work and re-examine the same question when more empirical papers dealing with the determinants of CSED are available to assess the stability of the results found.

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Table 1. Sample selection

	Number of studies	Percentage
Initial sample	80	100 %
Criteria leading to exclusion of studies		
Studies providing only descriptive statistics (a)	(22)	27.500
Studies with cross-national samples (b)	(10)	12.500
Final sample	48	60.000
Publication quality	Number of studies	Percentage
Ranked journals	34	70.833
Decent Journals	14	29.167
Total	48	100 %

(a) Antonites and De Villiers (2003), De Villiers and Barnard (2000),Parket and Eilbrit (1975);

(b) Maignan and Ralston (2002).

Table 2. Studies included in the Meta-analysis

Study	Country	No. of observations	Reporting years	Individualism	Masculinity	Long term orientation	Proxy for profitability	Effect size	Source of information
Freedman and Jaggi	USA	109	1973-1974	91	62	29	ROE	-0.041	Table. 2, p. 173
Cowen el al. (1987)	USA	134	1978	91	62	29	ROE	-0.010	Table. p. 119
Freedman and Jaggi	USA	101	1979	91	62	29	ROE	-0.034	Table. 1, p. 50
Patten (1991)	USA	128	1985	91	62	29	ROA	0.060	Table. 1, p. 304
Roberts (1992)	USA	101	1984-1986	91	62	29	ROE	0.203	Table. 3, p. 607
Hackston & Milne (1996)	New Zealand	50	1992	79	58	30	ROE	-0. 079	Table 6, p. 92
Stanwick & Stanwick	USA	121	1992	91	62	29	ROS	0.389	Table. 2, p. 201
Cormier & Magnan	Canada	33	1986-1993	80	52	23	ROA	0. 040	Table 2, p. 442
Alnajjar (2000)	USA	451	1990	91	62	29	ROE	-0.152	Table. 4, p. 185
Bewly & Li (2000)	Canada	188	1993	80	52	23	ROA	0.060	Table. 2, p. 214
Cormier & Gordon	Canada	36	1985-1996	80	52	23	ROE	0.009	Table. 5, p. 605
Moore (2001)	UK	24	1997-1999	89	66	25	Average	-0.519	Table. , p. 308
Richardson & Welker	Canada	324	1990-1992	80	52	23	ROE	-0. 023	Table 2, p. 604
Chau & Gray (2002)	Hong Kong	60	1997	25	57	96	ROS	0. 125	Table 2, p. 255
Chau & Gray (2002)	Singapore	62	1997	20	48	48	ROS	0. 000	Table 2, p. 256
Hail (2002)	Switzerland	73	1997	68	70	40	ROE	0. 129	Table 3, p. 757
Toms (2002)	UK	126	1997	89	66	25	ROE	0.153	Table. 3. p. 272
Ahmad et al (2003)	Malaysia	299	1999	26	50	NA	ROA	0.021	Table. 4, p. 83
Cormier and Magnan	France	246	1997	71	43	39	ROE	-0.070	Table. 2, p. 25
Al-Tuwaijri et al. (2004)	USA	198	1994	91	62	29	ROS	0.085	Table. 2, p. 461
Cormier et al. (2005)	Germany	304	1992-1998	67	66	31	FMR	0,029	Table. 3, p. 25
Haniffa & Cooke (2005)	Malaysia	139	2002	26	50	NA	ROE	0.333	Table. 5, p. 413
Magness (2006)	Canada	41	1995	80	52	23	ROA	-0. 174	Table. 3, p. 551
Ghazali (2007)	Malaysia	87	2001	26	50	NA	ROA	0.154	Table. 5, p. 260
Smith et al (2007)	Malaysia	40	2001	26	50	NA	ROE	-0.416	Table. 2, p. 193
Clarkson et al. (2008)	USA	191	2004	91	62	29	ROA	0.040	Table. 3 (B), p.
Branco & Rodrigues	Portugal	49	2003	27	31	30	ROA	-0. 077	Table 5, pp. 697
Stanny and Ely (2008)	USA	494	2006	91	62	29	ROA	-0.040	Table. 3. B, p.
Said et al. (2009)	Malaysia	150	2006	26	50	NA	ROE	0. 157	Table. 7, p. 222
Jinfeng & Huifeng (2009)	China	248	2006	20	66	118	ROE	0. 053	Table 6, p. 20
Pahuja (2009)	India	91	1999-2002	48	56	61	ROS	0. 189	Table 4, p. 238
Reverte (2009)	Spain	46	2005-2006	51	42	19	ROA	0. 101	Table 4, p. 362
Prado-Lorenzo et al	Spain	99	2007	51	42	19	ROE	0.040	Table. 3, p. 103

Notes: CSED: Corporate social and environmental disclosure; NA: not available. ROA: net profit/ total assets; ROE: net profit/ equity; ROS: net profit/ total sales.
In Moore (2001), corporate profitability is measured as the average of several financial performance measures denoted as Average in the table.
In Cormier et al. (2005), corporate performance is measured as firm's annual stock market return (FMR).

Table.2. Continued

Study	Country	No. of observations	Reporting years	Individualism	Masculinity	Long term orientation	Proxy for profitability	Effect size	Source of information
Rashid & Lodh, (2009)	Bangladesh	84	2003-2007	20	55	40	ROA	0.160	Table. 7. P. 226
Hussainey et al. (2009)	Egypt	111	2005-2010	25	45	NA	ROE	0.230	Table. 5, p. 28
Liu & Anbumozhi (2009)	China	175	2006	20	66	118	ROE	0.125	Table. 4, p. 598
Murcia & De Souza (2009)	Brazil	99	2007	38	49	65	ROE	0.192	Table. 1, p. 10
Tagesson et al. (2009)	Sweden	267	2006	71	5	20	ROE	0.171	Table. 4, p. 359
Siregar & Bachtiar (2010)	Indonesia	87	2003	14	46	NA	ROE	-0. 025	Table 2, p. 248, panel
Khan (2010)	Bangladesh	60	2007-2008	20	55	40	ROE	0. 193	Table 7, p. 99
da Silva Monteiro & Aibar-Guzmán (2010)	Portugal	327	2002-2004	27	31	30	ROE	0.064	Table. 4, P. 197
Gamerschlag et al. (2010)	Germany	482	2005-2008	67	66	31	ROE	-0.004	Table. 4, p. 17
Li & Zang (2010)	China	692	2008	20	66	118	ROE	0.159	Tables 3 & 4. P.638
Dawkins & Fraas (2011)	USA	344	2008	91	62	29	ROA	0.001	Table. 2, p. 312
Samaha and Dahawy (2011)	Egypt	100	2006	25	45	NA	ROE	0.063	Table., p.79
Cho et al. (2012)	USA	119	2004	91	62	29	ROA	0.010	Table. 7, p. 500
Uwuigbe & Egbide (2012)	Nigeria	41	2008-2009	30	60	16	ROA	0.667	Table. 2, p. 167
Khan et al. (2013)	Bangladesh	580	2005-2009	20	55	40	ROA	0.371	Table. 3, P. 10
Talebinia et al. (2013)	Iran	396	2006-2010	41	43	NA	ROA	0.042	Table. 143

Notes: CSED: Corporate social and environmental disclosure; NA: not available. ROA: net profit/ total assets; ROE: net profit/ equity; ROS: net profit/ total sales

Table 3. Profitability and CSED

Independent variable	Sample size N	Studies K	Mean correlation ($\bar{r}$)	Observed variance (S_r^2)	Estimated error variance (S_e^2)	Percentage explained (S_e^2 / S_r^2)	Z-Statistic	95 % confidence interval	χ^2_{k-1}	File Drawer 0.05
Overall meta-analysis	8986	49	0.072***	0.019	0.005	27.138	3.619	0.033; 0.112	180.557***	69
Moderating factors										
High individualism	4864	25	0.011	0.012	0.005	43.138	0.538	-0.031; 0.054	57.952***	-
Low individualism	4122	24	0.145***	0.019	0.005	28.370	5.066	0.088; 0.212	84.594***	63
High masculinity	4857	24	0.045*	0.016	0.004	29.570	1.717	-0.006; 0.096	81.163***	-
Low masculinity	4129	25	0.105***	0.021	0.005	27.250	3.577	0.047 ; 0.163	91.741***	41
High long term orientation	3682	17	0.118***	0.017	0.004	25.580	3.702	0.056 ; 0.181	66.455***	34
Low long term orientation	3803	23	0.019	0.017	0.006	33.817	0.700	-0.035; 0.074	68.011***	-

Notes: CSED: Corporate social and environmental disclosure. * significant at 10 %, **significant at 5%, ***significant at 1%. The medians are as follows: 51 for individualism, 55 for masculinity, and 29 for long term orientation.

Table 4. Additional and sensitivity analysis for profitability and CSED

Independent variable	Sample size N	Studies K	Mean correlation ($\bar{r}$)	Observed variance (S_r^2)	Estimated error variance (S_e^2)	Percentage explained (S_e^2 / S_r^2)	Z-Statistic	95 % confidence interval	χ^2_{k-1}	File Drawer 0.05
A- Profitability and CSED excluding US studies										
Overall meta-analysis	6495	37	0.100***	0.019	0.005	29.053	4.403	0.056; 0.145	127.305***	56
Moderating factors										
High individualism	3104	18	0.037*	0.008	0.006	68.125	1.710	-0.005; 0.079	26.422*	-
Low individualism	3391	19	0.158***	0.022	0.005	24.176	4.645	0.091; 0.224	78.589***	57
High masculinity	3891	20	0.118***	0.022	0.005	22.666	3.555	0.035; 0.183	88.237***	33
Low masculinity	2604	17	0.074***	0.014	0.006	46.761	2.592	0.018 ; 0.129	36.354***	9
High long term orientation	2520	13	0.164***	0.018	0.005	26.294	4.344	0.090 ; 0.238	49.440***	30
Low long term orientation	2474	15	0.038	0.013	0.006	47.456	1.319	-0.018; 0.095	31.542***	-
B- Additional analysis for profitability and CSED										
Overall meta-analysis	8986	49	0.072***	0.019	0.005	27.138	3.619	0.033; 0.112	180.557***	69
Additional tests										
ROA	3398	17	0.089***	0.023	0.005	21.042	2.410	0.016; 0.162	80.790***	21
ROE	4728	25	0.056**	0.015	0.005	33.534	2.249	0.007; 0.105	74.551***	15
ROS	411	4	0.101***	0.003	0.009	100.000	3.435	0.043; 0.158	1.451	2
Before 2000	3428	23	0.006	0.016	0.006	39.966	0.232	-0.046; 0.059	57.547***	-
After 2000 (including 2000)	5467	25	0.112***	0.017	0.004	25.387	4.254	0.061; 0.164	98.473***	45
High quality journals	6494	34	0.081***	0.020	0.005	25.666	3.318	0;033; 0.128	132.469***	45
Low quality journals	2492	15	0.052	0.018	0.005	32.166	1.486	-0.016; 0.121	46.704***	-

Notes: CSED: Corporate social and environmental disclosure. The new medians after excluding US studies are as follows: 30 for individualism, 50 for masculinity, and 29 for long term orientation. ROA: net profit/ total assets; ROE: net profit/ equity; ROS: net profit/ total sales. * significant at 10 %, **significant at 5%, ***significant at 1%.