FRIENDLY ENVIRONMENTAL POLICIES IMPLEMENTATION WITHIN THE COMPANY: AN ESG RATINGS ANALYSIS AND ITS APPLICABILITY TO COMPANIES´ ENVIRONMENTAL PERFORMANCE ENHANCEMENT

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ABSTRACT

In order to move towards a more environmentally oriented economy, society needs to be aware and able to recognize environmental friendly practices. Firms are increasingly relying on environmental scores ratings to make strategic decisions. In this context, understanding how day-to-day company´s decisions affect environment scores is crucial. This paper examines the impact of social policies on the environmental scores of companies. Using data on for 3895 firms from the ASSET4 database between 2006 and 2010, we report on how employment quality, health and safety, training and development and diversity policies affect firms' environmental scores. An ANOVA test, followed by a regression analysis, was ran to test differences between the major markets. Also, the interaction between the selected variables and environmental scores, was tested in order to investigate the individual effects of social policies and location on environmental performance. Results show that environmental scores increase with the presence of social policies, and that the location of the company is a differentiating factor. The paper concludes with a discussion of the implications of these findings for future environmental promotion within companies.

Keywords: ESG ratings, environmental scores, social policies, environmental policies, firm performance

1. Introduction and objectives statement

There is increased importance placed on environmental, social, and corporate governance (ESG) ratings (Kemp *et al.*, 2005; Kolk and Pinkse, 2010; Alonso-Almeida *et al.*, 2014). However, the ESG concept is multi-dimensional, which makes it more difficult to reach clear conclusions. That is why understanding how company´s decisions affect environment scores is crucial as it influences strategic decisions (Cheng *et al.,* 2014; Sugita and Takahashi, 2015).

Previous studies have focused on determining the relationship between ESG scores and economic performance (Hong and Kacperczyk, 2009, for example). Although most companies´ policies aim to increase economic results and competitiveness (Garau *et al.*, 2011; Dobler *et al.*, 2012), an effective

environmental strategy has been denoted to be a key element of competitive advantage (Porter and Van der Linde, 1995a; 1995b; Griffiths, 2004). Therefore, environmental scores have become a key performance indicator of the level of environmental engagement and generate valuable information on the potential competitive advantages of a company (Ioannou and Serafeim, 2010).

According to Franck (2002), environmental research development should rely on daily basis analysis and recommendations.

This study is based on Thomson Reuters ASSET4's integrated ratings for the period 2006–2010. Data was gathered on more than 3000 global companies to evaluate how female presence in the companies and their respective diversity policies (which try to promote a work–life balance) affect companies' environmental performance, as measured by the environmental scores. Furthermore, we analysed differences across major markets in Europe, North America and the rest of the world, the latter being mainly composed of Asian companies.

However, although many benefits of an environmental approach have been detected and society is asking for a change from different positions (Hall and Vredenburg, 2004; Charisiou and Goula, 2014), there are still many barriers to improve companies' environmental performance (Sullivan, 2002) such as organizational culture and change management (Eiadat *et al.*, 2008; Eccles *et al.*, 2012). In order to change what employees are committed to or care about, it is important to make cultural changes that target the environmental performance of the company (Perron *et al.*, 2006): we cannot expect higher commitment from employees, especially women, if other basic social needs are not fully covered. Therefore, developing diversity policies, such as flexible working hours (FWH) or day-care services (DCS), should increase the environmental awareness of employees. We believe that as basic social needs are covered, they will be more motivated to commit to a more environmental approach, in the line that also indicates Meissner (2015). The role of women, following the feminist theory (Humm, 1995) and its beliefs of women understanding and improving the relationship between places and people (Schneekloth, 1994; Merchant, 1981) is key in linking social and environmental awareness. Furthermore, in recent studies we found that the percentage of women employees decreases environmental scores while the percentage of women managers does not have a significant impact (Segarra-Oña *et al.*, 2014). Based on this, we state our first hypothesis:

H1: Companies´ environmental scores are affected by social policies implementation.

The differences between the location of companies in the developed markets and their environmental scores have been already analyzed, finding that environmental scores increase with the presence of diversity policies and the location of the company outside Asia (Peiró-Signes *et al.*, 2012). As such, we can also expect to see different social commitments and the effects of social policies across major markets basically due to the big differences regarding the coverage of women´s basic needs (Dankelman and Davidson, 2013; Stromquist, 2014). Thus, we set our second hypothesis as follows:

H2: The influence on the environmental score of companies varies depending on where companies are located.

2.   Methods

The data for this study was retrieved form Thomson Reuters ASSET4 database, which is a leading provider of ESG data (Collison 2008; Filbeck, 2009). We extracted integrated ratings and key performance indicators (KPI) for 3895 firms with available ESG scores for the period 2006–2010. Although data is available from 2002, we dismissed data from 2002 to 2005 because of its scarcity.

This study is focused on ASSET4 qualitative data related to social policies, such as employment quality, health and safety, training and development and diversity, for companies worldwide (see Table 1).

These KPIs measure a company's management commitment and effectiveness towards providing high-quality employment benefits and job conditions, a healthy and safe workplace, training and development,

and equal opportunities in its workforce (Kolk and Pinkse, 2010; Mio and Venturelli, 2012). Therefore, they reflect a company's capacity to increase its workforce loyalty and productivity by distributing rewarding and fair employment benefits; by focusing on long-term employment growth and stability; by integrating into its day-to-day operations a concern for the physical and mental health, well-being and stress level of all employees; by developing their workforce's skills, competences, employability and careers in an entrepreneurial environment; and by promoting an effective life-work balance, a family friendly environment and equal opportunities regardless of gender, age, ethnicity, religion or sexual orientation.

Table 1. Social variables within Asset4 database

Employment Quality	
EQ1	Competitive employee benefits policy
EQ2	Long-term employment growth and stability policy
Health and Safety	
HandS	Employee health and safety policy
Training and Development	
TandD	Training or career development policy
Diversity	
D1	Work-life balance policy
D2	Diversity and equal opportunity policy

Source: Self compilation from Asset4 descriptions

Furthermore, we retrieved the environmental scores for the same companies for these years, and classified the companies into the major markets in which they are located. We divided the major markets into North America (NA), Europe (EUR), Asia/Pacific (ASIA) and the rest of the world as in Peiró-Signes and Segarra-Oña, 2013.

Initially, we applied the ANOVA test, comparing environmental scores in companies with and without social policies in order to detect mean differences across business functions (see Table 2).

Table 2. One-Way ANOVA results

		Mean	Scheffe's	F (sig.)
EQ1	NO	.365		1602.03***
	YES	.572		
EQ2	NO	.410		3615.07***
	YES	.726		
HandS	NO	.234		3355.13***
	YES	.568		
TandD	NO	.257		3466.45***
	YES	.577		
D1	NO	.387		3407.29***
	YES	.670		
D2	NO	.291		1870.16***
	YES	.552		
Location	REST	.441	(EUR. NA. ASIA)	393.11***
	EUR	.624	(REST. NA. ASIA)	
	NA	.410	(REST. EUR. ASIA)	
	ASIA	.514	(REST. EUR. NA)	

***Significant at $p < 0.001$

Moreover, we applied the same one-way ANOVA tests according to major market area, followed by Scheffe's pairwise comparison procedure, to test for differences between individual pairs of groups in cases where one-way ANOVA results are statistically significant.

The ANOVA technique was conducted in order to assess differences across groups. Thus, we can confirm

whether the mean of the environmental score is significantly different according to each firm's social policies. The ANOVA test highlighted significant differences between environmental scores in those companies that apply social policies over those that don't apply them. Furthermore, it indicated that all major market environmental scores were significantly different from each other.

Groups in parentheses indicate the group numbers from which this group was significantly different at the *p*-0.05 level according to the Scheffe's pairwise comparison procedure. *F*-statistics and associated *p*-values are derived from one-way ANOVAs.

However, although we can determine whether companies that promote social policies have higher environmental scores from the mean comparison analysis, we cannot determine whether that result is caused directly by the social policies.

For this purpose, we conducted a regression analysis study considering the entire sample and the former variables studied for this purpose. We undertook an analysis of residuals to check for the presence of outliers. Outliers were defined as the cases where standardized residuals are greater than 3.3 (corresponding to the .001 alpha level); we then excluded them from further analysis. To assess multivariate multicollinearity, we used the tolerance and variance inflation factor (VIF), that builds upon the regressing of each independent on all the others. All the independents met the general accepted threshold (tolerance higher than 0.2 and VIF lower than 4).

Initially, we took the environmental score to be dependent on social policies:

Environmental Score = C + $\beta_1 EQ_1$ + $\beta_2 EQ_2$ + $\beta_3 HS$ + $\beta_4 TD$ + $\beta_5 DP_1$ + $\beta_6 DP_2$ + E

In this model, β_1 will help us to determine whether a competitive employee benefit policy makes a difference to the environmental score. β_3, for example, will help us to determine whether there is a difference in the environmental score between companies that promote policies to improve employee health and safety over those companies that don't. A positive β_3 coefficient will indicate a higher score for the same value in other factors influencing the environmental scores.

In the model, we have considered the firms with no social policies as the omitted category; so all comparisons will be made in relationship to this group. Table 3 shows the results for the environmental score model.

In this case, we have to assess the significance of dummy variables as a set by using the R^2-change method and ignoring the individual t-tests produced by default for each dummy β coefficient. Note that R^2-change and ANOVA F-change for the first set of variables are equal to R^2 and ANOVA F, respectively. The parameter R^2 – known as the coefficient of multiple determinations – indicates the percentage change in the dependent variable that can be explained by the independent variables in the model. Note that the relative predictive power of each specific variable is measured by the beta weights. The β coefficient shows us how much more the dependent variable increases (or decreases if β is negative) when each independent variable increases one unit; that is, in comparison to the omitted reference category.

Results indicate that when social policies are acting in an isolated way, environmental scores increase (R^2= .404, p<0.001), which confirms that companies that promote social policies log higher scores in environmental scores (H1), as they are more developed culturally. Environmental scores are influenced mainly by EQ2 (β_2=0.264), HS (β_3=0.223), TD (β_3=0.223) and D1 (β_5=0.231), when acting in an isolated way.

As environmental scores are affected by location, we had to create dummy variables to separate the effects of location from the environmental scores. Three dummy variables were modelled representing a company's major market location (EUR, NA and ASIA) so as to sort data into mutually exclusive locations and analyse their influence; these take a value of 0 or 1 depending on whether they are present or absent.

We added location terms to the model to incorporate the effect of social policies and location variables on the dependent variable (see Table 3). The new estimation model is as follows:

Environmental Score = C + $\beta_1 EQ_1$ + $\beta_2 EQ_2$ + $\beta_3 HS$ + $\beta_4 TD$ + $\beta_5 DP_1$ + $\beta_6 DP_2$ + $\beta_7 EUR$ + $\beta_8 NA$ + $\beta_9 ASIA$ + E

In the model, we have considered the firms outside of Europe, North America and Asia/Pacific with no social policies as the omitted category, so comparisons will be made in relationship to this group.

Table 3. Regression results. Location effects on environmental scores

	Model 1	Model 2
Constant	0.126 (0)	0.086 (0)
Employment quality Policy 1	0.018 (0.027)	0.042 (0.063)
Employment quality Policy 2	0.189 (0.264)	0.166 (0.233)
Healtht and Safety Policy	0.174 (0.223)	0.171 (0.22)
Training and Development Policy	0.132 (0.179)	0.103 (0.14)
DiversityPolicy1	0.151 (0.231)	0.138 (0.211)
DiversityPolicy2	0.016 (0.02)	0.055 (0.071)
EUR		0.076 (0.105)
NA		-0.041 (-0.062)
ASIA		0.09 (0.124)
ANOVA F	1690***	1272
R2	.404***	.434
F change		261***
R2 change		.030***

β coefficients in braquets. *** Significant at p<0.001

An F-test of the significance of the location variables is the significance of the change of R^2 in the equation with the new terms and the equation without them.

The new model was considered significantly (sig(F) <.05) better than would be expected by chance; therefore, we can reject the null hypothesis of no linear relationship between each of these variables to the independent variables.

3. Results

The results indicate that companies in Europe and Asia have higher environmental scores than those located in the rest of the world (β_7=0.105; β_9=0.124) when the same type of social policies is applied. On the contrary, companies in North America achieve significantly lower scores (β_8=-0.062) than those in the omitted category. These results are in accordance with previous findings (Peiró-Signes and Segarra-Oña, 2013).

Table 4. Regression results by location

	Europe	North America	Asia	Rest of the world
Constant				
Employment quality Policy 1	0.159	0.102	-0.047	0.062
Employment quality Policy 2	0.232	0.241	0.204	0.253
Healtht and Safety Policy	0.212	0.225	0.2	0.29
Training and Development Policy	0.103	0.174	0.095	0.131
DiversityPolicy1	0.141	0.203	0.353	0.135
DiversityPolicy2	0.107	0.024	0.095	0.043
Anova F	404.622***	527.166***	599.816***	163.075***
R2	0.383***	0.356***	0.477***	0.422***

Standardized β coefficients *** Significant at p<0.001

However, we wanted to test the joint effect of social policies and location variables on a dependent variable over and above their separate effects; that is, we want to confirm that location acts as a moderator.

To test this, a typical approach is to add interaction terms to the model. However, cross-product interaction terms may be highly correlated (multicollinear) with the corresponding simple independent variables in the regression equation, creating problems when assessing the relative importance of main

effects and interaction effects. To avoid multicollinearity, an alternative to the cross-product approach is to run separate regressions for each level of the interacting variables[8]. Moreover, this method will help us to compare the results between locations more effectively.

Therefore, we ran separate regressions for each location (see Table 4).

For the analysis of the differences between each major market, we calculated the difference between the standardized coefficients of each sample (see Table 5).

Table 5. Comparison of coefficients between locations

βi-βj	Europe- North America	Europe-Asia	Europe-Rest	North America-Asia	North America-Rest	Asia-Rest
Employment quality Policy 1	0.057 (304)***	0.206 (999)***	0.097 (265)***	0.149 (861)***	0.04 (130)***	-0.109 (-326)***
Employment quality Policy 2	-0.009 (-52)***	0.027 (134)***	-0.021 (-65)***	0.037 (188)***	-0.012 (-38)***	-0.049 (-134)***
Healtht and Safety Policy	-0.013 (-54)***	0.012 (42)***	-0.078 (-166)***	0.025 (123)***	-0.065 (-196)***	-0.09 (-230)***
Training and Development Policy	-0.071 (-289)***	0.008 (28)***	-0.028 (-55)***	0.079 (427)***	0.043 (139)***	-0.036 (-96)***
DiversityPolicy1	-0.062 (-390)***	-0.212 (-1070)***	0.006 (18)***	-0.149 (-863)***	0.069 (234)***	0.218 (603)***
DiversityPolicy2	0.083 (326)***	0.012 (44)***	0.064 (138)***	-0.071 (-316)***	-0.018 (-48)***	0.052 (133)***

t significance test in brackets. *** Significant at p<0.001

To calculate the corresponding t-value, the following expression was used:

$$t=\frac{\beta_i-\beta_j}{\sqrt{\frac{(m-1)\cdot SE_i^2+(n-1)\cdot SE_j^2}{m+n-2}}\cdot\sqrt{\frac{1}{m}+\frac{1}{n}}}$$

where β_i and β_j represent the β values for each pair of major market areas; SE_i and SE_j are the standard errors; and m and n are the number of data points for i and j areas, respectively. Table 5 shows the results of this analysis.

4. Discussion

Location analysis indicated that long-term employment growth and stability (EQ2) and health and safety (HS) policies have an important impact on the environmental scores in all the major markets. Those findings are aligned with the Environmental Kuznets Curve (EKC)-statement (Kuznets, 1995), which states that environmental degradation is created during the first stages of the economic development while the process of economic growth will eventually eliminate any environmental problems as regulations and environmental policies become more specific.

Training and development policies have a greater impact in North America than in the rest of the world, and little impact in Asia, which would support the theory, as Asia is in a lower development stage than North America, therefore their main objective, is growing. In the same direction, we found that, competitive employee benefits policies (EQ1) have a moderate impact in Europe and North America, almost no impact in the rest of the world, and negative impact in Asia.

Finally, work–life balance policies (D1) have the biggest impact in Asia, while diversity and equal opportunity policies have the lowest impact among the evaluated policies. Indeed, these results confirm the need to balance social aspects of day-to day life and work conditions, especially for those who mainly take care of (women) if we can foster environmental awareness and move from an initial stage of industrial growing to a more enhanced level of economic development.

A t-test revealed that beta values in each area are significantly different from each other, thus confirming our second hypothesis that stated that *the influence on the environmental score of companies varies depending on where companies are located*.

To sum up, this discussion about environmental scores highlights that this indicator is affected significantly by social policies, and that location acts as a moderating factor.

5. Conclusion

The objective of this study was to analyse environmental scores in companies adopting social policies. We found that companies that promoted social policies evidence a difference in their environmental scores over those that did not. Moreover, an analysis of the sample confirmed location as a differentiating factor. Companies located in Europe or Asia achieved generally higher scores than those located in North America and the rest of the world. These results are partly aligned with previous analysis that defined income per capital as a proxy for environmental pollution (Hettige *et al.*, 2000), although one could have expected North America to obtain higher environmental scores.

It is not surprising that the ANOVA revealed significant differences between the major markets, as environmental regulations are quite different across the globe.

We proved an interaction between employment quality, health and safety, training and development and diversity policies and environmental scores. In order to validate our first hypothesis – which stated that companies´ environmental scores are affected by social policies implementation –a complementary analysis using dummy variables to isolate the effects of each policy in the first analysis was conducted. Thus, it was investigated the individual effects of social policies and location on environmental performance. The results showed significant changes in environmental scores; therefore, the data supported the assumption that better environmental scores were directly caused by the promotion of social policies. We can conclude that the promotion of social policies positively affects the environmental orientation of the firm; that is, a company's management commitment and effectiveness towards providing high-quality employment benefits and job conditions, a healthy and safe workplace, education and equal opportunities in its workforce affects the environmental performance of companies.

We argue that companies with management commitment and loyal employees are culturally more developed, and it will be more sensible for them to promote environmental aspects in their structures and processes. Moreover, a regression analysis revealed that location was a significant predictor for environmental scores (R^2-change=0.03, p<0.001). The differences between the locations are evident, which could be due to the different environmental regulations companies face in each region (Burciu *et al.*, 2010; Šauer *et al.*, 2012; Beare *et al.*, 2014).

Our cross study of the relationship between social policies and location revealed some interesting insights. Models for each location highlighted that the impact of each social policy on the environmental scores changes according to company location, confirming the moderator effect of location on environmental scores. These results confirm our second hypothesis (The influence on the environmental score of companies varies depending on where companies are located).

The differences between firms that promote social policies and those that don't are evident. We confirmed the role of location, demonstrating that being located in major markets where strong environmental regulations apply implies higher environmental orientation regardless of the social policies applied. Finally, we have determined how location moderates the relative impact of each policy on the environmental performance.

The limitations of this research include the available sample and data. Only large companies have resources to issue corporate social responsibility reports or be included in the ESG ratings, thus limiting our conclusions. Future research should focus on the use of different methodologies, with more complex (i.e. a larger variety of organizational factors) and larger databases, as well as panel studies. An in-depth

qualitative case study will be necessary to obtain further information on why diversity policies perform this way.

Acknowledgment

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