

The Impact of Social policies' Promotion and the Moderating Role of Location on firm's Environmental Scores

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ABSTRACT: The objective of present research was to analyze environmental scores in companies when adopting external social policies. We confirmed that location acts as a differentiating factor. We also analyzed the human rights, community and product responsibility policies interaction with Environmental Scores. Our first hypothesis stated that social policies contribute to orientate companies toward environmental aspects and improving environmental scores. The results supported the assumption that better environmental scores are influenced positively by the promotion of social policies. We can conclude that the promotion of social policies positively affects the environmental orientation of the firm. We can argue that company's capacity to operate guaranteeing the freedom association and excluding child, forced or compulsory labor, to be a good citizen protecting public health and to produce quality goods and services is a measure of being more sensible to promote environmental aspects among their structures and processes. The differences between firms that promote external social policies and those that don't are evident. Finally, we have determined how location moderates the relative impact of each policy in the environmental performance.

Key words: Social, Location, Policy, Firm, Environment, Score

INTRODUCTION

In the last decade there has been an increasing importance of Environmental, Social, and Corporate Governance (ESG) ratings' analysis in academic literature. Although the ESG concept is a multi-dimensional indicator, its study is allowing researchers to reach clear conclusions regarding the promotion of social policies, corporate culture and environmental actions, the differences existing among them and also the benefits that its promotion implies. The line of research that focuses on determining the relationship between ESG scores and companies' performance is quite clear (Collison *et al.*, 2008, Hong and Kacperczyk 2009, Šauer *et al.*, 2012) as there is actually a consensus on the relation between environmentalism and the creation of potential competitive advantages for companies (Esty and Winston, 2006, Porter and Van der Linde, 1995, Hemmelskampa, 1997). Several studies rely on those indicators that measure the Environmental Scores (Semenova and Hassel, 2008, Duran *et al.*, 2009, Garau *et al.*, 2011) which is a key performance indicator of the level of environmental engagement finding that environmental performance is related with

environmental disclosures of pollution measures and indicators (Manescu, 2010, Delmas and Vered, 2010) and that the higher the environmental scores (environmental disclosures), the higher the environmental performance (Peiró-Signes and Segarra-Oña, 2013b).

Although benefits of an environmental approach have been detected, there are still many barriers to improve companies' environmental performance, such as cultural aspects (CFA Institute, 2008). Although employees' commitment with cultural changes may affect the environmental performance of the company (Chatterji *et al.*, 2009), one can hardly expect higher commitment of the employees, especially women, if other basic social needs are not fully covered (Knoll, 2002). Therefore, developing diversity policies, such as Flexible Working Hours (FWH) or Day Care Services (DCS), should increase environmental awareness between employees. As basic social needs are covered, they will be more motivated to commit or change to a more environmental approach (Li, 2010, Ahn, 2011, Tsai, 2012). Based on this idea, we state our first hypothesis:

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H1: *Social Policies contributes to orientate companies toward environmental aspects improving their Environmental Scores.*

We can expect also different social commitment and impact of social policies across major markets as reported by Peiró-Signes and Segarra-Oña (2013b) because of the different environmental regulation framework. Thus, we set our second hypothesis as follows:

H2: *Social policies have an unequal influence on the Environmental score of the companies according to their location*

MATERIALS & METHODS

For this study, we extracted environmental scores and social indicators from Thomson Reuters ASSET4 database, which is a leading provider of ESG data. Although data is available from 2002, we restricted the study for the period 2006-2010 because data from 2002 to 2005 was scarce. We gathered data on 3000+ global companies to evaluate how the women presence in the companies and the diversity policies, which try to promote a work-life balance, is affecting the environmental performance of companies, measured by their environmental scores. Further, we analyzed differences across major markets: Europe, North America and the rest of the World, which is composed mainly by Asian companies to check differences and similarities. We focused in ASSET4 quantitative environmental scores and qualitative data related to external social policies, such as human rights, community and product responsibility policies (see Table 1). These key performance indicators (KPIs) measure company’s management commitment and effectiveness towards respecting the fundamental human rights conventions, maintaining the company’s reputation within the general community and creating value-added products and services upholding the customer’s security. Therefore, they reflect a company’s capacity to operate guaranteeing the freedom association and excluding child, forced or compulsory labor, to be a good citizen protecting public health and to produce quality goods

and services integrating the customer’s health and safety, and preserving its integrity and privacy also through accurate product information and labeling.

Moreover, we divided companies according to the major market in which they are located. We considered North America (NA), Europe (EUR), Asia/Pacific (ASIA) and the rest of the world attending to previous findings that suggested important differences, especially between Europe and the rest of the markets (Peiró-Signes and Segarra-Oña, 2013b).

RESULTS & DISCUSSION

We run ANOVA tests comparing environmental scores in companies with and without each of the social policies to detect mean differences across these two groups (see Table 2). With the objective to find out if there are differences in the environmental scores among the selected groups and variables, we followed the ANOVA analysis with Scheffe’s pairwise comparison procedure to test for differences in environmental scores between individual pairs of groups attending to their location.

ANOVA tests highlighted that companies that promote external oriented social policies perform significantly better in their environmental scores that those companies that do not promote them. Additionally, we confirmed Peiró-Signes & Segarra-Oña (2013b) previous findings about the significant influence of location. However, we cannot determine whether that result is caused directly by the social policies promotion. To address this issue, we ran a regression analysis study considering the entire sample and the social variables studied for this purpose (Achen, 1982). We undertook an analysis of residuals to check for presence of outliers. Outliers were defined as the cases where standardized residual is greater than 3.3 (corresponding to the .001 alpha levels) and we excluded them for further analysis. To assess multivariate multicollinearity, following Hair (1998), we used Tolerance and Variance Inflation Factor (VIF), which build in the regressing of each independent on all the others. All the independents met the general

Table 1. External Social variables within Asset4 database

Human Rights	
HRP1	Policy to guarantee the freedom of association universally applied independent of local laws
HRP2	Policy for the exclusion of child, forced or compulsory labour
Community	
CP	Policy to strive to be a good corporate citizen or endorse the Global Sullivan Principles
Product Responsibility	
PRP1	Policy to protect customer health & safety
PRP2	Products and services quality policy

Source: Self compilation from Asset4 descriptions

Table 2. One-Way ANOVA results.

		Mean	Scheffe's	F (sig.)
HRP1	NO	0.384		5643***
	YES	0.745		
HRP2	NO	0.330		7950***
	YES	0.709		
CP	NO	0.250		2873***
	YES	0.563		
PRP1	NO	0.271		2187***
	YES	0.555		
PRP2	NO	0.410		580***
	YES	0.541		
Location	REST	.441	(EUR. EA. ASIA)	393.11***
	EUR	.624	(REST. EA. ASIA)	
	EA	.410	(REST. EUR. ASIA)	
	ASIA	.514	(REST. EUR. EA)	

Groups in parentheses indicate the group numbers from which this group was significantly different at $p < 0.001$ level according to the Scheffe's pairwise comparison procedure. F -statistics and associated p -values are derived from one-way ANOVAs.

Table 3. Regression results

	Model 1	Model 2
(Constant)	0.126	0.107
Human Rights Policy1	0.138 (0.2)	0.134 (0.194)
Human Rights Policy2	0.219 (0.339)	0.202 (0.314)
Community Policy	0.15 (0.192)	0.148 (0.189)
Product responsibility Policy1	0.13 (0.165)	0.118 (0.149)
Product responsibility Policy2	0.014 (0.021)	0.039 (0.058)
EUR		0.068 (0.093)
NA		-0.025 (-0.038)
ASIA		0.057 (0.079)
ANOVA F	2393***	1590***
R ²	.445***	.460***
F change		140.355***
R ² change		.015***

β coefficients in brackets. *** Significant at $p < 0.001$

accepted threshold (tolerance higher than 0.2 and VIF lower than 4). To develop the model, we considered environmental score as dependent on social policies:

$$Environmental\ Score = C + \beta_1 HRP_1 + \beta_2 HRP_2 + \beta_3 CP + \beta_4 PRP_1 + \beta_5 PRP_2 + E$$

For example, β_3 will help us to determine whether a good corporate citizen being influences the environmental score. A positive β_3 coefficient will

indicate a higher environmental score for the same value in other factors influencing the environmental scores. In the model, we have considered the firms with no external social policies as the omitted category, so all comparisons would be made in relationship to this group. Table 3 shows the results for the environmental score model.

We have to assess the significance of dummy variables as a set, using the R²-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 , called the coefficient of multiple determination, 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 variable is measured by the beta weights. 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 show that when social policies are acting in an isolated way, environmental scores increase ($R^2= .445$, $p<0.001$), which confirms that companies that promote social policies log higher scores in environmental scores (H1), as they are culturally more advanced. Environmental score is influenced mainly by HRP2 ($\beta_2=-0.339$), HRP1 ($\beta_3=-0.200$) and CP ($\beta_3=0.192$) when they acting in an isolated way. To separate the effects of location on the environmental scores we created three dummy variables representing company major market location (EUR, NA and ASIA). These dummies allowed us to sort data into mutually exclusive locations and see their influence, taking a value of 0 or 1, depending on whether they are present or absent. In the new estimation model, we added location terms to the model to incorporate the effect of social policies and location variables on the dependent variable (see table 4) is as follows:

$$\text{Environmental Score} = C + \beta_1 \text{HRP}_1 + \beta_2 \text{HRP}_2 + \beta_3 \text{CP} + \beta_4 \text{PRP}_1 + \beta_5 \text{PRP}_2 + \beta_6 \text{EUR} + \beta_7 \text{NA} + \beta_8 \text{ASIA} + E$$

This new model considers the firms outside the areas of Europe, North America and Asia/Pacific with no social policies as the omitted category, so comparisons are made in relationship to this group.

F-test of the significance of the location variables is the significance of the change of R^2 of the equation with the new terms and the equation without them. This model was considered significantly (sig (F) $<.05$) better than it

would be expected by chance and therefore, we could reject the null hypothesis of no linear relationship of each of these variables to the independent variables.

Results indicate that companies in Europe and in ASIA have higher environmental scores than those located in the rest of the world ($\beta_6=0.093$; $\beta_8=0.079$) when the same type of social policies are applied. On the contrary, companies in North America get significantly lower scores ($\beta_7=-0.038$) than those in the omitted category. Moreover, we wanted to confirm that location acts as a moderating factor, that is, we wanted to test the joint effect of social policies and location variables on a dependent variable over and above their separate effects. To test this, a typical approach is to add interaction terms to the mode (Berry, 1993). However, cross-product interaction terms may be highly correlated (multicollinear) with the corresponding simple independent variables in the regression equation, creating problems with 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 variable.

Table 4 shows the regression results for each location.

Further to analyze the differences between each major market, we calculated the difference between the standardized coefficients of each sample (see Table 5) as follows:

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

where β_i and β_j represent the β values for each pair of major market areas, SE_i and SE_j the standard error and m and n the number of data point for i and j areas, respectively. Table 5 shows the results of this analysis. Location analysis revealed an unequal impact of social policies on the Environmental scores of the companies attending to the major market where they are located.

Table 4. Regression results by location

	Europe	North America	Asia	Rest of the world
Constant	0.203	0.086	0.124	0.186
Human Rights Policy1	0.154 (0.26)	0.178 (0.244)	0.098 (0.119)	0.166 (0.26)
Human Rights Policy2	0.128 (0.209)	0.179 (0.276)	0.261 (0.395)	0.178 (0.287)
Community Policy	0.121 (0.157)	0.168 (0.235)	0.148 (0.178)	0.102 (0.151)
Product responsibility Policy1	0.139 (0.153)	0.113 (0.162)	0.134 (0.158)	0.07 (0.107)
Product responsibility Policy2	0.06 (0.1)	0.016 (0.021)	0.054 (0.081)	0.016 (0.027)
Anova F	512***	832***	672***	184***
R2	0.396***	0.421***	0.46***	0.407***

B coefficients and standardized β coefficients in brackets *** Significant at $p<0.001$

Table 5. Comparison of coefficients between locations

$\beta_i - \beta_j$	Europe Vs. North America	Europe Vs. Asia	Europe Vs. Rest	North America Vs. Asia	North America Vs. Rest	Asia Vs. Rest
Human Rights Policy1	0.015 (67.2)***	0.14 (531.3)***	-0.001 (-1.6)***	0.125 (567.6)***	-0.016 (-41.7)***	-0.141 (-315.6)***
Human Rights Policy2	-0.067 (-306.2)***	-0.186 (-723.2)***	-0.079 (-168.9)***	-0.119 (-599.5)***	-0.011 (-30.6)***	0.108 (256.6)***
Community Policy	-0.078 (-424.1)***	-0.021 (-87.5)***	0.006 (15.2)***	0.057 (300.5)***	0.084 (280.4)***	0.027 (68.1)***
Product responsibility Policy1	-0.008 (-41.3)***	-0.005 (-17.9)***	0.047 (114.5)***	0.004 (19.1)***	0.055 (194)***	0.051 (134.3)***
Product responsibility Policy2	0.079 (474.1)***	0.019 (99.3)***	0.073 (234.3)***	-0.06 (-352.1)***	-0.006 (-22.5)***	0.054 (168.1)***

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

Product and service quality policies have the lowest impact regardless location. The impact of the rest of the social policies in European companies is similar while in Asian companies for example, exclusion of child or forced labor has at least twice the impact of any other policy. Environmental scores in companies belonging to the rest of the world group are influenced positively mainly by human rights and community policies. In North America, human rights and community policies have at least 50% more impact than the rest of the social policies. Finally, t-test revealed that β values in each area are significantly different from each other confirming our second hypothesis that stated that location acts as a moderating factor between the environmental scores and the social policies.

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

CONCLUSION

The objective of this paper was to analyze environmental scores in companies when adopting external social policies. We found that companies that promoted this type of social policies make a difference in their environmental scores over those that didn't. Further, we confirmed that location acts as a differentiating factor. European and Asian companies obtained generally higher scores than those located in North America and in the rest of the world. As regulatory pressure is different, it is not surprising that the ANOVA revealed significant differences between the major markets. We also analyzed the human rights, community and product responsibility policies interaction with Environmental Scores. Our first hypothesis stated that social policies contribute to orientate companies toward environmental aspects and improving environmental

scores. To prove it, we investigated the solo effects of social policies and location on the environmental performance conducting a complementary analysis to isolate the effects of each policy in the first analysis using dummy variables. The results supported the assumption that better environmental scores are influenced positively by the promotion of social policies. We can conclude that the promotion of social policies positively affects the environmental orientation of the firm. Therefore, results show that company's management commitment and effectiveness towards respecting the basic human rights conventions, maintaining the company's reputation within the general community and creating value-added products and services upholding the customer's security, affects the environmental performance of companies. We can argue that company's capacity to operate guaranteeing the freedom association and excluding child, forced or compulsory labor, to be a good citizen protecting public health and to produce quality goods and services (integrating the customer's health and safety and preserving its integrity and privacy also through accurate product information and labeling), is a measure of being more sensible to promote environmental aspects among their structures and processes.

Further, results showed that location was a significant predictor for environmental scores, which could be due to the different environmental regulations companies are facing in each region (Kemp et al., 2005). Our cross study of the relationship between social policies and location revealed that the impact of each social policy in the environmental scores is different attending to the location of the company. We confirmed the moderator effect of location on environmental scores, which supports our second hypothesis (Social policies have an unequal influence on the environmental score of the companies according to their location). The differences between firms that promote external social

policies and those that don't are evident. We confirmed location role showing that been located in major markets where strong environmental regulations apply implies higher environmental orientation, regardless the social policies applied. Finally, we have determined how location moderates the relative impact of each policy in 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 and are included in the ESG ratings, limiting the conclusions. Future research should focus on the use of different methodologies with more complex (a larger variety of organizational factors) and larger databases, as well as panel studies. An in-depth qualitative case study would be necessary to obtain further information on why diversity policies are acting in such way.

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REFERENCES

- Achen, C. H. (1982). *Interpreting and using regression*. Series: Quantitative Applications in the Social Sciences, 29. Thousand Oaks, CA: Sage Publications.
- Ahn, J. (2011). Analysis of Changes in Female Education in Korea from an Education - Labor Market Perspective, *Asian J. Women Stud.*, **27** (2), 113-139.
- Berry, W. D. (1993). *Understanding Regression Assumptions*. Series: Quantitative Applications in the Social Sciences, 92. Thousand Oaks, CA: Sage Publications.
- CFA Institute, (2008). *Environmental, Social, and Governance Factors at Listed Companies: A Manual for Investors*. CFA Centre for Financial Market Integrity, London, UK.
- Chatterji, A. K., Levine, D. I. and Toffel, M. W. (2009). How Well Do Social Ratings Actually Measure Corporate Social Responsibility? *J. Econ. Manage. Strat.*, **18** (1), 125-169.
- Collison, D. J., Cobb, G., Power, D. M. and Stevenson, L. A. (2008). The financial performance of the FTSE4Good indices. *Corp. Soc. Responsib. Environ. Mgmt.*, **15** (1), 14-28.
- Delmas, M. and Vered, D. B. (2010). Measuring corporate environmental performance: the trade-offs of sustainability ratings. *Business Strategy and the Environment*, **19** (4), 245-260.
- Duran, D., Duran, I. and Diaconu, A. (2009). Issues on costs and investment for environmental protection. *Environ. Eng. Manage. J.*, **8** (4), 705-708.
- Esty, D. C. and Winston, A. S. (2006). *Green to Gold, How smart companies use environmental strategy to innovate, create value, and build competitive advantage*, John Wiley and Sons, Hoboken, New Jersey.
- Garau, G., Mandras, G. and Schirru, L. (2011). A statistical information system supporting environmental policies. *Environ. Eng. Manage. J.*, **10** (12), 1903-1910.
- Hair, J. F., Anderson, R. E., Tatham, R. L. and Black, W. C. (1998). *Multivariate Data Analysis*. 5th ed., Prentice-Hall, Englewood Cliffs, NJ.
- Hemmelskampa, J. (1997). Environmental policy instruments and their effects on innovation. *Eur. Plan. Stud.*, **5** (2), 177-194.
- Hong, H. and Kacperczyk, M. (2009). The price of sin: The effects of social norms on markets. *J. Financ. Econ.*, **93** (1), 15-36.
- Kemp, R., Parto, S. and Gibson, R. (2005). Governance for sustainable development: moving from theory to practice. *Int. J. Sust. Dev.*, **8** (1), 12-30.
- Knoll, M. S. (2002). Ethical screening in modern financial markets: the conflicting claims underlying socially responsible investment. *Bus. Lawyer.*, **57**, 681-726.
- Li, H. (2010). Gender Differences in China's Elderly Population and Policy Recommendations. *Asian J. Women Stud.*, **26** (1), 3-19.
- Manescu, C. (2010). Stock returns in relation to environmental, social, and governance performance: Mispricing or compensation for risk? School of Business, Economics and Law at University of Gothenburg, Sweden.
- Peiró-Signes, A. and Segarra-Oña, M. (2013). Trends in ESG Practices: Differences and Similarities Across Major Developed Markets. In *Sustainability Appraisal: Quantitative Methods and Mathematical Techniques for Environmental Performance Evaluation* (pp. 125-140). Springer Berlin Heidelberg.
- Porter, M. E. and Van der Linde, C. (1995). Toward a new conception of the environment-competitiveness relationship. *J. Econ. Perspect.*, **9** (4), 97-118.
- Semenova N. and Hassel L. G. (2008). Financial outcomes of environmental risk and opportunity for US companies. *Sustain. Dev.*, **16** (3), 195-212.
- Šauer, P., Kreuz, J., Hadrabová, A., and Dvořák, A. (2012). Assessment of Environmental Policy Implementation: Two Case Studies from the Czech Republic. *Pol. J. Environ. Stud.*, **21** (5), 1383-1391.
- Tsai, P. (2012). The Transformation of Leave Policies for Work-Family Balance in Taiwan. *Asian J. Women Stud.*, **28** (2), 27-54.