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ARE COMPANIES ENVIRONMENTAL SCORES AFFECTED BY DIVERSITY OF POLICIES AND WOMEN’S PRESENCE? AN OVERVIEW OF ENVIRONMENTAL CONDITIONANTS

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Abstract

This paper examines the impact of diversity policies and women’s participation in the workplace on the environmental scores of companies. Using data from 3895 firms present in the ASSET4 database during 2006–2010, we report on the impact of diversity policies, women’s presence, and the major market location of companies on their environmental scores. The results show that environmental scores increase with the presence of diversity policies and the location of the company outside Asia. Furthermore, we found that the percentage of women employees decreases environmental scores while the percentage of women managers does not have a significant impact. The paper concludes with a discussion of the implications of these findings for future environmental promotion within companies.

Key words: diversity policies, environmental promotion, environmental scores, women, social enhancement, ESG

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1. Introduction

There is an increasing importance of corporate Environmental, Social, and Governance (ESG) ratings (Galbreath, 2013; Hill et al., 2011; Krosinsky and Robins, 2008; MacLean, 2012; Stubbs and Rogers, 2013, Utasi et al., 2014) in the academic literature during the last decade. Most of these studies have focused on determining the relationship between ESG scores and economic performance (Hong and Kacperczyk, 2009; Humphrey et al., 2012a) or financial returns (Mănescu, 2011; Humphrey et al., 2012b). This relationship has not only become a key aspect for investors, stakeholders, and policy makers, but also for managerial boards as

it is becoming a social demand and, therefore, a source of competitive advantage (Kemp et al., 2005; Peiró-Signes and Segarra-Oña, 2013) and an indicator of ethics in business (Raman, 2011).

According to Duran et al. (2009), company policies may increase the economic results and competitiveness of their companies; and having an environmental strategy has been identified as being a key element of competitive advantage (Griffiths, 2004; Pohoryles, 2010; Porter and Van der Linde, 1995; Petruzzelli, et al., 2011; Petrić and Mandić, 2014). Therefore, environmental scores, which are a key performance indicator of the level of environmental engagement, are valuable information to represent potential competitive advantages for the

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companies and help companies comply with the triple bottom line principle (Šauer, 2012). In previous works, we analysed the interaction of human rights, community, and product responsibility policies with environmental scores. Results supported the assumption that better environmental scores are influenced positively by the promotion of social policies, concluding that the promotion of social policies positively affects the environmental orientation of a firm (Mondéjar-Jiménez et al., 2014). We also proved that social policies contribute to companies orientating toward environmental aspects so as to improve environmental scores, but to date, little work has been done on analysing how the presence of women and actions related to supporting women can affect the environmental scores of companies, obtaining therefore, a double-sided benefit.

We based this study on Thomson Reuters ASSET4's integrated ratings for the period 2006–2010. We gathered data on 3000+ global companies to evaluate how women's presence in the companies and the diversity policies, which try to promote a work-life balance, are affecting the environmental performance of the companies, measured by the environmental scores. Furthermore, we analysed differences across major markets in Europe, North America, and the rest of the world, which is composed mainly of Asian companies.

2. Materials and methods

Although benefits of an environmental approach have been found, there are many barriers to improving companies' environmental performance, such as organisational culture and change management (Perron et al., 2006). In addition, what employees are committed to or care about is important in order to make a cultural change that targets the environmental performance of the company (Bressers et al., 2013; Stone, 2000). We cannot expect higher commitment of the employees, especially women, if other basic social needs are not fully covered. Therefore, we assume in this work that developing diversity policies, such as flexible working hours (FWH) or day care services (DCS), should increase environmental awareness among employees. As basic social needs are covered, employees will be more motivated to commit or change to a more environmental approach. Based on this idea, we state our first hypothesis:

H1: Diversity policies contribute to orientate companies towards environmental aspects that improve environmental scores.

Some authors have proven that collaboration, solidarity, and conflict resolution increase in groups where women are present (Westermann et al., 2005). There is also a current line of study that advocates women have a superior environmental awareness as reported by Jackson (1993) or Dankelman and Davidson (2013). Based on this research, we state our second hypothesis that we split in two:

H2a: The percentage of women employees has a positive impact on environmental scores.

H2b: The percentage of women managers has a positive impact on environmental scores.

Finally, in a previous study, we checked the differences between the location of companies in the major developed markets and their environmental scores (Peiró-Signes et al., 2013; Mondejar-Jimenez et al., 2014) and found 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. We explained the differences based on the fact that regulatory pressure is different and also because of the varied environmental regulation frameworks. As reported before, we can also expect different levels of social commitment across major markets. Thus, we set our third hypothesis as follows:

H3: Diversity policies and the percentage of women have an unequal influence on the environmental scores of the companies according to their location.

We used Thomson Reuters ASSET4's integrated ratings for the period 2006–2010, a leading provider of ESG data. We extracted the data referring to 3895 firms with available ESG scores for the period and dismissed data from 2002 to 2005 because of its scarcity. Finally, we retrieved a total of 14,949 data points. However, not all the data points had available data for every variable. We focused in ASSET4 quantitative and qualitative data related to diversity for companies worldwide (Table 1). According to ASSET4's definitions, "the workforce/diversity and opportunity category in the ASSET4 database measures a company's management commitment and effectiveness towards maintaining diversity and equal opportunities in its workforce.

Table 1. Diversity variables within ASSET4 database

| | |
|-------------------------------------|---|
| Women Employees (WE) | Percentage of women employees. |
| Women Managers (WM) | Percentage of women managers. |
| Positive Discrimination (PD) | Does the company promote positive discrimination? |
| Flexible Working Hours (FWH) | Does the company claim to provide flexible working hours or working hours that promote a work-life balance? |
| Day Care Services (DCS) | Does the company claim to provide day care services for its employees? |

Source: ASSET4 descriptions

It reflects a company's capacity to increase its workforce's loyalty and productivity by promoting an effective life-work balance, a family friendly environment, and equal opportunities regardless of gender, age, ethnicity, religion, or sexual orientation". Further, we retrieved the environmental scores for the same companies for these years, and we classified companies in the major markets in which they are located. We divided the major markets in North America (NA), Europe (EUR), and the rest of the world, attending to previous findings (Peiró-Signes and Segarra-Oña, 2013; Mondéjar-Jiménez et al., 2014). First, we applied the ANOVA test comparing environmental scores in companies with and without PD, FWH, and DCS policies to detect mean differences across business functions. Moreover, we applied the same ANOVA tests by major market area (NA and EUR), comparing them with the rest of the markets all together.

The ANOVA technique (Table 2) indicates whether we reject the null hypothesis that reflects the equal mean value for each α level of significance. Thus, we can confirm whether the mean of the variable performance is significantly different for the firms according to the certification. The ANOVA test highlighted significant differences between environmental scores in those companies that apply diversity policies over those that do not apply them. Even though we can see from the means comparison analysis that companies with diversity policies have, in general terms, higher environmental scores, we cannot determine whether that result is caused directly by having diversity policies. Then, we conducted a regression analysis study considering the entire sample and the former variables studied for this purpose. We created dummy variables to analyse the effects of location on the environmental scores. Finally, we ran another regression analysis to see the effects when diversity variables and major market location are crossed. We developed two dummy variables representing company major market location (EUR, NA) to examine whether the market location of the company (Europe, North America, and the rest of the word) and the diversity variables are related, that is, if they have some influence on the environmental scores of these firms. Thus, the environmental score was taken as dependent variable. Dummy variables were modeled to sort data into mutually exclusive categories and see their influence, taking a value of 0 or 1, depending on whether they are present or absent.

The regression model for the environmental score was built considering that the environmental score is dependent on diversity policies, women's presence, and major market location (Eq. 1):

$$\text{Environmental Score} = C + \beta_1 WE + \beta_2 WM + \beta_3 PD + \beta_4 FWH + \beta_5 DCS + \beta_6 NA + \beta_7 EUR + E \quad (1)$$

β_1 will help us to determine whether the percentage of women employees is making a

difference in the environmental score. β_3 will help us to determine whether there is a difference in the environmental score between companies that promote positive discrimination. Then, a positive β_3 coefficient will indicate a higher score for the same value in other factors influencing the environmental scores. Similarly, we can interpret the rest of the coefficients, helping us to evaluate if these characteristics are having a significant influence on the environmental score. We considered in the models the firms in the rest of the world without any diversity policy as the base group or omitted category, so all comparisons would be made in relationship to this group.

Results for the environmental score are shown in Table 3. We used R^2 -change method to test the significance of the dummy variables, ignoring the individual t-tests for each dummy β coefficient. The parameter R^2 , called 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. 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 variables *PD*, *FWH*, and *DCS* are acting in an isolated way, what increases environmental scores ($\beta=0.243$, $p<0.001$; $\beta=0.167$, $p<0.001$; $\beta=0.088$, $p<0.001$), which confirms the logical assumption that companies that promote diversity policies log higher scores in environmental scores, as they are culturally more developed.

However, the percentage of woman in the companies as employees ($\beta=-0.204$, $p<0.001$) or as managers ($\beta=-0.056$, $p<0.05$) lowers the environmental scores. Finally, in this first model, we have confirmed the impact ($\beta=0.108$, $p<0.001$ for *EUR* and $\beta=0.070$, $p<0.001$ for *NA*) of the company's major market location in the score. That is, being located in Europe and North America will impact the environmental scores positively due to stronger regulatory frameworks, which is in accordance with previous findings (Peiró-Signes and Segarra-Oña, 2013; Peiró-Signes et al., 2014; Mondéjar-Jiménez et al., 2014). We added interaction terms to the model to incorporate the joint effect of diversity and location variables on a dependent variable over and above their separate effects (Table 3). The new estimation model is as follows (Eq. 2):

$$\text{Environmental Score} = C + \beta_1 WE + \beta_2 WM \dots + \beta_7 EUR + \beta_8 WE \times NA + \dots + \beta_{17} FWH \times EUR + E \quad (2)$$

The F -test of the significance of the interaction variables is the significance of the change of R^2 of the equation with the interaction terms and

the equation without the set of terms associated with the ordinal variable (size).

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

The cross effects analysis indicated that North American companies that promote positive discrimination ($\beta = -0.111, p < 0.01$) have worse environmental scores than those companies in the rest of the world that do not promote these policies. Similarly, European companies that provide *FWH*

($\beta = -0.100, p < 0.05$) have worse environmental scores than those companies in the rest of the world that do not promote these policies.

PD and *FWH* have, among the diversity variables, a higher influence on the environmental scores, and these variables are followed by the number of women, however, this variable has a negative impact.

Finally, we want to highlight that this discussion has been about environmental scores, and we should remark that this indicator seems to be affected by location, diversity policies, and the percentage of women employees.

Table 2. One-Way ANOVA results

| | | <i>Mean</i> | <i>F</i> | <i>Sig</i> |
|-------------------------|------|-------------|----------|------------|
| Positive discrimination | NO | .399 | 4329.7 | 0.000 |
| | YES | .731 | | |
| Flexible Working Hours | NO | .438 | 2352.0 | 0.000 |
| | YES | .734 | | |
| Day Care Services | NO | .474 | 892.8 | 0.000 |
| | YES | .751 | | |
| Location | Rest | .506 | 519.1 | 0.000 |
| | NA | .624 | | |
| | EUR | .410 | | |
| PDxNA | NO | .480 | 462.1 | 0.000 |
| | YES | .680 | | |
| PDxEUR | NO | .469 | 994.7 | 0.000 |
| | YES | .731 | | |
| FWHxNA | NO | .485 | 281.7 | 0.000 |
| | YES | .659 | | |
| FWHxEUR | NO | .476 | 847.9 | 0.000 |
| | YES | .764 | | |
| FWHxNA | NO | .491 | 173.5 | 0.000 |
| | YES | .691 | | |
| FWAxEUR | NO | .488 | 376.4 | 0.000 |
| | YES | .793 | | |

Table 3. Regression results

| | <i>Model 1</i> | <i>Model 2 with interactions</i> |
|-------------------------|----------------|----------------------------------|
| Constant | | |
| Women Employees | -0.204*** | -0.222*** |
| Women Managers | -0.056* | -0.021 |
| Positive Discrimination | 0.243*** | 0.296*** |
| Flexible Working Hours | 0.167*** | 0.246*** |
| Day Care Services | 0.088*** | 0.109** |
| NA | 0.07** | 0.175** |
| EUR | 0.108*** | 0.222*** |
| WExNA | | 0.167* |
| WExEUR | | -0.039 |
| WMxNA | | -0.178* |
| WMxEUR | | 0.002 |
| PDxNA | | -0.111** |
| PDxEUR | | -0.048 |
| FWHxNA | | -0.063 |
| FWHxEUR | | -0.1* |
| DCSxNA | | 0.008 |
| DCSxEUR | | -0.031 |
| Anova F | 81.465*** | 35.523*** |
| R2 | 0.196*** | 0.206*** |
| F change | | 2.90*** |
| R2 change | | 0.01*** |

β coefficients. *** Significant at $p < 0.001$, ** Significant at $p < 0.01$, * Significant at $p < 0.05$

3. Results and discussion

The aim of this study was to analyse environmental scores in companies when adopting diversity policies. We found that there was a difference in the environmental scores of companies that were adopting diversity policies over those that were not. In the analysis of the sample, we confirmed that location is a differentiating factor. Companies located in Europe or North America got generally higher scores than those located in the rest of the world, mainly Asia. It is not surprising that the ANOVA revealed significant differences between the three major markets due to environmental regulations.

We also proved an interaction between diversity policies, namely positive discrimination, flexible working hours, and day care services, and environmental scores. However, to validate our first hypothesis (Hypothesis 1: Diversity policies contribute to orientate companies towards environmental aspects that improve environmental scores), we ran a complementary analysis to isolate the effects of factors in the first analysis using dummy variables. We used diversity policies and location of the firms, and we added percentage of women employees and managers to control also for these diversity indicators.

Then, we investigated the solo effects of diversity and location on environmental performance. Our first hypothesis could be validated, because diversity policies were positively affecting environmental scores, and we found significant differences. On the other hand, we have to discard our second hypothesis. We have confirmed a significant negative impact of the percentage of women employees on the environmental scores, while the percentage of woman managers is not making any significant difference.

Our cross study of the relationship between diversity policies, percentage of women and location, resulted in an improved regression model. When companies are located in North America compared to companies in the rest of the world, mainly in Asia, it revealed better environmental scores for a higher percentage of women employees and lower scores for a higher percentage of women managers and positive discrimination policies. These results partially confirm our third hypothesis (Diversity policies and the percentage of women have an unequal influence on the environmental scores of the companies according to their location).

The differences between firms that apply diversity policies and those that do not are evident. We confirmed the role of location, showing that being located in major markets where strong environmental regulations apply implies a higher environmental orientation, regardless of the diversity policies applied. To sum up, our analysis shows that there are significant differences between companies that have been promoting diversity policies and those

that have not. Furthermore, we have shown that the percentage of women employees negatively affects environmental scores while the percentage of woman managers does not make any significant difference, but there is still a research gap in understanding why this is happening in such way. We can argue that companies with management commitment towards its workforce are culturally more developed and will be more sensitive to promoting environmental aspects among their structures and processes. 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 will be necessary to obtain further information on why diversity policies are acting in such a way.

4. Conclusions

The results showed different environmental scores; a therefore, the data partially supported the assumption that better environmental scores were caused directly by better diversity policies. We say partially because *PD*, *FWH*, and *DCS* had a positive influence, while on the contrary, the percentage of women employees had a negative impact. Thus, we can conclude that it is not the presence of women that is affecting a positive environmental orientation of a firm but rather the firm's diversity policies. In other words, it is the way in which employees are treated according to their diversity, which is affecting the environmental scores.

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References

- Dankelman I., Davidson J., (2013), *Women and the Environment in the Third World: Alliance for the Future*, Earthscan, London.
- Duran D., Duran I., Diaconu A., (2009), Issues on costs and investment for environmental protection, *Environmental Engineering and Management Journal*, **8**, 705-708.
- Galbreath J., (2013), ESG in focus: The Australian evidence, *Journal of Business Ethics*, **118**, 529-541.
- Bressers H., Bruijn T. J. N. M., Franco-Garcia L., Lulofs K. R. D., Xue Y., (2013), Voluntary agreements as a way to stimulate industrial environmental management and their conditions for success, *Environmental Engineering and Management Journal*, **12**, 1553-1561.
- Griffiths A., (2004), Corporate sustainability and innovation, *Innovation Management Policy and Practice*, **6**, 6-14.

- Hill M., Lowrance C., Mulder I., Boucher J., Green J., (2011), Embedding environmental risks in finance: Current methods and ongoing challenges, *Journal of Environmental Investing*, **2**, 36-51.
- Hong H., Kacperczyk M., (2009), The price of sin: The effects of social norms on markets, *Journal of Financial Economics*, **93**, 15-36.
- Humphrey J.E., Lee D.D., Shen Y., (2012a), Does it cost to be sustainable?, *Journal of Corporate Finance*, **18**, 626-639.
- Humphrey J.E., Lee D.D., Shen Y., (2012b), The independent effects of environmental, social and governance initiatives on the performance of UK firms, *Australian Journal of Management*, **37**, 135-151.
- Jackson C., (1993), Doing what comes naturally? Women and environment in development, *World Development*, **21**, 1947-1963.
- Kemp R., Parto S., Gibson R., (2005), Governance for sustainable development: Moving from theory to practice, *International Journal of Sustainable Development*, **8**, 12-30.
- Krosinsky C., Robins N., (2008), *Environmental Markets Insight: Sustainable Investing-The Art of Long-Term Performance*, Earthscan, London.
- MacLean R., (2012), ESG comes of age, *Environmental Quality Management*, **22**, 99-108.
- Mănescu C., (2011), Stock returns in relation to environmental, social and governance performance: Mispricing or compensation for risk?, *Sustainable Development*, **19**, 95-118.
- Mondéjar-Jiménez, J., Peiró-Signes, A., Segarra-Oña, M., (2014), The Impact of Social policies' Promotion and the Moderating Role of Location on firm's Environmental Scores, *International Journal of Environmental Research*, **8**, 1005-1010.
- Petrić L., Mandić A., (2014), Visitor management tools for protected areas focused on sustainable tourism development: the Croatian experience. *Environmental Engineering and Management Journal*, **13**, 1483-1495.
- Peiró-Signes A., 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*, Heidelberg: Springer, Berlin, 125-140.
- Peiró-Signes A., Segarra-Oña M., Mondéjar-Jiménez J., Vargas-Vargas M., (2013), Influence of the Environmental, Social and Corporate Governance Ratings on the Economic Performance of Companies: An overview, *International Journal of Environmental Research*, **7**, 105-112.
- Perron G.M., Côte R.P., Duffy J.F., (2006), Improving environmental awareness training in business, *Journal of Cleaner Production*, **14**, 551-562.
- Pohoryles R.J., (2010), Europe in the making—What role environmentalism; and, why should sustainable development be less than environmentalism?, *Innovation: The European Journal of Social Science Research*, **23**, 319-322.
- Porter M.E., van der Linde C., (1995), Toward a new conception of the environment-competitiveness relationship, *Journal of Economic Perspectives*, **9**, 97-118.
- Raman H., (2011), Pushing the paradigm shift to integrate ESG factors, *Ethical Investor*, **96**, 38-39.
- Šauer P., Kreuz J., Hadrabová A., Dvořák A., (2012), Assessment of environmental policy implementation: Two case studies from the Czech Republic, *Polish Journal of Environmental Studies*, **21**, 1383-1391.
- Petruzzelli, A. M., Dangelico, R. M., Rotolo, D., Albino, V., (2011), Organizational factors and technological features in the development of green innovations: evidence from patent analysis. *Innovation: Management, Policy & Practice*, **13**, 291-310.
- Stone L., (2000), When case studies are not enough: The influence of corporate culture and employee attitudes on the success of cleaner production initiatives, *Journal of Cleaner Production*, **8**, 353-359.
- Stubbs W., Rogers P., (2013), Lifting the veil on environment-social-governance rating methods, *Social Responsibility Journal*, **9**, 622-640.
- Utasi A., Yuzhakova T., Sebestyén V., Németh J., Robu B., Rédey Á., Popita G., (2013), Advanced quantitative environmental impact assessment method. *Environmental Engineering and Management Journal*, **12**, 305-310.
- Westermann O., Ashby J., Pretty J., (2005), Gender and social capital: The importance of gender differences for the maturity and effectiveness of natural resource management groups, *World Development*, **33**, 1783-1799.