CAPITALISM, NATIONAL INSTITUTIONS, AND ENVIRONMENTAL DISCLOSURE: DO LIBERALS DO MORE?

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1. Introduction

Corporate social responsibility (CSR) continues to be an instrument for legitimizing companies. Many firms in the world not only invest their resources in CSR initiatives, but also disclose environmental information to stakeholders and their potential investors through different channels, including sustainability reports (Awaysheh et al., 2020; Wang et al., 2018). The differences in the levels of environmental disclosure of companies can be explained by several internal and external factors of organizations (Garcia et al., 2020).

Regarding internal factors, previous studies have found that greater financial performance has a positive influence on environmental disclosure (Gamerschlag et al., 2011; Lourenço & Branco, 2013; Oh & Park, 2015). The study by Pham and Tran (2020) shows that companies with higher financial performance are more likely to disclose a more complete environmental report. In general, larger companies have more financial resources to prepare a sustainability report. Moreover, these firms have great pressure from stakeholders to make their activities more transparent, as they can cause more pronounced damage to the environment than smaller companies (Ali et al., 2017).

In addition to internal factors, institutional or external factors can explain the differences in environmental disclosure between companies based in different countries (Garcia-Sanchez et al., 2016). Previous studies have investigated which macroeconomic factors can interfere with environmental disclosure. The study by Ioannou and Serafeim (2012) found that environmental disclosure changes according to the degree of development of the country, in which companies are operating. For example, in countries with a better education system and less corruption, companies are more likely to disclose more environmental information.

Studies have examined determinants of environmental disclosure at the firm-level. However, less is known about the role of country-level factors in disclosure (Hartmann & Uhlenbruck, 2015). The characteristics of national institutions are important, since they influence business decisions, especially in relation to social responsibility practices (Ruiz-Barbadillo & Martínez-Ferrero, 2020). In liberal economies, it is more likely that companies try to satisfy shareholders and therefore prioritize the disclosure of financial and governance information. On the other hand, in coordinated economies, companies have an orientation towards stakeholders, considering the interests of workers' associations in the decision-making process. (Hall & Soskice, 2001).

Although some research has already analysed the effect of the institutional environment on environmental disclosure, it is still unclear how the characteristics of the type of capitalism that the country adopts influences environmental disclosure (Favotto et al., 2016). Certain national characteristics put pressure on firms to offer responsible practices. In this way, the determining factors of environmental disclosure are not only at the firm-level, but also at the country-level (Rosati & Faria, 2019). Therefore, the purpose of this study is to examine the effect of the characteristics of capitalism on environmental disclosure.

To achieve the research objective above, we examined a sample of 3248 companies, headquartered in 16 countries, during the period 2009-2019. The countries' capitalism characteristics were measured considering five variables: economic freedom index, foreign direct investment, availability of specialized training services, corruption perception index and protection of property rights. To measure environmental disclosure, an environmental

performance index was prepared, evaluating 25 environmental items, such as recycling, energy consumption, biodiversity, emissions, effluents and water, waste, spills, and environmental impacts.

After statistical tests, the results showed that in countries with greater economic freedom, more foreign investment and less protection of property rights, companies tend to have a greater engagement with environmental disclosure. The findings also show that the availability of specialized training services has a negative effect on environmental disclosure. This article supports the thesis that business behaviour in relation to environmental disclosure practices is shaped by the characteristics of countries' capitalism.

This study contributes to the literature in the following ways. First, the study reinforces the understanding of how national institutions can influence environmental disclosure practices, adopting new variables to represent the pillars of capitalism. Previous studies when examining the relationship between institutional factors and environmental disclosure neglect the country's characteristics of capitalism (Ortas et al., 2019). Second, there is a need to verify the effect of understudied national characteristics on environmental disclosure, introducing new theoretical frameworks in the social responsibility debate (Hartmann & Uhlenbruck, 2015).

Third, this study analyses the situation of companies in two different institutional contexts: liberal market economies and coordinated market economies, bringing new evidence of how environmental disclosure practices vary between countries. According to Giannetti et al. (2018), investigating the relationship between characteristics of capitalism and environmental disclosure can have relevant implications for managers, investors, and decision makers, who are responsible for designing and implementing environmental strategies and policies in companies and national governments.

Additionally, this research has managerial and governmental implications. Managers should pay greater attention to the country's institutional issues before installing or relocating their industries, as certain national institutions support the development of valuable capacities at the company-level, such as environmental disclosure. The findings of this research can also be particularly important for policy makers, as it is presented which key characteristics of capitalism can interfere in companies in their countries to adopt practices that can contribute to sustainable development.

2. Literature overview

2.1 Varieties of Capitalism Approach and Environmental Disclosure

The Variety of Capitalism (VoC) approach was developed in the late 1990s to explain the institutional differences and similarities between developed economies (Gallego-Álvarez & Quina-Custodio, 2017). In this approach, the firm is the centre of analysis and its behaviour is affected by political economy institutions (Hall & Soskice, 2001). National institutions differ in the type of capitalism adopted, since each country has different institutional characteristics. Thus, the VoC approach shows how national institutions differ between countries and create important consequences for the performance of firms (Benney, 2019).

The type of capitalism adopted by the country where the firm is operating is a determining factor in the relationship between the company and its players. Thus, the firm's success depends on coordinating its relations with internal players (e.g., employees, managers) and external players (e.g., customers, unions, and the state) (Magnin, 2018). The way

companies solve their coordination problems can result in two types of capitalism: liberal market economies (LME) and coordinated market economies (CME) (Hall & Soskice, 2001).

Liberal economies and coordinated economies have their own characteristics. In liberal economies (e.g., Australia, Canada, Ireland, New Zealand, United Kingdom, and United States) companies coordinate their economic activities through market competence and the legal guarantee of contracts (Hall & Soskice, 2001). In liberal economies, firms are primarily oriented to meet the demands of shareholders. Additionally, in this type of capitalism there is a susceptible conflict between management and employees, short-term employment and a financial system based on the capital market (Boliari & Topyan, 2007).

On the other hand, in coordinated economies (e.g., Austria, Belgium, Denmark, Finland, Germany, Japan, Netherlands, Norway, Sweden, and Switzerland), firms are oriented to meet the demands of all stakeholders, considering the point of view of unions and the state in their decisions (Kang & Moon, 2012). In coordinated markets, organized labour organizations exist and the financial system is based on the strength of banks (Benney, 2019). Moreover, in this type of capitalism, there is a greater investment in human resources and companies cooperate in research and development, generating more incremental innovation (Hall & Soskice, 2001). Table 1 shows the main differences between liberal economies and coordinated economies.

Table 1. Differences between liberal and coordinated economies.

Capitalism characteristic	Liberal economies	Coordinated economies
Firm orientation	Shareholders	Stakeholders
Financial system	Capital market	Bank soundness
Industrial relations	Low presence of unions	Strong presence of unions
Innovation in industries	Radical innovation	Incremental innovation
Labour market	Decentralized labour markets	Centralized labour markets

Previous studies have examined how these characteristics of capitalism affect companies' environmental disclosure, since institutional elements can shape the behaviour of firms. (Carnevale & Mazzuca, 2014; Cassely et al., 2020; Favotto et al., 2016; Gallego-Álvarez & Quina-Custodio, 2017; Hartmann & Uhlenbruck, 2015; Ortas et al., 2019; Pucheta-Martínez et al., 2019). The study by Carnevale and Mazzuca (2014) analysed 135 companies in the banking sector based in 13 countries. The findings show that companies based in coordinated economies tend to disclose more environmental information than companies in liberal economies, because coordinated markets have institutional elements that favour social responsibility, such as strong environmental legislation and more active unions.

Hartmann and Uhlenbruck (2015) investigated the impact of legal, market and social institutions on corporate environmental performance. The results show that firms based in countries with greater economic freedom will have a higher level of environmental performance. These authors believe that economies with greater market freedom, companies can maintain greater proximity with stakeholders. In addition, firms in these economies realize that customers and suppliers are important in creating value, increasing corporate efforts to mitigate the environmental damage caused by their operations.

Gallego-Álvarez & Quina-Custodio (2017) studied how aspects of national institutions affect social responsibility reporting in 110 companies. The findings show that in liberal economies firms report more economic, financial and governance information. Companies in these economies have a legal system based on common law. Therefore, companies focus on the

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protection of shareholders and on the rights of creditors, with other stakeholders having a less important role in business decisions. In contrast, firms in coordinated economies release more environmental information, because in the coordinated context the labour market is less flexible, unions are stronger and employment protection is greater (Pucheta-Martínez et al., 2019).

The study by Cassely et al. (2020) examined the influence of the capitalism model on the disclosure of corporate social responsibility in 2050 listed companies. The results show that when companies are in liberal and social-democratic economic models they tend to have a more transparent environmental disclosure. Contrary to these results, Graafland (2019) found that companies based in countries with a smaller government are less engaged in environmental disclosure. The author believes that greater participation by the state in the economy may be important for environmental issues, since national governments want to achieve harmonious development between society, the economy, and the environment.

Ortas et al. (2019) analysed the influence of different national institutions on environmental, social and governance disclosure. The findings show that environmental and social disclosure is influenced by certain characteristics of the institutional environment, such as the type of capitalism adopted by the country, the national financial system and trust in society/institutions. To compose the variables of the countries' institutional environment, they adopted the theoretical framework developed by Fainshmidt et al. (2016).

Fainshmidt et al. (2016) developed a theoretical framework that captures the institutional differences of 68 economies. These authors summarized the institutional context of countries in five important characteristics for measuring capitalism: the role of the state, the role of financial markets, the role of human capital, the role of social capital and the role of corporate governance. For each of these characteristics, they analysed national variables, for example: state direct dominance, state indirect intervention, equity and credit markets, knowledge capital, generalized trust and ownership concentration. We adopted this theoretical framework for the construction of the study hypotheses, which are presented below.

2.2 Hypotheses development

2.2.1 The role of the state

Economic freedom can have a positive effect on reporting environmental information, as greater economic freedom reduces the effects of corruption and encourages companies to take responsibility for its impacts on the environment (Baughn et al., 2007). Greater economic freedom leads to greater individual freedom of expression (Graafland, 2019). Thus, it is expected that in a country with greater economic freedom, people will have more voice to discuss environmental problems and pressure companies to act more responsibly (De Villiers & Marques, 2016). In more liberal markets, such as the United Kingdom and the United States, as companies cannot rely on capital provided by banks, the shareholders of the companies are more demanding and more dispersed (Jensen & Berg, 2012). Therefore, we hypothesize the following:

H1: Economic freedom has a positive effect on environmental disclosure.

2.2.2 The role of financial markets

Publicly traded companies have more pressure to disclose environmental information due to the visibility and responsibility problems resulting from many stakeholders (Khan et al.,

2013). In this context, in countries with greater foreign investment, companies are expected to have a more complete environmental disclosure, because the market requires additional information (Haniffa & Cooke, 2005). Compared to foreign investors, domestic investors have more information about information not published by companies, since they have local knowledge and informal networks. Thus, it is expected that countries with a large number of foreign investors, companies will disclose more environmental information in their official reports, to reduce the information costs between foreign and domestic investors (Cai et al., 2019). Therefore, we hypothesize the following:

H2: Foreign direct investment has a positive effect on environmental disclosure.

2.2.3 The role of human capital

When knowledge capital is available to firms in the economy, companies can invest in training, diversity, health, safety, and sustainability (Ortas et al., 2019). According to Jensen & Berg (2012), countries that invest more in education and research, companies will adopt new management techniques more quickly to adapt to the market. Organizations that operate in countries with greater availability of intellectual capital are more likely to have greater environmental disclosure, because the consumer market and other stakeholders are more demanding (Ioannou & Serafeim, 2012; Rosati & Faria, 2019). Therefore, we hypothesize the following:

H3: Availability of specialized training services has a positive effect on environmental disclosure.

2.2.4 The role of social capital

Social capital refers to the trust of economic actors in national institutions and in society, which is related to the level of corruption in the country. Countries with a lower level of generalized trust, there is pervasive corruption and an ineffective state (Fainshmidt et al., 2016). Countries with a higher level of corruption, companies generally have less environmental disclosure, since they are frequently involved in unethical practices (Ioannou & Serafeim, 2012). Additionally, the results obtained by ethical companies in corrupt countries may be less than unethical companies (Baldini et al., 2018). Firms mirror the national government, thus corrupt governments discourage companies from behaving more transparently (Walker et al., 2019). Therefore, we hypothesize the following:

H4: Lower levels of corruption have a positive effect on environmental disclosure.

2.2.5 The role of governance

Countries with high protection of property rights have strong legislation to protect investors (Jackson & Apostolakou, 2010). In these countries, companies tend to focus on the interests of shareholders, preparing a traditional report with financial, economic and governance information (Miniaoui et al., 2019). In contrast, in countries where social needs are valued, there is strong employment protection and companies are more committed to environmental disclosure (Jensen & Berg, 2012). The study by Frías-Aceituno et al. (2013) shows that in economies with greater investor protection, it is common that in the decision-making process of companies, social responsibility has less influence. Therefore, we hypothesize the following:

H5: Protection of property rights has a negative effect on environmental disclosure.

3. Research design

The initial sample considered all publicly traded companies headquartered in the countries analysed from 2009 to 2018. Thus, the final panel data sample is unbalanced and consists of 3248 companies (26433 observations), pertaining to 16 countries: Australia, Austria, Belgium, Canada, Denmark, Finland, Germany, Ireland, Japan, Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom and United States. According to Hall and Soskice (2001), these countries make up the coordinated and liberal economies. Table 1 shows the distribution of companies by country.

Table 1. Number of firms by country.

Country	No. of companies	Percentage	Cumulative percentage
Australia	108	3.325	3.325
Austria	29	0.893	4.218
Belgium	29	0.893	5.111
Canada	185	5.696	10.807
Denmark	40	1.232	12.038
Finland	62	1.909	13.947
Germany	230	7.081	21.028
Ireland	43	1.324	22.352
Japan	793	24.415	46.767
Netherlands	74	2.278	49.046
New Zealand	15	0.462	49.507
Norway	53	1.632	51.139
Sweden	131	4.033	55.172
Switzerland	139	4.280	59.452
United Kingdom	396	12.192	71.644
United States	921	28.356	100.000
Total	3248	100.000	

As can be seen, the country with the highest representation is the United States with 28.35%, followed by Japan with 24.41% and the United Kingdom with 12.19%. On the other hand, Austria and Belgium have only 29 companies, which represents 0.89%. New Zealand is the country with the lowest representation in the sample analysed with 0.3%. The companies are distributed within the eleven sectors of activity, as shown in Table 2.

Table 2. Number of firms by activity sector.

Economic sector name	No. of firms	Percentage	Cumulative percentage
Communication services	147	4.526	4.526
Consumer discretionary	649	19.982	24.507
Consumer staples	279	8.590	33.097
Energy	100	3.079	36.176
Financials	354	10.899	47.075
Health care	242	7.451	54.526
Industrials	684	21.059	75.585
Materials	334	10.283	85.868
Real estate	23	0.708	86.576

Technology	352	10.837	97.414
Utilities	84	2.586	100.000
Total	3248	100.000	

The sample companies are grouped into nine industry sectors: communication services, consumer discretionary, consumer staples, energy, financials, health care, industrials, materials, real estate, technology, and utilities. The sector with the highest representation is the industrial sector with 21.05%, followed by the consumer discretionary and financial sector with 19.98% and 10.89%, respectively. In contrast, the lowest representation comes from real estate with 0.70%.

The dependent variable of the study is the level of environmental disclosure. To measure environmental disclosure, a multidimensional construct was elaborated, including topics such as recycling, energy consumption, biodiversity, greenhouse gas emissions, effluents and water, waste, spills, and environmental impacts. Thus, 25 environmental indicators were selected and grouped into eight groups, which according to Gamerschlag et al. (2011) are the pillars of environmental disclosure. All data for the dependent variable were collected from the Thomson Reuters database. Table 3 shows the 25 indicators evaluated by company.

Table 3. Environmental disclosure items.

Pillars of environmental disclosure	Description
Recycled	Waste Recycled Total
	Waste Recycled to Total Waste Score
Energy consumption	Energy Efficiency Initiatives
	Energy Use Total
	Renewable Energy Use
Biodiversity	Biodiversity Impact Reduction
	Biodiversity Restoration Protection
Emissions	CO2 Equivalents Emission Total
	NOx Emissions
	SOx Emissions
	Ozone-Depleting Substances
Effluents and Water	Water Discharged
	Water Pollutant Emissions
	Water Recycled
	Water Withdrawal Total
	Water Technologies
Waste	Waste Total
	Non-Hazardous Waste
	Hazardous Waste Reduction
Spills	Recent Spills and Pollution Controversies
	Accidental Spills
Environmental Impacts	Environmental Resource Impact Controversies
	Land Environmental Impact Reduction
	Toxic Chemicals or Substances Reduction
	Environmental Products

The environmental disclosure index is measured by the ratio between the unweighted aggregation of 25 items relating to the pillars of environmental disclosure and the total number of items analysed. If the company discloses the evaluated item, it receives 1 point per item. If the firm does not disclose the item information, it receives 0. Therefore, if the company discloses all items, it has an environmental disclosure index equal to 1 (25/25). Table 4 shows the independent variables of this study: the indicators, and their respective sources.

Table 4. Independent variables description.

Capitalism pillars	Indicator	Source
The role of the state	Index of Economic Freedom (ECOFRE)	Heritage Foundation
The role of financial markets	Foreign direct investment (FORINV)	World Bank
The role of human capital	Availability of specialized training services (SPETRA)	World Economic Forum
The role of social capital	Corruption Perceptions Index (CORPER)	Transparency International
The role of corporate governance	Protection of property rights (PRORIG)	Fraser Institute

Independent variables represent the pillars of capitalism, according to the study by Fainshmidt et al. (2016) According to this study, the main characteristics of capitalism are the role of the state, the role of financial markets, the role of human capital, the role of social capital and the role of corporate governance. The economic freedom index is measured by aggregating 12 indicators, for example property rights, judicial effectiveness, government integrity, tax burden, government spending, fiscal health, business freedom, labour freedom, monetary freedom, trade freedom, investment freedom and financial freedom.

Foreign direct investment are the net inflows of investment to acquire a lasting management interest in an enterprise operating in an economy other than that of the investor. Availability of specialized training services measures the existence of high-quality professional training services in the country. This indicator ranges from 1 (lowest availability) to 7 (highest availability). Corruption Perception Index measures the perception of corruption in 180 countries, according to businesspeople and experts, ranging from 0 (highly corrupt country) to 100 (cleanest country). Protection of property rights measures the ability of property rights and financial assets to be defined and protected by law, ranging from 1 (rights poorly protected by law) to 7 (rights protected by law).

This study looked at two control variables: return on equity (ROE) and company size (SIZE). ROE was measured using the ratio between net income and total equity. The size of the company was measured by the number of employees over 1000. All the information was collected from the Thomson Reuters database.

First, the results show the descriptive statistics of the variables, such as number of observations, mean, standard deviation, minimum and maximum. Second, multicollinearity concerns have been checked by calculating the Pearson correlation coefficients. Third, econometric models were used to predict the impact of independent variables on environmental disclosure. The econometric models used were based on dependence techniques for panel data, because the use of panel data facilitates the evaluation of firms over time by analysing many years of observation in the same model (Garcia-Sanchez et al., 2016).

To test the hypotheses, we run the following model:

$$ENVDIS_{it} = \beta_0 + \beta_1 ECOFRE_{it} + \beta_2 FORINV_{it} + \beta_3 SPETRA_{it} + \beta_4 CORPER_{it}$$
$$+ \beta_5 PRORIG_{it} + \beta_6 ROE_{it} + \beta_7 SIZE_{it} + \theta_i + \varepsilon_{it}$$

Where the "i" refers to the firm, "t" represents the time, "ß" is the estimated parameter, "θ" refers to the unobservable time-invariant, the non-observable heterogeneity, and non-observable differences among firms, which are potentially correlated with the independent variables. Finally, the "ε" refers to the error term.

4. Results

4.1 Descriptive analysis

Table 5 provides a summary of the main descriptive statistics and Shapiro-Francia W test for normality. Environmental disclosure shows, on average, a value of 0.439. Thus, the sample firms disclosed 43.90% of the 25 items analysed. Moreover, the data reveal that there were companies that did not disclose any environmental item (minimum = 0) and at least one company disclosed all the environmental items analysed (maximum = 1).

Table 5. Descriptive Statistics.

Variable	No. of observations	Mean	Std. Dev.	Min.	Max.	Shapiro-Francia W test
ENVDIS	26433	0.439	0.294	0	1	0.91
ECOFRE	26433	75.417	3.324	67.5	84.2	0.97
FORINV	26433	2.482	5.587	-39.546	81.324	0.46
SPETRA	26433	5.693	0.289	4.8	6.7	0.97
CORPER	26433	77.821	5.665	69	95	0.92
PRORIG	26433	7.003	0.403	5.88	7.93	0.95
ROE	25071	0.140	0.451	-11.987	12.134	0.28
SIZE	26433	26.791	68.151	0.89	2200	0.31

Regarding the independent variables, economic freedom averages 75.41, foreign direct investment averages 2.48, availability of specialized training services averages 5.69, perception of corruption averages 77.82 and protection of property rights averages 7.00. Focusing on the control variables, ROE averages 0.14 and company size averages 26.79. The Shapiro-Francia W test for normality was provided for the variables. The results indicate that the data follow a normal distribution, since the p value is greater than the chosen alpha level.

4.2 Bivariate analysis

Table 6 presents the results of the variance inflation factor (VIF) and the correlation matrix of the variables. Multicollinearity can be detected with the aid of variance inflation factor. If the VIF value is close to 10, then multicollinearity is problematic. As all VIF values are not close to 10, we can conclude that multicollinearity is not an issue in our analysis.

Table 6. VIF and Correlation Matrix.

	VIF	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) ENVDIS		1.00							
(2) ECOFRE	1.46	0.15***	1.00						
(3) FORINV	1.05	0.03***	0.15***	1.00					
(4) SPETRA	1.15	0.01***	0.30***	0.04***	1.00				

(5) CORPER	1.44	-0.01**	0.20***	0.11***	0.20***	1.00		
(6) PRORIG	1.54	-0.13***	-0.36***	0.07***	-0.12***	0.37***	1.00	
(7) ROE	1.01	0.03***	0.05***	0.02***	0.04***	-0.00	-0.05***	1.00
(8) SIZE	1.02	0.20***	0.02***	0.02***	0.03***	-0.07***	-0.08***	0.03***	1.00

Note. ***p<0.01; **p<0.05; *p<0.10.

As can be seen in Table 6, no explanatory variable has a high correlation with environmental disclosure. The coefficients obtained are weakly correlated since they have values below 0.80. In general, the matrix presents variables with a low correlation between them, since the highest correlation was 0.37, between perception of corruption and protection of property rights. Therefore, these findings confirm that multicollinearity is not a problem.

4.3 Multivariate analysis

Table 7 presents the results of the panel data regression. Four models were built to test the hypotheses of this study. In Model I and Model II, we explore the association between the pillars of capitalism and environmental disclosure without considering companies in the financial sector. In Model III and Model IV, we use all 3248 companies in the sample, considering all eleven sectors of activity.

Table 7. Multivariate Analysis Results.

	Model I		Model II		Model III		Model IV	
Variable	Coef.	t	Coef.	z	Coef.	t	Coef.	z
ECOFRE	0.011***	15.52	0.010***	15.19	0.011***	17.01	0.010***	16.64
FORINV	0.001***	3.69	0.001***	3.58	0.000***	3.18	0.000***	3.09
SPETRA	-0.046***	-6.34	-0.049***	-6.76	-0.043***	-6.43	-0.046***	-6.93
CORPER	-0.000	-1.24	0.000**	2.15	-0.000	-0.64	0.001***	2.97
PRORIG	-0.043***	-5.67	-0.074***	-12.21	-0.040***	-5.72	-0.070***	-12.55
ROE	0.013***	3.33	0.013***	3.32	0.012***	3.10	0.012***	3.11
SIZE	0.000***	30.22	0.000***	29.96	0.008***	32.44	0.000***	32.16
Obs.	22274		22274		25071		25071	
Effect	Fixed		Random		Fixed		Random	
R-squared	R²within: 0.0664		R²overall: 0.0734		R²within: 0.0668		R²overall: 0.0737	
F-test	226.12***				256.07***			
Wald x² test			1764.24***				1993.33***	
Year effects	Yes		Yes		Yes		Yes	
Hausman test	Prob>chi2= 0.0000				Prob>chi2= 0.0000			

Note. ***p<0.01; **p<0.05; *p<0.10.

Model I analyses the data panel on the assumptions of the fixed effects model and Model II uses the assumptions of the random effects model. When operationalizing the Hausman test for choosing between these two models, the results indicated that Prob>chi2 = 0.0000, indicating that the fixed effects model is better. Model III and Model IV analyse the total sample, without excluding financial companies. Hausman test showed results that allow us to choose the fixed effects data model (Model III). Therefore, the analysis and discussion of the results will focus on Models I and III.

The data show that greater economic freedom positively influences environmental disclosure. We can infer that a market with less interference from the state may be important for firms to disclose more information about their environmental issues. Our evidence also

shows that in countries with greater foreign investment, companies tend to have a more complete disclosure of certain environmental issues. Companies disclose more environmental information to signal to stakeholders, which includes investors, that the company's practices are transparent not only in financial and economic aspects.

The findings show that having a more specialized workforce in the country is not a determining factor for companies to have a greater engagement with environmental disclosure. The availability of specialized training services has a negative effect on environmental disclosure, which contradicts our initial hypothesis. The variable that measures the level of perception of corruption was not significant. The property rights protection variable provides a negative sign. As a result, companies based in countries with a higher level of protection of property rights are less likely to disclose environmental information in more detail.

Regarding the control variables, ROE and company size showed a positive sign, indicating that companies with higher financial performance tend to have greater environmental disclosure. Companies with greater financial availability have more resources to prepare a more complete environmental report. Additionally, due to their larger size, these companies are under greater pressure from stakeholders.

The results of our analysis indicate that three hypotheses can be confirmed: H1, H2, and H5. Thus, countries with less state interference and more foreign investments tend to have companies with greater environmental disclosure. In addition, countries with greater protection of property rights are not an explanatory factor for environmental disclosure. Table 8 presents the summary of the results found.

Table 8. Summary of the Results.

Capitalism pillars	Variable	Hypothesis	Predicted sign	Obtained sign	Result
The role of the state	ECOFRE	H1	+	+	Confirm
The role of financial markets	FORINV	H2	+	+	Confirm
The role of human capital	SPETRA	H3	+	-	Not confirm
The role of social capital	CORPER	H4	+	not significant	Not confirm
The role of corporate governance	PRORIG	H5	-	-	Confirm

The results could not confirm hypothesis 3 since the signal was different from our expectations. Hypothesis 4 was also not confirmed, as it did not show significance within acceptable standards.

5. Discussion and implications

The findings show that in countries with greater economic freedom, companies tend to have greater environmental disclosure. This result is similar to the findings by Baughn et al. (2007) and Hartmann and Uhlenbruck (2015). According to Jackson and Apostolakou (2010), in more liberal countries, firms are more involved in social responsibility initiatives as a way to replace the lack of regulations. Economic freedom can stimulate managerial innovation and the introduction of technologies to improve environmental performance.

Companies that operate in more open markets are more likely to enter the international market (Graafland, 2019). Companies are under more pressure from stakeholders to legitimize their actions and therefore disclose a sustainability report with more environmental information (Hartmann & Uhlenbruck, 2015). Markets with greater economic freedom can instigate

competition between firms, which will adopt new ideas and concepts of social responsibility to create value (Baughn et al., 2007). Roy and Goll (2014) also found that in more economically free countries, companies are more engaged with environmental disclosure.

Another finding of this study is that when companies are located in countries with greater foreign direct investment, they disclose more environmental information. In fact, in countries with the presence of more foreign investors, companies will seek greater innovation, which includes environmental issues (Gallén & Peraita, 2018). Thus, disclosing more information in their official reports can reduce the information costs between local and foreign investors (Cai et al., 2019).

This assumption is supported by Marano and Kostova (2016), who suggest that greater foreign investment implies greater demands for environmental transparency. In this context, firms disclose more environmental information due to greater visibility, consequently they have greater responsibility to their stakeholders (Khan et al., 2013). In addition, investing in environmental disclosure can be interesting to attract new foreign investments. Our finding is in line with the study by Chapple & Moon (2005), which also found a positive influence of greater foreign investment in the country on environmental disclosure.

Unlike our research hypothesis, the availability of specialized training services does not have a positive effect on environmental disclosure. This contradicts the work by Ortas et al. (2019), who found that greater availability of intellectual capital in the country positively affects the disclosure of social and environmental information. According to Greening and Turban (2000), companies disclose more environmental information to attract qualified professionals. However, when they are operating in developed markets, which have a highly qualified workforce, as is the case in our study sample, educational factors do not become decisive for environmental disclosure.

Ioannou and Serafeim (2012) believe that countries with a solid educational system have business schools that favour the debate on corporate social responsibility. Therefore, in these countries it is expected that companies may have greater responsibility for environmental disclosure. In societies with a solid educational system and greater availability of training for employees, people expect greater performance from firms in social responsibility (Rosati & Faria, 2019).

The results show that greater protection of property rights has a negative effect on environmental disclosure. Countries with the highest protection of property rights, firms tend to serve the interests of stakeholders, releasing official reports with financial, economic and governance information (Miniaoui et al., 2019). In economies with greater investor protection legislation, it is common for companies to include more financial issues in their official reports than other types of information, such as environmental disclosure (Frías-Aceituno et al., 2013).

The findings of this research have some theoretical implications. First, this study analyses new variables to compose the characteristics of capitalism, since although there are many studies that relate environmental disclosure and factors at the firm-level, there is still a need for studies that examine the determining factors of environmental disclosure at the country-level. Additionally, we use the theoretical framework proposed by Fainshmidt et al. (2016) to select these variables.

Second, this study provides a new evidence for studies on varieties of capitalism and environmental disclosure, showing that organizations are shaped by national institutions. The company's success also depends on factors external to them, such as the characteristics of capitalism in the countries where they operate (Magnin, 2018). Although the Variety of

Capitalism approach defines particular characteristics for liberal economies and coordinated economies, our study has shown that certain characteristics of capitalism influence environmental disclosure in both types of capitalism.

Third, environmental disclosure is the outcome of corporate strategies and policies. However, national institutions can shape this responsible corporate behaviour since the characteristics of capitalism differ between countries. These characteristics are the result of problems in coordinating the relationship between companies and national institutions (Hall & Soskice, 2001). Therefore, this research reveals that companies' priorities in environmental disclosure will change according to the country where they operate.

The conclusions also have implications for companies located in countries analysed. Managers should pay greater attention to the country's capitalism characteristics when adopting environmental disclosure actions. For example, in more liberal countries, greater investment by companies is expected to produce a more complete sustainability report. Furthermore, results of this study can also be useful for policy makers. By investing more in certain characteristics of their countries, governments can open their markets in order to increase the transparency of their firms, which includes environmental disclosure.

6. Conclusion

This study aimed to examine the effect of the characteristics of capitalism on environmental disclosure. We analysed the environmental disclosure of 3248 companies based in liberal economies and coordinated economies. To measure the characteristics of capitalism, this research investigated five variables: economic freedom, foreign direct investment, availability of specialized training services, perception of corruption and protection of property rights.

The findings show that in more liberal countries, companies disclose more environmental information. It was also found that countries with greater foreign direct investment, companies have greater environmental disclosure. In addition, companies based in countries with greater availability of specialized training and greater protection of property rights have less environmental disclosure. In general, we find evidence that confirms the main thesis of the Variety of Capitalism approach: the behaviour of firms is shaped by the relations between the state and society. Certain characteristics of capitalism will have an impact on companies' environmental policies.

6.1 Limitations and future research

In common with all research, our results should be treated with caution. We measure the pillars of capitalism through the theoretical framework proposed by Fainshmidt et al. (2016). Thus, the characteristics of capitalism were limited to five key issues. In addition, environmental disclosure was measured by its quantity and not by the quality of that information. Another limitation is that this study looked only at companies based in coordinated and liberal economies.

Future research can examine the characteristics of capitalism considering other theoretical frameworks, which may include other variables independent of the debate of national institutions. In addition, future research in this area could analyse environmental disclosure considering the disclosure guidelines of the Global Reporting Initiative. Furthermore, we support next studies to increase the sample of companies, also examining

companies from emerging countries and expanding the theoretical discussion to the institutional voids.

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