

What is the role of ESG in value relevance? A comparison of the evidence in Latin America before and during the pandemic of COVID-19

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Resumo

Objective: to analyze the value relevance of environmental, social, and corporate governance (ESG) performance by comparing the period before and during the pandemic.

Method: the sample consists of 1,937 observations from six Latin American countries in the sample period 2010-2021. The data were collected from Refinitiv Eikon® and treated by Ordinary Least Squares (OLS) and Generalized Method of Moments (GMM) panel data.

Results: show that the ESG variable had a significant and negative relationship with the stock prices for the overall analysis (2010-2021) using the OLS model, while in the GMM model, the relationship was positive. OLS panel analysis indicated no significant relationship both before and during the pandemic. The results in the GMM model (reference in this research for the endogeneity control) allow us to conclude that investors in Latin American companies are considering ESG performance information, especially during the pandemic, as a relevant factor for their decision-making process, according to the Stakeholder Theory.

Contribution: can contribute to investors by showing that ESG performance in Latin America is relevant, as it can positively affect stock prices. Managers also have signs that higher ESG performance can create value for the organization. Thus, investors and managers know that the higher the ESG performance, the higher tends to be the stock price. The study can also contribute to researchers by highlighting that endogeneity problems need to be considered in value relevance models.

Keywords: Environmental, social, and corporate governance, value relevance; corporate social responsibility.

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Introduction

ESG is the acronym for Environmental, Social, and Governance, and is a metric of company performance. It was developed in a 2004 report by 20 financial institutions, and it was first mentioned in the United Nations Principles for Responsible Investment (UNPRI) (Gillan et al., 2021; United Nations Environment Programme Finance Initiative, 2005). ESG is how companies and investors integrate environmental, social, and governance concerns in their business (Gillan et al., 2021). It is considered a non-financial metric that stakeholders can use to evaluate an organization and make decisions to allocate their capital to it, considering the risks involved (Broadstock et al., 2021).

The United Nations recommends that investors consider ESG performance in their decision-making (United Nations Environment Programme Finance Initiative, 2005). This recommendation is built on the assumption that entities adopting ESG practices contribute to the community, making stakeholders perceive such practices and rewarding companies in the long term through the creation of value (Miralles-Quiros et al., 2017).

During the pandemic, companies with the highest ESG performance were identified as the best performers in the capital markets (Albuquerque et al., 2020; Broadstock et al., 2021; Ding et al., 2021). The perspective behind this ESG contribution lies in the belief that ESG activities can assist in building social capital and developing trust in the company, which can motivate stakeholders to remain faithful to the entity (Broadstock et al., 2021).

ESG performance can be used as an information source by users for decision-making, as better ESG performance may suggest that the company is more focused on transparency (Li et al., 2018). This metric can thus be related to stock price since more information on transparency suggests lower risk to the market. Therefore, companies with higher ESG are expected to have higher stock prices (value relevance) (Chan et al., 2022; Fazzini & Dal Maso, 2016; Miralles-Quiros et al., 2018, 2019; Zuraida et al., 2018).

Previous studies investigated the relationship between ESG and stock price in the Italian capital market (Fazzini & Dal Maso, 2016), in 38 countries (Zuraida et al., 2018), in the Brazilian market (Miralles-Quiros et al., 2018), in commercial banks in 20 countries (Miralles-Quiros et al., 2019), in Chinese entities (Chan et al., 2022), and Japanese and Malaysian companies (E-Vahdati et al., 2023).

It is noted that the studies did not focus on the relationship between ESG and value relevance by comparing periods with and without the pandemic. The comparative analysis between the periods is a gap to be explored

since the previous studies analyzed periods before the pandemic. The relevance of the comparative study is based on the premise that event studies have evidenced higher abnormal returns in companies with better ESG performance after the pandemic onset (Ding et al., 2021). The comparative analysis identifies whether ESG performance was significant in explaining the stock price both before (corroborating previous studies) and during the pandemic, showing that such practices are relevant to investor capital allocation decision-making.

In this sense, this research aims to analyze the value relevance of ESG performance by comparing the period before and during the pandemic. The sample includes 1,937 observations from six Latin American countries in the period 2010–2021, with data collected in the Refinitiv Eikon®. Data were winsorized at 95% and processed using panel OLS and GMM. Value relevance was measured by the model of Ohlson (1995). The results show that ESG is negatively related for the whole period in OLS and positively related in GMM. In the OLS model, there is no significant relationship before and during the pandemic, while in the GMM, it is negative and positive before and during the pandemic, respectively.

The study can make an empirical contribution to investors by suggesting whether ESG performance positively affects stock prices. According to the UNPRI recommendations of the United Nations, investors are encouraged to consider ESG aspects in their capital allocation decision-making (United Nations Environment Programme Finance Initiative, 2005). The research may also assist managers by evidencing whether the adoption and disclosure of ESG performance increase stock prices, which may help create long-term value for the company. The study can also benefit researchers by highlighting the need to consider endogeneity in their research.

2 Literature review and formulation of research hypotheses

Freeman (1984, p. 59) mentions which stakeholders they represent: “any group or individual who affects or is affected by the achievement of the company's objectives”. In this sense, the Stakeholder Theory considers that the company's commitment is to generate value for its users. So, this theory states that value is created for the company when it generates value for the different stakeholders (Parmar et al., 2010).

In this sense, when the organization develops the economic, ethical, and legal aspects (Carroll, 1979), it highlights its commitment to corporate sustainability and long-term value creation (Meek et al., 1995). Therefore, investing in ESG is one way to meet stakeholders' demands

by generating long-term value (Zuraida et al., 2018).

Investors consider ESG in their decision-making. In a global context, in 2019, ESG-focused portfolios raised more than USD 30 trillion in the world's major markets (Broadstock et al., 2021). Moreover, more than 3,000 institutional and professional investors have joined the UNIRPs, with their assets growing from USD 6.5 trillion in 2006 to more than USD 86 trillion in 2019 (Gillan et al., 2021). In Latin America, there was a 14.8% increase in ESG consideration as an investment factor by investors (Trent, 2019).

International studies suggest that entities with better ESG performance have higher abnormal returns (Albuquerque et al., 2020), lower volatility (Albuquerque et al., 2020; Broadstock et al., 2021), lower stock price reductions (Ding et al., 2021), and better investor attraction (Broadstock et al., 2021). As a result, investors may opt for ESG companies since, in addition to owning stocks in companies engaged with the environment, society, and corporate governance practices, they still generate higher returns on investments.

When analyzing stock prices, an important point to observe is value relevance, which can be understood as the usefulness of accounting information for investors to price assets (Francis & Schipper, 1999). The theoretical model was proposed in 1995 by Ohlson (1995). This model was tested by Collins et al. (1997) and considered the main one for this type of research. Collins et al. (1997) define that the value of a company is measured in terms of profits and equity. The authors emphasize that equity has greater relevance than net income for predicting future results due to the increase in the frequency and magnitude of extraordinary items, the change in firm size, and the increased negative results (Collins et al., 1997).

Holthausen and Watts (2001) classify value relevance studies into three categories: i) relative association studies; ii) incremental association; and iii) information content studies. This research adopts the incremental association study, which analyzes whether certain selected accounting information explains the value or returns (long windows) considering the inclusion of other specified variables. Relevance occurs if there is a statistically significant difference (Holthausen & Watts, 2001).

ESG performance facilitates lower-cost fundraising, enhanced reputation, reduced regulatory costs, more stable relations with society, retention of good employees, and more consistent revenues (Brammer & Millington, 2008; Miralles-Quiros et al., 2017). In this sense, the discussion of ESG value relevance is guided by the argument that companies are encouraged to adopt such practices to reduce information risk and increase stock prices (Gómez-Bezares et al., 2016) by creating long-term value (Miralles-Quiros et al., 2017).

Investors ESG-oriented stand out by considering both financial and non-financial criteria in their investment decisions (Gómez-Bezares et al., 2016). This increases their value compared to financial-only investors, as they consider different factors in their decision-making (Gómez-Bezares et al., 2016). In this sense, these investors can obtain higher long-term gains, becoming a differentiator for capital allocation in organizations (Gómez-Bezares et al., 2016). Therefore, the better an entity's ESG performance, the higher its stock price tends to be, as the company suggests greater credibility and trust to stakeholders (Miralles-Quiros et al., 2017), which generally value it on the stock market (Miralles-Quiros et al., 2018).

Fazzini and Dal Maso (2016) investigated the ESG value relevance of Italian companies in the period 2008-2013. They found that voluntary environmental disclosure correlates positively with firms' market value. Their discussion was based on two points: i) the presence of ethical investors encourages companies to disclose environmental information, and ii) the growing importance of environmental issues in investors' economic decision-making.

Zuraida et al. (2018) analyzed the relationship between ESG factors and stock prices in the period 2008–2012 in 38 countries. The results show a significant and positive relationship between ESG and components with the stock price. The discussion was based on the argument that traditional financial information has limited usefulness for investors as it is not sufficient to assess the company's ability to generate future profits, requiring the analysis of non-financial information.

Miralles-Quiros et al. (2018) investigated whether ESG performance significantly influences the stock price of Brazilian companies in the period 2010-2015. The results suggest that ESG increases stock prices. However, the market does not value all ESG components, as there is a relationship between environmental components for non-environmentally sensitive companies and social aspects and corporate governance for environmentally sensitive companies. The authors use the Value Enhancement Theory, which assumes that by integrating socially responsible activities into strategies, the organization creates long-term value for stockholders, which can also create value for the organization.

Miralles-Quiros et al. (2019) examined whether the ESG performance of commercial banks had a significant influence on stock prices in the period 2002–2015 in 20 countries. The results suggest that investors value the three ESG pillars differently, with environmental and corporate governance performance showing a positive relationship and social performance being negative. They ground the discussion in the context of banks' increased social responsibility activities following the global financial crisis

to enhance credibility and stakeholder trust.

Chan et al. (2022) studied the relationship between ESG performance and the relevance of accounting information in 6,486 observations of Chinese non-financial companies in the period 2011-2020, not including analysis/control of the pandemic. The results showed that ESG performance significantly reduces stock prices. The discussion was focused on the importance of China as one of the world's largest economies and the need to identify whether ESG performance creates long-term value for stockholders.

E-Vahdati et al. (2023) analyzed the impact of ESG practices and its three pillars on stock prices in Japanese and Malaysian companies in the period 2015-2019, and the moderating role between company awards on CSR and ESG practices. The study also explored the moderating role of the current president's previous occupation as CEO. The results showed that ESG performance has a positive effect on stock prices in both countries, being more relevant in Malaysia. Regarding the ESG pillars, environmental was significant only in Malaysia, social was significant in both countries, and corporate governance was significant only in Japan. The authors also found that CSR awards moderate ESG market valuation only in Malaysia and that the current president's previous occupation as CEO moderates ESG value relevance in Japan, supported by the Signaling and Positive Synergy Theories, respectively.

Based on the studies on the value relevance of ESG and the Stakeholder Theory that managers show information to generate long-term value, the first hypothesis is formulated.

H1: Companies with better ESG performance have higher stock prices.

The studies found a positive association between ESG and the pandemic, suggesting that in a period of crisis, companies that perform more ethical behaviors are more accepted by society as they represent less risk to users (Al Amosh & Khatib, 2023). In addition, in this period, there were higher abnormal returns for companies with better ESG performance (Albuquerque et al., 2020), as well as they were less affected by Covid-19 (Albuquerque et al., 2020; Broadstock et al., 2021). These results reinforce the prospect of long-term value creation, signaling lower risks for investors to allocate their capital (Broadstock et al., 2021; Gómez-Bezares et al., 2016). In this sense, the second hypothesis is formulated.

H2: Companies with better ESG performance during the pandemic have higher stock prices.

After the literature review presentation and the hypotheses construction, the next topic introduces the methodological aspects of the study.

3 Methodological Procedures

3.1 Data collection

Data collection was done on the Refinitiv Eikon® Platform. The initial sample consisted of 11,916 observations from 13 Latin American countries in the period 2010 to 2021. Data were collected in US dollars (US\$) for comparing values between different countries. The final sample comprised 1,937 observations and 291 firms, as detailed in Table 1.

Table 1 – Survey sample by country (2010-2021)

	Initial sample	Non-ESG country	Missing data	Final sample
Argentina	876	-	739	137
Brazil	4.308	-	3.440	868
Chile	2.088	-	1.782	306
Colombia	516	-	386	130
Ecuador	84	84	84	0
Jamaica	624	624	624	0
Mexico	1.668	-	1.265	403
Panama	12	12	12	0
Peru	1.188	-	1.095	93
Santa Lucia	12	12	12	0
Trinidad and Tobago	216	216	216	0
Turks and Caicos Islands	12	12	12	0
Venezuela	312	312	312	0
Total	11.916	1.272	9.979	1.937

Source: Prepared by the authors.

From the initial sample, 1,272 observations referring to countries that did not present ESG were excluded: Ecuador, Jamaica, Santa Lucia, Trinidad and Tobago, Turks and Caicos Islands, and Venezuela. Panama had only one company reporting ESG in the previous five years, but due to the country analysis, it would not be possible to segregate them, so accordingly, it was also excluded. Subsequently, 9,979 observations from firms that were missing data for one or more variables were excluded. The data were winsorized at the 95% level to handle outliers. For the period before the pandemic onset, 1,423 observations were obtained, while for the period after the pandemic onset, 514 observations were obtained. It should be noted that all information is annual.

3.2 Data processing

Data were analyzed in unbalanced short-panel regression models. The F-Chow, Lagrangian Multiplier of Breusch-Pagan, and Hausman tests were applied to verify whether the panel has POLS, fixed, or random effects. The results showed the presence of a panel with fixed effects. The Variance Inflation Factor (VIF) test revealed that there was no problem with multicollinearity since the VIF was less than 5.0 (Akinwande et al., 2015).

Endogeneity can be a problem in statistical analyses when there is a correlation between the independent variable and measurement errors that can skew the results. The Durbin-Wu-Hausman test found the presence of endogeneity. To solve this problem, the Generalized Method of Moments (GMM) model was applied, which is an estimation technique that allows regressors to remain endogenous and still obtain robust and efficient coefficients (Forti et al., 2015).

3.3 Value relevance calculation

The value relevance was calculated according to the valuation model proposed by Ohlson (1995), and empirically tested by Collins et al. (1997). The model considers BVPS and EPS as variables that affect the firm's market value. Following the study of Marques et al. (2022) segregated the model to verify the association of each variable, according to Equations 1 to 7.

$$P_{i,t+1} = \beta_0 + \beta_1 VPA_{i,t} + \epsilon_{i,t} \quad (1)$$

$$P_{i,t+1} = \beta_0 + \beta_1 LPA_{i,t} + \epsilon_{i,t} \quad (2)$$

$$P_{i,t+1} = \beta_0 + \beta_1 VPA_{i,t} + \beta_2 LPA_{i,t} + \epsilon_{i,t} \quad (3)$$

$$P_{i,t+1} = \beta_0 + \beta_1 ESG_{i,t} + \epsilon_{i,t} \quad (4)$$

$$P_{i,t+1} = \beta_0 + \beta_1 VPA_{i,t} + \beta_2 ESG_{i,t} + \epsilon_{i,t} \quad (5)$$

$$P_{i,t+1} = \beta_0 + \beta_1 LPA_{i,t} + \beta_2 ESG_{i,t} + \epsilon_{i,t} \quad (6)$$

$$P_{i,t+1} = \beta_0 + \beta_1 LPA_{i,t} + \beta_2 VPA_{i,t} + \beta_3 ESG_{i,t} + \epsilon_{i,t} \quad (7)$$

Where: P: stock price of the company i in period t+1 (April of the following year); EPS: Earnings per company stock i in period t; BVPS: Asset value per stock of the company i in period t; Company ESG i in period t.

The expected relationships between the explanatory and control variables with the dependent variable (stock price) are displayed in Table 2.

Table 2 Relationship between EPS, BVPS, ESG, and stock price.

Variables	Relation	Justification	Authors
EPS	+	Profit is an important variable considered by users to evaluate the choice of investment since it has greater power to distribute dividends to the number of stocks.	(Marques et al., 2022; Ohlson, 1995)
BVPS	+	Net equity suggests a greater capacity to create asset value, as well as containing results that do not pass through the income statement but may affect it in the future.	(Marques et al., 2022; Ohlson, 1995)
ESG	+	ESG may suggest greater long-term value creation and increased transparency, which may affect stock prices.	(Miralles-Quirós et al., 2018; Zuraida et al., 2018)

Source: Prepared by the authors.

Data were also segregated into pre-pandemic periods (2010-2019) and post-pandemic periods (2020-2021), to verify the behavior of stock price and ESG in the pandemic period. After the presentation of the expected relationships, the ESG variable is introduced.

3.4 ESG variable

The ESG variable used in this research refers to a score released by Refinitiv Eikon®. It consists of more than 630 indicators, and the platform discloses this information for more than 85% of the global market value (Refinitiv Eikon®, 2022). The ESG scores on this basis transparently and objectively measure ESG performance, commitment, and effectiveness considering the data disclosed by the company (Refinitiv Eikon®, 2022).

The percentile rank scores are simple to understand, as they are available in percentages and letter grades from D- to A+. The metric uses 10 categories evaluated across three components – environmental, social, and corporate governance. In the environmental component, there are 3 (three) categories: resource use, emissions, and innovations; in the social component, there are 4 categories: workforce, human rights, community, and responsible products; and in the corporate governance component, there are 3 categories: management, stockholders, and CSR strategy. The ESG component score is a relative sum of the category weights, which vary by sector for environmental and social categories. For governance, the weights remain the same across all sectors. Component weights are normalized to percentages ranging from 0 to 100, and the closer to 100 (one hundred), the higher the ESG performance.

4 Analysis and Discussion of Results

4.1 Descriptive analysis

The results of the descriptive statistics in (Table 3) show that the average ESG and its components (except governance) are higher for the post-pandemic period, and these have a lower coefficient of variation, suggesting less heterogeneity among companies.

Tabela 3 – Descriptive statistics segmented by pandemic period (2010-2021)

Variables	Pre-pandemic period (2010-2019)			Pandemic period (2020-2021)		
	Obs	Average	CV	Obs	Average	CV
ESG	1.423	45,974	46,047	514	49,560	42,941
Environmental	1.423	40,271	67,566	514	43,371	61,811
Social	1.423	47,612	52,776	514	53,011	46,280
Governance	1.423	50,369	43,344	514	50,104	45,711
Stock price	1.423	4,255	90,503	514	3,319	99,734
Profit per stock	1.423	0,316	127,077	514	0,233	146,318
The asset value of stock	1.423	3,463	109,232	514	2,484	121,344

Source: Prepared by the authors.

The average stock price (in dollars) showed a reduction during the pandemic, in addition to a higher coefficient of

variation (higher heterogeneity). This result is in line with the study by Albuquerque et al. (2020), which also found a reduction in stock prices after the start of the pandemic. This result was expected, as this period of uncertainty led many investors to consider other assets in their portfolios, such as the dollar and gold (Salisu et al., 2021).

Companies also showed a reduction in EPS and BVPS. This reduction was expected, considering that with the pandemic, entities were forced to follow social isolation measures imposed by countries to reduce contagions by the pandemic. These practices led some companies to temporarily close their operations, contributing to lower results. With the loss, there is a reduction in equity, unless there is a capital pay-in, a capital reserve, or positive comprehensive income.

The results allow us to conclude that Latin American companies have experienced a devaluation in their market value (stock price) and a reduction in accounting performance (EPS). In contrast, an increase in ESG performance was observed, which can be attributed to the increased demand from large investment funds for socially responsible companies (Miralles-Quiros et al., 2017). Another factor that may have contributed to the increase in ESG performance is the perception of lower risk by the market, which may increase the stock price (Gómez-Bezares et al., 2016) generating value in the long term (Miralles-Quiros et al., 2017).

An analysis by country reveals that companies in Colombia had the best ESG performance (53.678), with the lowest coefficient of variation (30.855%), suggesting more homogeneity. The Peruvian companies had the lowest ESG performance (39.014), with the second-highest coefficient of variation (50.620), only after Chile. Brazilian companies had the second-highest mean (50.353) and second-lowest coefficient of variation (40.934%).

As for the price per stock (in dollars), Argentine companies have the lowest value with 2.011. They have the second-highest coefficient of variation (134.985%) only after the Peruvians (150.976%). The highest average price is for the Colombians (5.484), with the second-lowest coefficient of variation (83.732%), after just the Brazilians (70.184), who have an average of 4.315 (second highest).

The complementary analysis by sector found that the sector with the best ESG performance is the Energy (49.996), and the Health has the lowest performance (37.064). Regarding the price per stock, the sector with the highest value is the Non-Cyclical Consumption (4.734), while the Utilities sector has the lowest value (2.641).

4.2 Results of the regression model and hypothesis testing: OLS model

Table 4 shows that BVPS and EPS (in December) have a positive relationship with the stock price (in April) and that they have economic relevance, according to the regression coefficient. Consequently, these variables may affect the investor's choice since the disclosure of positive results and the higher net equity increase the stock price. This finding corroborates the studies of Marques et al. (2022), Miralles-Quiros et al. (2019) and Zuraida et al. (2018), which found a positive and significant relationship between these two variables.

It is noteworthy that EPS is one of the most important variables for users to assess their choice for investment (Marques et al., 2022; Ohlson, 1995). Net equity suggests a greater capacity to create asset value and contains results that do not pass through the income statement (comprehensive income) and can't affect the organization's future performance (Marques et al., 2022; Ohlson, 1995). The ESG variable shows a negative and significant relationship (columns 5 to 7), with economic relevance, according to the

Tabela 4 – Analysis of the relationship between ESG and value relevance (2010-2021) in the OLS model

Variables	Statistical	BVPS	EPS	BVPS/EPS	ESG.	BVPS/ESG	EPS/ESG	Complete
		1	2	3	4	5	6	7
Constant	Coefficient	2,667*	3,076*	2,247*	4,572*	3,359*	3,589*	2,860*
	Standard error	0,326	0,949	0,287	0,356	0,409	0,308	0,355
BVPS	Coefficient	0,418*		0,304*		0,423*		0,309*
	Standard error	0,102		0,103		0,103		0,104
EPS	Coefficient		3,166*	2,674*			3,159*	2,659*
	Standard error		0,323	0,365			0,322	0,363
ESG.	Coefficient				-0,012	-0,015**	-0,011	-0,013**
	Standard error				0,008	0,007	0,006	0,006
N		1937	1937	1937	1937	1937	1937	1937
F		16,901*	96,123*	60,013*	2,525*	9,530*	49,138*	41,180*
r2 overall		0,390	0,337	0,464	0,002	0,370	0,323	0,453
r2 between		0,527	0,462	0,591	0,012	0,490	0,432	0,571
r2 within		0,117	0,177	0,234	0,004	0,123	0,180	0,239

Source: Prepared by the authors.

Caption: BVPS = equity value per stock; EPS = profit per stock; ESG = environmental, social, and governance. *, **, significance at 1% and 5%, respectively.

regression coefficient, showing that higher ESG performance suggests lower stock prices. This result corroborates the study of Chan et al. (2022), which also found a negative relationship in Chinese companies. These results do not confirm hypothesis H1 that entities with higher ESG performance have higher stock prices. So, the results do not match the Stakeholder Theory perspective, in which companies' ESG performance contributed to the stock price increase.

This result may be because investors in Latin America are still more concerned with the economic capacity of companies than with non-financial aspects. Another probable reason is that ESG generates value in the long term and has not yet been reflected in the stock price in the short term. This view may have begun to change because OLS models by year found that from 2016 to 2021 (except 2020) there was a positive relationship, being significant at 5% for the years 2018 and 2019. Another factor that may suggest a change in perspective on the importance of ESG is the increase in the number of companies with disclosed ESG performance, with 54 in 2010 and 256 in 2021.

The analysis segmented by the pandemic is detailed in Table 5. The results evidence that both before and during the pandemic, BVPS and EPS are positively and significantly related to stock price and economic relevance. That suggests that accounting information was able to affect the stock price, both before and during the pandemic. This result corroborates the studies of Marques et al. (2022), Miralles-Quirós et al. (2019) and Zuraida et al. (2018) that increased ability to generate profit and have a higher net worth positively affects stock price.

The ESG variable showed no significant relationship either before or after the pandemic. This result does not

confirm hypothesis 2 that during the pandemic period, the disclosure of ESG information was able to affect the stock price of Latin American companies. Cordazzo et al. (2020) also found no significant relationship in Italian companies after the ESG disclosure obligation.

In addition to the analysis of the total ESG, an analysis of each ESG component was also performed, and the results are provided in Table 6. The BVPS and EPS were economically relevant to explain the stock price.

Table 6 – Analysis of the relationship of E, S, and G with value relevance (2010-2021)

Variables	Statistical	Environmental	Social	Corporate governance
		1	2	3
Constant	Coefficient	2,860*	2,788*	2,234*
	Standard error	0,311	0,329	0,381
BVPS	Coefficient	0,306*	0,311*	0,304*
	Standard error	0,104	0,103	0,103
EPS	Coefficient	2,663*	2,660*	2,674*
	Standard error	0,364	0,363	0,365
E	Coefficient	-0,009**		
	Error	0,005		
S	Coefficient		-0,011*	
	Standard error		0,004	
G	Coefficient			0,000
	Standard error			0,006
N		1937	1937	1937
F		40,960*	42,580*	40,110*
r2 overall		0,455	0,459	0,464
r2 between		0,573	0,576	0,591
r2 within		0,455	0,240	0,234

Source: Prepared by the authors.

Caption: BVPS = equity value per stock; EPS = profit per stock; E = environmental; S = social; G = corporate governance. *, **, significance at 1% and 5%, respectively.

Stock prices were found to be negatively affected

Tabla 5 – Analysis of the relationship between ESG and value relevance segmented by the pandemic (2010-2021)

Variables	Statistical	BVPS	EPS	BVPS/EPS	ESG.	BVPS/ESG	EPS/ESG	Complete
		1	2	3	4	5	6	7
Panel A – Period before the start of the pandemic								
Constant	Coefficient	2,185*	2,712*	1,820*	3,989*	2,493*	2,757*	2,033*
	Standard error	0,273	0,193	0,219	0,401	0,344	0,314	0,281
BVPS	Coefficient	0,528*		0,376*		0,531*		0,378*
	Standard error	0,074		0,083		0,075		0,084
EPS	Coefficient		3,940*	2,931*			3,938*	2,923*
	Standard error		0,380	0,455			0,379	0,454
ESG.	Coefficient				-0,004	-0,007	-0,001	-0,005
	Standard error				0,007	0,005	0,006	0,005
N		1423	1423	1423	1423	1423	1423	1423
r2 overall		0,372	0,337	0,449	0,002	0,368	0,337	0,448
r2 between		0,532	0,500	0,607	0,011	0,521	0,499	0,602
r2 within		0,141	0,198	0,261	0,003	0,145	0,198	0,263
Panel B – Period during the pandemic								
Constant	Coefficient	1,521*	2,838*	1,448*	3,435*	1,779*	2,970*	1,705*
	Standard error	0,176	0,202	0,170	0,520	0,415	0,451	0,391
BVPS	Coefficient	0,710*		0,656*		0,712*		0,659*
	Standard error	0,062		0,065		0,062		0,064
EPS	Coefficient		1,895*	0,898**			1,853*	0,880**
	Standard error		0,469	0,415			0,467	0,416
ESG.	Coefficient				-0,003	-0,005	-0,003	-0,005
	Standard error				0,010	0,007	0,008	0,007
N		514	514	514	514	514	514	514
r2 overall		0,438	0,314	0,476	0,006	0,436	0,311	0,473
r2 between		0,483	0,402	0,521	0,011	0,479	0,394	0,517
r2 within		0,009	0,003	0,008	0,040	0,014	0,003	0,012

Source: Prepared by the authors.

Caption: BVPS = equity value per stock; EPS = profit per stock; ESG = environmental, social, and governance. *, **, significance at 1% and 5%, respectively.

by environmental and social aspects. There was no significant relationship before or during Covid-19 for all ESG components. Therefore, the results suggest that investors may not consider ESG performance in their decision-making in Latin America. The reason may be the lack of a sustainability culture for investors and a lack of more government incentives, which could offer income tax exemptions to increase the search for sustainable companies.

In Brazil (the country with the most observations), from 2018 onwards, there was a growth of individuals in the stock market, mainly caused by the low-interest rate (Selic), which increased by people on the stock market (Brasil Bolsa Balcão, 2020). These investors may be more focused on short-term financial returns, and for this reason, opt for companies with higher EPS and BVPS. Therefore, these results suggest that investors in Latin America are more concerned with the firm's short-term profitability than with its ability to generate long-term value, which may show a closer adherence to the Stockholder Theory perspective (stockholder wealth maximization) rather than the Stakeholder Theory perspective.

4.3 Results of the regression model and hypothesis testing: GMM model

According to the Durbin-Wu-Hausman test, the data reveal endogeneity problems, so the GMM model was applied. The results (Table 7) suggest that the stock price at t-1

is associated with the stock price at t, i.e., the previous stock price is a determinant of the current price. The BVPS and EPS results are like the OLS model, pointing to no statistical change in sign.

The ESG, in turn, showed a significant change in sign, but in terms of the magnitude of the coefficient's absolute value, the difference is low, being 0.013 (absolute value of OLS) and 0.010 (GMM). The positive relationship in the GMM model is in line with the premises of the Stakeholder Theory. These results suggest that firms with better ESG performance have higher stock prices, corroborating the studies of E-Vahdati et al. (2023), Fazzini and Dal Maso (2016), Miralles-Quirós et al. (2018, 2019) and Zuraida et al. (2018). So, it is possible to confirm H1 that companies with more ESG disclosure have higher stock prices.

The positive relationship found in this research can be aligned with the points discussed by Fazzini and Dal Maso (2016), which are: i) the presence of ethical investors encourages companies to adopt and disclose ESG information and ii) the growing importance of ESG issues in investors' economic decision-making. These results may also show that financial information may be limited, as it cannot predict future profit generation, requiring non-financial information (Zuraida et al., 2018). Therefore, ESG performance can create value for the stockholder, and at the same time, create value for the company (Miralles-Quirós et al., 2018).

Tabla 7 – Analysis of the relationship between ESG and value relevance (2010-2021) in the GMM model

Variables	Statistical	BVPS	EPS	BVPS/EP	ESG.	BVPS/ESG	EPS/ESG	Complete
		1	2	3	4	5	6	7
Constant	Coef.	1,014*	1,061*	0,961*	0,360*	0,373*	0,364*	0,487*
	EP	0,013	0,014	0,017	0,071	0,033	0,048	0,002
Price _{t-1}	Coef.	0,680*	0,633*	0,605*	0,710*	0,688*	0,642*	0,608*
	EP	0,002	0,002	0,003	0,005	0,002	0,003	0,000
BVPS	Coef.	0,022*		0,070*		0,015*		0,834*
	EP	0,002		0,003		0,002		0,001
EPS	Coef.		0,747*	0,718*			0,709*	0,056*
	EP		0,016	0,016			0,016	0,000
ESG.	Coef.				0,012*	0,013*	0,014*	0,010*
	EP				0,001	0,001	0,001	0,000
N		1.614	1.614	1.614	1.614	1.614	1.614	1.614
X ²		1,8e+5*	1,2e+5*	9,9e+4*	2,4e+4*	2,2e+5*	5,6e+4	7.3e+8*
Sargan test		168,6**	167,6**	167,86**	160,0**	169,82*	163,30**	197,43
Autocorrelation test (1)		-6,27*	-6,15*	-6,27*	-6,20*	-6,32*	-6,19*	-6,31*
Autocorrelation test (2)		-1,52	-1,67	-1,39	-1,73	-1,55	-1,71	-1,40

Source: Prepared by the authors.

Caption: BVPS = equity value per stock; EPS = profit per stock; ESG = environmental, social, and governance. *, **, significance at 1% and 5%, respectively.

As a result of lower standard error in the GMM model, the results suggest that the coefficients were better estimated. In addition, the p-statistic was also lower, suggesting more robust results. Consequently, the better results for GMM can be due to this model controlling the endogeneity in the sample.

In the period before the pandemic onset, the results highlighted that the EPS was statistically significant and positive, while the BVPS and ESG were negative. Therefore, before the pandemic, the ESG results were in line with a study of Chan et al. (2022), that found a negative relationship. It means that results do not corroborate the Stakeholder Theory of long-term value creation.

During the pandemic, the results were significant and positive in all three variables (EPS, BVPS, and ESG). Consequently, the results confirm H2 that companies with higher ESG information levels had an increased stock price during the pandemic. This result can be explained by the relevance of ESG performance in the pandemic, as it was considered a capital vaccine against the financial market crash (Dai, 2022). It is noteworthy that the Wald test is significant, suggesting model adherence, the Sargan test was not significant (as expected for the GMM model), but the Autocorrelation test (2) was significant, suggesting second-order autocorrelation.

Regarding the ESG categories, the results show a positive relationship for all components, with governance at 5% and others at 1%. The GMM tests were all consistent (Wald significant; Sargan and Autocorrelation (2) not significant). These results confirm H1 that firms with more ESG practices per component have higher stock prices.

In the pre-pandemic period, a negative relationship was seen between environmental performance and stock price, while the social and governance components showed a negative relationship. During the pandemic, only corporate governance had a negative relationship. The results suggest that before and during the pandemic, investors assigned different importance to the ESG components, corroborating the studies of Miralles-Quirós et al. (2018, 2019).

4.4 Sensitivity test

Six sensitivity analyses were performed. The first considered a regression for each country, with a model that does not consider segregation and another that does consider this period. In the model without segregation, the results revealed that ESG showed a negative and significant relationship for all companies, except for the Brazilian ones that were not a significant relationship. These results are not expected but can be justified by the fact that investors are still more concerned with the companies' economic capacity than non-financial aspects, in line with the Stockholders Theory (Friedman, 1970).

It is noteworthy that Argentine firms showed a negative and significant relationship for BVPS, suggesting that equity value negatively affects stock price. This variable did not show a significant relationship for Mexican and Colombian companies. In the analysis segregating by pandemic, it was found that in the period before and during the pandemic, there was no significant relationship between ESG and stock price in any country.

As for the environmental components, there was a negative and significant relationship for Chilean, Colombian, and Peruvian companies. In social aspects, the relationship is for the Argentinean, Chilean, Colombian, and Mexican entities. And in the aspects of corporate governance, there was a negative and significant relationship between Argentinian and Colombian companies. These results were not expected, since greater disclosure of environmental, social, and governance practices implies transparency, and therefore a higher stock price was expected.

A positive and significant relationship between the corporate governance component and the stock price was observed in Brazilian firms. These results are consistent with theoretical expectations that greater transparency suggests higher stock prices, corroborating the studies of Miralles-Quirós et al. (2018, 2019). These results support the perspective of the Stakeholder Theory that management focused on corporate governance tends to increase the stock price, as it increases investors' security. This positive relationship only in Brazil may be because the Brazilian market is one of the most developed in Latin America, with the first sustainability index in the region.

In the GMM model, the results suggest that ESG and the environmental component were positively related to stock prices in all countries except Colombia and Argentina, which were negative. Social was positively related in all countries except Colombia (non-significant) and Brazil and Argentina (negative). The relationship between the governance component and the stock price was negative, except for Brazil and Chile, which was positive.

The second analysis (OLS) applied a regression by sector, finding that the ESG had a negative relationship for the Communications, the Cyclical Consumption, the Energy, the Financial, and the Construction services sectors and was not significant for the other sectors. It suggests that, regardless of the firm's industry, higher ESG performance does not necessarily increase the stock price, corroborating the overall result (OLS) that investors in Latin America have not yet attributed the relevance of ESG in their investment decisions. In the GMM, there was a positive relationship for the Discretionary Consumption, the Materials, and the Utilities and was negative for the Energy and the Financial, suggesting that ESG relevance varies across sectors.

The environmental component showed a negative

relationship with the stock price in the sectors: the Communications Services, the Cyclical Consumption, the Energy, the Financial, the Health, and the Construction. For the social component, there was a significant and negative relationship for the Communications Services, the Energy, the Financial, and the Construction. And for the corporate governance component, the relationship is only found in the Financial and the Construction sectors. The results highlight that the behavior of the relationship between ESG components and stock price is negative but with differences between sectors.

In the GMM, there was a positive relationship in the environmental component for the Cyclical Consumption, the Industrial, the Materials and the Utilities, and was negative in the Non-Cyclical and the Financial. As for the social component, there was a significant and positive relationship in the Cyclical Consumption, the Materials and the Utilities and was negative in the Financial and the Industrial. And for governance, the results showed a positive relationship for the sectors of the Non-cyclical Consumption, the Industrial, the Materials and the Utilities. This result confirms that ESG performance may be more/less relevant depending on the sector of operation.

The third analysis performed the interaction of EPS and ESG. The assumption is that companies with more ESG have better accounting results (Albuquerque et al., 2020). The results corroborate the evidence in Table 4 and Table 5 that BVPS and EPS are important to explain the stock price positively. The ESG variable showed a negative and significant relationship with the stock price. The interaction between ESG and EPS did not show a significant relationship. No significant relationship was found in the analysis by category for any of the ESG components. Therefore, it is not possible to conclude that the EPS and ESG interaction increases the stock price.

The fourth analysis performed a test to check whether the presence of ESG influences the stock price (OLS model). For this purpose, a dummy was created, with 1 for companies with ESG and 0 for companies without ESG. ESG showed a negative and significant relationship. The results reinforce those previously found that investors have not considered ESG practices in their asset pricing decisions in Latin American countries. In the GMM model, the results showed a positive relationship, suggesting that the endogeneity problem may affect the results of the OLS model.

In the fifth sensitivity analysis, segregation by pandemic was performed for the ESG dummy. The results suggest that the ESG dummy was no significant relation in the pre-pandemic and post-pandemic periods. In the GMM model, the results revealed a positive relationship in the period before the pandemic and a negative relationship during the pandemic. The variables BVPS and EPS had a positive and significant relationship at both times and

models.

The sixth analysis tested the March stock price as a dependent variable. The OLS results highlighted a negative and significant relationship in the social component only, not confirming H1. In the comparison before and during the pandemic, there was no significant relationship in any model, not corroborating H2. The variables EPS and BVPS were significant in all models.

In the GMM model, the relationship was positive in all ESG components in the total period, corroborating H1. In the period before the pandemic, total ESG, social and corporate governance were related negatively to stock price. In the period during the pandemic, the results were positive in all models, corroborating H2.

Final Considerations

This research aimed to analyze the value relevance of environmental, social, and governance (ESG) practices, comparing the period before and during the pandemic. The sample consisted of Latin American firms and was treated using short panel data with fixed effects in OLS and GMM models.

The results allow us to conclude that EPS and BVPS are relevant to explain stock prices in this market. The ESG information varies according to the model used. In the OLS model, the relationship is negative, while in the GMM model is positive. As a result of the endogeneity problem, we conclude that the results of the GMM model are more robust.

Thus, the results confirm the two hypotheses, that in the complete period, firms with better ESG performance have higher stock prices (H1) and in the pandemic period, firms with higher ESG performance have higher stock prices (H2). Therefore, the results are in line with the Stakeholder Theory, i.e., investors have considered non-financial information (ESG) in their decision-making, which can assist in long-term value creation.

These results can be useful for managers, regulators, researchers, and investors. Managers have signs that when the company shows higher ESG performance, the stocks tend to have higher prices, and they usually have part of their compensation in stocks. Regulators can be more rigorous about companies' adoption of ESG practices, as they can issue rules specifying how the company should act in this regard, to avoid manipulation by managers.

Researchers have evidence that when using value relevance models, it is necessary to consider the presence of endogeneity. If there is an endogeneity problem, it is recommended to conclude your research results based on GMM models. And investors have evidence that when

the organization has higher ESG performance, it tends to have higher stock prices, which can be a competitive advantage. The results also reinforce that in troubled periods, such as the pandemic, the results tend to be less negative, corroborating previous literature.

The study focuses only on direct analysis of ESG and stock price. Thus, future studies could consider including interactions between ESG and earnings management to verify whether this could influence stock prices. This would enable a more detailed understanding of the complex interactions between ESG factors, accounting practices, and company value.

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