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## Value Relevance of ESG Scores: Evidence from European Stock Exchange Markets

**Abstract.** *The research is analyzing the value relevance of other comprehensive income and the environmental, social and governance (ESG) scores in regard to the share price in Europe (Italy, France, Germany and Spain). As part of the international and continuous developing capital markets, the disclosure of comparable financial information, based on global and quality standards, such as International Financial Reporting Standards (IFRS), is a key aspect for capital providers (investors, banks and other creditors) in making their investment decisions or management risk assessment. Depending on the category of financial information users, the relevance of the information provided by comprehensive income and other comprehensive income can be perceived differently, and thus managers are interested in overall performance, while investors are interested in return on investment and creditors in the company's performance from a solvency perspective. In the last years, the evolution of capital markets proved that besides the companies' performance respectively financial information provided, an important role in stakeholders' decisions is performed by the non-financial information, respectively ESG performance. The association between ESG, other comprehensive income, and share price was analyzed through the Ohlson price model, considering the impact of financial and non-financial information. The sample analyzed is through a period of 5 years 2017- 2021 and the data was collected through Thomson Reuter's Eikon Database. The research has concluded that there is a positive and significant influence of main ESG scores on the share price but not in the case of other comprehensive income. And the value relevance of ESG scores is reflected on the investors' behavior and their vision over sustainable investments.*

**Keywords:** *ESG scores, value relevance, other comprehensive income, share price, business ethics.*

### Suggested Citation

Răpan, C. M., Banța, V.-C., Manea, A., Aridah, M. W. (2022). Value Relevance of ESG Scores: Evidence from European Stock Exchange Markets. *Oblik i finansii*, 2(96), 68-75. [https://doi.org/10.33146/2307-9878-2022-2\(96\)-68-75](https://doi.org/10.33146/2307-9878-2022-2(96)-68-75)

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## Релевантність цінності оцінок ESG: дані європейських фондових ринків

**Анотація.** Дослідження присвячене аналізу релевантності іншого сукупного доходу та даних оцінки екологічних, соціальних та управлінських ризиків (ESG) щодо ціни акцій у Європі (Італія, Франція, Німеччина та Іспанія). Як частина міжнародних ринків капіталу, що постійно розвиваються, розкриття порівнянної фінансової інформації на основі глобальних стандартів якості, таких як Міжнародні стандарти фінансової звітності (МСФЗ), є ключовим аспектом для постачальників капіталу (інвесторів, банків та інших кредиторів) при прийнятті інвестиційних рішень або оцінці ризику управління. Залежно від категорії користувачів фінансової інформації релевантність інформації, яку надає сукупний дохід та інший сукупний дохід, може сприйматися по-різному, і, таким чином, менеджери зацікавлені в загальній результативності, тоді як інвесторів цікавить рентабельність інвестицій, а кредиторів – результати діяльності компанії з точки зору платоспроможності. Протягом останніх років еволюція ринків капіталу довела, що окрім результатів діяльності компанії та наданої фінансової інформації, важливу роль у прийнятті рішень стейкхолдерами відіграє нефінансова інформація за результатами оцінки ESG. Зв'язок між ESG, іншим сукупним доходом та ціною акцій проаналізовано за допомогою моделі ціни Олсона, враховуючи вплив фінансової та нефінансової інформації. Дані для аналізу взяті із бази даних Thomson Reuters Eikon за п'ятирічний період (2017-2021 рр.). Результати дослідження свідчать, що існує позитивний і значний вплив основних показників ESG на ціну акцій, але не у випадку іншого сукупного доходу. А релевантність цінності оцінок ESG відображається на поведінці інвесторів та їх баченні стійких інвестицій.

**Ключові слова:** оцінки ESG, релевантність цінності, інший сукупний дохід, ціна акцій, бізнес-етика.

### INTRODUCTION

A key aspect for capital providers (investors, banks and other creditors) in making their investment decisions or management risk assessment is the disclosure of comparable financial information, based on global and quality standards, such as International Financial Reporting Standards (IFRS). To address stakeholders' needs, IFRS allows two types of classifications, "by function of expense" and "by nature of expense" for the statement of profit and loss and other comprehensive income for the period (Faccia et al., 2021). In determine the companies' financial performance, in case of the ones that are applying IFRS, certain elements, representing income and expenses (gains or losses), are not recognized in profit or loss for the period, but are charged to equity (IASB, 2019). Therefore, the assessment of the performance of companies in the IFRS framework refers to the concept of comprehensive income that includes all elements of income and expenses, also those recognized in equity and identified under the description of other comprehensive income (IASB, 2018: Conceptual Framework, par. 7.15).

But in the last years, the evolution of capital markets proved that additional to the companies' performance

respectively financial information, an important role in stakeholders' decisions is performed by the non-financial information. Therefore, the information disclosed related to environmental, social and governance (ESG) is becoming an important matter in stakeholders' decision-making, considering the companies' impact on the communities where are operating (Hoang, 2018). A company's environmental performance disclose its effort to reduce the consumption of resource and emissions. A company's social performance refers to respecting human rights, community relations, the responsibility of the product, the quality of environment offer to its employees. And a company's corporate governance performance disclosed the rights and responsibilities of company's management (Yoon et al., 2018).

In order to provide value to the stakeholders, the ESG reporting requires measurement and systematically disclosure in order to ensure transparency about the risks and opportunities it faces and comparability (Badoi et al., 2021). ESG reporting has an important role in convincing sceptical stakeholders that the company's actions are honest considering that ethical decisions in business can bring challenging and complex situations, that often have

extended consequences for multiple stakeholders mixed and different outcome (Armstrong, 2020).

The scope of the research is to identify if there is a positive and significant influence of ESG scores and other comprehensive income on the share price on the European capital markets. And additionally, to identify if there is a straighten correlation between certain individual ESG scores, together with other comprehensive income, regarding the share price.

### LITERATURE REVIEW

The value relevance of the financial and non-financial information contributes to investors' decision to invest in the capital markets. The value relevance of the company's performance identified in the comprehensive income and other comprehensive income can be perceived differently by the investors and also by different users such as creditors, managers, depending on their final interest that can be in dividends, solvency rate (Firescu, 2015).

The relevance of financial information was identified, through different studies of the accounting literature, as a fundamental qualitative characteristic (IASB, 2018: Conceptual Framework, par. 2.6) influencing the share price and the companies' economic value (Barth et al., 2018). Researchers identified a statistical correlation between the accounting information and the value of the companies on the stock exchange (Biesland, 2009). Financial information can create value for investors and links between market values and book values, reflecting the value of the company (Felthman and Ohlson, 1995).

The concept of ESG developed significant in the last years, and as such the current literature includes many studies on the association between ESG and firm value or operating performance (Yoon, 2018). Several studies concluded that there is a notable correlation between the efforts that the companies are performing regarding ESG and their financial performance (Ortas et al., 2015).

Even if the disclosure of the ESG report is perceived by investors as a positive matter, there is a challenge in terms of level of the disclosure of ESG that could be interpreted by potential investors as overinvestment in ESG activities. Additionally, the effect that ESG disclosure could have, depending on the companies' ESG strengths or challenges, is to increase the companies' value reflected in the share price or to have a negative impact and to decrease it (Fatemi et al., 2017).

The content of the ESG report regarding the non-financial information could influence the companies' reputation and the view of the stakeholder over the companies' business ethics. Thus, strong disclosure will generate an increase in reputation and straighten the view over the business ethics leading to an increase in companies' value and access to financing capital. The opposite will lead to scepticism from the stakeholders (Alone et al., 2015, Dye et al., 2021).

### RESEARCH METHODOLOGY

The sample includes listed companies listed on European stock exchanges (France, Germany, Italy and Spain) with financial year ended in the period 2017-2021.

Additionally, the sample includes only companies that are preparing the financial statements in accordance with International Financial Reporting Standards (or "IFRS") and disclosed in the financial statements the other comprehensive income and reported earnings per share ratio and book value per share ratio and additionally disclose ESG information.

All the companies included in the population reported consolidated financial statements.

The collection of data was performed by using and querying the Thomson Reuters (Refinitiv) platform for the period 2017-2021. The sample consists of companies listed on large European stock exchange markets: 732 company-year observations.

The sample also contains:

- the share price that is the latest available closing price of each financial year;

- Net income of each financial year;

- ESG scores that refers to non-financial information that is believed to be relevant for the company's share price (according to Thomson Reuter's definition in the database) in including individual scores related to Environment, Social and Governance of each financial year defined as follows in Thomson Reuter's database:

- ES= "The environmental pillar measures a company's impact on living and non-living natural systems, including the air, land and water, as well as complete ecosystems. It reflects how well a company uses best management practices to avoid environmental risks and capitalize on environmental opportunities in order to generate long term shareholder value" (Thomson Reuter's definition in the database).

- SS="The social pillar measures a company's capacity to generate trust and loyalty with its workforce, customers and society, through its use of best management practices. It is a reflection of the company's reputation and the health of its license to operate, which are key factors in determining its ability to generate long term shareholder value" (Thomson Reuter's definition in the database).

- GS="The corporate governance pillar measures a company's systems and processes, which ensure that its board members and executives act in the best interests of its long term shareholders. It reflects a company's capacity, through its use of best management practices, to direct and control its rights and responsibilities through the creation of incentives, as well as checks and balances in order to generate long term shareholder value"(Thomson Reuter's definition in the database).

The current research hypotheses of the study are related to whether the other comprehensive income and ESG reporting have value relevance for investors.

The model developed by Ohlson (1995) is regarding the pricing analyse and the value relevance. For this research we customised the model and by using a linear regression, we study the relationship between the independent variables (share price) and the dependent variables (book value, earnings per share, other comprehensive income, net income and relevant ESG scores).

## Finance & Taxation

Considering the above, the following hypotheses were tested:

1. The share price dependency on the other comprehensive income, net income, book value per share and earning per share

$$Pit = \alpha_0 + \alpha_1 OCI_{it} + \alpha_2 NetIncome_{it} + \alpha_3 BVPS_{it} + \alpha_4 EPS_{it} + \epsilon_{it} \quad (1)$$

Where:

Pit = the share price of company *i* that is the latest available closing price of each year *t*.

OCI<sub>it</sub> = the other comprehensive income of company *i* at the end of financial year *t*.

NetIncome = Net income of company *i* at the end of financial year *t*.

BVPS<sub>it</sub> = book value per share of company *i* at year end *t*.

EPS<sub>it</sub> = earnings per share of company *i* at year end *t*.

$\epsilon_{it}$  = other value relevant information of company *i* at the end of financial year *t*.

2. The share price dependency on the other comprehensive income, book value per share, earning per share and the ESG score

$$Pit = \alpha_0 + \alpha_1 OCI_{it} + \alpha_2 ESG_{it} + \alpha_3 BVPS_{it} + \alpha_4 EPS_{it} + \epsilon_{it} \quad (2)$$

Where:

ESG<sub>it</sub> = ESG score independent variable for company *i* at year-end *t*. The variable refers to non-financial information that is believed to be relevant for the company's share price.

3. The share price dependency on the other comprehensive income and the ESG score

$$Pit = \alpha_0 + \alpha_1 OCI_{it} + \alpha_2 ESG_{it} + \epsilon_{it} \quad (3)$$

4. The share price dependency on the other comprehensive income and the individual ESG scores

$$Pit = \alpha_0 + \alpha_1 OCI_{it} + \alpha_2 ES_{it} + \alpha_3 SS_{it} + \alpha_4 GS_{it} + \epsilon_{it} \quad (4)$$

Where:

ES= The environmental pillar measures company's *i* at year-end *t* the impact on living and non-living natural systems and how well the company *i* uses best management practices to avoid environmental risks and capitalize on environmental opportunities in order to generate long-term shareholder value (Thomson Reuter's definition in the database).

SS= The social pillar measures company's *i* at year-end *t* "reputation and the health of its license to operate, which are key factors in determining its ability to generate long term shareholder value" (Thomson Reuter's definition in the database).

GS= The corporate governance pillar measures company's *i* at year-end *t* "the systems and processes, and company's *i* capacity to direct and control its rights and responsibilities through the creation of incentives, as well as checks and balances in order to generate long term shareholder value" (Thomson Reuter's definition in the database).

## RESULTS AND DISCUSSION

The purpose of this study is to analyze the value relevance of other comprehensive income and ESG scores (aggregate and individual) based on evidence from European Stock Exchange for the period 2017 and 2021.

In order to analyse the hypotheses, we used STATA to perform the research. For the outliers related to OCI

variables we used Winsor command for 1% and 99% of the population: winsor2 [independent variable], replace cut(1 99).

Table 1 provides descriptive statistics for each variable included in the study, the maximum, the minimum, the mean, and the standard deviation of each variable.

Table 1

Descriptive statistics for variables used in the analysis

Variable	Obs	Mean	Std. dev	Min	Max
Year	732	2019.664	1.183174	2017	2021
OCI	732	539140.4	5.56E+08	-2.31E+09	2.84E+09
SharePrice	732	55.86001	97.52747	0.0945	1536
NetIncome	732	9.89E+08	2.43E+09	-1.56E+10	1.54E+10
EPS	732	4.683034	8.42908	-9.14625	147.37
BVPS	732	36.48433	55.00848	-17.995	765.94
ESGScore	732	63.79537	19.14348	7.666605	94.785
ES	732	61.00178	25.9714	0	99.2021
SS	732	68.83593	21.2163	2.792219	97.81824
GS	732	58.18496	22.32437	2.998904	98.02126

Value Relevance of other comprehensive income, net income, book value per share and earning per share

Source	SS	df	MS		
				Number of obs	732
				F(4, 727) =	60.95
Model	1746049.90	4	436512.48	Prob > F =	0.00000
Residual	5206934.46	727	7162.22072	R-squared	0.2511
				Adj R-squared	0.247
Total	6952984.36	731	9511.60651	Root MSE	84.63

  

SharePrice	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
OCI	1.47E-09	5.67E-09	0.26	0.796	-9.67E-09	1.26E-08
NetIncome	2.34E-10	1.50E-09	0.16	0.876	-2.70E-09	3.17E-09
EPS	5.028752	0.5552562	9.06	0.000	3.9387	6.1188
BVPS	0.1442237	0.0878447	1.64	0.101	-0.0282	0.3167
_cons	26.81596	3.780724	7.09	0.000	19.3935	34.2384

Table 2 shows the model summary in equation (1) using linear regression.

F is 60.95 that means the independent variables: OCI, Net Income, EPS and BVPS explain significant the share price (the dependent variable).

The model proves to be significant statistical at all his levels considering the 99% confidence level obtained by having Prob > F = 0.0000. Thus, we can reject the null hypothesis that the share price is not dependent to the independent variables mentioned above.

The correlation with the variables is positive.

The model explains the dependency in a percentage of 25.11% considering the value of R-squared, thus the remaining difference of 74.89% is not explained by the model.

According to the results, the most significant coefficient is EPS, and thus a one unit increase in share price will lead to an increase of 5.02 units in EPS. OCI is having the coefficient 0.000, and also is outside the confident interval, resulting that is not a significant variable in the model, compared with the Net income that even though has the coefficient 0.000, the coefficient is in the confidence interval thus is significant.

Considering the values obtained for P>|t|, the EPS and BVPS are below 10% which means that both variables are having significant effect on the share price compared with OCI and Net income which are having less effect on the share price, resulting in 0.76 respectively 0.87.

Table 3

Value Relevance of other comprehensive income, ESG score, book value per share and earning per share

Source	SS	df	MS		
				Number of obs	732
				F(4, 727) =	61.06
Model	1748540.89	4	437135.222	Prob > F =	0.0000
Residual	5204443.47	727	7158.79432	R-squared	0.2515
				Adj R-squared	0.2474
Total	6952984.36	731	9511.60651	Root MSE	84.61

  

SharePrice	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
OCI	1.40E-09	5.66E-09	0.25	0.805	-9.71E-09	1.3E-08
ESGScore	0.1012	0.1658	0.61	0.542	-0.2243	0.4267
EPS	5.023483	0.5506257	9.12	0.000	3.9425	6.1045
BVPS	0.1443417	0.0847001	1.7	0.089	-0.0219	0.3106
_cons	20.61313	10.90091	1.89	0.059	-0.7879	42.0142

## Finance & Taxation

Table 3 shows the model summary in equation (2) using linear regression.

F is 60.06 that means the independent variables: OCI, ESG score, EPS and BVPS explain significant the share price (the dependent variable).

The model proves to be significant statistical at all his levels considering the 99% confidence level obtained by having  $\text{Prob} > F = 0.0000$ . Thus, we can reject the null hypothesis that the share price is not dependent to the independent variables mentioned above.

The model explains the dependency in a percentage of 25.15% considering the value of R-squared, thus the remaining difference of 74.85% is not explained by the model.

The correlation with the variables is positive.

According to the results, the most significant coefficient is EPS, and thus a one unit increase in share price will lead to an increase of 5.02 units in EPS. OCI is having the coefficient 0.000, and also is outside the confidence interval, resulting that is not a significant variable in the model, compared with the ESG Score that has the coefficient 0.10, the coefficient is in the confidence interval thus is significant and is influencing the share price.

Considering the values obtained for  $P > |t|$ , the EPS and BVPS are below 10% which means that both variables are having significant effect on the share price compared with OCI and ESG Score which are having less effect on the share price, resulting in 0.80 respectively 0.54.

Table 4

Value Relevance of other comprehensive income, ESG score

Source	SS	df	MS	Number of obs	732
Model	81640.0876	2	40820.0438	F(4, 727) =	4.33
Residual	6871344.27	729	9425.71231	Prob > F =	0.0135
				R-squared	0.0117
				Adj R-squared	0.009
Total	6952984.36	731	9511.60651	Root MSE	97.086

  

SharePrice	Coefficient	Std. err.	t	P> t	[95% conf. interval]
OCI	7.91E-09	6.46E-09	1.22	0.221	-4.78E-09 2.06E-08
ESGScore	0.4973	0.18762	2.65	0.008	0.1290 0.8657
_cons	24.12827	12.49527	1.93	0.054	-0.4027 48.6593

Table 4 shows the model summary in equation (3) using linear regression.

F is 4.33 that means the independent variables: OCI, ESG score does not explain significant the share price (the dependent variable).

The model proves to be significant statistical at all his levels considering the 98.65% confidence level obtained by having  $\text{Prob} > F = 0.0135$ . Thus, we can reject the null hypothesis that the share price is not dependent to the independent variables mentioned above.

The model explains the dependency in a percentage of 1.17% considering the value of R-squared, thus the remaining difference of 98.83% is not explained by the model.

The correlation with the variables is positive.

According to the results, the most significant coefficient is ESG Score, and thus a one unit increase in share price will lead to an increase of 0.49 units in ESG Score. OCI is having the coefficient 0.000, and also is outside the confidence interval, resulting that is not a significant variable in the model, compared with the ESG Score that has the coefficient 0.49, the coefficient is in

the confidence interval thus is significant and is influencing the share price.

Considering the values obtained for  $P > |t|$ , the ESG Score is below 10% which means that the variable is having significant effect on the share price compared with OCI is having less effect on the share price, resulting in 0.22.

Table 5 shows the model summary in equation (4) using linear regression.

F is 3.32 that means the independent variables: OCI, ES, SS and GS does not explain significant the share price (the dependent variable).

The model proves to be significant statistical at all his levels considering the 98.96% confidence level obtained by having  $\text{Prob} > F = 0.0104$ . Thus, we can reject the null hypothesis that the share price is not dependent to the independent variables mentioned above.

The model explains the dependency in a percentage of 1.18% considering the value of R-squared, thus the remaining difference of 98.82% is not explained by the model.

**Value Relevance of other comprehensive income, and the ESG disaggregates score: Environment score (ES) ,  
Social score (SS) and Governance Score (GS)**

Source	SS	df	MS	Number of obs	732
				F(4, 727)	3.32
Model	124812.274	4	31203.069	Prob > F =	0.0104
Residual	6828172.090	727	9392.259	R-squared	0.018
				Adj R-squared	0.0125
Total	6952984.360	731	9511.607	Root MSE	96.914

SharePrice	Coefficient	Std. err.	t	P> t	[95% conf. interval]
OCI	6.98E-09	6.47E-09	1.08	0.281	-5.73E-09 1.97E-08
ES	0.22450	2.037E-01	1.10	0.271	-0.1754 0.6244
SS	0.4202306	0.2661792	1.58	0.115	-0.1023 0.9428
GS	-0.2072534	0.1853929	-1.12	0.264	-0.5712 0.1567
_cons	25.29347	12.84896	1.97	0.049	0.0680 50.5190

The correlation with the variables is positive except for GS where is a negative correlation.

According to the results, the most significant coefficient is SS, and thus a one unit increase in share price will lead to an increase of 0.42 units in SS. OCI is having the coefficient 0.000, and also is outside the confident interval, resulting that is not a significant variable in the model, compared with the ESG Scores that are with the coefficient in the confidence interval thus is significant and are influencing the share price.

Considering the values obtained for P>|t|, the ESG Scores together with OCI are all above 10% which means that the variable are not having significant effect on the share price.

#### CONCLUSIONS

The research concluded that there is a positive and significant influence of ESG scores with the share price, except for the Governance ESG score where is a negative correlation. The research proved that there is not a strong correlation between other comprehensive income and the share price.

The value relevance of ESG scores and other comprehensive income is reflected on the investors' behavior and their vision over sustainable investments, influencing the share price.

For the future research, the current research can be extended to emerging markets such as Romania, Bulgaria, Hungary in order to observe and to conclude over the behavior of the investor and the value relevance of the ESGs scores and other comprehensive income.

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