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THE SHORT-TERM EFFECTS OF CORPORATE SOCIAL PERFORMANCE ON FINANCIAL PROFITABILITY

A menedzsment elméletek szerint az erős vállalati társadalmi teljesítmény (CSP) javítja a pénzügyi jövedelmezőséget. Továbbá, a felelősen viselkedő vállalkozások hozzájárulhatnak a gazdaságok fenntartható növekedéséhez, amely az ENSZ fenntartható fejlődésre vonatkozó, 2030-ig terjedő keretrendszerének is prioritása (Agenda 2030). Bár a CSP kifejezést alkalmazzuk, más szorosan kapcsolódó tényezőkre is hivatkozunk, így a vállalkozások környezetvédelmi és vállalatiirányítási politikáira; éppen ezért a tanulmányban mindvégig az ESG-koncepciót (környezeti, társadalmi és vállalatiirányítási faktorok) fogjuk használni. Megvizsgáljuk, hogy valóban létezik-e a szakirodalomban domináns pozitív kapcsolat a vállalkozások ESG és pénzügyi teljesítménye között. Az elemzéshez az MSCI ACWI Indexből származó 1.099 elemű vállalati mintát használunk, amely 2018-ra terjed ki. A regressziós számítások a súlyozott legkevesebb négyzetek (WLS) módszerén alapulnak. A függő változó az árbevétel-arányos adózott eredmény (ROS, 2018); a kontrollváltozók az előző évi (2017) jövedelmezőség, méret, tőkeáttétel, növekedés, tőkeintenzitás, iparági és regionális dummy változók. Az eredményeink azt mutatják, hogy a magasabb ESG, E és S teljesítmény rövid távon nem módosítja jelentősen a pénzügyi jövedelmezőséget. A vállalatiirányításnak azonban jelentős és pozitív hatása van 5,00 százalékos szignifikancia szint mellett: a G-pontszám 10-pontos növekedése 0,30 százalékponttal növeli a ROS-t. Egy másik ugyancsak fontos következtetés: a társadalmi és környezeti tényezők, amelyeket gyakran szintiszta költségekként értelmeznek, nem csökkentik jelentősen a rövid távú jövedelmezőséget. Ez utóbbi megállapítás azt sugallja, hogy a vállalatoknak érdemes ESG-tudatos projektekbe fektetniük, hiszen nem járnak profitsökkenéssel, de hozzájárulhatnak az Egyesült Nemzetek Szervezete Fenntartható Fejlődési Céljainak (SDG) az eléréséhez.

Management theories emphasise that strong corporate social performance (CSP) enhances financial profitability. Further, responsible firms have the potential to promote sustainable growth which is the priority of the United Nations' 2030 Agenda for Sustainable Development. Although we apply the term CSP, we also refer to other closely linked factors such as environmental and governance policies. For this reason, we use the ESG concept (environmental, social and governance) throughout the study and test whether the dominant hypothesis of positive ESG-financial performance relationship exists. The analysis covers

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DOI: 10.14267/RETP2020.02.20

2018 company-level data and performed on a 1,099-element firm sample from the MSCI ACWI Index. Regression calculations rest on the weighted least squares (WLS) method. The dependent variable is the return on sales (ROS, 2018); the control variables are previous year (2017) profitability, size, leverage, growth, capital intensity, industry and regional dummies. The empirical results show that higher ESG, E, and S ratings do not change profitability significantly in the short run. However, corporate governance has a significant and positive effect at 5.00 per cent: a 10-point increase in G score increases ROS by 0.30 percentage points. Another important conclusion is that social and environmental factors, which often interpreted as mere costs, do not significantly reduce short-term profitability. This latter finding implies that companies should invest in ESG projects as they will not experience evaporating profits but might contribute to achieving some of the Sustainable Development Goals of the United Nations.

INTRODUCTION

According to global advisory firms [Collins and Allen, 2020: 17; Henisz et al., 2019], valuation professionals are becoming more ESG-conscious, as 75 per cent consider somehow environmental, social and governance factors while evaluating corporates. Statistical figures on sustainable investing also underpin the importance of ESG. GSIA [2018] report shows that the total assets under management (AUM) based on sustainable investing strategies more than doubled by 2018 compared to 2012, reaching \$30,000 billion, which roughly equals to 33 per cent of the global AUM (this figure was 21 per cent in 2012).

Policymakers are also keen on ESG issues, since solving global environmental, social, and governance challenges contribute to achieve and maintain sustainable economies and societies. One of the prominent sustainability programmes is the United Nations' (UN) 'Transforming our world: the 2030 Agenda for Sustainable Development'. In this agenda, the UN defines 17 Sustainable Development Goals (SDGs). Here are some that are closely related to corporate ESG performance [United Nations, 2015: 14]: guarantee gender equality (SDG5); promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all (SDG8); ensure sustainable consumption and production patterns (SDG12), take urgent action to combat climate change and its impacts (SDG13).

However, the concept of ESG is not entirely new since many scholars have analysed it thoroughly but under different names (ethical, socially responsible, sustainable or responsible investing) and focusing on only one of its elements. Comprehensive literature review articles such as Friede et al. [2015], Griffin and Mahon [1997], Margolis and Walsh [2003], Orlitzky et al. [2003], Renneboog et al. [2008]; Revelli and Viviani [2013] summarised the key hypotheses and findings.

There are three competing hypotheses on the direction of the relationship (positive, negative or no effect) and the type of causality (ESG performance affects profitability or vice versa, or synergetic, interdependent as a third type of dependence). Stakeholder theory [Clarkson, 1995; Freeman, 2010; Hillman and Keim, 2001; Mitchell et al., 1997], good management theory [Waddock and Graves, 1998] as well as the resource-based view of firms [Barney, 1991; Hart, 1995; Hart and Dowell, 2011; Wernerfelt, 1984] as well as the resource-based view of firms [Barney, 1991; Hart, 1995; Hart and Dowell, 2011; Wernerfelt, 1984] maintain that the satisfac-

tion of primary stakeholders (for instance, customers, employees, local communities, shareholders) is essential in realising superior financial performance.

Slack resources theory [Günther et al., 2012; Orlitzky et al., 2003; Preston and O'Bannon, 1997; Ullmann, 1985; Waddock and Graves, 1998] also emphasises a positive relationship between corporate ESG and financial performance; however, it assumes reverse causation, that is, financial profitability determines ESG performance. Previous outstanding financial performance provides excess cash (as a slack resource) necessary to become a responsible company.

The next hypothesis assumes a negative relationship meaning that higher ESG scores depress financial performance. This is the underlying theory of the trade-off hypothesis and the management opportunism hypothesis. The trade-off hypothesis [Aupperle et al., 1985; Dam, 2008; Friedman, 1970; Preston and O'Bannon, 1997; Vance, 1975] claims that reaching and maintaining higher ESG performance is costly, as resource reallocation to responsible activities such as community development or charity is not profitable but, on the contrary, generates higher operating expenditures due to internalisation of externalities.

Managerial opportunism hypothesis [Günther et al., 2012; Makni et al., 2009; Preston and O'Bannon, 1997] rests on the assumption that corporate managers usually chase their private interests and do not care much about stakeholders. In periods when financial performance is robust, managers tend to cut off social expenses to take full advantage of their short-term private interest. However, when financial performance decays, managers might engage in noteworthy but not necessarily profitable social programs to offset their underperformance. The opportunism hypothesis, like the slack resource theory, emphasises reverse causation.

The 'no effect' principle of McWilliams and Siegel [2001, 2000] claims that incorporating R&D factors in the analysis of the ESG versus financial performance relationship eradicates any significant relationship and results in neutrality. In their 2001 paper, the authors outline a supply and demand model of corporate social responsibility and hypothesise that firm-level ESG performance depends on several factors such as size, level of diversification, research and development, advertising. The conclusion, yet again, is that there is no significant relationship between ESG and financial performance. However, they admit that the hypotheses are difficult to test empirically due to the lack of data. Some other empirical studies also found a neutral relationship [for instance, Bebchuk et al., 2013; Garcia-Castro et al., 2010; Johnson et al., 2009; Menz, 2010] The size factor was shown to be a market pricing anomaly in Naffa [2009].

Another critical issue is how to measure financial performance. Günther et al. [2012] or Pelozo [2009] summarises the most commonly used metrics. They classify financial performance indicators into three groups: accounting ratios (including ROS, ROE, ROIC), measures that use both stock exchange and accounting data (e.g. P/E, EV/EBITDA), and metrics calculated from stock exchange data (e.g. Jensen's alpha, Sharpe ratio). Studies that analysed stock returns are, for instance, Bebchuk et al. [2009] Eccles et al. [2014], Edmans [2012], Kovács et al. [2011] In the empirical section, we analyse the net profit margin (ROS). Several studies used ROS as the dependent variable, see, for instance, Callan and Thomas [2009], Griffin and Mahon [1997], Hart and Ahuja [1996], Qiu et al. [2016], Waddock and Graves [1998], Wagner [2005].

We test the hypothesis that companies with high ESG performance retain significantly higher financial profitability than companies with low ESG ratings. Our hypothesis is in line with stakeholder theory, good management theory and the resource-based view of firms. We first analyse company ESG performance separately (E, S and G), then together (ESG score). The reference period covers 2018, i.e. the focus is on the short-term profitability effect of ESG factors.

The remainder of the paper is organised as follows. In the second section, we present the brief conceptual framework of ESG investing. The next section introduces the database compiled and built for the empirical analysis. Subsequently, we describe the applied methodology. Finally, we present our empirical findings. The paper ends with a conclusion.

CONCEPTUAL FRAMEWORK

The conceptual framework underlying this paper originates from the theory of corporate valuation. ‘Value’, interpreted either at the firm or equity level, is most often measured by the present value of expected future cash flows:

$$Value_0 = \sum_{t=1}^{\infty} \frac{Cash\ flow_t}{\prod_{t=1}^{\infty} (1+r_t)}, \quad (1)$$

where $Cash\ flow_t$ is the expected cash flow in period t and r_t is the required rate of return (cost of capital) reflecting the riskiness of the business. There is a growing perpetuity version of the above formula:

$$Value_0 = \frac{Cash\ flow_1}{(r_1-g)}, \quad (2)$$

where g measures the long-term sustainable growth rate of profits. Based on Equation (2), expected future cash flows, riskiness, and growth determine valuation. The following formula is a version of the Residual Income (RI) model (for more information on RI see, for instance, Juhász [2018] or Ehrbar [1998]):

$$E_0 = \sum_{t=1}^{\infty} \frac{S_{t-1}*(1+g_t)*ROS_t - BV(E_{t-1})*r_{Et}}{\prod_{t=1}^{\infty} (1+r_{Et})} + BV(E_0), \quad (3)$$

where E_0 is the present value of equity, S_{t-1} is the net sales in period $t-1$, g_t is the expected growth rate of net sales in period t , ROS_t is the net profit margin during t , $BV(E_{t-1})$ is the book value of equity at the beginning of t , r_{Et} is the required rate of return on equity. According to Equation (3), if a firm increases its profitability (profit margin, ROS), it will also increase shareholder value, *ceteris paribus*.

Several factors may affect profitability, and one could be ESG-related issues. As an example, businesses that do not pay attention to the environment may face high environmental fines, lousy behaviour towards customers and local communities may lead to a drop in demand, and poorly managed businesses may find it challenging to adapt to the market contest. These negative phenomena (but also the positive ones) have an impact on future cash flows and their stability; therefore, they affect profitability and share prices.

To sum up, referring to Porter – van der Linde [1995: 106] or Szabó – Juhász [2019a, 2019b] increasing corporate resource productivity through environmental cost leadership ‘lowers true economic costs and raises the true economic value of products’. Consequently, strong ESG performance should have a positive effect on financial profitability. Based on the above, we define the following hypotheses:

H1: Firms with higher composite ESG scores achieve a significantly higher return on sales ratio (ROS) than those firms which possess low ESG scores.

H2: Companies with higher environmental (E), social (S), and corporate governance (G) scores have a significantly higher return on sales ratio (ROS) than companies with low E, S and G scores.

DATABASE

To perform regression calculations, we collected a corporate sample from Bloomberg. Observations include companies that were members of the MSCI ACWI Index in 2018. The constituents of the MSCI ACWI Index come from 23 developed and 26 emerging countries and have medium or large capitalisation. In December 2018, a total of 2,781 companies were in the index, and typically covered 85 per cent of the capital markets in the respective countries.

The Appendix summarises the variables involved in the analysis. Further, it also contains their calculation methods and Bloomberg codes. Several studies have applied the listed characteristics, see, for instance, Callan and Thomas [2009], Qiu et al. [2016], Russo and Fouts [1997], Wagner [2005]. The dependent variable is the return on sales (ROS) for 2018. Sustainalytics² provides E, S, and G, as well as combined ESG scores to Bloomberg. The ratings range from 0 to 100, and higher values indicate better ESG performance.

Control variables include the 2017 return on sales, company size, leverage, capital intensity, growth, industry and geographic dummies. Assets, net sales, and market capitalisation describe the size factor (to have a linear relationship between the dependent and explanatory variables we calculate their natural logarithm). The following firm characteristics represent indebtedness: book leverage, market-based leverage, and net debt to assets ratio. We measure growth also with three variables. These are as follows: the growth rate of assets, sales, and profit after tax between 2016 and 2018.

Our initial database included 2,781 companies; however, many did not disclose ESG scores, and several were not traded in 2017; hence they also lacked ROS for 2017. Consequently, we excluded every company that even had one missing data (listwise deletion)³. After the primary screening, 1,492 businesses remained in the database.

In the next step, we excluded firms that had extreme values for either the dependent or explanatory variables, given that the regression methodology is very sensitive to these [Kovács, 2014]. Extreme observations are those that are beyond three times the interquartile range (lower limit: $Q1 - 3 \times IQR$; upper limit: $Q3 + 3 \times IQR$). After the secondary screening, the sample consists of 1,100 companies. Table 1 summarises the descriptive statistics for each variable.

Table 1: Descriptive statistics

Factor	Variable	Unit	Minimum	Maximum	Mean	Standard deviation
Profitability	ROS	%	-36.54	62.50	11.86	10.18
Profitability (previous year)	ROS_17	%	-34.42	57.69	11.49	10.39

² Sustainalytics is one of the leading global ESG rating agency founded in 1992.

³ An appropriate procedure for managing missing data could have been the so-called “Multiple Imputation (MI)” method, that we, however, discarded due to the large portion of missing ESG scores.

Firm size (SIZE)	MCAP	ln	7.10	13.55	9.55	1.04
	ASSETS	ln	6.45	13.86	9.70	1.21
	SALES	ln	5.35	13.12	9.18	1.20
Leverage (LEV)	BLEV	%	0.00	138.30	36.58	23.88
	MLEV	%	0.00	88.47	22.74	18.14
	DA	%	0.00	93.66	23.33	16.76
Capital intensity (CAP)	CAP	-	0.22	12.67	2.29	2.17
Growth rate (GRO)	gASSETS	%	-16.38	30.07	5.98	6.66
	gSALES	%	-18.16	29.66	6.02	6.05
	gPAT	%	-57.71	75.13	8.79	20.29
ESG	ESG	-	28.41	68.26	50.39	9.49
	E	-	28.84	67.75	50.40	9.45
	S	-	28.52	68.30	50.39	9.57
	G	-	29.29	67.94	50.30	9.77

Dummy factor	Dummy variables	Abbreviation	Observations	
			№	distribution
Sectors (SEC)	Communication services	CS	76	6.91%
	Consumer discretionary	CD	170	15.45%
	Consumer staples	CST	95	8.64%
	Energy	EN	48	4.36%
	Financials	FI	81	7.36%
	Health care	HC	97	8.82%
	Industrials	IN	215	19.55%
	Information technology	IT	113	10.27%
	Materials	MA	94	8.55%
	Real estate	RE	52	4.73%
Regions (REG)	Utility	UT	59	5.36%
	Americas	A	465	42.27%
	Europe, the Middle East and Africa	EMEA	291	26.45%
	Asia-Pacific	AP	344	31.27%

Influential observations	Minimum	Maximum	Mean	Standard deviation	№ of observations
Cook's distance	0.00	0.08	0.00	0.00	1 100
Leverage	0.01	0.12	0.02	0.01	1 100

Notes: The sector (SEC) classification rests on the MSCI Global Industry Classification Standard (GICS).

Source: Own compilation

The middle part of the table contains descriptive statistics about the dummy variables. More than 45 per cent of the companies operated in the consumer discretionary, IT and industrials sectors in 2018. In regional terms, the predominance of American companies (42.27 per cent) is apparent. The fewest companies are from the EMEA region (291).

According to Table 1, the relative standard deviations are typically less than two, and there are no influential observations in the sample (the highest Cook's distance is very close to 0, and the maximum leverage is below 0.2), i.e. the database is suitable for further analysis.

Table 1 and the Appendix show that we treat firm size, leverage, and growth with more variables, hence, we can interpret firm characteristics in a sophisticated way. However, one would face high multicollinearity in modelling if each variable enters in the analysis at once. It is necessary to combine these corporate variables somehow to avoid the confusing degree of multicollinearity. An obvious solution would be to calculate simple averages, but this would ignore the correlations between the variables. For this reason, in the framework of principal component analysis (PCA), we combine the firm characteristics into common factors, namely size, leverage and growth.

ECONOMETRIC MODELS AND ESTIMATION METHODS

Raw ESG scores are only suitable for comparison within industries, which is a 'unique' feature of Sustainalytics's database. Therefore, it is necessary to make some transformation. To this end, we follow the normalisation procedures of Morningstar tailored to Sustainalytics rating system [Justice and Hale, 2016]. First, we obtain ESG z-scores:

$$zESG_i = \frac{ESG_i - \mu_{peer}}{\sigma_{peer}}, \quad (4)$$

where ESG_i is the Sustainalytics ESG score for firm i , μ_{peer} is the peer group average ESG score, and σ_{peer} is the standard deviation of the ESG scores for the same peer group.

Next, we recalculate standardised ESG scores by using Equation (5) to have scores between 0 and 100 again, but now individual company-level ESG scores are comparable across industries:

$$NormESG_i = 50 + (zESG_i \times 10) \quad (5)$$

Equation (5) is the normalisation formula, with an average score of 50.

We estimate a linear regression model based on the following general equations (we calculate different equations owing to high multicollinearity between each ESG variable; see, for example, Qiu et al. [2016]).

$$ROS_{it} = \beta_0 + \beta_1 ROS_{it-1} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 CAP_{it} + \beta_5 GRO_{it} + \beta_6 ESG_{it} + \sum_{j=1}^{11} \beta_6 SEC_{ji} + \sum_{j=1}^3 \beta_7 REG_{ji} + u_{it} \quad (6)$$

$$ROS_{it} = \beta_0 + \beta_1 ROS_{it-1} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 CAP_{it} + \beta_5 GRO_{it} + \beta_6 E_{it} + \sum_{j=1}^{11} \beta_6 SEC_{ji} + \sum_{j=1}^3 \beta_7 REG_{ji} + u_{it} \quad (7)$$

$$ROS_{it} = \beta_0 + \beta_1 ROS_{it-1} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 CAP_{it} + \beta_5 GRO_{it} + \beta_6 S_{it} + \sum_{j=1}^{11} \beta_6 SEC_{ji} + \sum_{j=1}^3 \beta_7 REG_{ji} + u_{it} \quad (8)$$

$$ROS_{it} = \beta_0 + \beta_1 ROS_{it-1} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 CAP_{it} + \beta_5 GRO_{it} + \beta_6 G_{it} + \sum_{j=1}^{11} \beta_6 SEC_{ji} + \sum_{j=1}^3 \beta_7 REG_{ji} + u_{it} \quad (9)$$

In the above regressions, the dependent variable is the 2018 return on sales ratio (ROS). Among the explanatory variables, the primary focus is on the E, S, G, and combined ESG scores. Following prior literature, we control for firm size (see, for instance, [Brammer and Pavelin, 2008, 2006; Cormier and Magnan, 2003; Dhaliwal et al., 2011; Patten, 1991; Qiu et al., 2016]), leverage [Brammer and Pavelin, 2008, 2006; Cormier et al., 2011; Cormier and Magnan, 2003; Qiu et al., 2016], capital intensity [Russo and Fouts, 1997; Schaltegger and Figge, 2000; Wagner, 2005], growth [Capon et al., 1990; Russo and Fouts, 1997], industry and country dummies [Patten, 1991; Qiu et al., 2016; Wagner, 2005].

In the literature, the ordinary least squares (OLS) method is one of the general approaches to estimate similar models (see, among other, [Qiu et al., 2016; Russo and Fouts, 1997; Wagner, 2005]). According to Wooldridge [2013], the conclusions of ordinary least squares could be considered as the best linear unbiased estimates (BLUE) if the Gaussian-Markov (GM) standard assumptions are met. The GM assumptions: the variables are linear, exact multicollinearity does not exist, there is strict exogeneity, but no homoskedasticity and autocorrelation among the error terms (the latter is not relevant for cross-sectional data). The normality of the errors is not part of the GM model assumptions. If it is not satisfied, but a sufficiently large sample is analysed, the results obtained can be still valid as an asymptotic approximation due to the central limit theorem. The assumption of homoskedasticity does not hold; therefore, we apply the weighted least squares (WLS) method.

RESULTS

Table 2 presents the results of the WLS regressions. It shows the coefficients of the explanatory variables of Equations (6), (7), (8) and (9) described in the previous section, as well as the related statistics such as the standard errors, empirical significance levels, adjusted R^2 , F-tests and the maximum values of Cook's distances.

Based on the F-tests, one can conclude that the explanatory variables together significantly explain profitability; therefore, the linear relationship is also valid. The adjusted R^2 values are around 53 to 54 per cent, i.e. the model has adequate explanatory power. Cook's distances are below the critical value of 1; hence there are not any highly influential outlier observations in the sample. It is important to note that the final sample size decreased further by 1 to 1,099. Some 'pre-run' regressions indicated that one of the companies still has an excessive influence on the sample; therefore, it was omitted from the analysis (is was Mattel, the American toy manufacturer giant, Bloomberg ticker: MAT UW Equity).

Table 2: Results of regression calculations

Model Variables	(6)			(7)			(8)			(9)		
	β	Std. err.	Sig.	β	Std. err.	Sig.	β	Std. err.	Sig.	β	Std. err.	Sig.
Constant	4.96	1.74	***	5.97	1.72	***	5.65	1.76	***	3.14	1.77	*
ROS_17	0.54	0.02	***	0.54	0.02	***	0.54	0.02	***	0.54	0.02	***
SIZE	-0.29	0.17	*	-0.27	0.17		-0.29	0.17	*	-0.24	0.16	
LEV	-0.05	0.01	***	-0.06	0.01	***	-0.05	0.01	***	-0.06	0.01	***
CAP	1.35	0.15	***	1.36	0.15	***	1.36	0.15	***	1.35	0.15	***

GRO	0.04	0.02	**	0.04	0.02	**	0.04	0.02	**	0.04	0.02	**
ESG	0.01	0.02										
E				-0.01	0.02							
S							0.00	0.02				
G										0.03	0.02	**
CS	1.23	0.90		1.22	0.89		1.27	0.89		1.19	0.90	
CD	0.56	0.44		0.47	0.43		0.52	0.44		0.53	0.43	
CST	0.01	0.45		-0.08	0.45		-0.07	0.45		-0.01	0.44	
EN	0.20	0.87		0.02	0.84		0.14	0.87		0.29	0.85	
FI	-2.62	0.98	***	-2.80	0.99	***	-2.77	0.99	***	-2.51	0.97	***
HC	1.41	0.89		1.51	0.90	*	1.45	0.90		1.41	0.89	
IT	2.86	0.75	***	2.86	0.75	***	2.86	0.75	***	2.81	0.75	***
MA	-0.08	0.57		-0.16	0.57		-0.10	0.57		-0.06	0.57	
RE	0.99	1.25		1.04	1.22		1.02	1.26		0.96	1.22	
UT	-1.65	0.62	***	-1.78	0.62	***	-1.76	0.62	***	-1.48	0.59	**
A	2.22	0.45	***	2.11	0.44	***	2.14	0.46	***	2.34	0.43	***
AP	-0.72	0.38	*	-0.87	0.35	**	-0.85	0.38	**	-0.43	0.39	
Adj. R ²	0.55			0.56			0.55			0.56		
F	76.57			77.56			76.23			79.92		
p-value	0.00		***	0.00		***	0.00		***	0.00		***
Max. Cook's D	0.48			0.39			0.39			0.20		

Notes: The dependent variable is the return on sales (ROS).

Regressions are estimated using the weighted least squares (WLS) method. The definition of each variable is in Table 1 and the Appendix. Among the dummy variables, due to exact multicollinearity, the variables IN (industrials) and EMEA (Europe, the Middle East, and Africa) were excluded.

*, **, and *** indicate that the given variable is significant at 10, 5, and 1 per cent, respectively.

Source: Own compilation

Firstly, most of the control variables are significant at least at 5.00 per cent and coincide with preliminary expectations. If the previous year's (2017) ROS is 1.00 percentage points higher, the 2018 ROS increase approximately 0.54 percentage, *ceteris paribus*. We measured the size factor in logarithmic form; thus, it shows that a 1.00 per cent growth in size decrease profitability by 0.29/100 basis points (Equation (6)). Although the size factor is significant at 10 per cent in two cases (Equation (6) and (8)), but its practical interpretability is low. Further, size is not significant in model (7) and (9). A 1.00 percentage point surge in indebtedness reduces profitability by 5-6 basis points, assuming everything else is unchanged. If capital intensity rises by one unit (this means an increase of almost 44 per cent from the average value of 2.29), then profitability grows by 1.35 percentage points. A 1.00 percentage point upward shift in the growth rate will result in a 4.00 basis point improvement in profitability. A notable finding is that in 2018 companies operating in the Americas (typically US companies) outperformed companies from the EMEA region by 2.10-2.35 percentage points. In contrast, companies in the Asian region typically underperform firms in the EMEA region. We now turn to the issue of ESG's profitability-effects. The regression coefficient of the composite ESG rating does not deviate significantly from zero, so we

must reject H1. In other words, our calculations do not support the higher profitability of companies with improved ESG scores. We cannot accept H2 at the usual significance levels either, at least for environmental (E) and social (S) scores. If environmental or social rating increase, financial performance does not change significantly. Our results are in line with [Garcia-Castro et al., 2010; McWilliams and Siegel, 2001, 2000].

In contrast to the previous findings, the corporate governance factor (G) coefficient is significant at 5.00 per cent and has a positive impact on financial performance; therefore, it confirms H2. Firms with higher G scores significantly outperform firms with lower scores. If the G score increases by 10 points, the return on sales ratio become higher by 30 basis points, *ceteris paribus*. In the hypothetical case, if a business jumped from the minimum score 0 to the maximum 100, profitability would increase by 3.00 percentage points. Our result corroborates the findings of [Brown and Caylor, 2006; Core et al., 2006; Giroud and Mueller, 2010] and consistent with stakeholder theory, good management theory and the resource-based view of firms.

Besides, a further important conclusion is that social and environmental factors, which often interpreted as mere costs, do not significantly reduce even short-term profitability. This latter finding implies that it is socially rewarding for companies to invest in ESG projects as they will not experience evaporating profits but might contribute to reach and maintain sustainable growth. This finding is consistent with the argument from Revelli and Viviani [2015]. Also, companies that pay attention to environmental and social concerns foster achieving some of the Sustainable Development Goals of the United Nations. These objectives, among others, are gender equality, inclusive and sustainable economic growth, full and productive employment and decent work, sustainable consumption and production, mitigation of climate change and its impacts. Promoting such goals, in turn, could help reduce risks threatening economies and societies.

As a robustness check, we executed the regression analyses using stepwise procedures. Table 3 summarises the results.

Table 3: Robustness check, regression with stepwise procedures

Variables	β	Standard error	p-value	Sig.	Tolerance	VIF
ROS_17	0.55	0.02	0.00	***	0.44	2.29
LEV	-0.06	0.01	0.00	***	0.23	4.28
CAP	1.41	0.14	0.00	***	0.27	3.74
GRO	0.05	0.02	0.01	**	0.46	2.20
G	0.05	0.01	0.00	***	0.20	5.27
FI	-3.11	0.93	0.00	***	0.78	1.29
IT	2.56	0.72	0.00	***	0.93	1.08
UT	-1.76	0.59	0.00	***	0.78	1.29
A	2.65	0.37	0.00	***	0.74	1.35
Adj. R ²	0.79		Max Condition index:	5.73		
F	456.49		Max Cook's D	0.47		
p-value	0.00	***	Max Leverage	0.13		

Source: Own compilation

The findings are similar to Equations (6)-(9), seeing that ESG, E and S dropped out from the final model. Further, in line with our primary findings, the governance factor is significant, but here even at 1.00 per cent. Moreover, the coefficient is higher than before (45 basis points). The coefficients of the control variables remained close to the original model estimates and are typically significant at 1.00 per cent (the size variable is still insignificant).

CONCLUSION

In this study, we employed the ESG concept (environmental, social and governance) to test one of the dominant management literature hypotheses, namely the existence of a positive ESG-financial performance relationship. Environmental criteria consider how companies perform as supporters of nature and often referred to as corporate externality risks. Social measures summarise reputational issues, i.e. how companies take care of their primary stakeholders, including employees, suppliers, customers. Corporate governance deals with company leadership, such as executive pays, audits, internal controls, financial reporting and minority investor rights. Many times, scholars consider governance policies as agency problems.

To perform the analysis, we collected a 1,099-element corporate sample from Bloomberg. Observations include companies that were members of the MSCI ACWI Index in 2018. Regression calculations relied on the weighted least squares (WLS) method. The dependent variable was the return on sales ratio (ROS, 2018); the control variables were previous year (2017) profitability, size, leverage, growth, capital intensity, industry and regional dummies. To interpret corporate size, leverage, and growth in a more sophisticated way, we used three firm characteristics for each. However, to avoid high multicollinearity, but to consider correlations between the variables, we applied principal component analysis.

Our findings indicate that higher ESG, E, and S ratings did not significantly change the profitability in the short run. However, corporate governance had a significant and positive effect at 5.00 per cent: a 10-point increase in G score increased ROS by 0.30 percentage points. Another important conclusion is that social and environmental factors, which often interpreted as mere costs, did not significantly reduce short-term profitability. This latter finding implies that companies should invest in ESG projects as they will not experience evaporating profits but might contribute to reach some of the Sustainable Development Goals (SDGs) of the United Nations.

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APPENDIX

Variables in the analysis				
Factor	Variable	Abbr.	Calculation	Bloomberg code
Profitability	Return on sales (2018)	ROS	Profit after tax (2018) / Net sales (2018)	PROF_MARGIN
Profitability (t-1)	Return on sales (2017)	ROS_17	Profit after tax (2017) / Net sales (2017)	PROF_MARGIN
Firm size (SIZE)	Market capitalization (2018)	MCAP	ln(Number of shares * Price/share) (28.12.2018.)	CUR_MKT_CAP
	Assets (2018)	ASSETS	ln(Fixed plus current assets) (at the end of 2018)	BS_TOT_ASSET
	Net sales (2018)	SALES	ln(Net sales) (2018)	SALES_REV_TURN
Leverage (LEV)	Book leverage (2018)	BLEV	LT debt. + max(ST debt - Cash; 0) / Equity + LT debt + max(ST debt - Cash; 0) (at the end of 2018)	BS_LT_BORROW BS_TOT_ASSETS CASH_AND_ MERKETABLE EQY_SH_OUT PX_LAST TOT_COMMON_ EQY
	Market capitalisation based leverage (2018)	MLEV	LT debt. + max(ST debt - Cash; 0) / Market cap + LT debt + max(ST debt - Cash; 0) (at the end of 2018)	
	Net debt/Assets	DA	LT debt + max(ST debt - Cash; 0) / Assets (at the end of 2018)	
Capital intensity	Capital intensity (2018)	CAP	Assets (at the end of 2018) / Net sales (2018)	BS_TOT_ASSET SALES_REV_TURN
Growth rate	Average growth rate of assets (2016-2018)	gASSETS	Average growth in assets (2016-2018) / Average of the assets (2016-2018)	BS_TOT_ASSET SALES_REV_TURN
	Average growth rate of net sales (2016-2018)	gSALES	Average growth in net sales (2016-2018) / Average net sales (2016-2018)	IS_INC_BEF_XO_ ITEM
	Average growth rate of profit after tax (2016-2018)	gPAT	Average growth in profit after tax (2016-2018) / Average profit after tax (2016-2018)	
ESG score	ESG score (2018)	ESG	Scores of Sustainalytics	SUSTAINALYTICS_ RANK
	Environment score (2018)	E		SUSTAINALYTICS_ ENVIRONMEN
	Social score (2018)	S		SUSTAINALYTICS_ SOCIAL
	Governance score (2018)	G		SUSTAINALYTICS_ GOVERNANCE

(continued)

Factor	Variable	Abbr.	Calculation	Bloomberg code
Sectors	Communication services	CS	GICS classification (dummy variables)	GICS_ SECTOR_ NAME
	Consumer discretionary	CD		
	Consumer staples	CST		
	Energy	EN		
	Financials	FI		
	Health care	HC		
	Industrials	IN		
	Information technology	IT		
	Materials	MA		
	Real estate	RE		
Regions	Utility	UT	MSCI classification (dummy variables)	-
	Americas	A		
	Europe, the Middle East and Africa	EMEA		
	Asia-Pacific	AP		

Notes: The dependent variable is the ROS 2018.

Source: Own compilation