IMPACT OF ESG SUBSET PERFORMANCE ON FINANCIAL AND MARKET OUTCOMES

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Abstract: This study examines the relationship between subsets of Environmental, Social, and Governance (ESG) performance measures and corporate financial and market-based performance. Utilizing regression analysis on longitudinal data spanning ten years from global car manufacturers, the findings reveal no significant relationship when considering composite ESG measures. However, further investigation into specific dependent and independent variables indicates a short-term significant negative effect of Environmental performance on financial performance, measured by Return on Assets (ROA). In contrast, a long-term significant positive effect on the market-based measure, Tobin's Q, is observed only within the Governance subset of the ESG score. These results underscore the critical role of governance in the automotive industry as reflected in our dataset.

Keywords: ESG disclosure, social capital, human capital, financial performance, market-based performance.

1 Introduction

The Environmental, Social and Governance (ESG) is incorporated into the managerial processes of all companies. Private companies are expected to exist no longer to serve their shareholders but all stakeholders like customers, employees, the environment, and the global community (Brockett, 2012). At the same time, investors regard a strong ESG performance as a driver for long-term profitability and assessing their investment decisions. With increasing investors weighing in on ESG issues, tens of thousands of publicly listed firms now provide "materiality assessment" of ESG issues, prioritising specific issues based on their distinguished materiality to society, firms and investors.

The market-based performance of a company is significantly influenced by the market's valuation and, consequently, investors' portfolio decisions. Recent trends highlight the rise of ESG (Environmental, Social, and Governance) investing. But what exactly is ESG investing? Although there is no unified definition, ESG investing is often considered a derivative of Socially Responsible Investing (SRI), which emerged in the 1960s. ESG investing generally relies on ethical or moral criteria, applying negative screening to exclude entire industries (such as arms or tobacco) or specific stocks from portfolios. Initially driven by ethical considerations and value alignment, financial materiality has also become a strong motivator for many ESG investors (Barman, 2020).

The scope of ESG topics is vast and continually evolving. The materiality of these factors varies significantly depending on the industry and individual company. For example, resource-intensive industries like car manufacturing are more exposed to environmental factors than sectors such as commercial real estate (Adler et al., 2020).

ESG issues can present both risks and opportunities, potentially leading to additional costs or benefits. These issues significantly impact a company's risk profile, financial performance, and reputation. They also influence a firm's long-term valuation, consumer satisfaction, and product sustainability. High-profile cases of ESG misconduct, such as the Volkswagen Diesel scandal and the Deepwater Horizon oil spill, illustrate the severe financial and ecological consequences of neglecting ESG principles (Barman, 2020). Conversely, positive ESG activities can create substantial value. For instance, a corporate reputation grounded in good working conditions, high ethical standards, and diversity can attract qualified employees, enhance brand loyalty, improve customer retention, and ensure the retention and attraction of talented workers (Adler at al., 2020).

According to the Global Sustainability Investment Alliance, integrating ESG factors systematically and explicitly into financial analysis is the most widely used sustainable investing strategy. However, challenges persist, such as limited access to non-financial metrics, data consistency across sectors and geographies, and comparability. Unlike financial reporting, which adheres to uniform standards like the International Financial Reporting Standards (IFRS), no comparable set of standards exists for ESG-related reporting. Consequently, the demand for ESG score providers has surged, bridging the gap between complex non-financial data of companies and the needs of ESG-focused investors (PRI, 2020).

In terms of legislative frameworks, Japan's sustainability reporting approach fundamentally differs from Europe's. Japan has adopted a soft-law approach based on non-compulsory principles, unlike the mandatory requirements in Europe. Despite being voluntary, ESG-related disclosure in Japan has been robust and rapidly evolving. Between 2011 and 2020, all German and Japanese car manufacturers included in this study published either a Corporate Social Responsibility (CSR) report or an integrated report, indicating a growing commitment to ESG practices (Azmi et al., 2021).

A company's market-based performance depends on the market's valuation and, therefore investors' portfolio decisions. Recent trends indicate that ESG investing is on the rise – but what exactly is ESG investing? Although there is no unified definition of ESG investing, it is often referred to and has its roots in Socially Responsible Investing, which dates to the 1960s (Han et al., 2016). It is generally based on ethical or moral criteria and applies negative screening to exclude entire industries (e.g. arms or tobacco) or specific stocks from portfolios. Since then, ethical considerations and alignment with values have been strong drivers for many ESG investors, but financial materiality has also become a source of motivation. As a result, topics included in the scope of ESG are numerous and ever-shifting.

The central research question surrounding the relationship between ESG performance and corporate performance has been subject to numerous academic studies in the past decades as it impacts the credibility around the ESG domain, and the competitiveness of automobile firms certainly impacts the trust of investors and stakeholders. (Billio et al., 2021; Tarmuji et al., 2016; Dinca et al.,2022). Throughout most of the literature, theoretical justification is found in the stakeholder theory developed by Freeman et al. (2007), which essentially claims that the interests of all stakeholders need to be considered to ensure a 'firm's continued stability and its long-term value creation. The 'firm's engagement in ESG responsibilities highlights its commitment to comply with stakeholders' demands to avoid additional costs associated with strict adherence to "formal contractual obligations (Freeman et al., 2007). Supporters of the stakeholder theory argue that it is more necessary than ever to focus on good stakeholder relationships to achieve profit maximisation in 'today's difficult business context. Subsequently attaining a competitive edge over its competitors and enhancing firm value. (Xie et al.,2019). From a stakeholder theory perspective, it is reasonable to acknowledge the link between a 'firm's ESG performance and financial benefits as the main stakeholders are directly affected by its ESG-related activities. ESG should be perceived as a scope of expansion, competitive advantage & opportunity for corporate development. Moreover, ESG responsibilities are a source of strategic investment for Automobile firms. They build the trust of stakeholders by aligning & balancing the common (ESG) interests which assist in the expansion of the firm's business operations, structuring confidence in the automobile firm's management by restraining risk-taking, hence attaining a competitive edge over its competitors, enhancing firm-value with stakeholders alliance. Therefore, automobile firms in recent years are becoming increasingly aware that organisational decisions surrounding ESG should be balanced to ensure long-

term return on investments for the stakeholders and innovatively comply with sustainability requirements in their products. So, they can differentiate their products from their adversaries to gain a competitive advantage and increase market access in the long term. Safeguarding stakeholders' interests eventually assists firms in achieving long-term success leading to higher financial performance (Zailani et al., 2021). Subsequently, for regulators, firms that increasingly dedicate resources towards ESG issues and responsibilities could help stabilise and stimulate long-term sustainable development in the industry. Furthermore, with regulatory compliance in place for ESG disclosures, the depth of information collected industry-wide could be utilised for supervision, evaluation & guidance, with necessary enforcement measures to be placed where needed (Zhao et al., 2018). Moreover, ESG as an integrated approach helps investors identify the performance benchmarks set by the firms by analysing themes such as materiality and governance structure and thereby driving returns on their financial investment associated with the firms due to a variety of factors such as enhanced risk management and operational efficiency, furthermore providing downside protection in times of (social or economic) crisis (Whelan et al.,2022). In parallel, integrating financial materiality in ESG performance assessment allowed differentiating between firms that encapsulate substantial ESG issues instead of firms that address ESG issues with a moderate financial impact on their business, which could lead to better-informed investment decisions and enhanced investment analysis (Madison and Schiehll, 2021).

2 Methodology and Data

The population of this study consists of the 20 largest car companies in the world, consisting of German, Japanese, Dutch, French, Swedish, US, South Korean, Chinese, and Japanese car manufacturers publicly listed on the stock market. The period covers ten years, from 2011 to 2020, resulting in 200 observations. The financial data is collected from the investment research platform YCharts and annual reports of sampled car manufacturers. The ESG scores and sub-scores, which act as a proxy for ESG performance, are sourced from the global ESG data provider Arabesque S-Ray.

Multiple regression analysis is executed in the statistical software R for evaluation purposes.

For investigation of the relationship of the mentioned variables based on recent societal, regulatory, and investment trends as well as findings from existing literature, we examine the following research questions:

RQ1: What is the impact of the change in the ESG performance score or its subcomponents on the financial performance (FP) of a firm in the automotive sector?

RQ2: What is the impact of the change in the ESG performance score or its subcomponents on the market-based performance (MP) of a firm in the automotive sector?

Additionally, differences in financial and market-based performance (FP and MP) can not only be explained by the ESG score. Therefore, it is necessary to include control variables; First, control variables for systematic and unsystematic risk are included as they are expected to affect financial performance. Systematic risk is represented by a 'company's beta factor (BETA), which controls for an 'equity's price change about movements in the market. Unsystematic risk is represented by the debt ratio (DEBT), which is calculated as total liabilities over total 'shareholder's equity and measures the extent of a 'company's leverage. It is expected that companies with high financial leverage are more likely to experience financial distress and profitability deterioration. Capital expenditure (CAPEX) has also been regarded as one of the potential control variables and is calculated by the net capital expenditure divided by revenue. A dummy variable is included in line with prior studies to test for possible country features (COUNTRY). A firm's size (SIZE) should also be controlled by the natural logarithm of a firm's total assets. A positive effect could be explained by larger firms having more resources to invest in ESG activities and non-financial disclosure.

The following regression model should be applied to test research question RQ1 and examine the relationship between change in the ESG score or its subcomponents and change in the financial performance:

$$\Delta ROAi,t+1 = \alpha + \beta 1 \Delta ESGi,t + \beta 2 \Delta BETAi,t + \beta 3 \Delta \text{DEBT}i,t + \beta 4 \Delta SIZEi,t + \beta 5 \Delta CA\text{PEX}i,t + \beta 6 COUNTRYi + \varepsilon i,t \quad (1)$$

To test research question RQ2 and examine the relationship between the change in the ESG score and the change in the market-based performance, a change in Tobin's Q should become the dependent variable:

$$\Delta \text{TQ}i,t+1 = \alpha + \beta 1 \Delta ESGi,t + \beta 2 \Delta BETAi,t + \beta 3 \Delta \text{DEBT}i,t + \beta 4 \Delta SIZEi,t + \beta 5 \Delta CA\text{PEX}i,t + \beta 6 \Delta COUNTRYi + \beta 7 \Delta \text{RO}Ai,t+1 + \varepsilon i,t \quad (2)$$

In both equations, the change in ESG score could be replaced by the particular changes in the three components ΔE, ΔS or ΔG.

3 Results and Discussion

From the individual models shown in Table 1 (Fixed effects models - FE), it is clear that the ESG variable (that is, its difference, that is, the change) is not statistically significant either in the case of the ROA model (model 1a) or in the case of TQ (2a). In addition, the problem of multicollinearity also appears to be problematic. For this reason, we developed modified models in which we work with individual ESG subcategories, namely E, S and G. These models are statistically significant. From our point of view, the poolability of the models was tested. In contrast, classic OLS models appeared less suitable in the given panel data structure (twenty companies over ten years). Testing was carried out using the Hausman test. Calculations and tests were performed using the R program, stargazer, plm, and car packages.

In individual models, we first worked with the level of change in the composite ESG indicator. Since it appeared to be statistically insignificant in the individual models both for the change in financial performance (ROA) and the change in market-based performance, we proceeded to the decomposition and testing of its components - environmental (E), social (S) and governance (G). It was already possible to capture their significance in the individual components. Change in E score, i.e., Environmental performance, comes out as significant, whereas in the case of growth of this performance, according to the model, there is a decrease in profitability. Here it is possible to consider that the government's efforts and the pressure of the environment to improve environmental performance and the implementation of environmental policies and related investments have a direct negative impact on the change in profitability in the form of the short-term financial indicator ROA. In this case, the controlled variables were the size of the company, where a positive effect of the change in size on profitability can be seen.

Table 1 Regressions with 'Tobin's Q (Note: ***, **, and * denote a significance level of 0.001, 0.01, and 0.05).

Dependent variable: 'Tobin's Q				
Model	(1a) FE	(1b) FE	(2a) FE	(2b) FE
	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)	Coefficient (Std. Error)
Dependent Variable	ΔROA	ΔROA	ΔTQ	ΔTQ
Independent Variables				
ΔESG	-0.00086 (0.00081)		0.00342 (0.00256)	
ΔE		-0.00108** (0.00035)		0.00128 (0.00116)
ΔS		-0.00013 (0.00049)		-0.00166 (0.00163)
ΔG		0.00036 (0.00037)		0.00300* (0.00125)
ΔSIZE	0.28026*	0.23356*	-0.88149*	-0.94849**

	(0.10974)	(0.09660)	(0.34727)	(0.34498)
COUNTRY		0.00027 (0.00206)	-	-
ΔBETA	-0.00912 (0.00881)	-0.00504 (0.00855)	-0.02595 (0.02787)	-0.02148 (0.02845)
ΔDEBT	-0.04196*** (0.01077)	-0.03566*** (0.00986)	0.02570 (0.03409)	0.02794 (0.03369)
ΔCAPEX	-0.01426 (0.21436)	-0.04550 (0.19865)	-0.89040 (0.67835)	-1.10236 (0.68434)
Constant	-	0.00834 (0.00447)	-	-
N Observations	200	200	200	200
R2	0.14678	0.17496	0.07551	0.1126

It can be assumed (but it was not the subject of testing) that a two-way causal relationship can work there. The indicator of the manifestation of investments in debt (DEBT) also had a negative effect, which can be seen in the increase in indebtedness caused by implementing policies improving ESG performance in the form of a decrease in profitability. It should be noted that neither the change in capital expenditure (CAPEX) nor the change in the systematic risk component are statistically significant as critical variables in this model. But what can be read from the above results is that the increase in investments in the improving level of environmental impact has a negative short-term impact on the growth of profitability, which means a decrease in profitability with an increased level of investment in environmental measures.

However, in the case of the long-term market-based performance indicator, only the management component (G) was statistically significant, the correlation of which was positive. That is, investments in improving the management level will be reflected in the long-term growth of the company's market performance, expressed in the change of Tobin's Q indicator.

4 Conclusions

The main objective of this study was to investigate the relationship between ESG performance on the one hand and corporate financial as well as market-based performance on the other. The focus was placed on the twenty largest car manufacturers worldwide. Recent developments in sustainability reporting, ESG investing and the automotive industry globally have revealed trends toward more sustainability. Results from the regression analysis based on longitudinal data (long panel) have found no significant relationship between composite ESG measures. Therefore, based on data from the global car manufacturers over ten years, we investigated the differences in the particular dependent and independent variables that reveal the short-term significant negative effect of Environmental performance on financial performance (ROA). Long-term positive signification in the market-based measure (Tobin's Q) has been found only in the Governance subset of the ESG score, which points to the importance of this aspect in our dataset and for decision-makers in the automotive industry.

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