DOES ENVIRONMENTAL, SOCIAL AND GOVERNANCE PERFORMANCE INFLUENCE ECONOMIC PERFORMANCE?

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Abstract. The purpose of this paper is to evaluate the influence of environmental, social and governance performance on the economic performance of the Standard & Poor's 500 companies. Structural equation modeling and linear regression have been utilized to measure the overall and individual influence of environmental, social and governance (ESG) performance on economic performance using longitudinal data comprising the years from 2010 to 2015. The overall ESG model had a significant relationship on economic performance. Furthermore, the findings of this study show that social and governance performance significantly affects economic performance in all regression models. However, environmental performance failed to show a significant relationship. The research contributes to the literature by providing insights for investors, managers and employees about the influence of ESG performance on company performance.

Keywords: corporate social responsibility, economic performance, environmental performance, governance performance, social performance, structural equation modelling.

JEL Classification: E00, G3, Q0.

Introduction

Financial crises and disputes have increased apprehensions over companies' transparency, reputation, ethical, social and environmental performance (Galbreath, 2013; Nicholson & Kiel-Chisholm, 2011). In addition, media pressure has played a critical role in motivating companies towards increased ESG transparency and disclosure (Garcia-Sanchez et al., 2014). Customers, investors, government, and employees are the key stakeholders which contribute to the growing interest on the socially responsible aspects (Schwartz & Carroll, 2003). Beyond that, sustainability issues have attracted intensified attention by the stakeholders and scholars. Therefore, firms' ESG disclosures have substantially increased to meet the stakeholders' demands and create more accountability for firms (Eccles et al., 2014; Tamimi & Sebastianelli, 2017). Over the 21st century the competitive nature of the business environment requires a

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range of practices to achieve a competitive advantage. Furthermore, the Principles for Responsible Investment (PRI) make the link between environmental, social and governance (ESG) and investment performance prominent. Firms from more than 150 countries agree on the United Nations' Global Impact Signatory which covers topics such as human rights, environment, transparency, and worker rights. It is stated that Northern Europe makes up most of the signatories in the UN Global Compact, however; U.S. was the most represented country as a single country. Socially responsible investment reached higher levels in the U.S. with $3.74 trillion with philanthropic activities and use of codes of ethics being higher in the U.S than in other countries. There is a growth in the demand and emphasis placed on the socially responsible aspects by the stakeholders (Tamimi & Sebastianelli, 2017). In line with these arguments, stakeholder theory argues that firms must operate by considering the needs of all stakeholders that are involved in the business activities of the firm. ESG performance is a way of considering the needs of stakeholders in terms of environmental, social and governance initiatives and providing them with the information they demand regarding these issues. Thus, satisfaction and dissatisfaction among stakeholders and influence the economic performance of the companies (Clarkson, 1995).

Discussions of ESG performance have shifted from the traditional financial perspective to a more sophisticated perspective of socio-economic outcomes (Wang et al., 2016). ESG information offers relevant information regarding non-financial performance of a company. Companies provide information about their technology, raw materials, adherence with regulations, strategies and contributions to the society (van Duuren et al., 2016). Within the sustainability and business ethics literature the concept of ESG and its consequences had been intensely researched. Results on the relationship between ESG and firm performance yield different findings. Some studies concluded that there is a positive relationship between ESG and firm performance (Fatemi et al., 2018; Yoon et al., 2018; Zhao et al., 2018); while others concluded a negative relationship or no relationship at all (Atan et al., 2018; Duque–Grisales & Aguilera-Caracuel, 2019; Malcolm et al., 2007). Furthermore, geographical area makes a difference amongst firms with research conducted in different regions yielding different findings which make it challenging to present a decisive conclusion (Forte, 2013; Lambooy, 2010). Despite the intense attention paid by scholars on financial outcomes of the ESG (Gallego-Alvarez et al., 2014; Lo & Kwan, 2017; Mervelskemper & Streit, 2017), the inquiry to find evidence for the impact of ESG on the economic performance remains unanswered. Thus, economic performance has received less attention than financial performance. There has been an increase in the multiplicity of regions and countries appearing within the research samples. This can be both explained by globalization and the use of institutional view while analyzing the ESG aspects (Pache & Santos, 2013; Surroca et al., 2010). There is a gap within the subject as the causality between economic performance and sustainability performance is still a complex subject (Friede et al., 2015; Margolis & Walsh, 2003; Taliento et al., 2019). Furthermore, several studies investigated the association between ESG performance and financial performance of the companies; however, the results were ambiguous and inconclusive (Horváthová, 2010; Landi & Sciarelli, 2019; Revelli & Viviani, 2015; van Beurden & Gössling, 2008). This study aims to fill these gaps by providing an evaluation of the causal effect of ESG on the economic performance of firms and to provide conclusive findings on the subject.

In this respect the purpose of this study is two-fold: first, investigating the influence of ESG performance on the economic performance of U.S. firms; second, investigating the individual influences of environmental, social and governance performance on the economic performance of the firms. The stakeholder theory is used as a framework to explain the proposed relationship between the variables. The empirical analysis was carried out using longitudinal data (2010–2015) from the U.S. Structural equation modelling (SEM) and multiple regression analysis were employed using lagged values for ESG performance to claim causality.

The remainder of the paper is organized as follows. Section 1 consists of the theoretical and hypotheses development in light of the literature. Section 2 presents the methodology of the research and the results are presented in section 3. Discussion is carried out in section 4 and the final section concludes the paper.

1. Hypothesis development

The concept of ESG covers operations and behaviors of a company on environmental, social and governance matters (Bassen & Kovacs, 2008). Furthermore, ESG disclosure increases transparency within the company about their environmental, social and governance practices (Eccles et al., 2014; Li et al., 2018). Disclosure of these aspects creates more incentives for managers, investors and stakeholder to make better decisions and evaluations. Therefore, ESG disclosure causes an increase in the availability and quality of the information (Cheng et al., 2014). This is expected to reduce the information asymmetry between firm and stakeholders (El Ghoul et al., 2011). ESG investing is not the same as strategic management; however, successful management and accounting of ESG requires a strategic point of realization of the concept. According to van Duuren et al. (2016) ESG management affects the technology, resources, employees, and society in the long-term.

ESG information is used by investors in making decisions about the companies' economic performance (Amel-Zadeh & Serafeim, 2018). In addition, ESG information is claimed to be a measure of opportunities and risks (Limkriangkrai et al., 2017). According to Russo and Perrini (2010), from the stakeholder theory view, stakeholders' primary interests are environmental, social and governance issues. There is a link between ESG performances of organizations and their economic performances which has been created by the perceptions of the stakeholders (Barnett, 2007). According to Fisman, Heal, and Nair (2006), social performance can boost companies' ability in gaining competitive advantage and increasing market value. Clarkson (1995) claimed that companies' ability in contributing to stakeholders' demands is the key to economic performance. Given the concept of ESG studied as a single construct the previous findings are rather inconclusive or misleading. Some scholars suggested that there is a positive relationship between considering the needs of stakeholders and financial and economic performance (Nekhili et al., 2019; Richardson, 2009; Tarmuji et al., 2016). El Ghoul, Guedhami, and Kim (2017) analyzed the relationship between ESG performance and firm value in 53 countries and found a positive relationship. Furthermore, Friede et al. (2015) conducted a meta-analysis indicated that vast majority of the research found a positive association between ESG and financial performance. Therefore, the following hypothesis is proposed:

H1 ESG performance has a positive influence on economic performance.

Environmental issues caused by companies such as greenhouse gas emissions, water management, and air pollution have gained the attention of all countries (Li & Green, 2011). There are several arguments on the relationship between environmental performance and economic performance. To start with, carrying out business operations that comply with environmental regulations would minimize the future costs of not complying with the regulations (Hart, 1995; Shrivastava, 1995). Likewise, considering an environmentally friendly business strategy, operating costs can also be reduced (Russo & Fouts, 1997). In a normative stakeholder perspective, customers would perceive firms' products and services in a positive way (Donaldson & Preston, 1995). In general, employees, customers and government, which are key stakeholders, can positively react to the environmentally friendly image created by firms and therefore develop positive attitudes (Berman et al., 1999; Hart, 1995). Al-Najjar and Anfimiadou (2011), found a positive relationship between environmental performance and market-based performance in a sample of 350 UK companies. Wang, Li, and Gao (2014) analyzed the effect of greenhouse gas emission disclosure on the Tobin's Q and found a negative effect in Australia through the perspective of stakeholder theory. This suggests that stakeholder respond negatively to activities which harms the environment such as greenhouse gas emissions. Furthermore, Yadav, Han, and Rho (2016) found a positive relationship between environmental performance and abnormal stock returns on a sample of 394 US companies using efficient market theory. Therefore, companies that engage in environmentally responsible business operations can create affirmative stakeholder perceptions resulting in improved economic performance (Baumgartner, 2014; Branco & Rodrigues, 2007; Epstein & Schnietz, 2002). In line with the previous arguments the following hypothesis is proposed:

H2 Environmental performance has a positive influence on economic performance.

Stakeholders consider the social initiatives of companies such as employee and customer related aspects (Rhouma et al., 2012). Concepts such as human rights and supply chain issues have gained attention due to the globalized companies and supply chains and the U.S is one of the leading countries in this field (Darragh, 2011; Tschopp, 2005). For instance, California applied the California Transparency in Supply Chains Act of 2010 and at the federal government level a similar act is aimed to be proposed (Darragh, 2011). According to Gao and Bansal (2013) benefits of such practices include economic and financial advantages. Employees are one of the major groups of stakeholders; therefore, firms' way of managing and maintaining relationships with employees can influence their economic performance (Delery & Doty, 1996). Furthermore, investing in human resource management practices can assist a business to realize human resource related benefits and enhance competitive advantage for firms (Greening & Turban, 2000). Another human resource related benefit is lower turnover, absenteeism and increased productivity (Berman et al., 1999).

Moreover, economic performance can be affected by any socially irresponsible activity of companies. According to Frooman (1997) companies faced with skeptical market reactions when they show social behaviors which might be deemed as socially irresponsible by the customers and investors. The market reactions are found to be significantly negative for these companies (Bromiley & Marcus, 1989). According to Waddock and Graves (1997) economic performance of a company can be increased through customer perceptions on product qual-

ity and safety. Garcia-Sanchez, Prado-Lorenzo, Rodriguez-Dominguez, and Gallego-Alvarez (2008), analyzed the effect of social performance on the sales growth though a stakeholder theory perspective and found a positive effect in Spain. In addition, Mishra and Suar (2010) analyzed the effect of social performance on the return on asset as a financial performance indicator and found a positive effect in India. However, Surroca and Tribó (2008) analyzed 22 different countries and found a negative relationship between social performance and return on asset and Tobin's Q. Even though contradictory results exist, on the whole it can be said that social performance contributes to the overall economic performance of companies (Dhaliwal et al., 2011). Therefore, the following hypothesis is proposed:

H3 Social performance has a positive influence on economic performance.

The corporate governance structure of a company includes, among others, board functions and structure, compensations policy, company vision and strategy and rights given to shareholders. Moreover, companies show voluntary disclosures of corporate governance information to increase transparency and minimize agency issues (Allegrini & Greco, 2013). Corporate governance performance is associated with many economic performance indicators including resource usage, attracting investment capital, and promoting investors' trust. In addition, corporate governance performance enhances firms' ability to pay attention to societal issues and stakeholder demands which contribute to the long-term economic performance of firms (Yoon et al., 2018). Furthermore, Gill (2008) argued that governance activities can influence and shape stakeholders' perceptions and behaviors towards the company. Corporate governance practices also contribute to the reputation and image of a company. Therefore, managers and CEOs are willing to invest in positively perceived governance related activities to enhance sympathy towards the company and achieve a good prestige (Barnea & Rubin, 2010). According to Klettner, Clarke, and Boersma (2014), corporate governance has an economic influence on the firms. The studies which focused on the corporate governance and the firm performance nexus, found a positive relationship between governance performance and firm performance (Bhagat & Black, 1998; Li & Yang, 2012; Monda & Giorgino, 2013). Monda and Giorgino (2013) found a positive link between governance performance and financial performance indicators such as market valuation and return on asset for companies in France, Italy, UK and US. In addition, cost of equity is also reduced when companies showed improved governance performances in the US (Li & Yang, 2012). Soana (2011) found a positive relationship between governance performance and return on assets of Italian banks. According to Driffield, Mahambare, and Pal (2007), a more shareholder-oriented governance strategy has a positive influence on capital structure and firm value. Accordingly, the following hypothesis is proposed:

H4 Governance performance has a positive influence on economic performance.

2. Materials and methods

In this study, longitudinal data have been used for environmental, social, governance and economic performance. The longitudinal approach was utilized because it can help analyze the causal relationship between ESG and economic performance of firms (Allouche & Laroche, 2005). Annual data has been collected from the ASSET4® database provided by

Thomson Reuters Inc. It is adhered as one of the most credible and objective sources of data (Galbreath, 2013; Ortas et al., 2015). Thomson Reuters ASSET4® provides a database about ESG performance measures. Seventy key performance indicators are classified into 18 groups which measures each of the ESG. Due to the socio-historical differences across different countries, it is inevitable to conduct a study in the U.S. ESG data have been adopted as 1-year, 2-year and 3-year lagged data therefore, and the data selected is for the years between 2010 and 2012. The chosen period is important for the U.S. companies as the assets managed under the socially responsible and sustainable investment criteria rose by 22 percent from $3.07 trillion disclosed in 2010 to $3.74 trillion in 2012. In order to measure the impact, economic performance data have been selected for the years between 2011 and 2015 which allows to measure up to 3 years of lagged data for each ESG year. Therefore, for each firm 5 years of relevant data have been obtained. Global financial crisis can be adhered as a cornerstone for the ESG research and prior research about the relationship between ESG and economic performance is limited. Thus, the period after the crisis when the companies have started placing more importance and due conscience on their ESG performances considerably to enhance a strong image is an important period to analyze (Miralles-Quirós et al., 2019).

ESG is a non-financial performance measure; therefore, it differs from the traditional measures of firm performance. ESG covers a considerable amount of material non-financial information and provides additional perspectives for the investment community (Li et al., 2018). According to Eccles and Viviers (2011) there is an increasing demand for additional information which is particularly material. ESG incorporates a broad range of constructs such as environmental issues (climate change, pollution), social issues (e.g. quality, safety, human rights) and corporate governance issues (e.g. auditing, board functions, transparency, reporting). Therefore, ESG concept is an aggregated three-factor model of these dimensions. It is argued that the ESG constructs should be considered in a single study as they are interconnected with each other (Galbreath, 2013; van Duuren et al., 2016). ESG performance was measured using more than 280 performance indicators by Thomson Reuters experts. A total of 372 U.S. companies from mixed industries (e.g. technology, financial, manufacturing, logistics, and oil) listed in S&P 500 involved in the data have been attributed a score from a scale of 0 (lowest) to 100 (highest) for their environmental, social, governance and economic performance. Environmental performance refers to firms' influence on the environmental indicators such as carbon emission, resource consumption, and product innovation. Social performance refers to firms' influence on the social indicators such as human rights, equality, health and safety, community and product responsibility. Governance performance refers to firms' influence on the board functions, structure, compensation, policy, vision and strategy. Economic performance is measured as client loyalty, shareholders loyalty and overall performance which imply the company's ability to generate long term shareholder value and sustain financial health. Previous studies mostly focused on the financial performance indicators such as return on asset, market value, share price (Taliento et al., 2019; Velte, 2017; Yoon et al., 2018). It is necessary to evaluate the financial indicators as well as non-financial indicators to provide stronger conclusions for the causality between the ESG performance and firm performance (Goyal et al., 2013). Thus, this can help to make an evaluation and generalization based on the influence of

ESG performance on the overall economic performance of the companies (Ferrero-Ferrero et al., 2016; Goyal et al., 2013).

The data analysis consists of two parts. First, structural equation modeling was used to test H1 (whether ESG influence the economic performance). ESG is constructed as a latent variable from the manifest environmental, social and governance performance variables. Model fit, and the beta coefficients have been tested and the regression coefficients for the impact of ESG performance on the economic performance are also tested. In addition, structural relationships among latent variables can be analyzed by using SEM (Bollen & Long, 1993). ESG is constructed as a three-factor model and its influence on the economic performance have been tested. The SEM model based on hypothesis 1 is depicted in Figure 1.
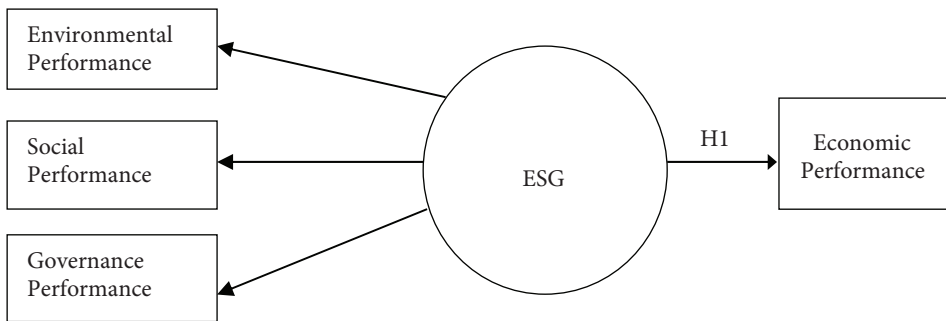

Figure 1. SEM Model

Second, multiple regression analysis was used to test the individual effects of the environmental, social and governance on the economic performance (Frooman, 1997; Horváthová, 2010). Within the regression model, the dependent variable was the economic performance and the independent variables were environmental, social and governance performance. Considering the multidimensionality of the concept (Brammer et al., 2009), there is a need to analyze the individual effects of each ESG variable. Three years of lagged ESG data were used for each year of the economic performance variable. To test the hypotheses H2, H3, and H4, nine regression analyses have been conducted as three models. The models 1–3 test the relationship between 2010–2013 ESG measures on the three consecutive years of economic performance measures.

The multiple regression models are as follows:

$$\text{Economic performance}_t = \beta_0 + \beta_1 \text{Environmental performance}_{t-1, 2, 3} + \beta_2 \text{Social performance}_{t-1, 2, 3} + \beta_3 \text{Governance performance}_{t-1, 2, 3}.$$

3. Results

In Table 1 below, the descriptive statistics for the U.S. companies' environmental, social, and governance performances are summarized for the years between 2010 and 2013. In addition, descriptive statistics for economic performance has been provided for the years 2011 to 2015. The U.S. companies' governance performance was significantly higher than their

environmental and social performance over the years. However, a negative trend can be observed for governance performance from 2010 to 2012. Further, environmental performance showed a positive trend from 2010 to 2012. Social performance showed a stable trend over the period. On the other hand, economic performance of the U.S. companies showed a drop in 2011 from a mean score of 66.76 to 61.91 in 2012. From 2012, a positive trend can be observed with a mean score of 72.77 in 2015. Moreover, governance performance showed lower standard deviation values than environmental and social performance. This indicates that governance performance of the U.S. companies was stable; however, their environmental and social performances were more volatile. Economic performances of the companies were more stable in 2015 than in other years.

Table 1. Descriptive Statistics of the U.S. based companies

	N	Min.	Max.	Mean	Std. Deviation	Skewness
ESG 2010						
GOV	372	4.85	96.42	77,0742	16,17014	−1.498
ENV	372	9.40	94.96	57,8988	32,14394	−0.377
SOC	372	3.74	97.29	59,5466	27,47565	−0.381
ESG 2011						
GOV	372	5.42	96.62	76,8359	16,61201	−1.318
ENV	372	8.77	94.65	60,0239	31,99475	−0.470
SOC	372	5.01	97.26	60,7345	27,55730	−0.457
ESG 2012						
GOV	372	6.03	96.38	74,5997	16,74263	−1.133
ENV	372	8.29	94.21	60,1922	31,40999	−0.501
SOC	372	3.60	97.00	59,1322	28,03563	−0.386
ECN 2011–2015						
ECN 2011	372	2.82	98.09	66,7592	24,75135	−0.712
ECN 2012	372	3.20	98.52	61,9117	27,04446	−0.424
ECN 2013	372	3.39	98.55	64,0072	26,03603	−0.599
ECN 2014	372	7.36	98.17	67,3089	23,44055	−0.664
ECN 2015	372	17.37	97.03	72,7678	18,97732	−0.814

Notes: **, $p < 0.01$; *, $p < 0.05$; ECN, economic performance; ENV, environmental performance; SOC, social; GOV, governance performance.

Table 2 below shows the correlation coefficients for ESG and economic performance variables. The correlation coefficients implied that variables used are not highly correlated with each other. The ESG variables showed relatively higher correlations with each other however, this does not imply a multicollinearity problem. The correlations and variance inflation factor (VIF) between the variables for each of the years were tested and multicollinearity is not an obstacle in this research.

Table 2. Correlation statistics for variables

	GOV	ENV	SOC	ECN
GOV	1			
ENV	0.64**	1		
SOC	0.63**	0.79**	1	
ECN	0.37**	0.44**	0.50**	1

Notes: **, $p < 0.01$; *, $p < 0.05$*; ECN, economic performance; ENV, environmental performance; SOC, social; GOV, governance performance.

For a SEM analysis, it is important that the model fits the data. The model-fit indices and the impact of ESG on economic performance are shown in Table 3 below. Hu and Bentler (1999) suggested the cut-off criteria for a good model-fit as a value closer to 0.95 for comparative fit index statistic (CFI) and a cut-off value closer to .06 for root mean square error of approximation statistic (RMSEA). In addition, a cut-off value closer to 0.95 for goodness-of-fit statistic (GFI) has been suggested. A good model fit would be expected to provide results for Chi-square test to be insignificant (Barnett, 2007). Table 3 below summarizes the model-fit indices for the nine models formed and the factor loadings of the three-factor ESG model on the economic performance. Considering the criteria, the models 1 to 8 showed good fit indices. Thus, the model-fit of the 8 models were accepted. However, model 9, showed

Table 3. SEM Results and Model Fit Indices of the U.S. based companies

Model Fit Indices	CFI	GFI	RMSEA	CMIN/df	Factor Loadings of Lagged ESG on ECN	R^2	Sig.
Model 1 2010 ESG–2011 ECN	0.995	0.992	0.077	3.159	0.66	47.4%	**
Model 2 2010 ESG–2012 ECN	0.999	0.996	0.031	1.352	0.72	46.3%	**
Model 3 2010 ESG–2013 ECN	0.999	0.997	0.027	1.271	0.59	32.9%	**
Model 4 2011 ESG–2012 ECN	0.997	0.995	0.050	2.088	0.74	47.4%	**
Model 5 2011 ESG–2013 ECN	0.997	0.995	0.050	1.970	0.50	31.8%	**
Model 6 2011 ESG–2014 ECN	0.994	0.991	0.079	3.323	0.50	24.6%	**
Model 7 2012 ESG–2013 ECN	0.997	0.995	0.049	1.975	0.59	34.3%	**
Model 8 2012 ESG–2014 ECN	0.997	0.995	0.048	1.884	0.52	27%	**
Model 9 2012 ESG–2015 ECN	0.998	0.987	0.101	5.183	0.48	23.4%	**

Notes: **, $p < 0.01$; *, $p < 0.05$; ECN, economic performance; ESG, environmental, social and governance performance.

RMSEA value above 1 which indicates a poor fit. Although CFI, GFI and CMIN/df showed good model fit, RMSEA is accepted as the most informative goodness of fit indices; therefore, model 9 was rejected (relationship between 2012 ESG and 2015 economic performance).

To test hypothesis 1, whether ESG has an impact on economic performance, structural equation modelling is used. The results showed that ESG and economic performance showed significant loading coefficients over the proposed years. Moreover, the R^2 for each model showed that three-factor ESG explained a considerable variance in economic performance. It should be noted that the highest amount of variance in economic performance is explained in the 1-year lagged models. Therefore, hypothesis 1 was accepted (ESG performance has a positive influence on economic performance).

Table 4. Multiple Regression Results of the U.S. based companies

Model 1 Predictors *2010 ESG*	2011 ECN (1-Year Lag)	2012 ECN (2-Year Lag)	2013 ECN (3-Year Lag)
GOV coefficient	0.178**	0.146*	0.145*
ENV coefficient	0.086	0.145*	0.112
SOC coefficient	0.460**	0.421**	0.348**
F statistic	96.138	90.451	53.064
F sig.	**	**	**
R^2	44.3%	42.8%	30.5%
Adjusted- R^2	43.9%	42.4%	30%
Model 2 *2011 ESG*	2012 ECN (1-Year Lag)	2013 ECN (2-Year Lag)	2014 ECN (3-Year Lag)
GOV coefficient	0.143*	0.146*	0.159*
ENV coefficient	0.128	0.077	−0.004
SOC coefficient	0.443**	0.367**	0.366**
F statistic	93.838	50.926	37.508
F sig.	**	**	**
R^2	43.5%	29.4%	23.5%
Adjusted- R^2	43%	28.9%	22.9%
Model 3 *2012 ESG*	2013 ECN (1-Year Lag)	2014 ECN (2-Year Lag)	2015 ECN (3-Year Lag)
GOV coefficient	0.120*	0.084	0.145*
ENV coefficient	0.049	0.023	−0.094
SOC coefficient	0.438**	0.425**	0.451**
F statistic	57.314	41.331	36.067
F sig.	**	**	**
R^2	31.8%	25.2%	23.3%
Adjusted- R^2	31.3%	24.6%	22.7%

Notes: **, $p < 0.01$; *, $p < 0.05$; ECN, economic performance; GOV, governance performance; SOC, social performance; ENV, environmental performance.

To test the individual impacts of environmental, social and governance on economic performance multiple regression analyses have been employed. Table 4 below shows the regression results for the influence of 1-year lagged, 2-year lagged, and 3-year lagged environmental, social and governance performance on the economic performance for the years 2011–2015. F-statistics indicated that the models were significant ($p < 0.01$). For each lagged ESG performance, 3 regression analyses were conducted to test the influence on the economic performance.

Environmental performance only showed a significant ($p < 0.05$) relationship in the 2010 ESG and 2012 ECN. However, environmental performance did not show a significant ($p < 0.05$) relationship with the economic performance in the other models. Therefore, hypothesis 2 is not accepted (Environmental performance has a positive impact on economic performance). Further, 1-year lagged, 2-year lagged, and 3-year lagged social performance showed a significant ($p < 0.01$) relationship with economic performance measures. Therefore, hypothesis 3 is fully supported and accepted (Social performance has a positive influence on economic performance). Moreover, governance performance showed a significant ($p < 0.05$ and $p < 0.01$) influence on the economic performance in 8 of the 9 regression analyses. Therefore, hypothesis 4 is accepted (Governance performance has a positive influence on economic performance). In model 1, the adjusted R^2 was 43.9% with 1-year lag, 42.4% with 2-year lag, and 30% with 3-year lag. In model 2, the adjusted R^2 was 43%, 28.9% and 22.9% respectively for 1–3 years lagged data. In model 3, the adjusted R^2 was 31.3%, 24.6% and 22.7% respectively for 1–3 years lagged data. It can be observed that as the number of lagged years increased, the amount of variance explained in economic performance decreased in all models. Overall, environmental, social and governance performance explain a considerable amount of variance of the economic performance of the U.S. companies.

4. Discussion

The key driver behind the move towards the interest in ESG performance is the perceived need to provide stakeholder with a complete picture of companies. Stakeholders' awareness and demand on the ESG is growing and they incorporate ESG information with other investment information. Companies are consolidating ESG information into their managerial and operational initiatives (Adams & Frost, 2008). In addition, satisfying the needs of the stakeholders would yield better economic and financial performance measures (Donaldson & Preston, 1995). Economic performance includes employee-related aspects such as motivation and retention (Greening & Turban, 2000), customers satisfaction, loyalty (Dawkins & Lewis, 2003), increased reputation (Whooley, 2004) and better access to capital (Roberts & Downing, 2002). In fact, Wagner and Schaltegger (2004) discovered that companies which adopted a long-term value-oriented approach had a stronger relationship than companies without a value-oriented approach. The findings of this study showed that social and governance performance had a positive influence on economic performance of the S&P 500 firms. However, environmental performance of the firms did not show a significant effect.

In the context of the U.S. firms listed in S&P 500, descriptive statistics implied that, there is a negative trend in the governance performance of companies, a stable trend for

social performance and a positive trend for environmental and economic performance. In addition, governance performance was the most stable measure in comparison with social and environmental performance measures. This implies that the S&P 500 firms may share a similar agenda for corporate governance however, different for environmental and social operations (Nollet et al., 2016). The findings of this study indicated that environmental, social and governance performance loaded significantly on the construct of ESG performance. Therefore, ESG is confirmed as a significant construct and showed a significant influence on the economic performance between the period 2010 and 2014. A substantial amount of empirical studies found a significant relationship between ESG and economic performance (Ambec & Lanoie, 2008; Ferrero-Ferrero et al., 2016; Velte, 2017; Yoon et al., 2018; Zhao et al., 2018) while some found an insignificant relationship (Landi & Sciarelli, 2019; Margolis & Walsh, 2003). Thus, the findings are in-line with previous results that found a positive association between ESG performance and economic performance measures (El Ghoul et al., 2017; Friede et al., 2015).

In the context of the U.S. environmental performance is found to have a positive influence on the financial performance of firms (Al-Najjar & Anfimiadou, 2011; Gallego-Alvarez et al., 2014; Yadav et al., 2016). However, the findings of this research found that environmental performance did not have a significant effect. The findings of this research failed to provide support for the previous studies which found a significant positive or negative effect of environmental performance on the economic performance (Al-Najjar & Anfimiadou, 2011; Wang et al., 2014; Yadav et al., 2016). Muhammad, Scrimgeour, Reddy and Abidin (2015) found a significant relationship between environmental performance prior to the financial crisis in 2008 and an insignificant relationship during and after the financial crisis in Australia. The findings of this study on economic performance are in line with the finding of Muhammad et al. (2015). In addition, the findings supported the studies which concluded that social performance has a positive influence on the economic performance (Dhaliwal et al., 2011; Mishra & Suar, 2010; Surroca & Tribó, 2008). The results also indicated that governance performance is a significant contributor of the economic performance of firms. This is in-line with the previous studies that found a positive association between the governance performance and economic performance (Klettner et al., 2014; Monda & Giorgino, 2013; Soana, 2011).

There are various findings within the literature considering the nexus. For instance, Tarmuji et al. (2016) concluded that governance performance was the only ESG construct which showed a relationship with economic performance in Malaysian companies. In an Australian context, Sila and Cek (2017) found a significant relationship of two dimensions of the ESG namely social and environmental performance with economic performance. Governance performance of companies listed in Australia did not show a significant relationship with economic performance (Sila & Cek, 2017). Velte (2017) found a positive relationship between ESG performance and return on assets of firms from Germany. For instance, Galema, Platinga and Scholtens (2008) found an insignificant relationship between sustainability indicators and financial risk and return over 289 companies in the U.S. Mixed results have been found in a meta-analysis study consisting of empirical research about environmental performance and economic performance (Wagner et al., 2002). According to Holder-Webb, Cohen, Nath,

and Wood (2009) U.S. companies consider social aspects more than other aspects and tend to disclose social performance information more. In line with this finding, social performance showed a stronger influence on economic performance than governance and environmental performance. Furthermore, both the three-factor ESG and individual environmental, social and governance performance explained a considerable amount of variance in economic performance in each period. However, it is observed that 1-year lag explained a higher variance than 2-year and 3-year lag. Therefore, it can be said that the influence of environmental, social and governance performance can be observed in the following year and the extent of influence decreases in the second and third years respectively.

Conclusions

The purpose of this study is two-fold: first, forming a three-factor ESG model and test its influence on the economic performance; second, analyzing the individual influences of environmental, social and governance performance on the economic performance of the U.S. firms. In this study, data from the Asset4® dataset have been utilized to test the proposed effects and relationships. The findings of this study are in line with the proposed influence of ESG on the economic performance. We found significant influence of ESG on the economic performance. Moreover, social and governance performance showed a significant influence on the economic performance. However, environmental performance showed an insignificant influence. Social performance is proven to be a valuable predictor of the economic performance. Another finding of this research is that governance performances of firms are higher than their environmental and social performance.

Thus, ESG is a significant predictor of the economic performance of the companies. However, it could be argued within a stakeholder theory perspective that stakeholders acknowledge social and governance performance of companies more than their environmental performance. Companies should consider the findings of this research and place importance on social and governance performance indicators to see future economic benefits. Findings also reveal that the extent of the influence of environmental, social and governance performance is highest at the year after and decreases thereafter.

This study contributes to the literature by using longitudinal data to claim causality of the findings. Therefore, causality which is a common limitation for studies which use cross-sectional data has been overcome. Previous studies mostly focus on the ESG performance of European or Asia Pacific countries; however, this research focused on the U.S. In addition, another perspective for the ESG and economic performance literature by proposing both a combined three-factor model and separate factor models was provided. Findings also support that firms from different regions have different choices, policies and objectives; therefore, different findings should be expected.

The implications and suggestions for scholars include the need for additional research in different regions using longitudinal ESG data. Moreover, companies should acknowledge the importance of ESG performance and aim to achieve higher performances. For the academics, this is the first study to confirm the three-factor construct of ESG by using confirmatory factor analysis. Thus, this can provide incentives for other researches to conduct the same

analysis across different countries and industries. This study provides insights for the management of companies. The findings are expected to provide an incentive for the companies to increase their ESG performance and enhance the transparency by disclosing ESG performance. Environmental performance of companies should be analyzed in-depth in order to understand why it is not significant in influencing the economic performance. Moreover, companies should focus more on the governance and social performances as they are proven to be significant contributors of the economic performance of companies.

Despite its relevance and contribution, this study also has some limitations. In this study, research was solely focused on the U.S. which is a developed country; this has limited the generalization of the findings to the all developed and developing countries. Last, the issue of "greenwashing" stays as a limitation for all sustainability research which based their data from the ESG information provided by companies. As a future research suggestion a developing country may be selected to compare the findings between developed and developing countries would help overcome the limitations of generalizability. Furthermore, another research suggestion is to analyze the period from 2015 to 2019 and to compare the results with the current studies. In addition, different economic indicators and mediating variables can be used to observe their effect on the relationship.

Author contributions

Kemal Cek was responsible for writing, data analysis and interpretation. Serife Z. Eyupoglu supervised the research and contributed to the theoretical development and editing of the article.

Disclosure statement

The authors declare that we did not have any competing financial, professional, or personal interests from other parties.

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