



The Impact of the Business Life Cycle on the Relationship between Excessive ESG and Firm Value

Suyon Kim

Department of Accounting, Jeonbuk National University, Jeonju, 54896 Republic of Korea; sykim309@jbnu.ac.kr (S.K.).

Abstract. This study aims to investigate the impact of the business life cycle on the relationship between excessive ESG and firm value through regression analysis. The study targeted Korean firms from 2016 to 2021, and the findings revealed a negative correlation between excessive ESG investment and firm value. After including the business life cycle in the analysis, no relationships were found during the introduction and decline stages between these two factors. However, excessive ESG positively impacts firm value during both the growth and mature stages of the business life cycle. In the growth stage, firms need a strategy that distinguishes them from other competitors. Thus, ESG investments serve as a method for differentiation in a competitive market, resulting in a positive association between the two factors. Additionally, firms in the mature stage possess substantial cash flow, enabling them to engage in a wider array of socially responsible initiatives. Therefore, in both stages, excessive ESG aligns with strategic objectives and is critical for enhancing firm value. This study suggests that companies can strategically leverage ESG investments to maximize firm value according to the different stages of the business life cycle.

Keywords: Business life cycle, Excessive ESG investment, Firm value, Signaling theory, Strategy.

1 | INTRODUCTION

After COVID-19, environmental, social, and governance (ESG) investments received global attention and transformed into a trend. At the same time, investors are becoming more interested in sustainable management, and global asset management firms are incorporating ESG as a primary investment in the capital market. Consequently, ESG management has developed into a rigorous and transparent standard for investor evaluation (Jeong & Ban, 2024). Firms are increasingly implementing ESG management as a strategic approach that aligns with contemporary global demands, forming ESG-related committees within the board to evaluate and oversee ESG policies and undertaking various initiatives to enhance ESG performance (Yang & Choi, 2022).

ESG, sometimes referred to as corporate social responsibility (CSR), has significantly grown during the last two decades. Since the early 1980s, corporate sustainability has evolved beyond simple expressions of goodwill (Kiron, Kruschwitz, Haanaes, & Velken, 2012), with most of the research using the term CSR to address ESG disclosures, since ESG represents the most recent iteration of CSR (De Silva Lokuwaduge & De Silva, 2022).

This study endeavors to examine the implications of excessive ESG—defined as the portion not accounted for by financial factors—on firm value. Specifically, it seeks to understand how certain firms engage in ESG investments at levels surpassing their industry peers. Although ESG initiatives originated from altruistic motives, it is an expense that firms must bear. Moreover, excessive ESG implies that a firm is allocating more resources than its counterparts within the same industry.

Signaling theory posits that ESG investments convey the distinctive attributes of a corporation to external stakeholders and indicate that the firm is proactively confronting future risks. When making decisions on ESG investments, a variety of firm-specific variables have an influence. Acquiring a thorough understanding of these traits is essential for firms seeking to get value from the ESG operation (Hasan & Habib, 2017; McWilliams & Siegel, 2001). The dynamic resource-based approach posits that firms' capabilities evolve over time, establishing a foundation for competitive advantage and leading to distinct characteristics in firms' capabilities (Penrose, 1959; Wernerfelt, 1985). Thus, this study incorporates the business life cycle in the relationship between excessive ESG and firm value.

This study attempts to examine the relationship between excessive ESG and firm value along with the impact of the business life cycle. The results of the regression analysis suggest that firms' excessive ESG investments decrease firm value. However, analyzing such a relationship by incorporating the business life cycle shows that firms' excessive ESG investments in the growth and mature stages increase firm value. The results suggest that firms need to adjust their ESG investments based on their current position, since their business life cycle exhibits different resource allocation throughout different stages, resulting in unique strategic methodologies.

This study contributes significantly to the present literature by differentiating between normal and excessive levels of ESG, as opposed to previous studies that viewed ESG as a static entity. This approach allows for a more nuanced understanding of how overinvestment in ESG influences a firm's sustainability value.

The subsequent sections of this article are organized as follows: Section 2 provides a comprehensive review of the background that leads to the hypotheses, Section 3 provides a detailed description of the research design and offers a comprehensive description of the data used in the study, Section 4 presents the empirical results, and Section 5 contains the study's conclusion.

2 | BACKGROUND AND HYPOTHESIS DEVELOPMENT

2.1 | Studies on ESG Investment

Investments in ESG can be explained through the lens of signaling theory, which explains the effect when a person with an information advantage signals to a person with lesser information in situations of information asymmetry (Connelly, Certo, Ireland, & Reutzel, 2011). Connelly et al. (2011) posits that a firm may convey several signals to external stakeholders, highlighting a firm's distinct qualities, and ESG can be considered an information indicator that a firm communicates to external stakeholders (Backhaus, Stone, & Heiner, 2002). While only the financial information was used as

an indicator to evaluate firm performance, recently, non-financial information, such as ESG investment, is included in assessing firm performance for their sustainable existence (Eccles, Ioannou, & Serafeim, 2014). ESG investment is regarded as a firm's dedication to ensuring a stable management system to outside stakeholders (Ross, 1977).

Lys, Naughton, and Wang (2015) proposed the model that defines corporate social responsibility. The model posits that firms' social responsibility actions are influenced by financial performance, cash equivalents, risks, the level of research and development, corporate governance, and firm size. The residual that cannot be explained by such economic variables is the excessive amount. The excessive part of CSR expenditure carries value-relevant information. Gregory, Tharyan, and Whittaker (2014) suggested that abundant resources positively affect the extent of CSR activities and this, in turn, leads to higher firm performance.

Excessive investments in ESG are explained by the two contrasting aspects of signaling theory. Investing in ESG higher than the average within the industry means that firms are actively participating risk management (Lim & Choi, 2018). The risks that firms might face vary, such as government regulation and social and environmental restrictions (Husted, 2005). Preemptive initiatives to avoid risks by investing in ESG actively and excessively helps firms to establish moral capital to mitigate the insurance-like effect, which may affect firm performance (Shiu & Yang, 2017). Therefore, excessively investing in ESG indicates that firms are doing their best to increase their value. Researchers contend that firms with superior ESG investment generally possess a more favorable corporate reputation, yielding higher competition, which, in turn, enhances firm value.

When a firm makes excessive ESG investments within the industry, it is regarded as having a sustainable (Yuan, Lu, Tian, & Yu, 2020) and outstanding ESG strategy (Habib, 2023) and can effectively allocate limited resources (Lin, Ho, Ng, & Lee, 2020). As ESG obtains support from various outside stakeholders, such as investors and consumers, it is expected that excessive ESG will gain more support from many stakeholders, which leads to higher firm performance (Freeman, 2010). Also, Naughton, Wang, and Yeung (2019) found that when investors exhibit a favorable attitude toward a firm's social responsibility activities, the firm increases the level of its activities, which leads to excessive ESG and higher firm value.

On the other hand, excessive ESG investment indicates the level of risk that the firms confront (Kotchen & Moon, 2012). For example, firms in the negative image industry, such as the tobacco and gambling industries, are more sensitive to the level of ESG investment (Jo & Na, 2012). Wood and Ross (2006) stated that as the government intensifies regulations, firms' costs of regulatory compliance increase as a proactive action. In Korea, since regulations pertaining to the environment, labor, and fair competition are directly linked to a firm's ESG level, the higher costs for firms with more exposure to the restrictions of environment, labor, and fair competition will incur higher regulation compliance expenses (Gond, Kang, & Moon, 2011; Lee & Yang, 2015). Doh and Guay (2006) contended that firms' responsible activities are effective under pressure from non-governmental organizations such as environmental groups. Krüger (2015) suggested that CSR activities diminish firm value, since such activities may signal that there is information asymmetry within the firm. Thus, based on the argument so far, the first hypothesis is as follows:

H1: Excessive ESG affects firm value.

The dynamic resource-based theory underscores that differences in resources among firms serve as a crucial factor in characterizing each firm's originality (Penrose, 1959; Rumelt, 1984). The business life cycle is based on this theory, suggesting that firm characteristics develop over time with different resources and strategies, and a firm's success relies on the efficient and effective use of resources (Habib & Hasan, 2019).

A firm's business life cycle is categorized into four stages: introduction, growth, maturity, and decline (Dickinson, 2011). Each stage has distinct characteristics. Firms at the introductory stage exhibit unpredictability due to their new position in the market, characterized by uncertainty and risk, but they spend significantly for a sustainable future. Firms in the growth phase are engaged in the acquisition of fixed assets to enhance their capacity for innovative production and diversification (Liao, 2006). Also, firms experience expansion and the emergence of competitors, which requires the development of strategies to remain competitive and promote innovation activities (Dickinson, 2011). Firms must pursue more differentiated strategies to survive the competition during the period of maturity, which is defined by intense competition and stagnation in sales and business expansion. As firms reach the mature stage, they have advanced management capabilities and abundant cash flow (Waddock & Graves, 1997), leading to higher corporate socially responsible activities (Hasan & Habib, 2017). During the decline stage, there is a significant likelihood of market elimination caused by internal inefficiencies and inadequate management techniques, thus necessitating more expenditure to regain market share (Dickinson, 2011). To sum up, it is notable that a firm's business life cycle depends on its capability of utilizing its internal resources by taking risks.

In this context, firms' strategies encompass not only financial assets but also non-financial assets (Eccles et al., 2014). Given that the initial purpose of ESG has evolved into a trend (Verheyden, Eccles, & Feiner, 2016) serving as a survival strategy for both the environment and corporations (Van Duuren, Plantinga, & Scholtens, 2016), particularly in the post-COVID-19 context, it is essential to evaluate excessive ESG investments within the framework of the business life cycle. From the signaling theory point of view, excessive ESG can be regarded as a risk that firms are willing to take.

There are various studies that verify firms' risks at each phase of the business life cycle to guarantee their growth and sustainability. Hasan and Habib (2017) specifically examined business risk-taking behavior using comprehensive data from the United States and the life cycle model developed by Dickinson (2011). They identified a U-shaped risk-taking pattern corresponding to life cycle stages and contended that investments during the introduction and decline phases are risky due to their adverse effects on corporate performance. Similarly, Coad, Segarra, and Teruel (2016) concluded that R&D investments made by early-stage companies are riskier than those made by mature-stage companies. As a result, the introduction and decline stages of investments have a detrimental impact on shareholder wealth due to an excessive level of risk taking. Risk taking during the growth and mature stages has a beneficial effect on future performance. With this background, this study is designed to test the effect of the business life cycle on the relationship between excessive ESG investment and firm value. The second hypothesis is as follows:

H2: The business life cycle impacts the relationship between excessive ESG investment and firm value.

3 | RESEARCH DESIGN AND SAMPLE DESCRIPTION

3.1 | Research Design

3.1.1 | Data

To evaluate the impact of the business life cycle on the relationship between excessive ESG and firm value, the initial data was gathered from the Korean stock market from 2016 to 2021, after excluding financial institutions. The final data was derived by excluding firms with insufficient financial information. Winsorization was used on the upper and lower extremities of the control variables to mitigate the influence of outliers. Table 1 delineates the methodology for data selection in this investigation.

Table 1: Data selection process.

Firms with excessive ESG investment from 2016 to 2021	10,525
Less:	
No financial data	2,255
Final observation	8,270

3.1.2 | Measuring Business Cycle

Though firm age has traditionally been used to assess the business life cycle, it may not be a reliable indicator. This is because the business life cycle does not have a defined duration; some may develop significantly quicker or slower than others (Cameron & Whetten, 1981). The first study of the business life cycle was carried out by Anthony and Ramesh (1992). This study adopts the method suggested by Dickinson (2011) and introduced new business life cycle measures based on cash flow.

Dickinson (2011) defined the business life cycle by analyzing cash flow patterns that reflect the differences in profitability, risk and growth. Specifically, to construct combinations of cash flow patterns based on economic theory, three different net cash flows are used. The business life cycle stages are divided into five based on the combination: introduction, growth, mature, shake-out, and decline. However, since there have been reports that the direction in the shake-out stage is unclear, this study excludes the shake-out stage.

The introduction stage is marked by negative operating through excessive investment. The growth stage features positive operating by generating cash outflow and making an effort to differentiate from competitors within the market. In the mature stage, cash flow for operation is positive, and investments are still being made, implying cash outflow. The decline stage shows a negative cash flow of operation.

3.1.3 | Measuring Excessive ESG

Excessive ESG is measured by the method suggested by Lys et al. (2015). According to their study, ESG levels are estimated by regression analysis, employing economic factors considered to affect a firm's ESG level as explanatory variables, defining a normal level of ESG. The residual values are defined as excessive ESG. In other words, the part of the actual ESG level that can be explained by economic factors is considered normal ESG, while the difference between actual ESG and normal ESG is classified as excessive ESG. The first equation shows the detailed measurement.

$$ESG_t = SA + IS + CASH + CFO + LEVERAGE + MTB + SIZE + RND + ADV + GOV + IND + YRD \quad (1)$$

where SA = Net sales / Total assets; IS = Income before extraordinary item / Net sales; CASH = Cash / total assets; CFO = Cash flow from operations / Total assets; LEVERAGE = (Long-term debt + debt in current liabilities) / Total assets; MTB = (Market value of equity + long-term debt + debt in current liabilities) / Total assets; SIZE = Natural logarithm (Total assets); RND = Research and development expense / Net sales; ADV = Advertising expense / Net sales; GOV = Governance score; IND = Industry dummy; and YRD = Year dummy.

3.1.4 | Hypothesis Testing

The second equation is designed to test the first hypothesis. The definitions of the variables used in the model are described in Table 2.

$$TobinQ_t = \alpha_1 + \beta_1 OESG_t + \beta_2 Size_t + \beta_3 Lev_t + \beta_4 Roa_t + \beta_5 Ocf_t + \beta_6 Invrec_t + \beta_7 Da_t + \beta_8 Loss_t + \beta_9 Growth_t + Ind + Yr + \varepsilon \quad (2)$$

Tobin's Q represents a proxy for firm value, determined by dividing the sum of the book value of assets and the market value of equity by the book value of assets (Lee & Jeon, 2019). Calculating Tobin's Q for each business necessitates assessing the company's replacement cost, which serves as the denominator. Nevertheless, due to the impracticality of direct measurement, the book value of total assets is commonly used as a proxy for replacement cost (Chung & Pruitt, 1996). A higher Tobin's Q value indicates that the business's market value exceeds its replacement cost, implying a higher firm value. On the other hand, if the value is lower, it indicates that firms are undervalued.

OESG quantifies excessive ESG investment and represents the residual value from the first equation. Size, Lev, Roa, Ocf, Invrec, DA, Loss and Growth are the control variables selected based on prior research. Da is obtained from discretionary accruals, as specified by Kothari, Leone, and Wasley (2005). Equation 3 is used to quantify the value of Da. The regression coefficient of the second equation is calculated for each industry year in the targeted data. Equation 3 is used to obtain the value of Da, and the regression coefficient from the third equation is calculated for each industry year in the targeted data.

$$\frac{Ta_t}{A_t} = \alpha_0 + \beta_1 \frac{1}{A_t} + \beta_2 \left(\frac{\Delta Sales_t - \Delta Ar_t}{\Delta Ar_t} \right) + \beta_3 \frac{Ppe_t}{A_t} + \beta_4 Roa_t + \varepsilon_t \quad (3)$$

where Ta = Net income – cash flow from operation; A = Total assets; Sale = Sales revenue; Ar = Accounts receivables; Ppe = Plant, property, and equipment; and Roa = Net income / total assets.

Table 2: Variable definitions.

TobinQ _t	Tobin's Q (book value of assets + market value of equity) / book value of assets
OESG _t	Excessive ESG, derived from Equation 2
Size _t	Firm size, natural logarithm of total assets
Lev _t	Leverage, total liabilities / total assets
Roa _t	Return on assets, net income / total assets
Ocf _t	Operating cash flow, cash flow from operation / total assets
Roe _t	Return on equity, net income / total equity
Beta _t	Beta, systematic risk
Vol _t	Volatility, standard deviation of stock return
Da _t	Discretionary accruals measured by the model in Kothari et al. (2005)
Btm _t	Book-to-market ratio, book value of equity / market value of equity
Ind	Industry dummy
Yr	Year dummy

The third equation is used to examine the impact of the business cycle on the relationship between excessive investment in ESG and firm value. The interaction variables, OI, OG, OM, and OD in Equation 3, are of interest.

$$\text{TobinQ}_t = \alpha_1 + \beta_1 \text{OESG}_t + \beta_2 \text{Int}_t + \beta_3 \text{Grw}_t + \beta_4 \text{Mat}_t + \beta_5 \text{Decl}_t + \beta_6 \text{OI}_t + \beta_7 \text{OG}_t + \beta_8 \text{OM}_t + \beta_9 \text{OD}_t + \beta_{10} \text{Size}_t + \beta_{11} \text{Lev}_t + \beta_{12} \text{Roat}_t + \beta_{13} \text{Ocf}_t + \beta_{14} \text{Invrec}_t + \beta_{15} \text{Dat}_t + \beta_{16} \text{Loss}_t + \beta_{17} \text{Growth}_t + \text{Ind} + \text{Yr} + \varepsilon \quad (3)$$

where Int = Introduction stage; Grw = Growth stage; Mat = Mature stage; Decl = Decline stage; OI = interaction variable between OESG and Int; OG = interaction variable between OESG and Grw; OM = interaction variable between OESG and Mat; and OD = interaction variable between OESG and Decl.

4 | EMPIRICAL RESULTS

4.1 | Descriptive Statistics

Table 3 provides the descriptive statistics for the variables utilized in this study. The mean value of Tobin's Q (TobinQt) is 1.783, with a median value of 1.054. Excessive ESG investment (OESGt) has a mean of 0.789. The average values for the introduction, growth, mature, and decline stages of the business life cycle are 0.143, 0.019, 0.317, and 0.036, respectively.

Table 3: Descriptive statistics.

Variable	Q1	Q3	Std	Mean	Median
TobinQt	0.608	1.877	6.864	1.783	1.054
OESG _t	0.318	1.111	0.793	0.789	0.468
Int _t	0.000	0.000	0.350	0.143	0.000
Grw _t	-0.135	0.226	0.725	0.019	0.053
Mat _t	0.000	1.000	0.465	0.317	0.000
Decl _t	0.000	0.000	0.186	0.036	0.000

Note: See Table 2 and Equation 3 for definitions of the variables.

Table 4 shows the Pearson correlation. The correlation coefficient between Tobin's Q and OESG is -0.073, indicating a weak negative correlation, which is statistically significant (p-value < 0.0001). While Tobin's Q is adversely connected with the growth and mature stages, there is no correlation between the introduction and decline stages. However, it is crucial to understand that Pearson's correlation only assesses linear correlations and does not take into consideration non-linear relationships or the effect of other factors, which may impede a full understanding of the relationship between the two variables.

Table 4: Pearson correlation.

	TobinQt	OESG _t	Int _t	Grw _t	Mat _t	Decl _t
TobinQt	1.000	-0.073	0.023	-0.061	-0.035	0.004
OESG _t	<.0001	1.000	0.033	<0.0001	0.001	0.691
Int _t			1.000	-0.045	-0.168	-0.022
Grw _t				1.000	0.008	0.008
Mat _t					1.000	0.008
Decl _t						1.000

Note: See Table 2 for definitions of the variables.

4.2 | Main Findings and Discussion

Table 5 shows the results of regressing the relationship between excessive ESG (OESGt) and firm value to test the first hypothesis. The coefficient of OESGt is -0.538 and is statistically significant at 10%. The result of testing the first hypothesis suggests that excessive ESG investment may be seen as a proactive strategy to alleviate prospective risks associated with environmental regulations, social problems, and governance challenges, yet they might also indicate an elevated inherent risk profile to investors. Consequently, our finding highlights the significance of strategic ESG investment, indicating that just increasing the level of ESG investment does not lead to an increase in company value.

Table 5: Regression results for the first hypothesis.

Variable	Estimate	t-value
Intercept	5.625	5.150***
OESG _t	-0.538	-6.690***
Size _t	-0.143	-3.230***
Lev _t	0.528	81.420***
Roat	-0.972	-1.380
Ocf	1.481	1.950**
Invrec _t	-0.889	-3.260***
Dat	0.802	1.090
Loss _t	0.328	2.060**
Growth _t	0.006	1.800*
Ind		Included
Yr		Included
F-value		433.750
Adj R ²		0.451
Observations		8,270

Note: (1) *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively. (2) See Table 2 for definitions of the variables.

Table 6 contains the results of regression analysis assessing the impact of the business life cycle on the relationship between excessive ESG and firm value. The interaction variables of OI, OG, OM and OD are of interest. Though Grw and Mat have negative coefficients, the coefficients of OG and OM are 0.618 and 0.620, respectively, and are statistically significant at the 10% level. For firms in the growth and mature stages, excessive ESG showed a statistically significant positive relationship with firm value. This result is consistent with the research of Waddock and Graves (1997) and Hasan and Habib (2017), indicating that firms in the mature stage may actively participate in ESG initiatives due to their surplus cash flow and sophisticated managerial skills. Moreover, as Dickinson (2011) indicates, firms in the expansion phase need distinct ways to manage increasing competition. Excessive ESG investment may act as a distinctive approach, guaranteeing long-term growth and enhancing firm value. In these stages, excessive ESG investment is not merely considered a cost but a strategic investment for future competitiveness.

Table 6: Regression results for the second hypothesis.

Variable	Estimate	t-value
Intercept	4.792	4.180***
OESG _t	-0.847	-7.260***
Int _t	0.063	0.220
Grw _t	-1.292	-8.010***
Mat _t	-0.873	-4.240***
Decl _t	-0.167	-0.340
OI _t	-0.055	-0.230
OG _t	0.618	7.310***
OM _t	0.620	4.190***
OD _t	0.066	0.170
Size _t	-0.097	-2.100**
Lev _t	0.522	78.930***
Roa _t	-0.534	-0.670
Ocf	1.449	1.780*
Invrec _t	-0.476	-1.620*
Da _t	0.240	0.300
Loss _t	0.225	1.340
Growth _t	0.009	2.660***
Ind		Included
Yr		Included
F-value		297.890***
Adj R ²		0.452
Observations		8,270

Note: (1) *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively. (2) See Table 2 and Equation 3 for definitions of the variables.

5 | CONCLUSIONS

This research examined the relationship between excessive ESG activities and firm value and the impact of the business life cycle on this relationship. To verify the relationship, the Korean listed companies from 2016 to 2021 were used. After regression analysis, the results indicate that excessive ESG investment can negatively impact firm value. This corresponds with the idea that while companies may participate in ESG initiatives to signal their commitment to social responsibility, excessive spending may also be seen as a misallocation of resources, resulting in lower financial performance. This study highlights the importance of aligning ESG investment with the firm's overall strategy, since stakeholders might view excessive expenditure as indicative of inefficiency or a lack of focus on key business goals.

The research, on the other hand, argues that excessive ESG investment may actually increase firm value throughout the growth and maturity phases of the business life cycle. Firms in these phases are better positioned to utilize their resources effectively, and their commitment to ESG may help them gain an advantage over their peers, enhance their corporate image, and gain support from a variety of stakeholders. This implies that firms should carefully correspond their ESG activities with their growth objectives, since responsible practices may lead to higher performance and sustainability in the long term.

This study underscores the dual nature of excessive ESG investment, demonstrating that, although it could harm firm value, it can also be a profitable strategy for firms in key life cycle stages. As a result, it is critical for firms to evaluate their ESG policies throughout their entire life cycle, ensuring that their investments are not only socially responsible but are also aligned with their financial objectives and market positioning.

While previous research has analyzed the impact of ESG activities on firm value, this study distinguishes between normal and abnormal levels of ESG. Also, by considering firms' capabilities to invest in ESG, it is notable that excessive ESG can be used as a strategic activity.

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Competing Interests:

The author declares that there are no conflicts of interests regarding the publication of this paper.

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