THE INFLUENCE OF LIQUIDITY RISK, MARKET VALUE, AND EXPECTED RETURN ON CORPORATE SOCIAL AND ENVIRONMENTAL EXPENDITURES IN INDONESIA'S NATURAL RESOURCE-BASED INDUSTRIES: THE MODERATING ROLE OF FINANCIAL DISTRESS

A Thesis

Submitted to the Master's Study Program of Finance in Sustainable Finance at the Faculty of Economics and Business in partial fulfillment of the requirements for the degree of

Master of Finance (M.Fin.)

by:

Yana Fimansyah

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ABSTRACT

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This research plays a pivotal role in exploring the equilibrium between securing organizational legitimacy and preserving corporate financial stability. Therefore, the purpose of this study is threefold. First, it investigates the simultaneous relationship between liquidity risk, market value, and expected return on Corporate Social and Environmental Expenditures (CSEE); secondly, to explain the moderating role of financial distress among the considered variables; and thirdly, to examine the contribution of the lagged dependent variable (prior CSEE) into the model. The analysis focuses on natural resource-based industries including energy, mining, forestry, and plantation companies listed on the Indonesia Stock Exchange during the 2018–2024 period, yielding 280 panel observations. This study employs a two-step Generalized Method of Moments (GMM) estimation. The findings display a positive but statistically insignificant effect of liquidity risk and expected return on CSEE, while market value has significant positive effect. Moreover, financial distress moderates the relationships among the variables examined; and the lagged CSEE found to be positively significant. These findings highlight that internal financial conditions and distress play a critical role in shaping firms' sustainability investment strategies. Stronger regulatory frameworks and fiscal incentives are recommended to support long-term commitments to environmental and social programs. To the best knowledge of the researcher, the study is first to measure the moderating impact of financial distress of the influential factors of corporate management's decision-making in determining the allocation of CSEE funds by considerating the simultaneous relationship between independent and dependent variables.

Keywords: *Liquidity risk, Market value, Expected return, Financial distress, Corporate Social and Environmental Expenditures (CSEE), GMM model, Lagged CSEE*.

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Completing this thesis has been both an academic milestone and a deeply personal journey, one that has shaped not only my thinking but also my perspective on life and learning process. It has been a path filled with reflection, growth, and the unwavering presence of those who walked alongside me.

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My heartfelt thanks also go to my family, who cultivated my love for philosophical inquiry through years of thought-provoking conversations at home. Their belief in my ability to pursue this academic path gave me the strength to persevere.

Above all, I wish to express my deepest appreciation to my beloved husband. Your constant presence, quiet strength, and willingness to listen, especially in moments of my doubt have been my greatest source of comfort. Thank you for standing by me through every frustration, every late night, and every small victory along the way.This thesis is not only a product of research and writing; it is a reflection of all the support, patience, and inspiration I have received. For that, I am endlessly grateful.

Depok, 22nd July 2025

Yana Fimansyah

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CHAPTER I
INTRODUCTION

1.1. Background

Over the past few decades, academic discourse and debate among industries and stakeholders on the implications of environmental issues and sustainability for economic systems have remained central (Ray & Nayak, 2023). To be specific, since the Industrial Revolution, concerns over sustainability have increased considerably, driven by production, consumption, and organizational practices. Businesses are encouraged to engage in extensive resource exploitation and massive production by rising societal demand and industrial growth. Consequently, these practices attract heightened scrutiny from communities and stakeholders concerning corporate sustainability commitments. Some scholars argue that profit-oriented business practices have significantly contributed to climate change. Ray & Nayak (2023) state, while greenhouse gas emissions are a natural phenomenon, human activities particularly fossil fuel combustion have exacerbated their impact. Extreme climate change has an impact on the entire planet, necessitating global action. In response to this issue, reducing carbon emissions is one of the key commitment in the Paris Agreement, which is an international accord to combat global warming. According to the UN official website, 195 nations ratified the agreement during the COP 21 summit in Paris in 2015.

Nevertheless, despite the establishment of numerous agreements and frameworks for decarbonization and climate risk mitigation, empirical evidence suggests a worsening climate trajectory. According to Dewi (2025) reports that global temperatures increased by 1.5 degrees Celsius in 2024, marking the highest increase in the past decades. This temperature increase has also become a concern for the European Union's Copernicus Climate Change Service (C3S), an agency that provides information on past, present, and future climate in Europe and worldwide. They attribute this climate change to high greenhouse gas emissions, especially from the burning of fossil fuels.

While many parties (the public, investors and philanthropists) advocate for sustainable business, many other parties (industries to be specific) maintain business-as-usual, profit-driven business. To tackle this problem, currently governments worldwide are tightening environmental regulations, compelling corporations to adopt sustainable business models. Companies, especially those engaged in manufacturing and the natural resource sector, face heightened scrutiny, with regulatory frameworks mandating a

transition to low-carbon economies aligned with ESG principles and the Triple Bottom Line (planet, people and profit) framework.

From a macro-level societal perspective, corporations are increasingly perceived as instrumental in facilitating the low-carbon economy transition. Stakeholders demand escalated transparency for corporate transparency in climate-related disclosures. As a result, companies are increasingly expected to transcend a narrow profit-maximization imperatives by embedding the "Triple Bottom Line" framework emphasizing planet, people, and profit or the principles of environmental, social, and governance (ESG) into their operational frameworks, mitigating ecological degradation, addressing the long-term environmental liabilities and implementing restorative interventions.

Indonesia, as a natural resource-rich developing country, also declared its participation in the Paris Agreement at High-level Signature Ceremony for the Paris Agreement which took place at the UN Headquarters, New York, United States, on Friday, April 22, 2016 (The Ministry of Environment and Forestry, 2016). Given that Indonesia's economy remains fundamentally dependent on fossil fuels, making the government's role and commitment to achieving net-zero emissions critically important. Conflicting interests between the private sector and political will can significantly hinder decarbonization efforts. However, it must be underscored that Indonesia holds immense potential to transition to renewable energy sources such as geothermal, bioenergy, hydropower, wind, and solar. This dynamic positions Indonesia uniquely in the global energy transition landscape. Moreover, growing awareness among the public and investors regarding sustainability and climate change has surged to increasing demands for industries to assume greater environmental responsibility. This public sentiment is influencing industrial policy directions, particularly as green stock indices become more attractive to investors in today's financial markets. As a result, since 2020, many companies have begun publishing integrated sustainability reports in their annual disclosures, adopting frameworks such as the GRI, POJK 51 (Financial Services Authority Regulation), or TCFD. Natural resource-based industries including energy, mining, plantation, and forestry are no exception to the mounting pressure to fulfill their social responsibilities. Ethically, extractive industries carry a heightened duty to remediate the environmental damage they impacted.

Indonesian government has reinforced some regulatory mechanisms to intitutionalize corporate social and environmental responsibility. Law No. 40 of 2007 on Limited Liability Companies and Government Regulation No. 47 of 2017 concerning on Social and Environmental Responsibility (SER) of Limited Liability Companies impose statutory obligations on business particularly those engaged in natural resource exploitation

to integrate sustainability frameworks into their business practices, ensuring alignment with broader environmental and societal imperatives. Law of the Republic of Indonesia Number 40 of 2007 concerning Limited Liability Companies defines SER as the company's commitment to engage in sustainable economic development to enhance the environment and quality of life, which benefits the company, the local community, and the community at large. Article 74 regulates issues such as SER, which is required for businesses who conduct business in the natural resource sector or anything associated with it. Businesses that manage and use natural resources in their operations are those that use them to conduct their commercial operations.

Moreover, In Indonesia, since 2019 sustainability report has become mandatory for banks and listed companies since 2020. However, due to COVID-19 outbreak, the enforcement was deferred to 2021 (PwC, 2023). Nonetheless, in Indonesia, despite the mandate imposed by the Financial Services Authority Regulation No. 51 requiring sustainability reporting, several companies had voluntarily conducted and disclosed their sustainability activities within their annual reports prior to this regulation. Notably, firms operating in natural resource-intensive sectors such as mining, energy, forestry, and palm oil plantations have been among the forerunners. Given their intrinsic interaction with the environment, these industries have been regulated under Law No. 40 of 2007 on Limited Liability Companies and Government Regulation No. 47 of 2017 concerning Social and Environmental Responsibility (SER), which explicitly obligates them to fulfill their environmental responsibilities. Sustainability report extends beyond merely documenting operational ESG performance, however, it is a strategic evaluation instrument and a communication tool with investors and diverse stakeholders. It serve as an annual health check on a company’s strengths and weaknesses which facilitae ongoing enhancements that drive outcomes beneficial not only for business itselft but also stakeholders.

Corporate awareness of Social and Environmental Responsibility (SER) is increasingly reflected through financial commitments aimed at reducing negative environmental impacts. In this context, companies allocate funds to various initiatives such as emission reduction, waste management, pollution control, and ecosystem conservation. These activities, along with broader Corporate Social Responsibility (CSR) efforts, are collectively referred to in this study as Corporate Social and Environmental Expenditures (CSEE).

Over the years, CSEE has come to be seen not merely as a compliance requirement, but as a strategic investment that supports the company’s long-term sustainability goals, particularly in achieving decarbonization targets. These expenditures are now commonly

disclosed in corporate sustainability reports, indicating a shift toward more transparent and responsible business practices. Such disclosures help build investor confidence and foster stronger engagement with stakeholders (Yang et al., 2019; Boubaker et al., 2020). Moreover, the publication of sustainable spending is often used as a tool to address potential legal, regulatory, and reputational challenges. By openly sharing information about their environmental and social initiatives, companies also enhance their approach to managing financial risks, ultimately contributing to a more resilient and sustainable corporate structure.

Some scholars posit that transparent disclosure of environmental and corporate social responsibility (CSR) expenditures might mitigate future corporate financial risks (Wang & Yang (2024); Sharfman & Fernando (2008). Corporate financial risks including liquidity, market, interest rate, and credit risks, need to be thoroughly addressed to maintain business continuity and long-term stability. Corporate financial risks not only jeopardize operational stability but also have the potential to amplify severe financial distress and, ultimately, insolvency. In the contemporary era, beyond financial vulnerabilities, public sentiment regarding sustainability has become a critical determinant of market dynamics, corporate reputation and corporate resilience. Moreover, scholars argue that by disclosing environmental and CSR-related costs serve as a risk-mitigation mechanism, enhancing corporate resilience amid evolving regulatory lanscape and market dynamics.

The risk mitigation perspective, rooted in stakeholder theory, asserts that all companies expenditures related to social and environmental costs serve as risk-mitigating mechanisms (Wang & Yang, 2024). Stakeholder theory posits that companies operate within a broad stakeholder network, necessitating the reconciliation of diverse interests beyond shareholder financial returns or managerial incentives. Corporate responsibility extends to broader societal welfare, encompassing employee well-being and all communities impacted by business operations, including the surrounding environment in which the business operates. Additionally, companies are accountable for their environmental footprint, aligning with govermental objectives for carbon neutrality. Accordingly, the allocation of financial resources to environmental sustainability and corporate social responsibility (CSR) initiatives is not merely a corporate obligation but an essential strategic necessity. Such investment serves as a critical risk mitigation mechanism, fortifying the company against potential financial and operational instabilities

Previous empirical evidence supports this theory, indicating that companies allocating funds to CSEE initiatives and environmental cost are effectively mitigate corporate risks. According to Sharfman & Fernando (2008) state that the higher the level

of environmental risk management, the lower the firm's non-leveraged equity beta (systematic risk). Meanwhile, based on the findings from Dowell et al. (2000), stricter environmental management strategies were similarly attributed to higher market values. Others proliferation of studies in this field reveals that CSEE clarifies companies' view of the future, allowing them to effectively predict future events and respond to external changes to avoid adverse impacts in a more targeted manner (Desender, LópezPuertas-Lamy, Pattitoni, & Petracci, 2020). Their findings Lee & Faff (2009) revealed that companies that disclose their social responsibility in financial statements show reduced idiosyncratic risk associated with a rapidly growing market portfolio. Similarly, Goss and Roberts (2011) assert that enhanced CSR performance correlates with a significant reduction in corporate risk. Mishra & Modi (2013) further substantiate this claim, demonstrating that companies with strong CSEE engagement experience substantial risk mitigation. Additionally, Kim, Li, and Li (2014) emphasize that organizations that demonstrate strong social responsibility practices tend to enhance information transparency, thereby mitigating information asymmetry. Consequently, firms can preempt drastic stock price fluctuations through improved disclosure mechanisms.

Despite growing interest among investors, financial managers, and market participants in understanding the implications of corporate responses to climate change on competitiveness and shareholder value (CERES, 2006; Innovest, 2006), scholarly consensus remains elusive. Contrary to the prevailing perspective, debates persist regarding the purported positive correlation between environmental performance and financial outcomes (Murphy, 2002). The conventional views contend that such initiatives impose substantial costs on firms and should therefore be minimized. To be specific, "Pollution control expenditures are seen by investors as a waste of money that may be used for more profitable investments, and they do not hold businesses accountable for their socially conscious actions" (Mahapatra, 1984: 29).

Moreover, some scholars argue that CSEE intiatives exacerbates default risk by amplifying liquidity risk, due to managerial inefficiencies or agency problem (Bouslah, Kryzanowski, & M'Zali, 2016). Wang & Yang (2024) state that in recent years, the "insurance" role of CSEE has been increasingly associated with increasing corporate liquidity and debt repayment pressure. Some scholars claim that CSR or other activities that refer to social or environmental activities are only a burden for the company. The lack of a standardized framework to quantify environmental costs as corporate assets stems from their perceived inability to generate future economic benefits.

Theoretically, this study supports the over-investment view, rooted in shareholder theory by Friedman. Friedman posited that a corporation's foremost duty is to maximize shareholder wealth. He maintained that corporate management should not allocate resources toward social or environmental initiatives unless such actions yield direct economic benefits to the firm. In his view, addressing societal concerns was the prerogative of governments and individuals rather than corporate entities (Friedman, 1970). Similarly to Barnea & Rubin (2010) that challenge Freeman's stakeholder theory (Freeman, 1984), which posits that excessive allocation of resources to corporate social responsibility (CSR) initiatives may be inefficient and wasteful, increasing cash flow volatility, corporate insolvency risk, and liquidity risk ratio while reducing profitability. This perspective resonates with shareholder and agency theory, which urgues that CSR-related expenditures may divert essential financial resources to sectors unrelated to operational activities, prioritizing managerial self-interests over shareholders value or agency problem (Wang & Yang, 2024). Consequently, beyond a certain threshold, corporate social and environmental expenditures impose a financial burden rather than yielding strategic economic benefits for companies. In conclusion, existing literature reflects a dichotomy between the risk mitigation view, rooted in stakeholder theory and the over-investment perspective, grounded in shareholder theory. These theoretical divergence underscores the field’s enduring scholarly relevance.

While prior research has predominantly explored the impact of CSR and environmental cost on corporate risk, including liquidity, market, and default risk, the author proposes that advancing this line of inquiry may reveal an inverse relationship. Several empirical investigations have explored the nexus between corporate risk and environmental expenditure. Study Adawia (2023), in particular, revealed that environmental costs are positively and significantly affected by a firm’s liquidity and profitability. This finding reinforces Setiawan & Hana (2024). Their findings, which indicate that beyond firm size, profitability substantially influences the extent of CSR engagement and disclosure. Tobing, Zuhrotun, & Rusherlistyani (2019) posits that higher profitability enables firms supported by stakeholder approval to allocate greater resources to CSR initiatives. Such activities enhance corporate reputation and yield intangible benefits through increased stakeholder trust, investor interest, and social legitimacy. Indraswari & astika (2015) found that profitability and firm size positively influence the level of CSR cost. In contrast, Pertiwi, Suryandari, & Putra (2022) demonstrated that while profitability and market capitalization have a positive impact on CSR disclosure, firm size does not significantly affect the extent of such disclosure. Indraswari & Mimba (2017) posit

that market capitalization is positively correlated with CSRs. Wulandari & Zulhaimi (2017) examined the relationship between profitability and corporate social responsibility (CSEE) expenditures, using CSR costs as the dependent variable. Their study, which focused on manufacturing and service companies listed on the Indonesia Stock Exchange (IDX) during the 2012–2015 period, found that profitability had a positive influence on CSR.

Prior studies present inconsistencies findings. Widarsono & Hadiyanti (2015) findings revealed that profitability and liquidity, whether examined partially or simultaneously, exerted no significant influence on the environmental performance of firms in the manufacturing sector. Indraswari & Mimba (2017) reported no significant link between profitability and CSR. Istiqomah & Amanah (2021) similarly found no effect of ROA or market capitalization on CSR disclosure, though firm size proved influential. Dipasti & Sulistyowati (2022) also observed no impact of profitability on CSR, and liquidity has an impact on CSEE disclosure, while Zalfa, Sari, Ningrum, Widyastuti, & Maidani (2024) identified a negative correlation. Dewi and Suaryana (2015) argued that profitability does not inherently lead to increased investment in Corporate Social Responsibility (CSR), as higher CSEE scores may not accurately represent actual financial commitment or expenditure. Finding from Lucky, Mustika, & Astarani (2024) also indicates that profitability factors do not significantly influence corporate social responsibility (CSR) expenditures. In contrast, market capitalization exhibits a negative relationship with CSR costs. Specifically, companies in the transportation and logistics sector listed on the Indonesia Stock Exchange (IDX) during the 2020–2023 period tend to incur lower CSEE costs as their market capitalization increases, and vice versa.

In this study, the term market value is considered more relevant than market capitalization due to the research's primary focus on the investment sector. Additionally, rather than utilizing profitability which predominantly reflects realized financial outcomes based on historical data the study examines a proxy for expected return. This proxy is regarded as more applicable and fundamental in contemporary investment decision-making, as it provides estimates of future values, which are increasingly prioritized by investors. Investors, particularly in the natural resource-based industries that face significant exposure to ESG-related risks, require higher expected financial returns as compensation for the heightened risks associated with environmental, social, and governance (ESG) factors (Nakagawa, Morita, & Sakemoto, 2025). Hens & Trutwin (2024) similarly emphasized that the fundamental rationale for conducting expected return assessments using the Capital Asset Pricing Model (CAPM) lies in the increasing demand

from investors for higher returns on investments that incorporate Environmental, Social, and Governance (ESG) considerations.

This study delineates the simultaneous causality among liquidity risk, market value, expected return, and corporate social and environmental expenditures. The author conceives of this research not as a simple, one-directional linear analysis, but as a deeply intertwined and reciprocal relationship that reflects the complexity of the phenomenon being studied. The existence of a simultaneous relationship between the independent and dependent variables suggests the likelihood of endogeneity issues.

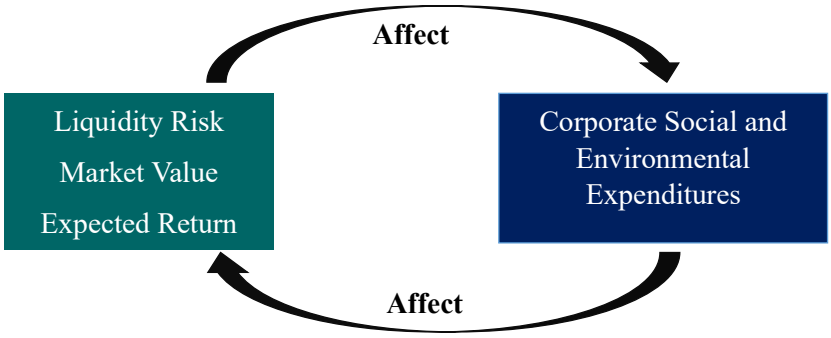

Figure 1
Simultaneous Causality

Source: Processed by author

To mitigate perceptions of high liquidity risk or potential default, companies may limit allocations fund to corporate social and environmental expenditures (CSR initiatives and environmental costs), often viewed as a financial burden beyond a certain threshold (Wang & Yang, 2024). Moreover, while investors advocate for sustainability, return on investment remains a critical consideration, as investment decisions are inherently driven by expected economic benefits (expected return). Thus, firms seeking higher returns may curtail corporate social and environmental expenditures represented in this study by environmental costs and CSR to optimize their return on investment ratio.

However, the author posits that liquidity risk may exhibit an inverse relationship with market value. In recent years, stakeholders increasingly demand corporate social responsibility. Companies that have high social and environmental fund expenditures tend to cultivate a strong reputation among investors, fostering stakeholder trust, enhancing loyalty, and lowering capital costs as a reward for their commitment to sustainability initiatives. As a result, their stock prices in the market (market value) may appreciated, driven by goodwill generated through corporate social and environmental expenditures. This reputational capital incentivizes firms to uphold their image in the eyes of investors (Wang & Yang, 2024). This is supported by legitimacy theory, which emphasizes that companies strive to maintain a positive public image and strong relationships with society

(Suchman, 1995). One of the ways to achieve this is through activities related to ESG (Environmental, Social, and Governance). By engaging in social initiatives and demonstrating environmental responsibility, companies are perceived more favorably, which in turn enhances their reputation. This becomes a key motive behind a company's willingness to allocate funds toward CSR initiatives and environmental expenditures. The underlying assumption is that if a company has already spent a certain amount in the previous year, it will tend to maintain or even increase that level of spending. Therefore, one of the hypotheses in this study is that corporate social and environmental expenditures from the previous year influence the current year's CSEE allocation (lagged CSEE). As a result, there is growing concern about whether companies deliberately raise their CSR and environmental spending when their market value drops, aiming to rebuild their reputation and regain investor confidence.

Considering the inconsistencies in prior research and the theoretical advancements posited particularly the interplay between stakeholder, shareholder and legitimacy theories in explaining simultaneous causality, alongside the inverse dynamics between liquidity risk and market value this study integrates a moderating variable to fortify the analytical depth and robustness of the model. The researcher incorporates financial distress as a moderating variable, given its well-documented influence on corporate investment and capital allocation decisions. Simultaneously, this seeks to address the question of whether companies will continue to increase their CSEE expenditures during periods of declining market value, particularly when such conditions are exacerbated by the threat of financial distress. Cui & Zhang (2025), for instance, have examined financial distress as a mediating variable in financial stability strategies, asserting that lower financing constraints facilitate firms' access to external capital, thereby accelerating their convergence toward an optimal capital structure and enhancing financial stability. Recognizing financial distress as a key explanatory factor in the relationship between corporate risk and fund allocation decisions, the author incorporated it to achieve a more comprehensive analysis of the interconnections among the research variables.

Given the persistent challenge of classifying corporate social and environmental expenditures, as either assets or expenses for a company where they are frequently perceived as liabilities under the over-investment theory this study critically scrutinizes whether corporate social and environmental expenditures should be conceptualized as an investment or merely a financial burden. By incorporating the potential for simultaneous causality as described above, this research aims to investigate the extent to which firms consider liquidity risk, market value, and expected returns when determining the allocation

of funds toward environmental costs and CSR initiatives. Through this analytical framework, the study seeks to establish whether corporate social and environmental expenditures function solely as a financial obligation or, alternatively, as a strategic investment instrument capable of generating long-term economic value. Accordingly, this research endeavors to determine the significance of liquidity risk, market value, and expected returns in shaping corporate decision-making regarding corporate social and environmental expenditures allocation.

1.2. Formulation of the Problem Statement

Based on the phenomena that occur, the findings of previous research and the development of existing theories, researcher formulate the problem statement as follows:

a) How does liquidity risk impact corporate social and environmental expenditures fund allocation decisions?
b) How does market value impact corporate social and environmental expenditures fund allocation decisions?
c) How does expected return impact corporate social and environmental expenditures fund allocation decisions?
d) To what extent does financial distress strengthen or weaken the relationship between liquidity risk, market value, expected return and corporate social and environmental expenditures fund allocation decisions?
e) To what extent does prior-year social and evrioenmental expenditures affect current-year corporate social and environmental fund allocation?

1.3. Research Objectives and Significance of the Study

This study aims to investigate how liquidity risk, market value, expected return and prior-year corporate social and environmental expenditures impact companies allocation fund preferences toward environmental costs and Corporate Social Responsibility (CSR) initiatives, considering financial distress into account as a moderating variable. The purpose of this investigation is:

a) Identifying and measuring the extent to which liquidity risk and market value influence a business's decisions regarding environmental and corporate social responsibility expenditures, as well as the ways in which these risk categories influence its investment decisions.
b) Examining how expected returns and prior-year corporate social and environmental expenditures can affect company decisions when it comes to allocating funds to environmental and corporate social responsibility expenditures.

c) Evaluating how financial distress influences the relationship between market value, liquidity risk, expected return and also prior-year CSR and environmental cost on corporate investment decisions in environmental costs and corporate social responsibility. This study will investigate how these variables' effects can be strenghthen or weaken by financial difficulties.
d) This study seeks to offer a novel perspective by grounding its analysis in shareholder theory and legitimacy theory. Within this framework, corporate risk assessments particularly concerning liquidity and market value are integral to informed decision-making regarding the allocation of funds to environmental costs and corporate social responsibility (CSR) initiatives. Shareholder theory posits that such expenditures may be perceived as financial burdens, given their potential lack of direct economic returns. Consequently, a well-calibrated strategy is essential to establish an optimal threshold, ensuring that these investments do not undermine the company's financial stability
e) This research contributes a novel perspective by adopting the framework of simultaneous causality to analyze the relationships among variables. Furthermore, rather than employing traditional profitability proxies, it utilizes expected returns based on the Capital Asset Pricing Model (CAPM), reflecting investor emphasis on future firm valuations particularly in industries that are highly exposed to ESG-related risks.

1.4. Scope and Limitations

This study investigates firms in natural resource-based industries (the mining, plantation, forestry, and energy sectors) listed on the Indonesian Stock Exchange (2018–2024) that completely disclosed financial and sustainability reports (2018–2024). Limited to a seven-year period and specific sectors, it examines liquidity risk and market value as corporate risk proxies. Future research may explore broader risk factors that could be considered as a key instrumental assessment before allocating fund for sustainable expenditures. Moreover, other industrial sectors should be thoroughly examined, as the distinct characteristics of each industry may yield varying outcomes. A nuanced understanding of these differences is essential to derive meaningful insights and ensure informed decision-making. Furthermore, incorporating diverse methodological frameworks and advanced data analysis techniques can contribute to more comprehensive and rigorous findings.

CHAPTER II
LITERATURE REVIEW AND HYPOTHESIS

2.1. Grounded Theories

2.1.1. The Risk Mitigation View and Over-Investment View

Based on the existing literature, the relationship between social and environmental responsibility and default risk is viewed in two different directions: the risk mitigation view and the over-investment view (Wang & Yang, 2024). Initially, corporate social and environmental expenditures was viewed as a strategic tool that could fulfil the desires of investors who were concerned about environmental damage issues. In the risk mitigation view, which is rooted in stakeholder theory, it is argued that corporate social and environmental expenditures acts as a risk mitigator. Freeman's stakeholder theory (1984) stated that companies have strong relationships with various stakeholders, so they must be able to embrace and accommodate all existing interests. One way is to fulfil their social responsibilities towards society and the environment, maintain stable cash flow, and reduce the possibility of default risk (Jensen & Meckling, 1976).

According to Freeman theoretical standpoint, firms will be more economically productive if they use their resources in a way that is "greener" (i.e., more efficient). For example, using fewer resources or generating less waste and pollution from the resources used can lead to such "more environmentally friendly" use. Chen and Metcalf (1980); Mahapatra (1984), found that researchers typically attribute positive relationships between economic and environmental performance to better use of those resources, which in turn improves overall organizational effectiveness.

Through sustainable expenditures (environmental cost and CSR-related cost) activities, companies can show their seriousness in embracing all stakeholder interests, and by disclosing these through sustainability reports, companies can reduce agency costs. The advantages of carrying out these activities are that they will increase the company's reputation and sense of ownership by all stakeholders. Thus, the goodwill created through sustainable expenditures, which is like insurance, will maintain cash flow in the future and make the company more resilient in facing risks (Godfrey, Merrill, & Hansen, 2008).

Some scholars have explored the relationship between Corporate Social Responsibility (CSR) and corporate financial risk, consistently identifying a negative correlation between the two variables. Spicer (1978) pioneered empirical investigations into the effects of CSR on systematic risk, providing early evidence that fulfilling CSEE obligations mitigates risk levels. Similarly, Herremans, Akathaporn, and McInnes (1993)

demonstrated that CSR enhances corporate reputation within the U.S. manufacturing sector, contributing to superior stock performance and reduced investment risk, ultimately benefiting investors. These results imply that corporate social responsibility (CSR) serves as a strategic instrument to optimize risk mitigation in addition to protecting a company's reputation.

Meanwhile, from an accounting-based perspective, Hart & Ahuja (1996) discovered that during a two-year period, pollution reduction efforts were positively correlated with a number of performance metrics, and that the businesses who improved their environmental performance most significantly experienced the biggest profits. This body of studies was expanded by Russo & Fouts (1997), who investigated broader indicators of environmental performance and how they affected return on assets (ROA) from a resource-based approach. They discovered a robust correlation between economic performance and environmental factors, especially when accounting for the moderating influence of industry expansion. From a market-based company performance metric perspective, the outcomes are also generally consistent. Klassen & McLaughlin (1996), for instance, discovered that although negative publicity had the opposite impact, enterprises that obtained substantial, positive environmental exposure witnessed an increase in their market value. According to Hamilton (1995), companies experienced stock market losses following announcements of the Toxic Release Inventory (TRI) that were especially detrimental. Bosch, Eckland, Woodrow, & Lee (1998) discovered similar results to Hamilton (1995): when the results were made public, the market value of companies that had been the subject of EPA investigations and those that had appealed enforcement proceedings decreased. Dowell, Hart, & Yeung (2000) found that stricter environmental management systems were likewise attributed with increased market values. Since improving environmental performance has a variety of internal consequences almost all of these researches explored the link between environmental and economic performance.

Consequently, investments in sustainable expenditures are associated with enhanced firm value and diminished market risk, driven by increased investor confidence and stabilized stock valuations. Additionally, a number of academics examined the connection between environmental risk management and systematic risk, including Feldman, Soyka, and Ameer (1997); (Sharfman & Fernando, 2008) found that the higher the level of environmental risk management, the lower the firm's non-leveraged equity beta (systematic risk). This is supported by legitimacy theory, which posits that an organization’s survival depends not only on financial performance but also on its ability to align with the norms, values, and expectations of society (Suchman, 1995). From this

perspective, companies are driven to legitimize their operations through actions that signal social and environmental responsibility. One of the most prominent ways to achieve this is by engaging in Environmental, Social, and Governance (ESG) initiatives, particularly through Corporate Social Responsibility (CSR) programs and environmental expenditures. By doing so, firms aim to demonstrate their commitment to broader societal goals, thereby gaining social approval and strengthening their legitimacy. This pursuit of legitimacy becomes a strategic consideration, especially in dynamic and uncertain environments, as it helps build reputational capital and ensures long-term sustainability. As a result, the decision to allocate resources toward CSR and environmental initiatives is not merely philanthropic, but rather a calculated effort to maintain legitimacy in the eyes of stakeholders.

In contrast, this optimistic view is challenged by the over-investment perspective, rooted in shareholders theory, which critiques Freeman's stakeholder theory (Barnea & Rubin, 2010). Investors do not hold businesses accountable for their socially conscious actions, and they consider pollution control spending as a waste of money that may be used for more profitable endeavors, according to Mahapatra (1984). Proponents argue that excessive resource allocation to sustainable initiatives may be inefficient and counterproductive, potentially leading to heightened cash flow volatility (Barnea & Rubin, 2010). This critique aligns with shareholder and agency theories, which posit that CSEE initiatives may divert critical resources from core business operations, allowing managerial interests to dominate (Wang & Yang, 2024). From an investment standpoint, CSEEs are often perceived as yielding intangible goodwill returns with limited quantifiable financial benefits. Empirical evidence supporting the over-investment hypothesis further highlights the potential risks of excessive sustainable expenditures. Godfrey (2005) argued that surpassing the optimal level of social responsible investment imposes additional financial burdens on firms without proportionate benefits, thereby increasing the likelihood of bankruptcy. This risk is particularly evident when examining liquidity ratios, as excessive liabilities can strain a firm's ability to meet short-term obligations, such as trade payables and dividends.

While stakeholder, shareholder, and legitimacy theories provide foundational insights into the motivations behind CSR and environmental responsibility, recent perspectives have emphasized a more integrated approach. One such framework is the theory of Creating Shared Value (CSV), which views social and environmental initiatives not as costs, but as strategic drivers of competitive advantage. The Creating Shared Value (CSV) theory, developed by Porter & Kramer (2011), provides a strategic lens through

which companies can simultaneously pursue economic success and generate social value. Unlike traditional CSR, CSV embeds societal needs into core business practices, treating social and environmental challenges as opportunities for innovation and growth. It focuses on three key areas: redefining products to meet social needs, improving productivity by managing environmental impact, and supporting local cluster development.

This framework enriches the interpretation of CSR and environmental cost as not merely regulatory compliance or reputational tools, but as long-term strategic investments. In relation to firm performance, CSV suggests that responsible environmental and social practices can improve market value, attract long-term investors (reducing liquidity risk), and contribute to more stable expected returns. Thus, CSV strengthens the theoretical bridge between ethical corporate behavior and financial outcomes, offering a complementary perspective to legitimacy, stakeholder, and shareholder theories by emphasizing shared interests between business and society.

Environmental costs, in particular, remain challenging to categorize as assets or equity and are often viewed as liabilities that burden the firm. This approach begs the question of whether spending on the social and environmental (sustainable expenditures) are better considered an investment or a cost. This study aims to provide an entirely novel perspective based on the over-investment theory, which holds that excessive spending on sustainable initiatives might compromise a company's operational stability and expose it to increased market and financial risks. This study examines whether liquidity risk, market value, and expected return influence a firm’s future investment regarding sustainable expenditures. Companies that prioritize strong liquidity ratios and high profit expectations may decide to reduce their sustainable expenditures allocations, considering them as a burden. Meanwhile, from a market value perspective, companies that have low market value or high market risk will reduce sustainable expenditures (environmental costs and CSR) to increase stock prices (reduce market risk). Companies will adjust their fund allocation strategies to increasing stock value by increasing the proportion of dividends, reducing costs to increase profits. On the other hand, based on the literature review, companies that want to boost their reputation and market value can allocate more resources to sustainable initiatives, by treating environmental costs as strategic investments. Therefore, the researcher consider financial distress into account as a moderating variable in this study in addition to considering firm size as a control variable. In a condition of financial distress (high level of financial distress), companies will shift their focus to mitigating bankruptcy. As a result, investments or expenditures that are considered less urgent will tend to be ignored. Thus, the negative relationship between liquidity risk,

market value, and expected return and investment in sustainable expenditures will be stronger.

2.2. Supporting Theories

2.2.1. Corporate Social and Environmental Expenditures

Corporate social and environmental expenditures or firm's sustainability practices refer to all expenses allocated by companies to support sustainable business practices, including costs related to corporate social responsibility (CSR) and environmental initiatives (Fei, Wei, Chunxia, & Zhen, 2022). This expenditure encompasses costs associated with mitigating environmental impacts from operational activities, including waste management programs, investments in eco-friendly technology, and regulatory compliance. Additionally, CSRs cover costs related to corporate social responsibility initiatives, such as community empowerment programs and other social engagements (Wulandhari & Machdar, 2024). In this study, the term Corporate social and environmental expenditure refers to the annual environmental and CSR-related costs incurred by companies.

2.2.2. Liquidity Risk and Corporate Social and Environmental Expenditures

Liquidity risk refers to the company's ability to meet its short-term debt obligations using current assets (McLaney & Atrill, 2016). These short-term obligations can be in the form of company debt, dividend debt, tax debt, and others. A company is considered liquid if it can meet its obligations on time. Conversely, if it fails to fulfill its obligations, it is deemed illiquid.

Liquidity, according to Kaplan and Zingales (1997), is the firm's capacity to produce cash in order to satisfy both short-term and long-term needs. The term clearly indicates whether or not a firm faces financial difficulties while financing its venture with the cash on hand. A company is considered financially unconstrained if it can generate sufficient cash to fund its obligations or investments without difficulty. Cash flow is one of the indicator of liquidity ratio. Cash flow comprises the movement of funds, encompassing both inflows and outflows. While cash inflow represents the return on an investment, cash outflows are typically allocated for new investments. According to Brigham and Ehrhardt (2017), the cash flow statement is a financial report that outlines the impact of a company's financing, investing, and operating activities on its cash flows over a given accounting period. In summary, a company's financial health and operational effectiveness can be evaluated based on its capacity to generate cash from core business activities.

Another key indicator for assessing liquidity is the quick ratio, which excludes inventory from current assets due to its limited convertibility into cash, particularly in

capital-intensive industries such as mining, energy, and plantations (McLaney & Atrill, 2016). Similarly to Sinha (2012) state that quick ratio excludes prepaid expenses and inventory from current assets due to their limited liquidity and difficulty in immediate conversion to cash. An increase in this ratio indicates a higher level of corporate liquidity. The lower level for this ratio is often mentioned as 1.0 times (or 1:1; that is, current assets (excluding inventories) equel current liabilities) (McLaney & Atrill, 2016).

When a company determine to allocate funding for investments or expenditures, including those related to environmental cost and CSR-related intiatives, it is crucial to consider liquidity ratio. According to Hidayat, Wahyudi, and Muharam (2018), the firm's capacity to generate cash that can meet both short-term and long-term needs influences the investment decision the company makes. The company should maintain its liquidity to prevent any disruptions to its business operations, attract investments, and maintain the confidence of external parties. Highly liquid companies are more likely to allocate capital resources towards Corporate Social Responsibility (CSR) initiatives and environmental costs. According to Surroca, Tribó, and Waddock (2010) argue that higher liquidity enables firms to invest in sustainability without compromising financial stability. Similarly, Cheng, Ioannou, and Serafeim (2014) assert that strong liquidity enhances a firm's ability to address environmental and social concerns by reducing financial constraints.

Conversely, in low liquidity conditions, the company's top priority is to survive, not to spend additional expenses that do not directly support operational sustainability. Companies may take actions, such as cutting non-essential operating costs and delaying or reducing capital expenditures. Barnea and Rubin (2010) assert that liquidity constraints hinder corporate sustainability efforts, risking reputational damage and long-term value decline.

2.2.3. Market Value and Corporate Social and Environmental Expenditures

A company's market value is the monetary value assigned by the market to a company, based on the collective perception of investors and analysts about the company's financial performance, growth prospects, and risks (Marketing, 2024). Similar to Hartono (2017: 208), market value refers to the prevailing price of a company's stock on the exchange at a specific moment, as determined by the collective actions and perceptions of market participants. According to Susetyo & Niati (2019), a higher number of outstanding shares combined with a higher stock price reflects a company’s larger scale. Such firms are typically perceived by potential investors as financially stable, thereby fostering greater investor confidence and encouraging long-term shareholding.

Market value is pivotal to a company's long-term sustainability, serving as a critical metric for investors in evaluating investment risk. Firms with stable market value are perceived as more secure compared to those exhibiting volatility. Consequently, market value functions as both a risk assessment indicator and a measure of corporate performance. Its significance is paramount in informing investment decisions, ensuring strategic capital allocation (Marketing, 2024).

In recent years, environmental and social issues have garnered heightened attention from investors, consumers, non-governmental organizations and the general public. This shift has driven firms to integrate sustainability into their financial strategies, often reflected in sustainability reports through environmental expenditures and corporate social responsibility (CSR) initiatives. By prioritizing sustainability, companies seek to bolster investor trust, cultivate long-term loyalty, and enhance their corporate reputation, ultimately ensuring a stable and elevated firm market value. García-Madariaga & Rodríguez-Rivera (2017) state certain Corporate Social Responsibility (CSR) issues specifically those aligned with a company's core business operations and key stakeholders may significantly enhance financial performance by fostering competitive advantage, stakeholder trust, and long-term value creation. Similarly to Nekhili, Nagati, Chtioui, & Rebolledo (2017) state that family-owned enterprises stand to gain significantly from articulating their commitment to Corporate Social Responsibility (CSR), as such transparency fosters greater shareholder endorsement compared to non-family firms.

Dhaliwal, Radhakrishnan, Tsang, & Yang (2012) argue that CSR reporting may be useful for market participants (i.e., shareholders) because CSR initiatives tend to affect firm value through several mechanisms, including sales, costs, operational efficiency, financing, and litigation risk. This stakeholder group is primarily interested in assessing the risk and likelihood of the firm's expected future profitability (Bebbington, Larrinaga, & Moneva, 2008). Jamali, Safieddine, & Rabbath (2008) added that disclosing and reporting CSEE performance can produce competitive advantages that must be valued by shareholders, thus potentially increasing market value.

Market value, commonly reflected in stock price volatility, constitutes a pivotal determinant in corporate decision-making, particularly in the allocation of financial resources toward sustainability initiatives such as Corporate Social Responsibility (CSR). Furthermore, the author observes that firms with stable stock prices are inclined to perceive CSR as a strategic tool to enhance reputational capital, build stakeholder trust, and mitigate long-term risks. For instance, Flammer (2013) emphasizes that firms operating in stable markets can afford to invest in long-term sustainability projects without fearing immediate

negative impacts on their financial performance. This approach aligns with the broader goal of reducing systematic risk and increasing shareholder value through responsible business practices. Godfrey P. C. (2005) further explains that CSR activities during periods of market stability can act as a form of "moral capital," shielding firms from potential negative impacts during crises. This moral capital manifests as investor trust and consumer loyalty, which are vital during market downturns. Consequently, firms engaging in CSR in stable environments often experience reduced overall risk and enhanced resilience against economic shocks.

Several empirical studies have questioned the assumed positive relationship between CSR disclosure and firm performance. Cahan et al. (2016), Wang and Li (2015), and Guidry and Patten (2010) reported no meaningful link between CSR transparency and market valuation, challenging the expectation that such disclosures inherently enhance firm value. Similarly, Jones et al. (2007) identified a negative association, indicating that, under certain conditions, CSR disclosures may be interpreted unfavorably by investors. In high-risk market environments, where stock prices are highly volatile, companies may perceive Corporate Social and Environmental Expenditures (CSEE) as financial constraints rather than strategic assets. Boubaker, Cellier, Manita, and Saeed (2020) suggest that increased market uncertainty often shifts corporate focus toward liquidity preservation and operational efficiency, thereby limiting spending on non-essential activities like CSEE. In such settings, long-term sustainability investments tend to be deprioritized in favor of short-term financial safeguards.

Whitelaw's (1994) foundational work offers an equilibrium perspective on how firms navigate the trade-off between risk and return under fluctuating market conditions. His findings highlight that firms exposed to higher volatility generally seek greater returns to justify the risks undertaken. Consequently, in these contexts, CSEE initiatives may be set aside in favor of core business functions that contribute more directly to financial performance. These varying results underscore ongoing debates regarding the actual informational value and economic relevance of voluntary CSR disclosures in corporate reporting..

Integrating empirical evidence and theoretical frameworks, it becomes apparent that market value exerts an inconsistent influence on the allocation of corporate social and environmental expenditures. However, the author posits several hypotheses. Firms with stable market conditions are more inclined to invest in CSR, leveraging it as a strategic asset to build reputation and reduce long-term risks. Conversely, in high-risk environments,

CSEE is often deprioritized due to its perceived financial burden and the urgent need for operational resilience.

2.2.4. Expected Return and Corporate Social and Environmental Expenditures

According to Kurniawan (2021), expected return on investment reflects an individual or investor's perception and expectation of potential gains or future economic benefits from capital market investments. Increasing share prices and dividends are the two main sources of returns from the capital market. Investment decisions are driven by the pursuit of high returns, underpinned by the Theory of Planned Behavior (TPB) and reinforced by the Motivation Theory of Goal Achievement (Ariasih & Mustanda, 2018). Empirical findings by Merawati and Putra (2015), Tandio and Widanaputra (2016), and Riyadi (2017) further corroborate the positive influence of expected returns on investment intentions.

Investors today no longer focus solely on corporate profitability; rather, they place increasing emphasis on anticipated future returns as compensation for the exposure to ESG-related risks. As highlighted by Nakagawa, Morita, & Sakemoto (2025) and Hens & Trutwin (2024), the fundamental logic of the Capital Asset Pricing Model (CAPM) which posits that investors must be compensated for holding riskier assets also applies in the ESG context. Accordingly, investors tend to demand higher expected returns from firms perceived as having detrimental environmental, social, or governance characteristics. Furthermore, when investor perceptions regarding a firm's ESG profile are heterogeneous, market dynamics may lead to elevated return expectations for that firm. This is particularly evident under the assumption that wealthier investors, who are more ESG-conscious than their less affluent counterparts, exert greater influence an idea reflected in the Environmental Kuznets Curve framework. Consistent with the findings of Soschinski & Rodrigues (2022), the study reveals a positive correlation between Corporate Social Responsibility (CSR) and shareholder returns, indicating that corporate engagement in CSR particularly in environmental initiatives enhances market performance, as reflected in increased share returns.

Drawing upon these scholarly works and theoretical foundations, the author posits the hypothesis that, if the company seeks to be seen as having a high return on investment, it may minimize operational costs and expenses. The author aligns with the over-investment theory, grounded in shareholder and agency theories, asserting a negative correlation between expected returns and corporate social and environmental expenditures.

This study employs Capital Asset Pricing Model (CAPM). Capital Asset Pricing Model (CAPM) is a financial model that connects the expected return (expected return) of

a risk asset with its systematic risk, which is measured through the beta (β) coefficient. This model serves to estimate the expected return based on the market risk inherent in the asset. CAPM is considered to have more advantages in assessing the rate of return of investment by considering systematic risks (Urwah, Farida, & Faozi, 2024). Moreover, CAPM has a simplicity and practicality: CAPM provides a straightforward linear relationship between risk (Beta) and expected return, making it easier to apply in various financial analyses. Furthermore, CAPM is used to evaluate whether a stock is valued naturally or not. By comparing the expected rate of return from shares with risk and market return rate, investors can assess whether the current stock price is undervalued or overvalued (Urwah, Farida, & Faozi, 2024).

2.2.5. Financial Distress

Platt & Platt (2002) describe financial distress as a phase of financial decline that precedes insolvency or liquidation. Whitaker (1999) views it as a prolonged period of negative net operating income, while Beaver, Correia, & McNichols (2011) define it as a firm's inability to meet its financial obligations as they come due, posing risks to its long-term stability. Financial distress can be classified into distinct categories to assess the severity of a company's financial instability and its potential risk of bankruptcy.

According to Fahmi (2011), corporate financial distress generally falls into four key classifications, each representing a different stage of financial deterioration. These categorizations provide a structured framework for evaluating a firm's financial health and anticipating the likelihood of insolvency. 1) Financial distress classified as category A represents an extremely severe and perilous condition, wherein a company faces an imminent risk of bankruptcy or insolvency. At this critical stage, the firm’s financial instability is so profound that its ability to meet obligations is severely compromised, potentially necessitating legal proceedings or corporate restructuring to mitigate further deterioration. 2) A company in Category B or severe financial distress faces critical risks, necessitating pragmatic, strategic measures to safeguard assets and ensure stability. 3) Financial distress classified as C or moderate indicates that a company, while facing financial strain, remains capable of stabilizing operations and securing additional funding from internal or external sources, mitigating the risk of severe deterioration. 4) Companies in Category D (low financial distress) face temporary financial fluctuations driven by external conditions rather than structural weaknesses, with recovery expected as pressures ease.

Corporate financial health can be assessed using various bankruptcy prediction models, including the Ohlson, Zmijewski, Springate, and Altman Z-score models. This

study exclusively employs the Altman Z-score due to its proven reliability and widespread use in bankruptcy forecasting. The Altman Z-Score model, widely validated and refined, remains a leading tool for assessing financial distress across industries (Putra, Wahyuni, & Fitrijanti, 2022). This study employs its third modification, which removes the X5 variable (sales/total assets) to reduce industry bias. Altman argues that this metric's high variability across sectors could compromise the model's accuracy (Altman & Hotchkiss, 2006). A higher Z-Score indicates a more stable financial status. An estimation of the company's financial distress is derived through the following computational approach.

$$Z\text{-}Score = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$$

Where:

X_1 = Working capital/Total assets

X_2 = Retained earnings/Total assets

X_3 = Earnings before interest and taxes/Total assets

X_4 = Book value of equity/Book value of total liabilities

Companies experiencing financial distress but maintaining operating profits tend to exhibit investment behavior similar to that of financially stable firms. However, firms facing financial distress with increasing operating losses are more likely to reduce their investment levels compared to the previous year to maintain their liquidity (Bhagat, Moyen, & Suh, 2005).

Therefore, the author hypothesizes that when a company has a high liquidity ratio and is simultaneously experiencing financial distress (indicated by a low Z-score), it will further reduce its allocation of funds for sustainable expenditures (Strengthens the negative correlation). Meanwhile, in terms of market value and expected return, when a company experiences financial distress (indicated by a low Z-score), these variables have minimal influence, regardless of whether they are high or low. Instead, the company shifts its focus and strategic priorities toward mitigating financial difficulties (weaken the negative correlation).

2.2.6. Trade-off Between Corporate Social and Environmental Expenditures and Financial Performance

The trade-off theory implies that companies must balance resource allocation between operational investments and sustainable activities. High expected return means the company is in a robust financial position, leading to reduced pressure to increase sustainable spending for the sake of reputation or stakeholder appeasement. Management may instead focus on core operations and financial strategies that contribute directly to profitability.

Margolis, Elfenbein, & Walsh (2007) also found that while CSR can contribute to a company's value, firms with a high expected return might prioritize other strategic financial initiatives that yield more immediate returns, reducing their CSR. Chen, Chung, & Lee (2018) explored how companies with high financial performance could optimize their cost of capital by maintaining a favorable reputation and showing strong returns. These companies often do not need to spend excessively on sustainable expenditures to attract investors, as their performance already aligns with investor expectations. High expected returns make it easier for companies to balance corporate social and environmental expenditures and investments that directly influence financial outcomes.

2.2.7. The Correlation Between Research Variables

As previously stated, the researcher assumes that liquidity risk and expected return are significantly negatively correlated to the dependent variable (corporate social and environmental expenditures), while the market value and prior-CSEE are significant positive correlated. This hypothesis is built through the over-investment theory which views those costs related to the environment such as carbon emission reduction, waste management, reforestation, water security, community empowering is considered more as a burden for the company because of the intangible and long-term returns. Therefore, it will affect the company's operational activities and stability. Thus, when the level of liquidity risk is high, the company will reduce their expenditures related to environmental costs and CSR in the following year, in order to allocate funds to projects or investments that better support the company's operations. In addition, according to motivation theory, investors always expect a high rate of return on their investment. Therefore, if they want a high rate of return, the company will reduce the expenses or liabilities. In our assumption, financial distress as a moderating variable can strengthen and weakens the relationship between the independent variables and the dependent variable.

Table 1
The Correlation Between Independent and Dependent Variables

Independents	Dependent	Expected correlation
Prior Dependent	Corporate social and environmental expenditures	Positive significant **(+)**
Liquidity risk		Negative significant **(-)**
Market value		Positive significant **(+)**
Expected return		Negative significant **(-)**

Source: Processed by the author

Table 2
The Correlation Between Independent, Dependent and Moderating Variables

Z	X on Y	Expected correlation
FD	LR on CSEE	Strengthens the relationship between X & Y
FD	MV on CSEE	Weakens the relationship between X and Y
FD	ER on CSEE	Weakens the relationship between X and Y

Source: Processed by the author

Where:

FD : Financial distress (moderating variable)

LR : Liquidity risk (independent variable)

MV : Market value (independent variable)

ER : Expected return (independent variable)

CSEE : Corporate Social and Environmental Expenditures (dependent variable)

2.3. Review of Previous Studies

Research examining the influence of liquidity risk on Corporate Social and Environmental Expenditures (CSEE) has produced consistent evidence supporting the over-investment view. Harymawan & Nowland (2016), emphasized that limited liquid resources discourage discretionary spending such as CSR, especially when firms are financially constrained or exposed to uncertain market environments.

Conversely, firms with high market value are more inclined to invest in CSR as a strategic reputation-building tool. Waddock & Graves (1998) demonstrated a positive and significant relationship between firm market value and social performance. They argued that firms with stronger market valuations benefit from stakeholder trust, which incentivizes them to disclose and invest in sustainability programs. Likewise, Brammer & Millington (2008) found that companies with larger market capitalizations tend to be more visible and are held to higher societal expectations. As such, these companies proactively invest in CSEE to manage stakeholder perceptions and mitigate reputational risk.

Regarding expected return, Eccles et al. (2014) revealed that firms with higher expected returns are more likely to engage in long-term sustainability strategies, including CSEE. Their findings show that high-return firms perceive sustainability practices not as a cost but as a strategic investment that ensures long-term value creation.

In examining the moderating role of financial distress, Bhagat, Moyen, & Suh (2005), concluded that firms under financial stress significantly reduce investment activities, including CSR. Their analysis indicated that companies experiencing ongoing losses prioritize cash conservation and solvency over non-operational expenditures.

Consequently, financial distress reinforces the negative impact of liquidity risk on sustainability spending, suggesting that under distressed conditions, firms are less likely to allocate resources to non-essential social initiatives.

Moreover, Mahapatra (1984) emphasized that investors often perceive environmental and social investments as excessive costs. His research found that firms facing financial distress, regardless of their market value, tend to scale back social spending due to concerns over managerial efficiency and return on investment. In such cases, financial distress weakens the positive effect of market value on CSR, as firms shift their focus from image building to cost control.

Lastly, Brammer and Millington (2008) and Cormier & Magnan (2013), provided empirical support for the persistence of CSEE behavior. They found that companies with a history of sustainability spending tend to maintain or increase their CSEE over time. This "path dependency" is driven by the need to sustain stakeholder trust, regulatory consistency, and reputational continuity. Firms that have already made public commitments to environmental and social responsibility are less likely to abandon such practices in subsequent periods.

2.4. Hypothesis Developments

2.4.1. Liquidity Risk Has A Negative Effect on Corporate Social and Environmental Expenditure (The First Hypothesis)

Liquidity indicates how well a company can cover its short-term liabilities using its available current assets. When companies face high liquidity risk, they tend to prioritize the use of cash for core operational needs and short-term debt repayment rather than for social responsibility activities such as social and environmental spending (CSEE). In this context, limited liquidity can depress a company's commitment to sustainability, especially if it does not have sufficient free cash flow to fund social and environmental activities that do not generate direct profits.

According to shareholder theory, companies are supposed to maximize value for shareholders, and under liquidity pressures, management is more encouraged to maintain short-term profitability for the benefit of investors (Friedman, 1970). This causes companies facing liquidity pressures to reduce or delay the allocation of funds for CSEE activities, which are considered not to contribute directly to short-term profits.

Previous research has also shown that companies with low liquidity levels tend to reduce social responsibility activities due to limited financial resources (Javed et al., 2020; Harymawan & Nowland, 2016). Therefore, in the context of emerging markets such as Indonesia, where economic uncertainty is still high, liquidity risks are predicted to have a

negative impact on CSEE. Thus, the first hypothesis (H1) is Liquidity Risk (LR) has a negative influence on corporate social and environmental expenditure (CSEE).

2.4.2. Market Value Has A Positive Effect on Corporate Social and Environmental Expenditure (The Second Hypothesis)

Market value describes an investor's perception of the company's overall value. Companies with high market capitalizations tend to have greater social pressures and public expectations in carrying out socially and environmentally responsible business practices. Stakeholder theory argues that large corporations that are the center of public attention have a greater responsibility to consider the interests of stakeholders, not only shareholders, but also local communities, the environment, and regulators (Freeman, 1984).

Companies with high market value also have greater resources to invest in CSEE and sustainability activities. In addition, based on legitimacy theory, large companies are more motivated to maintain their social legitimacy through active involvement in social and environmental programs to maintain a positive image in the eyes of the public and other stakeholders (Suchman, 1995).

Studies by Waddock & Graves (1997) and Brammer & Millington (2008) found that companies with high market value are more likely to engage in CSEE as a reputation strategy and risk mitigation. Therefore, the higher the market value of a company, the more likely they are to allocate funds to social and environmental activities. Based on these arguments, the hypothesis proposed is: Market Value (MV) has a positive influence on corporate social and environmental expenditure (CSEE).

2.4.3. Expected Return Has A Positive Effect on Corporate Social and Environmental Expenditure (The Third Hypothesis)

Expected returns are an indicator of investors' perception of the potential profits of a stock in the future. When yield expectations are high, companies gain trust from the market and are more free to expand, including in social responsibility activities. Within the framework of stakeholder theory, companies need to maintain good relations with stakeholders, including investors, by demonstrating that they are capable of creating economic and social value simultaneously (Donaldson & Preston, 1995).

Companies that have a high level of expected return are generally associated with efficient management and good growth prospects, so they have room to implement more progressive social and environmental policies. CSEE can be one strategy to manage investor expectations and strengthen market confidence. Empirical findings support that companies with strong market performance tend to have a greater incentive to demonstrate social and environmental commitment as part of long-term sustainability and reputation

strategies (Eccles et al., 2014; Fatemi et al., 2018). Therefore, companies with high return expectations are expected to increase social and environmental spending. The hypothesis is Expected Return (ER) has a positive influence on corporate social and environmental expenditure (CSEE).

2.4.4. Financial Distress Moderates the Effect of Liquidity Risk on CSEE Negatively

Financial distress is a condition when a company experiences serious financial stress, such as an inability to meet short-term and long-term obligations. In this context, financial distress can amplify the negative impact of liquidity risks on corporate social and environmental expenditures (CSEE). When a company does not have enough cash or current assets, and at the same time is under financial pressure, then priority will be directed more towards the survival of the company than the allocation of funds for non-core activities such as CSEE.

From the perspective of shareholder theory, deteriorating financial conditions make management more focused on saving the company's value and short-term profits (Friedman, 1970). Social and environmental activities tend to be considered burdens or non-mandatory expenses, especially when companies have to commit massive efficiencies to survive. Therefore, financial distress is believed to strengthen the negative relationship between liquidity risk and CSEE.

Furthermore, legitimacy theory also explains that companies in distressed conditions have a greater likelihood of losing social legitimacy due to reduced social responsibility activities. However, as liquidity pressures and distress mount, companies are often unable to maintain a balance between public expectations and operational needs. This causes CSEE to be further depressed in a combination of low liquidity and high distress.
Based on this thought, the H4 hypothesis can be drawn: financial distress moderates the negative influence of liquidity risk on corporate social and environmental spending.

2.4.5. Financial Distress Moderates the Negative Influence of Market Value on CSEE

Companies with high market value generally have a greater incentive to maintain reputation and social legitimacy through active involvement in social and environmental responsibility. However, when the company experiences financial distress, these capabilities and incentives can be distorted. Financial distress is a barrier for companies to take advantage of market capitalization advantages in funding CSEE programs.

Stakeholder theory states that large companies must respond to the expectations of a wider range of stakeholders, including the public and investors (Freeman, 1984). However, when large companies are in a state of distress, financial resources become

limited, so spending on social and environmental programs may be considered a burden that needs to be reduced. Pressure from creditors and short-term investors tends to divert management's attention from sustainability issues to financial rescue issues.

Based on legitimacy theory, large companies that experience distress actually face a reputation dilemma. If they continue to do CSEE when finances are bad, the public can be suspicious of management efficiency; however, if you stop CSEE, the company's reputation can decline. As a result, distress weakens the positive impact of market value on CSEE due to contradictory internal and external pressures. Therefore, the H5 hypothesis was formulated that financial distress moderates the negative influence of market value on social and corporate environmental spending.

2.4.6. Financial Distress Moderates the Effect of Expected Return on CSEE Negatively

Yield expectations are a signal of investor confidence in the company's prospects. Generally, high return expectations encourage companies to maintain their reputations and demonstrate commitment to sustainability, including through social and environmental spending (CSEE). However, when a company experiences financial distress, this relationship can be disrupted. Financial distress weakens a company's capacity to respond to investor expectations through CSEE activities, as limited funds are more directed towards survival needs.

From the perspective of shareholder theory, management in distress must maintain shareholder value in an efficient way, which often means reducing expenses that do not directly contribute to profits (Jensen, 2001). Therefore, even though the expectation of returns is high, if the company is in distress, then the commitment to CSEE tends to be reduced or even stopped.

Stakeholder theory and legitimacy theory also show that market expectations for the company's social performance can be unfulfilled during a financial crisis. In this case, distress prevents companies from taking a proactive role in CSEE despite high external pressures. These mismatches can create reputational losses, but in the short term, the company chooses to secure its financial position first. Thus, the H6 hypothesis is formulated that financial distress moderates the negative influence of return expectations on social and corporate environmental spending.

2.4.7. Prior CSEE Has a Positive Impact on Current CSEE

Corporate Social and Environmental Expenditures (CSEE) tend to be sustainable and strategic in nature. When a company has done CSEE in the previous period, it is likely that the company will continue or even increase the expenditure in the next period. This is

due to the path dependence or attachment of managerial decisions to past policies, as well as the need for consistency in building a long-term image and reputation.

Within the framework of legitimacy theory, the company actively seeks legitimacy from the community and stakeholders through consistent social and environmental activities. CSEE has in the past been a public reference for the company's sustainability commitments. If a company stops or reduces CSEE expenditure abruptly, the public or stakeholders may doubt the company's integrity and commitment to social and environmental issues. Therefore, in order to maintain the legitimacy that has been gained, companies are encouraged to maintain or improve CSEE in the future (Suchman, 1995).

In addition, stakeholder theory explains that companies that have previously interacted with stakeholders through CSEE activities build social expectations that need to be met in a sustainable manner (Freeman, 1984). The previous CSEE fostered trust and formed long-term relationships between the company and the community, so that the company felt obliged to maintain the continuity of the program so as not to cause negative reactions or loss of public trust.

Empirically, previous research has also shown that CSEE tends to be persistent and has a lag effect on subsequent spending decisions (e.g., Brammer & Millington, 2008; Cormier & Magnan, 2015). Therefore, based on this theoretical approach and empirical evidence, the H7 hypothesis is Prior CSEE has a positive effect on the current CSEE.

2.5. Research Model

This research model adopts a quantitative approach using a data panel regression model to analyze the influence of financial variables on Corporate Social and Environmental Expenditure (CSEE). In this model, the dependent variable is the CSEE, while the independent variables consist of Lag of all variabel: Liquidity Risk (LR), Market Value (MV), and Expected Return (ER). This study also included Lagged Financial Distress (FD) as a moderation variable that is thought to strengthen or weaken the influence of independent variables on CSEE. In addition, Lagged Firm Size (FS) is used as a control variable to avoid estimation bias due to the influence of company size on CSEE decisions.

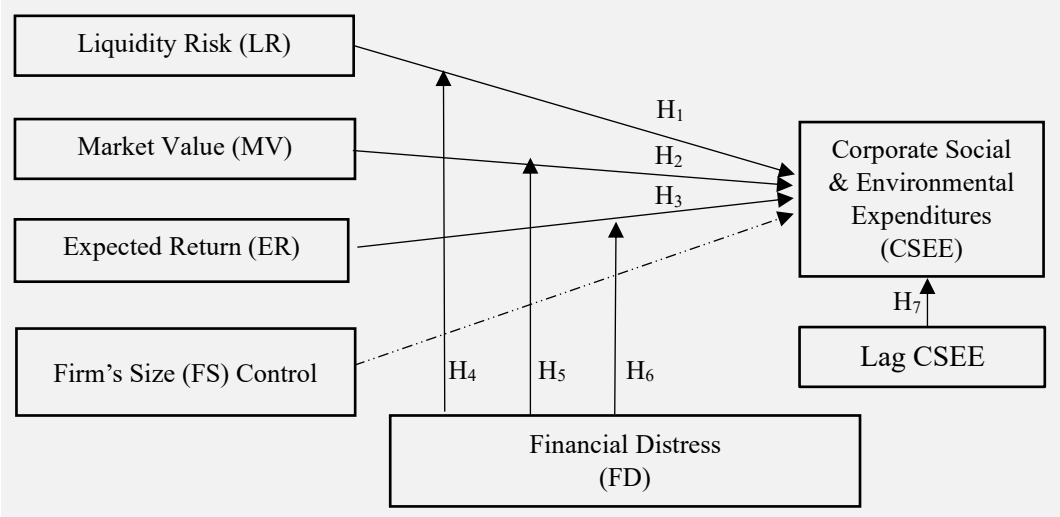

Figure 2
Research Model

Source: Processed by author

CHAPTER III
RESEARCH METHODOLOGY

3.1. Type and Research Approach

For this study, the evaluation processes will adhere to recognized social scientific practices in order to guarantee reliability, objectivity, and the production of high-caliber data and insights. Quantitative evaluation of secondary data from the companies' sustainability and financial statements was used to meet the goals of this study. After a thorough literature assessment, a conceptual framework and hypotheses will be constructed.

Numerical data collection and generalization across populations or to explain a specific occurrence are the main goals of quantitative research. Quantitative research produces factual, trustworthy outcome data that are typically generalizable to bigger populations, according to (Steckler, McLeroy, Goodman, Bird, & McCormick, 1992). The quantitative research approach, according to Bryman (2016), emphasizes numbers and figures in the data collection and analysis process and is therefore considered scientific.

According to Sugiyono (2019, p. 23) states "a quantitative approach can be interpreted as a research method based on the philosophy of positivism, used to research a particular population or sample, sampling techniques are generally carried out randomly, data collection and data use research instruments, data analysis is quantitative/statistical with the aim of testing the established hypothesis". This quantitative approach is used with the aim of obtaining information based on the measurement results of validated instruments.

This research aims to seek the relationship between prior corporate social and environmental expenditures, liquidity risk, market value, and expected return on allocating fund decision on corporate social and environmental expenditures by incorporating financial distress as a moderating variables.

3.2. Population and Samples

The population in this research are all mining, energy, plantation and forestry companies that carry out their business activities in the field of natural resources. These sectors were deliberately chosen due to their significant environmental and social impact. Companies in resource-based industries are frequently scrutinized by the public, regulators, and investors due to their direct interaction with natural ecosystems and local communities. In Indonesia where environmental degradation, deforestation, and social inequality remain persistent challenges.

This research focuses on firms engaged in natural resource sectors, specifically mining, energy, plantation, and forestry industries. The selection sample criteria followed a set of clear selection parameters: (1) the firms must operate their core business in one of the aforementioned sectors; (2) they must have been consistently listed on the Indonesia Stock Exchange (IDX) from at least 2017 up to 2024 (3) they are required to have published both complete financial reports and sustainability disclosures over a seven-year period, from 2018 to 2024, and (4) companies are required to accurately calculate the total amount of their CSR and environmental costs and disclose them clearly in their sustainability reports or integrated reports. All data were retrieved directly from the official or IDX website:

Table 3
Sample Selection

No	Criteria	Sum of the companies	Sum of the data
1	Mining, energy, plantation, and forestry companies which are listed in Indonesia Stock Exchange from 2017 until 2024.	114	798
2	Mining, energy, plantation, and forestry companies which do not disclose and publish completely integrated report and or/ sustainability report from 2018 until 2024.	(48)	(336)
3	Companies which do not accurately calculate the total amount of their CSR and environmental costs and disclose them clearly in their sustainability reports or integrated reports.	(26)	(182)
	Total sample selected	**40**	**280**

Source: Indonesia stock exchange (IDX)

After conducting a thorough analysis and determining the appropriate sample size, as presented in the table above, the researcher identified 40 firms (list provided in appendix) observed over a seven-year period, resulting in a total of 280 observations. This sample size substantially exceeds the minimum threshold typically associated with small sample studies. As noted by Narayan (2005), critical values for small sample sizes, defined as those involving 30 to 80 observations, range between 2.496–3.346 at the 90% confidence level, 2.962–3.910 at 95%, and 4.068–5.250 at 99%.

3.3. Variables and Operational Definitions

The independent variables in this study include liquidity risk, proxied by the quick ratio (acid-test ratio), as well as market value, represented by stock market capitalization. Expected return is measured using the Capital Asset Pricing Model (CAPM). The dependent variable is sustainable expenditure that include environmental cost and CSEE-related initiatives, while financial distress serves as the moderating variable, proxied by the Altman Z-Score. Additionally, firm size is included as control variables.

3.3.1. Corporate Social and Environmental Expenditures (Dependent Variable)

Corporate social and environmental expenditures represent a firm's investment in environmental costs and corporate social responsibility (CSEE) initiatives. Environmental costs encompass every expenditure related to actions that avoid and manage environmental impacts, including those associated with reducing emissions, waste management programs, investments in eco-friendly technology, and regulatory compliance, community empowerment programs and other social engagements. The data is obtained from annual sustainability reports from companies.

3.3.2. Liquidity Risk (Independent Variable)

Liquidity risk refers to a company's ability to meet its short-term financial obligations without compromising operational stability. This study employs quick ratio to estimate companies' liquidity ratio. For many businesses, especially for capital-intensive industry, such as mining, forestry, plantation and energy. This industry demands substantial capital for exploration, heavy machinery (e.g., excavators, dump trucks, conveyors), processing facilities, and essential infrastructure such as roads and ports. Consequently, capital-intensive industries often face challenges in rapidly converting inventory into cash. As a result, quick ratio is more reliable to assess liquidity ratio in these industries (McLaney & Atrill, 2016). The quick ratio is calculated as follows:

$$\text{Quick Ratio} = \frac{\text{Current Assets (Excluding Inventories)}}{\text{Current Liabilities}}$$

To better reflect liquidity risk, this study applies a negative natural logarithm transformation to the quick ratio. By doing so, firms with lower liquidity (i.e., lower quick ratios) yield higher transformed values, making the interpretation more intuitive: higher values now indicate greater liquidity risk. This adjustment not only aligns with the conceptual logic of the variable, but also improves the distributional properties of the data, which is often necessary for robust econometric analysis (Wooldridge, 2016).

3.3.3. Market Value (Independent Variable)

Market value represents the total monetary worth of a company as assessed by market capitalization. It reflects investor sentiment and evaluations based on a firm's profitability, growth trajectory, and associated risks (Marketing, 2024). In empirical finance, market value is typically proxied by market capitalization, which is computed as the product of a firm's stock price and the total number of outstanding shares. In this study, the data was sourced from Bloomberg and covers the period from 2018 to 2024.

3.3.4. Expected Return (Independent Variable)

Expected return refers to the anticipated profitability of an investment, reflecting the compensation for the risk borne by investors. Expected return is one of the important aspects in investment activities. Investors seek a high return on their capital. Expected return is calculated using the Capital Asset Pricing Model (CAPM). The Capital Asset Pricing Model (CAPM) quantifies a risky asset's expected return through its systematic risk, measured by the beta (β) coefficient. By integrating market risk, CAPM enhances investment return assessments (Urwah, Farida, & Faozi, 2024). Its strength lies in its clarity and utility, offering a direct linear risk-return relationship for streamlined financial analysis. The CAPM is calculated as follows:

$$\mathbf{E(R_i) = R_f + \beta_i\,(R_m - R_f)}$$

where:

$E(R_i)$: Expected return on asset *i*

R_f : Risk-free rate

β_i : Beta coefficient of asset *i* (its volatility compared to the market)

R_m : Expected return of the market

$(R_m - R_f)$: Market risk premium

3.3.5. Financial Distress (Moderating Variable)

Platt and Platt (2022) describe financial distress as a condition experienced by a company prior to bankruptcy or liquidation, marked by a decline in financial health. This study employs the Altman Z-Score model to evaluate the financial stability of firms, where a higher Z-Score signifies a stronger financial position. The Altman Z-Score has undergone extensive validation and modifications, rendering it suitable for application across a broad range of industries, including both publicly traded and privately held firms (Putra, Wahyuni, & Fitrijanti, 2022). In particular, this research utilizes the third modification of the model, which excludes the X5 variable (sales to total assets ratio). This exclusion aims to reduce the impact of industry-specific factors on the assessment, as this ratio tends to

vary widely across different industries with diverse asset bases (Altman & Hotchkiss, 2006).

In a condition of financial distress (high level of financial distress), companies will shift their focus to mitigating bankruptcy. As a result, investments or expenditures that are considered less urgent will tend to be ignored. Thus, the negative relationship between liquidity risk, market risk, and expected return and investment in sustainable expenditures will be stronger. Scale of interpretation of Z-Score:

a) 3.0 - safe based on these financial figures only.
b) 2.7 to 2.99 - On Alert.
c) 1.8 to 2.7 - Good chances of going bankrupt within 2 years.
d) < 1.80 - Probability of Financial distress is very high.

A forecast of the company's financial distress is computed as follows:

$$\boldsymbol{Z = 6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4}$$

where:

X_1 = Working capital ÷ total assets

X_2 = Retained earnings ÷ total assets

X_3 = Earnings before interest and taxes ÷ total assets

X_4 = Book value of equity ÷ book value of total liabilities

3.3.6. Firm Size (Control Variable)

A firm's size reflects its amount of business development. According to Prastuti, Kadek, Sudiartha, & Gede (2016) the size of a company is reflected in the amount of its total assets and capital used. The amount of total asset value can be seen in the company's balance sheet financial report. Almilia & Retrinasari (2007) stated that because the total asset value is so high, the natural logarithm (Ln) value of the total assets is utilized to keep it from being too big to fit into the equation model. Since the total asset value is comparatively more stable than the market capitalization and total sales value, it is employed as a gauge of a firm's size. Firm size denotes the scale of a company's operations, which can influence its capacity and motivation for sustainable expenditures investments.

3.3.7. Lagged Variable (Independent Variable)

The operational definition of Lagged CSEE refers to the previous period's Corporate Social and Environmental Expenditures, which is incorporated as a lagged dependent variable in the regression model to account for the dynamic nature of CSEE behavior. By including Lagged CSEE, the model captures the path-dependent characteristics and temporal persistence of firms' social and environmental commitments, reflecting the idea that CSEE-related expenditures tend to exhibit continuity over time due

to reputational, regulatory, and strategic considerations (Arellano & Bond, 1991). This variable serves not only to improve the model's explanatory power but also to control for potential autocorrelation and omitted variable bias in panel data estimation.

Table 4
Operational Definition

Variables	Measurement
Corporate Social & Environmental Expenditures	The total amount of environmental costs + corporate social responsibility
Liquidity Risk	Quick Ratio: Current assets (excluding inventories) ÷ current liabilities
Market Value	Market Capitalization = Shares price * Total shares
Expected Return	CAPM = $E(R_i)=R_f+\beta_i (R_m-R_f)$
Financial Distress	Z-score = $6.56X_1 + 3.26X_2 + 6.72X_3 + 1.05X_4$
Firm Size	FS = Ln total assets
Lagged CSEE	Lagged CSEE = L. CSEE

Source: Processed by the author

3.4. Data Documentation

This study utilized data gathered from three primary sources: corporate annual financial statements, sustainability reports, and the Bloomberg Terminal, covering the period between 2018 and 2024. The financial reports were used to obtain key accounting-based indicators such as liquidity, profitability, and leverage. Meanwhile, sustainability reports provided specific information on Corporate Social and Environmental Expenditures (CSEE). To complement these datasets, the Bloomberg Terminal was employed to access market-based variables, including firm market value and expected returns. The integration of these sources ensured a consistent and reliable dataset, both in terms of qualitative and quantitative aspects, supporting the implementation of a robust panel data analysis across firms and over time.

3.5. Data Analysis

This study employs panel data regression analysis, with data processed using descriptive statistical analysis. This involves interpreting data through tables, graphs, or figures, followed by inferences drawn from the analyzed data (Sujarweni, 2015). The analysis is performed using the Econometric Views (Stata) Software, Version 18.

Panel data combines cross-sectional and time-series data. It includes observations across multiple individuals over certain time periods (Ghozali & Ratmono, 2013).

Generally, panel data is characterized by a short time dimension and a large number of individuals, although it can also include large time periods with a smaller number of individuals (Prasetyo & Firdaus, 2009). Advantages of Panel Data Regression (Wibisono, 2005):

a) Panel data explicitly accounts for individual heterogeneity by allowing specific variables for individuals.
b) This ability to control heterogeneity enables the testing and modeling of more complex behavior.
c) By relying on repeated cross-sectional observations (time series), panel data is suitable for dynamic adjustment studies.
d) A higher number of observations increases data informativeness and variability while reducing multicollinearity, leading to more efficient estimation results.
e) Panel data can be used to study complex behavioral models.
f) It minimizes biases arising from data aggregation at the individual level.

Despite these advantages, classic assumption testing is still employed in panel data regression, as some researchers advocate for its use. This study applies such classic assumption tests.

3.5.1. Classic Assumption Tests

Classic assumption tests are used to ensure that the regression equations produce unbiased estimates. A good regression model should have data that are normally distributed or close to normal and free from classic assumption violations. The classic assumption tests include four types: normality, multicollinearity, autocorrelation, and heteroscedasticity tests.

3.5.1.1. Multicollinearity Test

Multicollinearity arises when two or more predictor variables in a regression analysis exhibit a strong correlation with each other. This situation can compromise the accuracy of coefficient estimates and diminish the overall dependability of the regression model. When multicollinearity is present, the standard errors associated with the regression coefficients tend to increase, making it challenging to isolate the unique impact of each predictor on the outcome variable. As a result, this issue can cause misleading results in hypothesis testing and reduce the effectiveness of the model's statistical inference.

To detect multicollinearity, this study uses the Pearson correlation matrix among the independent variables, following the approach suggested by Ghozali and Ratmono (2013:7). If the correlation coefficient between any pair of independent variables exceeds 0.80, it indicates the presence of multicollinearity. Conversely, a correlation value below

0.80 implies that the variables are sufficiently independent, and multicollinearity is not a concern. While this is a preliminary diagnostic, more rigorous tests such as the Variance Inflation Factor (VIF) could also be considered in future research to provide more robust insights.

3.5.1.2. Heteroscedasticity Test

Heteroscedasticity refers to the circumstance in which the variance of the residuals (error terms) differs across observations. In an ideal regression model, the assumption of homoscedasticity must be satisfied, meaning that the residuals exhibit constant variance. Violations of this assumption lead to inefficient estimators and biased statistical inference, such as incorrect standard errors and unreliable p-values.

To identify heteroscedasticity in this study, the Harvey test is employed. The test specifically examines whether there is a systematic pattern in the variance of the residuals across the levels of the independent variables. The decision rule is based on the probability value (Prob. Chi-square): if it is below 0.05, it indicates the presence of heteroscedasticity; otherwise, the data are considered homoscedastic. To address potential heteroscedasticity and ensure consistent estimation, this study uses robust standard errors (White's heteroscedasticity-consistent standard errors) in a fixed-effects regression model (vce(robust) in Stata). Using robust standard errors is a common practice recommended in panel data analysis to correct for both heteroscedasticity and autocorrelation (Wooldridge, 2010; Baltagi, 2005).

3.5.1.3. Autocorrelation Test

Autocorrelation, also known as serial correlation, arises when the error terms in a regression model exhibit correlation over time. In panel or time series data analysis, detecting autocorrelation is crucial because it breaches the fundamental assumptions of classical linear regression, which can result in inefficient parameter estimates and unreliable statistical conclusions.

Since this research employs a dynamic panel data approach estimated through the two-step System Generalized Method of Moments (GMM), the Arellano-Bond test is deemed more suitable for detecting autocorrelation compared to traditional methods like the Breusch-Godfrey LM test. This test examines whether the residuals from the differenced model are free from serial correlation, particularly focusing on first-order (AR(1)) and second-order (AR(2)) autocorrelations. While the presence of AR(1) autocorrelation is anticipated due to the differencing process, a significant AR(2) autocorrelation would signal a breach of the moment conditions, thus compromising the validity of the instruments and the overall estimation results.

The use of the Arellano-Bond test is justified because System GMM estimators rely on internal instruments derived from lagged values of the endogenous variables. These instruments are valid only if the error terms are not serially correlated beyond the first order. Therefore, confirming that there is no second-order autocorrelation (p-value for AR (2) > 0.05) is critical to ensure the reliability of the estimation results (Arellano & Bond, 1991; Roodman, 2009).

3.5.1.4. Normality Test

The normality test is not mandatory for verifying the assumption that the residuals in a regression model are normally distributed in this model. Although this assumption is not strictly required for the consistency of estimators in large samples due to the Central Limit Theorem, it remains important for the validity of inference in smaller samples. Non-normal residuals can indicate model misspecification or the presence of outliers.

In this study, the normality of the residuals is tested using the Skewness and Kurtosis tests for normality, often abbreviated as the Skewness/Kurtosis (SK) test or Jarque-Bera alternative. The skewness statistic measures the asymmetry of the data distribution, while kurtosis evaluates the peakedness or heaviness of the tails. The null hypothesis of this test is that the residuals are normally distributed. If the combined probability value of the SK test exceeds 0.05, the residuals are considered to be normally distributed; otherwise, the assumption of normality is violated.

Compared to the Jarque-Bera test, the SK test is more flexible and is widely used in econometric analysis for small- to medium-sized samples (Cameron & Trivedi, 2005). Normality is particularly important when interpreting test statistics and conducting hypothesis tests, as it affects the accuracy of confidence intervals and p-values.

3.5.2. Stationary Test

The stationary test is a very important first step in the analysis of the System GMM model, as it requires data that is stationary (or can be converted to stationary) in order to produce a valid estimate. If the data is not stationary, then the model can give misleading results, such as bias in coefficient estimation or errors in hypothesis testing. The three main tests used to test the stationarity on the panel data are:

3.5.2.1. Levin-Lin-Chu Test (LLC)

The LLC test assumes that the autoregressive coefficient is the same for all units in the panel. The test also tested whether there were any unit roots in the panel data, with a null hypothesis stating that all units in the panel contained unit roots. The LLC test is more suitable for relatively homogeneous data between units (Levin, Lin, & Chu, 2002). The Null (H_0) hypothesis is that all units in the panel contain unit roots (non-stationary). The

Alternative Hypothesis (H_1) is that at least one unit in the panel does not contain a (stationary) unit root. Interpretation of P-Value: If the p-value < 0.05: Reject H_0, it means that the data is stationary. If the p value ≥ 0.05: Failed to reject H_0, the data is not stationary.

The results of this stationary test will indicate whether the data needs to be differentiated or if it is stationary at the level. If the data is found to be not stationary, then transformations such as differentiation or other adjustments can be made to achieve stationarity.

3.5.2.2. Im-Pesaran-Shin Test (IPS)

The test is carried out to determine the presence of heterogeneity (difference) in the parameters between the units in the panel. This test allows for different coefficients for each individual in the panel, as well as tests whether there are any unit roots in the panel data taking into account temporal dependencies. In the IPS test, the null hypothesis is that all units in the panel have a unit root, while the alternative hypothesis is that at least one unit has no unit root (Im, Pesaran, & Shin, 2003). The Null (H_0) hypothesis is that all units in the panel contain unit roots (non-stationary). The Alternative Hypothesis (H_1) is that at least one unit in the panel does not contain a (stationary) unit root. Interpretation of P-Value: If the p-value < 0.05: Reject H_0, it means that the data is stationary. If the p value ≥ 0.05: Failed to reject H_0, the data is not stationary.

3.5.3. Instrument Validity and Endogeneity Test

To ensure the validity of the instruments and address potential endogeneity in the dynamic panel model, this study employs the Hansen J-test and the Difference-in-Hansen test as part of the Generalized Method of Moments (GMM) two-step estimation. The Hansen J-test evaluates the overidentifying restrictions to confirm that the instruments are not correlated with the error term, thereby validating their exogeneity (Roodman, 2009). Additionally, to detect and control for endogeneity arising from omitted variables, reverse causality, or measurement errors, internal instruments such as lagged levels and differences of endogenous variables are used. The effectiveness of these instruments is further supported by checking for the absence of second-order autocorrelation in the residuals, which would indicate consistency in the moment conditions used in the model.

3.5.3.1. Hansen Instrument Validity Test

The Hansen J-test, also known as J-statistic, is an important evaluation tool in dynamic panel regression based on the Generalized Method of Moments (GMM), especially in the two-step version (GMM). This test is designed to test overidentifying constraints, i.e. whether all instruments used in the regression model are considered valid, in the sense that they do not correlate with error terms. This test is preferred in two-step

models because it is resistant to heteroscedasticity and robust to non-homogeneous error specifications (Arellano & Bover, 1995; Blundell & Bond, 1998).

Technically, the Hansen J-test assumes the null hypothesis that all instruments are exogenous. If the p-value of the Hansen J-test is greater than a certain significance level (usually 0.05), then the null hypothesis is not rejected, so it can be concluded that the instrument used is valid. However, if the p-value is too small, then this indicates that there is an instrument that may correlate with the error, thus violating the exogeny assumption. In the context of the GMM model, this is a sign that the estimation results can be biased and unreliable for causal inference (Baum, Schaffer, & Stillman, 2003).

Nevertheless, although Hansen's large p-value is considered an indication that the instrument is valid, too high a p-value (close to 1) is also suspect. This can indicate the overfitting of instruments due to too many instruments compared to the number of group observations (panel units). The proliferation of these instruments can obscure the true diagnosis because the more instruments used, the more likely it is that the "visible" model is valid even though it is not. Therefore, the best practice in the use of GMM is to limit the number of instruments so as not to exceed the number of panel units (Roodman, 2009).

3.5.3.2. Sargan Instrument Validity Test

The Sargan test is a precursor to the Hansen test and is often used to test the validity of instruments in one-step GMM regression models. This test is based on the assumption of homoscedasticity, so it is not recommended to be used in two-step estimation that already takes into account heteroscedasticity. Nevertheless, the Sargan test remains relevant to provide additional confirmation of the validity of the instrument in empirical studies, especially when used in conjunction with the Hansen test as a comparator (Sargan, 1958); Hayashi, 2000).

Like the Hansen test, the Sargan test also tests the null hypothesis that all instruments are valid. If the p-value > 0.05, then the model does not reject the null hypothesis, indicating that the instrument used does not correlate with the error term. In this case, the instrument is considered a reliable estimation tool. On the other hand, a significant p-value indicates that one or more instruments are invalid, so the estimated coefficient can be biased. Therefore, this test is important in assessing the consistency and credibility of the GMM model (Baum et al., 2003).

However, because the Sargan test is sensitive to error specification, it is not robust to heteroscedasticity. This means that if the data has a residual variance that is not constant between observations, then the results of the Sargan test can be misleading. This is why many researchers prefer the Hansen test for two-step GMM analysis, although it still

includes Sargan as a complement. By using these two tests together, researchers can obtain a more comprehensive picture of the validity of the instruments used in the model (Bowsher, 2002).

3.5.4. Hypothesis Test

3.5.4.1. The Generalized Method of Moments (GMM) Two-Step Model

The Generalized Method of Moments (GMM) two-step estimation is a robust econometric technique widely used to address challenges inherent in panel data, particularly when dealing with dynamic relationships, unobserved heterogeneity, and potential endogeneity of explanatory variables (Arellano & Bover, 1995; Blundell & Bond, 1998). In this study, the GMM two-step dynamic panel regression model is employed to test the hypotheses regarding the determinants of Corporate Social and Environmental Expenditures (CSEE). This model allows for the inclusion of the lagged dependent variable (Lagged CSEE) as a regressor to capture the persistence of firms' social and environmental behavior over time, which is a typical characteristic in CSEE-related expenditures. The use of GMM helps to mitigate bias that may arise from omitted variables and simultaneity by relying on internal instruments constructed from lagged values of the endogenous variables. This research can not be done by Ordinary Least Square because of the present of lag dependent variable that make a bias on the model. Hence Two Stage Least Square (2SLS) type is more appropriate to be utilized. This data structure has N (companies) > T (period) that can be categorized as bigger N and short T, therefore the more appropriate model is GMM two steps (Baltagi, 2005).

The inclusion of lagged independent variables (such as Lagged Liquidity Risk, Lagged Market Value, and Lagged Expected Return) in the model provides an empirical framework to explore the delayed effects of financial factors on CSEE. Financial decisions often have lagged implications on non-financial outcomes such as CSEE investments, as companies may adjust their sustainability budgets based on past financial performance and risk exposure. Moreover, including these lagged regressors helps to prevent reverse causality and ensures a more accurate identification of the causal impact of financial indicators on sustainability expenditure. This dynamic structure allows the model to simulate real-world decision-making processes more effectively compared to static panel models.

3.5.4.2. GMM Two-Step Model with Simultaneously Hypothesis Testing

For examining all of hypothesis, this model integrates variable lag of dependent, independents, moderation, and control. Furthermore, the study introduces a moderation effect of Financial Distress on the relationship between financial indicators and CSEE by

incorporating interaction terms (e.g., FD × MV, FD × ER) as well as their lagged forms (Lagged FD × MV, Lagged FD × ER). These terms allow the model to investigate whether the presence of financial distress weakens or strengthens the influence of liquidity, market value, and expected return on CSEE. By using GMM, the study is able to estimate these moderated effects while accounting for the endogeneity that may be present due to potential feedback loops between firm performance and sustainability spending. These interaction terms offer deeper insights into the conditional dynamics of CSEE behavior under financial constraints.

The choice of GMM two-step over other estimation methods is justified due to its efficiency in handling panel data with short time periods and many cross-sectional units, which aligns with the structure of the dataset used in this research (Roodman, 2009). The two-step procedure also improves efficiency by using a weighted matrix that accounts for heteroskedasticity and autocorrelation within the panels. Additionally, the model's validity is ensured through instrument diagnostics, such as the Hansen J-test and Arellano-Bond tests for serial correlation. Overall, the GMM two-step model provides a rigorous empirical framework to test the proposed hypotheses and evaluate the dynamic and moderated effects of financial factors on corporate social and environmental expenditure. This is an equation for this model:

GMM two-step model without moderating variable

$$CSEE_t = \alpha + \beta.CSEE_{t-1} + \beta.LR_{t-1} + \beta.MV_{t-1} + \beta.ER_{t-1} + \beta.FS_{t-1} + € \text{ ……..……..……...(1)}$$

GMM two-step model with moderating variable

$$CSEE_t = \alpha + \beta.CSEE_{t-1} + \beta.LR_{t-1} + \beta.MV_{t-1} + \beta.ER_{t-1} + \beta.(FD_{t-1}*LR_{t-1}) + \beta.(FD_{t-1}*MV_{t-1}) + \beta.(FD_{t-1}*ER_{t-1}) + \beta.FS_{t-1} + € \text{ ……..…...(2)}$$

Where:

α : Constanta

β : Coefficient

CSEEt : Corporate Social Environmental Expenditure

LRt-1 : Lagged Liquidity Risk

MVt-1 : Lagged Market Value

ERt-1 : Lagged Expected Return

FDt-1 : Lagged Financial Distress

FSt-1 : Lagged Firm Size

€ : Error

CHAPTER IV
RESULT ANALYSIS AND DISCUSSION

4.1. Overview of Study Objective

This research explores the key factors influencing Corporate Social and Environmental Expenditures (CSEE) by analyzing a panel dataset comprising 40 publicly listed companies in Indonesia. The dataset spans from 2018 to the latest available year, 2024, resulting in a total of 280 firm-year observations. The selection of companies focused on those operating within resource-intensive industries, namely energy, mining, forestry, and plantation sectors, due to the inherently high environmental and social footprint associated with these industries.

These sectors were intentionally selected given their frequent exposure to environmental scrutiny and stakeholder pressure. Firms in such industries often operate in close proximity to natural ecosystems and local communities, making them more vulnerable to public, regulatory, and investor expectations regarding sustainable practices. In Indonesia, where challenges such as environmental degradation, deforestation, and social inequality remain ongoing, the expectation for companies to act responsibly is particularly strong (Herbohn, Walker, & Loo, 2014). Consequently, the relevance of CSEE in these industries is more pronounced compared to others. Furthermore, regulatory developments have played a significant role in shaping CSEE practices. The Indonesian Financial Services Authority (OJK), through regulations like OJK Regulation No. 51/POJK.03/2017, has mandated sustainability reporting for companies operating in sectors with substantial environmental impact. This regulatory framework has contributed to the increasing institutionalization of CSEE reporting, particularly within the resource-based sectors.

By focusing on this specific group of companies, the study seeks to capture how external legitimacy pressures and internal financial conditions shape corporate social and environmental expenditure decisions. The selected firms provide a relevant context to explore the interaction between financial indicators (such as liquidity risk, market value, expected return, and financial distress) and CSEE and environmental cost strategies, given their exposure to both stakeholder demands and regulatory expectations.

The panel dataset comprising 40 companies over multiple years offers a solid basis for analyzing both cross-sectional and longitudinal patterns in CSEE behavior. Specifically, this study investigates the relationship between liquidity risk, market value, and expected returns in shaping corporate decisions regarding the allocation of Corporate Social

Responsibility (CSEE) funds and annual environmental expenditures. Grounded in agency and shareholder theory as articulated by Friedman, the firm's primary objective is to maximize shareholder wealth. Accordingly, all corporate actions and decisions should prioritize shareholder interests, notably by minimizing expenditures that do not directly contribute to operational efficiency or value creation. In essence, firms are expected to mitigate operational burdens by avoiding non-essential costs. This perspective aligns with the over-investment view, which posits that CSEE and environmental expenditures, beyond a certain threshold, impose financial burdens that may compromise company efficiency.

From this standpoint, social and environmental allocations are construed as non-value-adding expenditures that must be prudently managed to avert potential liquidity constraints. Empirical evidence suggests that over-investment of funds toward non-operationally productive activities engenders inefficiencies that exacerbate liquidity risks. In contrast, shareholders theory, as advanced by Friedman, is critically opposed by Freeman, emphasizing that corporate social and environmental expenditures transcends the narrow objective of shareholder wealth maximization, encompassing a broader accountability to all stakeholders impacted by the firm's operations (the companies' operating environment, local communities, employees, and regulatory institutions). Within this framework, corporate social and environmental expenditures (CSEE) are conceptualized as strategic tools for risk mitigation, fostering corporate sustainability through the preservation of social legitimacy.

Legitimacy theory further supports this viewpoint, particularly within the Indonesian context where firms especially those in the natural resource sector engage in CSEE activities as a reputational safeguard. With the rapid proliferation of data and information, contemporary society has become increasingly conscious of the socio-economic, health, and environmental issues surrounding them particularly the escalating challenges of climate change. This heightened awareness has led to growing public demand that companies should no longer operate under a solely profit-driven paradigm, but rather adopt a sustainability-oriented approach to business practices.

Companies operating in the natural resource extraction sector are especially scrutinized, as they are often perceived as main contributors to environmental degradation. As such, these firms are regarded as bearing a heightened moral and social obligation to engage in environmental mitigation and restoration efforts. This responsibility is typically operationalized through the allocation of Corporate Social Responsibility (CSEE) funds and environmental expenditures, which serve as tangible expressions of corporate commitment to ecological and social accountability. These firms often sustain CSEE and

environmental cost allocations despite experiencing financial turbulence, which is motivated by the imperative to uphold legitimacy in the eyes of the public and regulatory bodies.

This study seeks to empirically reconcile these divergent theoretical perspectives. From the over-investment view, two hypotheses are proposed: (1) under heightened liquidity risk, firms are expected to curtail CSEEs to mitigate financial strain and avert insolvency; and (2) firms are likely to reduce CSEE when seeking higher expected returns, treating such expenditures as liabilities rather than value-generating investments. In contrast, under the stakeholder theory or risk mitigation perspective, this study contends that firms confronted with declining market value (market capitalization) tend to escalate their CSEE activities in an attempt to reclaim legitimacy from stakeholders (society), indicating a negative correlation between market value and CSEE.

Given the theoretical divergence and inconsistent empirical findings in extant literature, this study introduces financial distress as a moderating variable. Financial distress is posited to either reinforce or weaken the relationships among the main variables, contingent upon firm-specific conditions. Additionally, firm size is included as a control variable to account for heterogeneity in operational scale, thereby enhancing the robustness and interpretability of the model.

4.2. Descriptive Statistics

Descriptive statistics summarize key aspects of the dataset using measures like mean, median, standard deviation, and range. They offer an overview of data patterns and variability, aiding further analysis (Gravetter & Wallnau, 2007). The table below displays these values for each variable in the study:

Table 5
Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
YEAR	280	2021	2.003581	2018	2024
CSEE	280	75525.67	185224.4	23.6	1301706
LR	280	1.386725	1.217763	.0019443	9.59198
MV	280	1.23e+07	2.38e+07	15680	2.85e+08
ER	280	-18266.1	106433.5	-1023910	282305.8
FD	280	3.026673	5.111682	-21.76086	21.99258
FS	280	28.65942	3.031768	18.71998	32.75658
ID	280	20.5	11.56406	1	40
CSEEt	280	9.086263	2.404803	3.202746	14.07919
LRt	280	.7835987	.388286	.0019424	2.360097
MVt	280	15.11023	1.701488	9.660205	19.46837
ERt	280	-1.071001	9.909563	-13.83914	12.55075
FDt	280	1.099073	1.182468	-3.125042	3.135172
FSt	280	3.383768	.1140308	2.981632	3.519176

Source: Output Stata

4.2.1. Corporate Social and Environmental Expenditures (CSEE)

Corporate social and environmental expenditures represent a firm's tangible investment in environmental sustainability and corporate social responsibility (CSEE) efforts. These expenditures may include costs related to reducing emissions, improving waste management, adopting environmentally friendly technologies, complying with environmental regulations, as well as supporting social programs such as community development and empowerment initiatives (Kolk, 2016); (Schaltegger & Burritt, 2010). In this study, the data on CSEEs is extracted from annual sustainability reports published by firms listed on the Indonesia Stock Exchange (IDX) or companies' website from 2018-2024, offering a detailed account of firms' environmental and social responsibilities.

Before transformation, the variable CSEE had a wide range, with values extending from IDR 23.6 million to over IDR 1.3 trillion and. The mean value of CSEE in its raw form is approximately IDR 241.96 million, indicating the average amount spent on social and environmental programs across all firms. The highest recorded CSEE occurred in PT Bumi Resources Minerals Tbk in 2019, reflecting a substantial commitment to sustainability, likely driven by reputational factors and stakeholder expectations. In contrast, the lowest expenditure was recorded by PT Ratu Prabu Energi Tbk in 2020, which may be attributed to financial constraints or differing strategic priorities.

To address the skewed distribution and to achieve linearity in regression models, we applied a natural logarithm transformation to CSEE. The resulting variable CSEEt = log (1 + CSEE) has a mean value of 9.09 and a standard deviation of 2.40. The minimum and maximum transformed values are 3.20 and 14.08 respectively. These figures highlight a moderate average CSEE across firms, yet they also reveal substantial disparities. The distribution remains positively skewed, suggesting that while most companies allocate modest funds to CSEE, a few outliers significantly outspend others. This observation is consistent with earlier research in emerging markets, where CSEE practices tend to be uneven and closely linked to firm characteristics such as size, ownership, and industry pressures (Haniffa & Cooke, 2005); (Ghazali, 2007).

4.2.2. Liquidity Risk (LR)

Liquidity risk refers to a company's ability to meet its short-term financial obligations without jeopardizing its operational continuity. This study uses the quick ratio an indicator excluding inventories from current assets as a proxy to assess liquidity. Liquidity is particularly critical in capital-intensive industries like mining, forestry, plantations, and energy, which require substantial capital for exploration, heavy equipment, processing facilities, and vital infrastructure such as roads and ports. High operating costs

and risks further complicate financial flexibility, making it difficult for firms in these sectors to swiftly convert assets into cash (McLaney & Atrill, 2016).

The untransformed data on liquidity risk reveals a mean of 1.38, with a widespread ranging from a minimum of 0.00019 to a maximum of 9.59. The highest liquidity ratios were recorded by PT Alamtri Resources Indonesia Tbk in 2024 and PT TBS Energi Utama Tbk in 2019. These values reflect a firm's readiness to cover current liabilities with its most liquid assets, an important signal of financial health. The variance also underscores the contrasting liquidity profiles across firms, from those struggling to maintain solvency to those holding substantial liquid reserves.

In the transformed model, Liquidity Risk (LRt), defined as the log-transformed quick ratio, averages around 0.78 with a standard deviation of 0.39. The transformed values range from virtually no liquidity (0.0019) to relatively high levels (2.36), confirming a diverse sample of firms with varying financial resilience. These differences highlight the strategic importance of liquidity in corporate decision-making, particularly in contexts where CSEE may be seen as a discretionary expense (Bhagat et al., 2005).

4.2.3. Market Value (MV)

Market value represents the total monetary worth of a company as assessed by market participants. It reflects investor sentiment and evaluations based on a firm's profitability, growth trajectory, and associated risks (Marketing, 2024). In empirical finance, market value is typically proxied by market capitalization, which is computed as the product of a firm's stock price and the total number of outstanding shares. In this study, the data was sourced from Bloomberg and covers the period from 2018 to 2024.

Before transformation, market capitalization values varied widely, with PT Dian Swastatika Sentosa Tbk and PT TBS Energi Utama Tbk recording the highest values in 2024. The average market value across all firmas was approximately IDR 31.59 trillion, reflecting a mix of large-cap and mid-cap companies. This spread is consistent with the inclusion of firms across different sectors and capitalization levels.

Market Value (MVt) was transformed using a natural logarithm to reduce skewness. The transformed values have a mean of 15.110 and a standard deviation of 1.701, ranging from a minimum of 9.660 to a maximum of 19.468. The broad range suggests considerable heterogeneity in firm size and market reputation. Larger firms, given their visibility and accountability to a broader investor base, are more likely to engage in proactive CSEE initiatives (Waddock & Graves, 1997).

4.2.4. Expected Return (ER)

Expected return is an estimate of the potential profitability of an investment, reflecting compensation for the risk assumed by investors. It is a critical metric in portfolio selection and performance evaluation. This study calculates expected return using the Capital Asset Pricing Model (CAPM), a widely adopted framework that relates expected return to systematic risk. The CAPM formula incorporates the risk-free rate (approximated using the BI 7-Day Reverse Repo Rate), the firm's beta coefficient (obtained from Bloomberg), and the market risk premium (represented by the annual JCI Index). The use of BI 7-Day Reverse Repo is justified as it is the central bank's policy benchmark and reflects the short-term risk-free rate applicable in the Indonesian context (Urwah, Farida, & Faozi, 2024).

The untransformed expected return data indicates an average of -7.59%, revealing that firms experienced relatively low or negative returns during the study period. The highest values were observed in PT Dian Swastatika Sentosa Tbk and PT Rukun Raharja Tbk, both in 2023. This volatility underlines the unstable market conditions and highlights the potential constraints on CSEE financing when profitability is in question.

Expected Return (ERt), after transformation, has a mean of -1.071 and a standard deviation of 9.910. The values range from -13.839 to 12.551, emphasizing the spread in firm performance. Negative returns on average reflect investor caution or possibly poor firm performance, which may limit resources allocated to discretionary spending like CSEE.

4.2.5. Financial Distress (FD)

Financial distress, as defined by Platt & Platt (2022), refers to a situation where a company faces a declining financial position, which may precede bankruptcy or liquidation. In this study, financial distress is measured using the Altman Z-Score model, specifically its third modification. This version omits the sales-to-total-assets ratio to account for the varying nature of industries, making it more appropriate for heterogeneous samples (Altman & Hotchkiss, 2006; Putra, Wahyuni, & Fitrijanti, 2022). A higher Z-score implies a stronger financial condition.

Empirically, when firms experience heightened financial distress, their focus typically shifts towards survival strategies. Investments in areas perceived as non-essential, such as CSEE, may be deprioritized in favor of liquidity preservation and debt servicing. This trade-off is particularly relevant when examining interactions between financial health and sustainability expenditure decisions.

Before transformation, the highest financial distress scores were observed in PT BISI International Tbk in 2024 and PT TBS Energi Utama Tbk in 2020. The mean score was approximately 2.93, which suggests that most firms in the sample were operating in a relatively stable financial state, albeit with a few experiencing substantial pressures.

The log-transformed Financial Distress variable (FDt) has a mean of 1.099 and a standard deviation of 1.182. The values range from -3.125 to 3.135, effectively capturing a wide spectrum of financial health. These variations allow the model to assess how CSEE decisions differ across firms with differing degrees of solvency.

4.2.6. Firm Size (FS)

Firm size reflects the scale of a company's operations and its financial and strategic capacity to pursue sustainability agendas. As stated by Prastuti et al. (2016), firm size is commonly gauged by total assets, which serve as a stable and consistent measure compared to market capitalization or revenue. To avoid disproportionately large figures in regression analysis, the natural logarithm of total assets is employed (Almilia & Retrinasari, 2007). Prior to transformation, the largest firms in the sample were PT Alamtri Resources Indonesia Tbk and PT Tembaga Mulia Semanan Tbk, both in 2022. The mean value of total assets was around IDR 31.22 trillion, suggesting a generally large and capital-intensive sample.

Firm Size (FSt), calculated as log (1 + total assets), has a mean of 3.384 with a standard deviation of 0.114. The narrow ranges from 2.982 to 3.519 suggests that most firms operate at similar scales, which enhances the internal validity of the study by minimizing the influence of extreme variations in size. Collectively, these descriptive statistics not only provide a foundational understanding of the dataset but also reflect the diversity of the sample in terms of financial condition, size, and market performance factors that are critical in shaping CSEE strategies and financial behaviors.

4.3. Classical Asumption Test

4.3.1. Multicollinearity Test

Multicollinearity occurs when two or more predictor variables in a regression model exhibit a strong linear relationship with each other. This interdependence complicates the evaluation of each variable's unique effect on the outcome variable, as it causes an increase in the standard errors of the coefficient estimates. Consequently, this issue undermines the accuracy of the regression results and may lead to questionable or misleading conclusions.

Table 6
Variance Inflation Factor

Variable	VIF	1/VIF
FDt	**2.17**	**0.460921**
LRt	**1.98**	**0.504975**
MVt	**1.48**	**0.675047**
FSt	**1.09**	**0.914443**
ERt	**1.01**	**0.993997**
Mean VIF	**1.55**	

Source: Output Stata

To assess the presence of multicollinearity, this study employed the Variance Inflation Factor (VIF), a commonly used diagnostic test in econometrics. The VIF measures how much the variance of a regression coefficient is increased due to collinearity. As a rule of thumb, a VIF value greater than 10 indicates serious multicollinearity, while values between 5 and 10 suggest moderate multicollinearity. In this study, all VIF values were found to be considerably low. Specifically, the VIF values for the independent variables were as follows: Financial Distress (FDt) = 2.17, Liquidity Risk (LRt) = 1.98, Market Value (MVt) = 1.48, Firm Size (FSt) = 1.09, and Expected Return (ERt) = 1.01. The mean VIF across all variables was 1.55, which is well below the critical thresholds.

These results clearly indicate that multicollinearity is not a serious issue in this model. The low VIF values demonstrate that the independent variables are not strongly correlated with one another and thus can be interpreted independently. Therefore, the estimated coefficients are considered stable and reliable. This strengthens the credibility of the model and supports the validity of the statistical inferences drawn from the regression analysis. Future studies may additionally employ condition indices or eigenvalue analysis for deeper exploration, but the current diagnostics suffice for this study.

4.3.2. Heteroscedasticity Test

Heteroscedasticity arises when the spread of residuals in a regression analysis varies across different data points. This phenomenon breaches a fundamental assumption of the classical linear regression framework, potentially causing estimators to lose efficiency and resulting in unreliable hypothesis testing due to incorrect estimation of standard errors. For a regression model to be considered robust, it is essential that the error terms exhibit homoscedasticity, meaning their variance remains consistent throughout all observations.

In this study, heteroscedasticity was examined using a fixed-effects model with robust standard errors (via vce(robust) in Stata), an approach recommended in panel data settings to adjust for both heteroscedasticity and within-panel autocorrelation (Wooldridge,

2010; Baltagi, 2005). The regression results suggest that the robust standard errors sufficiently accommodate any potential heteroscedasticity in the model. Specifically, no abnormally large or small residuals were detected, and the application of robust standard errors corrects for heteroscedasticity even if it exists.

Table 7
Fixed Effects Robust Standard Error

	F(5,39)	=	1.68
corr(ui, Xb) = -0.5051	Prob > F	=	0.1613

(Std. err. adjusted for 40 clusters in ID)

CSEEt	Coefficient	Robust std. err.	t	P>|t|	[95% conf.	interval]
LRt	1.477701	.7635994	1.94	0.060	-.0668247	3.022226
MVt	-.0493136	.2378654	-0.21	0.837	-.5304417	.4318146
ERt	-.0112574	.0114205	-0.99	0.330	-.0343575	.0118426
FDt	-.7867648	.3924644	-2.00	0.052	-1.580599	.0070695
FSt	-1.539774	1.105572	-1.39	0.172	-3.776003	.6964558
_cons	14.73637	6.412364	2.30	0.027	1.76614	27.7066
sigma_u	2.4306814					
sigma_e	1.222195					
Rho	.79819426	(Fraction of variance due to ui)				

Source: Output Stata

Although the Harvey test was not directly reported, the estimation using robust standard errors is a widely accepted econometric remedy. This technique ensures that the confidence intervals and p-values of the regression coefficients are reliable despite any non-constant variance in the residuals. As a result, the estimated coefficients can be considered both consistent and efficient, and no significant evidence of heteroscedasticity is detected in the model.

4.3.3. Autocorrelation Test

Autocorrelation, also known as serial correlation, refers to the correlation of the error terms across different time periods. In the context of panel data analysis, especially dynamic models, autocorrelation can severely distort standard errors and lead to misleading inferences if not appropriately addressed.

Table 8
The Arellano Bond Test

GMM-type (missing=0, separate instruments for each period unless collapsed) DL.L.CSEEt collapsed

Arellano-Bond test for AR(1) in first differences: z =	-2.46	Pr > z =	0.014
Arellano-Bond test for AR(2) in first differences: z =	1.64	Pr > z =	0.101

Source: Output Stata

Because this study utilizes a dynamic panel data model estimated using the two-step System Generalized Method of Moments (System GMM), the Arellano-Bond test is employed to detect autocorrelation in the differenced residuals. This test is particularly appropriate for GMM estimation because it tests for serial correlation in the first-differenced errors, which is crucial for the validity of internal instruments generated by the model. The Arellano-Bond test results reveal the following: the first-order autocorrelation test (AR (1)) yields a z-statistic of –2.46 with a p-value of 0.014, indicating the presence of first-order autocorrelation. However, this is expected and generally acceptable in differenced models. The second-order autocorrelation test (AR (2)) yields a z-statistic of 1.64 with a p-value of 0.101, which is not statistically significant at the 5% level that means there is no autocorrelation on this second order lag. Based on the analysis the instrument fulfill the requirements of validity that have autocorrelation in AR1 and no autocorrelation in AR2.

4.3.4. Normality Test

Although the assumption of normality is not essential for the consistency of parameter estimates in large samples under GMM estimation, testing for normality remains important for small sample inference and for ensuring that the error distribution does not affect the robustness of statistical conclusions. Non-normal residuals may signal issues such as outliers, model misspecification, or non-linear relationships that are not captured by the model.

Table 9
The Skewness Kurtosis Test

Skewness and kurtosis tests for normality

Variable	Obs	Pr(skewness)	Pr(kurtosis)	Joint test Adj chi2(2)	Prob>chi2
resid_fe	**280**	**0.0095**	**0.1483**	**8.19**	**0.0167**

Source: Output Stata

In this study, the Skewness/Kurtosis (SK) test was employed to assess the normality of the regression residuals. The results of the test are as follows: the p-value for skewness is 0.0095, indicating that the residuals exhibit a degree of asymmetry, while the p-value for kurtosis is 0.1483, suggesting that the residuals are not excessively peaked or heavy-tailed. The joint test yields an adjusted chi-square statistic with a p-value of 0.0167, which is statistically significant at the 5% level.

This implies that the residuals are not perfectly normally distributed, primarily due to skewness. However, given that GMM estimation does not require normally distributed residuals, and considering the relatively large panel size (40 cross-sections across 7 years), this violation does not invalidate the model. Moreover, the two-step GMM with robust

standard errors is resilient to such deviations from normality. Hence, while the normality assumption is technically violated, it does not compromise the reliability of the findings or the efficiency of the estimators.

4.4. Stationarity Tests

Before conducting the GMM estimation, it is crucial to examine the stationarity properties of the panel data variables. Stationarity ensures that the mean and variance of the variables remain constant over time, which is vital for avoiding spurious regression results and ensuring reliable inference. In this study, four stationarity tests were conducted: Levin-Lin-Chu (LLC), Im-Pesaran-Shin (IPS), ADF-Fisher, and PP-Fisher.

4.4.1 Levin-Lin-Chu (LLC) Test

The Levin, Lin, and Chu (LLC) test is one of the most widely used methods to examine stationarity in panel data. Unlike the IPS test, the LLC test assumes a common unit root process across all cross-sectional units. This means that it restricts the autoregressive coefficient to be the same for every individual in the panel. Because of this assumption, LLC is often considered more restrictive and less flexible than IPS. However, it still provides valuable insights, especially when the panel units are believed to have similar dynamic properties. The null hypothesis (H0): All panel units contain a unit root (non-stationary). The alternative hypothesis (H1): All panel units are stationary. If the LLC test statistic is significantly negative, and the p-value is below the chosen significance level (e.g., 0.05), then we reject the null hypothesis, indicating that the panel data is stationary.

Table 10
Levin-Lin-Chu (LLC) Test

Variables	LLC t-statistic	p-value
CSEEt	-7.6987	0.0000
LRt	-11.1370	0.0000
MVt	-26.3794	0.0000
ERt	-52.5998	0.0000
FSt	-9.5901	0.0000
FDt	-134591	0.0000

Source: Output Stata

4.4.2 Im-Pesaran-Shin (IPS) Test

The IPS test allows for heterogeneity in the panel, permitting individual autoregressive parameters for each cross-section. This test is more flexible than LLC and appropriate when dealing with diverse firm characteristics. The IPS test statistic follows a standard normal distribution. The null hypothesis (H0) assumes that all units in the panel contain a unit root (are non-stationary). The alternative hypothesis (H1) states that at least one unit in the panel is stationary. Since ERt has t-bar statistic at -9.8419 and a p-value of

0.0007, also indicating that we reject the null hypothesis of a unit root and conclude that at least one of the series is stationary.

Table 11
Im-Pesaran-Shin (IPS) Test

Variables	t-bar statistic	p-value
CSEEt	-1.5194	0.3105
LRt	-1.8154	0.8868
MVt	*	*
ERt	-9.8419	0.0007
FSt	-1.0356	0.9999
FDt	-2.2913	0.4412

Source: Output stata; * Normality of Z-t-tilde-bar requires at least 6 observations per panel with balanced data and no time trend.

4.5. Instrument Validity and Endogeneity Test

To ensure the robustness of the dynamic panel model used in this study, particularly in dealing with potential endogeneity, this research employs the two-step Generalized Method of Moments (GMM). A critical aspect of this estimation technique involves validating the instruments used, which is assessed through the Hansen J-test and the Sargan test. These tests evaluate whether the instruments employed in the model are appropriate, i.e., uncorrelated with the residuals, and thus valid for consistent estimation.

Table 12
Hansen and Sargan Test

```
Sargan test of overid. restrictions: chi2(2)    =   1.11  Prob > chi2 =  0.573
  (Not robust, but not weakened by many instruments.)
Hansen test of overid. restrictions: chi2(2)    =   5.49  Prob > chi2 =  0.064
  (Robust, but weakened by many instruments.)
```

Source: Output stata

Based on the output from the GMM two-step estimation, the Hansen J-statistic yields a chi-squared value of 5.49 with 2 degrees of freedom, and a corresponding p-value of 0.064. Since this p-value is slightly above the conventional threshold of 0.05, the null hypothesis that all instruments are valid cannot be rejected. This indicates that the instruments used in the model are sufficiently exogenous and uncorrelated with the residuals. Therefore, the instrument set employed is considered valid under the Hansen test.

However, it is important to note that while this result provides a green light for model validity, the p-value being close to the cutoff point also calls for caution. As highlighted by Roodman (2009), a p-value that is neither too small nor excessively large is ideal. A very high p-value, approaching 1, might suggest instrument proliferation when too many instruments are used, the Hansen test can falsely indicate that instruments are valid

even if they are not. In this study, the number of instruments is appropriately limited relative to the number of panel units, which helps mitigate that risk and maintains model integrity.

Thus, from a methodological standpoint, the Hansen test supports the use of lagged levels and differences as valid internal instruments for addressing endogeneity within the dynamic model. Furthermore, the result implies that moment conditions used in the GMM estimation are correctly specified, bolstering the credibility of the statistical inference drawn from the regression.

In parallel, the Sargan test provides another layer of validation for the instruments used. The output reveals a chi-squared statistic of 1.11 with 2 degrees of freedom, and a p-value of 0.573. This value is significantly above the 0.05 threshold, allowing us to confidently conclude that the null hypothesis is not rejected. Therefore, the instruments are again deemed to be valid, aligning with the results of the Hansen test. Given that the Sargan test is sensitive to the assumption of homoskedasticity, and less robust than the Hansen test in the presence of heteroskedasticity, it is reassuring that both tests converge on the same conclusion. The very high p-value in the Sargan test is also expected in GMM two-step models when heteroskedastic-consistent estimators are used, reinforcing the validity of the instrument set without raising concerns of overfitting.

Nevertheless, researchers should always remain cautious in interpreting a high Sargan p-value in isolation. As noted by Bowsher (2002), reliance on this test alone in two-step estimations can be misleading due to its limitations under non-spherical error structures. However, the consistency between Hansen and Sargan results in this analysis serves to triangulate the instrument validity and enhances the robustness of the model's findings

In summary, both the Hansen and Sargan tests indicate that the internal instruments used such as lagged levels and differences of the endogenous regressors are appropriate for addressing endogeneity. The moment conditions appear to be satisfied, and the estimations are likely to be both consistent and efficient. These results provide a strong foundation for interpreting the causal relationships identified in the regression analysis, particularly in the context of understanding how liquidity risk, market value, expected return, and financial distress influence corporate social and environmental expenditures.

4.6. Hypothesis Testing Results

This section provides a detailed interpretation and reflection on the seven tested hypotheses based on the two-step system GMM results. The use of a dynamic panel model enhances the estimation by incorporating the time-dependent structure of CSEE and controlling for endogeneity. To assess the model's goodness of fit, while traditional R-

squared values are not applicable in GMM, the Wald chi-squared statistic is used as a proxy to evaluate model significance. In this study, the Wald chi-squared value is 52627.49 with a p-value of 0.000 (without moderating variable), and 51765.20 with a p-value of 0.000 (with moderating variable). This value indicates a highly significant model where the included variables jointly explain a substantial portion of the variation in CSEE.

Table 13
GMM Two-step System Model without Moderating Variable

```
Wald chi2(5)     = 52627.49
Prob > chi2      = 0.000
```

CSEEt	Coefficient	Corrected std. err.	z	P>|z|	[95% conf.	interval]
CSEEt L1.	.9410105	.0274217	34.32	0.000 ***	.8872649	.9947562
LRt L1.	.6657403	.4380034	1.52	0.129	-.1927305	1.524211
MVt L1.	.1018786	.0340786	2.99	0.003 ***	.0350858	.1686715
ERt L1.	.006299	.0058447	1.08	0.281	-.0051564	.0177543
FSt L1.	-.9174785	.4517002	-2.03	0.042 **	-1.802795	-.0321624
_cons	2.750086	1.795468	1.53	0.126	- .7689667	6.26914

Source: Stata Output

While the exact R-squared value is not computed in GMM due to its reliance on instrumental variables rather than ordinary least squares, the explanatory power of the model can still be inferred from its predictive accuracy, the significance of key variables, and the persistence captured by the lagged dependent variable. Based on the statistical results presented above, it can be concluded that prior to including the moderating variable, only three variables show statistical significance: lagged CSEE, market value, and firm size. Lagged CSEE is positively significant with a p-value of 0.000 and a coefficient of 0.9410105. Meanwhile, market value also exhibits a positive and significant relationship, with a p-value of 0.003 and a coefficient of 0.1018786. Firm size, included as a control variable, is significant at the 5% level with a p-value of 0.042

Firm Size (FSt) serves as a control variable in the model, ensuring that observed effects are not merely artifacts of firm scale. Larger firms are often under greater public scrutiny and possess more resources, which may influence CSEE. By including this control,

the model adjusts for structural differences and isolates the effect of the financial variables under study.

4.6.1. Interpretation of Findings without Moderation

The GMM estimation model without moderating variable can be formulated as follows:

$$CSEE_t = 0.126 + 0.9410(CSEE_t) + 0.6657(LR_{t-1}) + 0.1019(MV_{t-1}) + 0.0063(ER_{t-1}) + -0.9175(FS_{t-1}) + 0.05 \quad \text{(1)}$$

The first hypothesis (H_1) posits that liquidity risk has a negative and significant impact on corporate social and environmental expenditures budget allocation decisions. However, the GMM estimation results reveal a coefficient of 0.6657 with a p-value of 0.129. This indicates that while the relationship is positive not as expected before, it is not statistically significant at conventional levels (5%). In practical terms, this result suggests that companies facing higher liquidity risk may tend to increase their CSR and environmental spending, although the effect is not strong enough to be considered statistically conclusive. From the perspective of legitimacy theory, this finding can be interpreted as a strategic response by firms experiencing financial vulnerability. When liquidity is tight, companies might engage more in CSR as a reputational strategy, aiming to maintain legitimacy in the eyes of external stakeholders despite internal financial strain. This kind of behavior serves as a signal that the firm remains socially responsible and committed to long-term sustainability, even under pressure. Therefore, the first hypothesis is rejected.

The second hypothesis asserts that market value has a positive and significant relationship with corporate social and environmental expenditures. The empirical findings support this, showing a coefficient of 0.1019 and a highly significant p-value of 0.003. *Ceteris paribus*, a one-unit increase in market value is associated with an increase of 0.1019 units in CSEE. This result suggests that companies with higher market valuations tend to allocate more resources toward CSR initiatives.

From the perspective of legitimacy theory, this relationship can be understood as firms' efforts to maintain and enhance their social license to operate. High market value firms are often under greater scrutiny from the public and stakeholders; therefore, engaging in CSR activities becomes a strategic tool to demonstrate responsible corporate behavior and reinforce their legitimacy in society. Moreover, stakeholder theory complements this interpretation by highlighting that firms with higher market value are more likely to respond proactively to the demands and expectations of diverse stakeholder groups, including investors, customers, and communities. Investing in CSR not only helps satisfy

these stakeholders but also potentially improves the firm's reputation and long-term financial performance. In summary, the positive and significant association between market value and CSR spending underscores the role of both legitimacy and stakeholder management as key drivers behind corporate social responsibility decisions. Therefore, the second hypothesis is accepted.

The third hypothesis (H_3) proposed that expected return has a significant negative relationship with corporate social and environmental expenditures budget allocation. However, the GMM estimation results reveal a positive but statistically insignificant coefficient of 0.0063, with a p-value of 0.281. This outcome contradicts the initial hypothesis and indicates that expected return does not significantly influence social and environmental spending decisions in the observed sample.

From a theoretical standpoint, this result may be understood through the lens of stakeholder theory and legitimacy theory, which argue that firms are not solely driven by short-term financial returns or shareholder wealth maximization. Instead, they also prioritize long-term relationships with stakeholders and societal expectations. This could explain why firms may continue or even increase social and environmental expenditures, regardless of the expected return, as a strategy to maintain legitimacy, reputational capital, and social license to operate.

Therefore, although the statistical result does not support the original hypothesis, it offers valuable insight: corporate social and environmental expenditures decisions may be decoupled from short-term financial expectations and instead grounded in non-financial motives such as legitimacy preservation, stakeholder alignment, or long-term strategic positioning. Therefore, the third hypothesis is rejected.

4.6.2. Interpretation of Findings with Moderating Variable

The following model and table present the results of the data analysis using the GMM two-step model, which incorporates financial distress as a moderating variable and tests the model simultaneously.

$$CSEE_t = 0.312 + 0.8120(CSEE_{t-1}) + 1.9352(LR_{t-1}) + 0.2542(MV_{t-1}) + 0.0087(ER_{t-1}) + -0.6909(FD_{t-1}*LR_{t-1}) + -0.02136(FD_{t-1}*MV_{t-1}) + -0.0023(FD_{t-1}*ER_{t-1}) + -0.6965(FS_{t-1}) + 0.05 \quad \text{(2)}$$

Table 14
GMM Two-step System Model with Moderating Variable

Dynamic panel-data estimation, two-step system GMM

Group variable: **ID**		Number of obs =	**240**
Time variable : **YEAR**		Number of groups =	**40**
Number of instruments = **19**		Obs per group: min =	**6**
Wald chi2(**8**) = **51765.20**		avg =	**6.00**

Prob > chi2 = **0.000** max = **6**

CSEEt	Coefficient	Corrected std. err.	z	P>|z|	[95% conf.	interval]
CSEEt L1.	.81198	.0589358	13.78	0.000 ***	.6964679	.927492
LRt L1.	1.935243	.5061122	3.82	0.000 ***	-2.927204	-.9432812
MVt L1.	.2542055	.0722727	3.52	0.000 ***	.1125536	.3958573
ERt L1.	.008736	.0128659	0.68	0.497	-.0164807	.0339526
FDLRt L1.	-.6908522	.192767	-3.58	0.000 ***	.3130359	1.068669
FDMVt L1.	-.0213598	.009037	-2.36	0.018 **	-.0390721	-.0036476
FDERt L1.	-.0023389	.0092644	-0.25	0.801	-.0204968	.0158189
FSt L1.	-.6964946	.3613557	-1.93	0.054 *	-1.404739	.0117495
_cons	1.445139	1.429395	1.01	0.312	-1.356423	4.246701

Source: Output stata

The fourth (H_4) hypothesis posits that financial distress strengthens the relationship between liquidity risk and corporate social and environmental expenditure. However, the results indicate that liquidity risk has a strong and statistically significant positive effect on CSR expenditure when considered independently (coefficient = 1.9352, p value 0.000). However, the interaction term between liquidity risk and financial distress is negative and highly significant (coefficient = -0.6909, $p < 0.01$). This suggests that financial distress significantly weakens the positive influence of liquidity risk on CSR decisions. In simpler terms, while companies experiencing liquidity risk might still be inclined to allocate more resources toward CSR (as a form of reputational insurance or stakeholder engagement), this tendency diminishes sharply when the company is also under severe financial distress. Therefore, hypothesis 4 is rejected.

The fifth hypothesis (H_5) posits that financial distress weakens the relationship between liquidity risk and corporate social and environmental expenditure. The results reveal a compelling shift in the relationship between market value and corporate social and environmental expenditure when financial distress is introduced as a moderating variable. Initially, market value exhibited a positive and significant effect on social and

environmental spending, suggesting that firms with higher market valuation tend to allocate more funds to CSR initiatives, possibly as a way to maintain public legitimacy and stakeholder trust. However, after incorporating financial distress as a moderator, the direction of the relationship reverses with a significant negative coefficient (-0.02136, p = 0.018). This indicates that under financial distress, firms with higher market value are less likely to invest in CSR and environmental initiatives. Therefore, the fifth hypothesis is accepted.

The sixth hypothesis (H_6) proposes that financial distress weakens the relationship between liquidity risk and corporate social and environmental expenditure. The result reveals that the incorporation of financial distress as a moderating variable in the relationship between expected return and social and environmental expenditures does result in a change in the direction of the coefficient, from positive to negative. However, the relationship remains statistically insignificant (coefficient = -0.0023, p = 0.801), suggesting that even under varying levels of financial health, expected return does not meaningfully explain changes in social and environmental spending budgeting decisions. This means that there is no empirical support suggesting that financial distress strengthens the relationship between expected return and CSR—in fact, the findings reinforce that there is no strong relationship between the two, either under normal conditions or during financial distress. Therefore, the sixth hypothesis is rejected.

The last hypothesis is the lagged dependent variable (CSEEt-1). The result shows a coefficient of 0.9410 (first equation) and 0.8120 (second equation) and is both highly significant (p = 0.000). This validates the hypothesis (H7) and highlights the dynamic nature of CSEE behavior. The strong persistence indicates that firms tend to maintain continuity in CSEEs across periods. The seventh hypothesis is accepted.

This inertia points to the institutionalization of CSEE practices within firms. Once embedded, CSEE activities likely follow internal routines, strategic plans, or reputational commitments, making them relatively immune to short-term financial shocks. The finding provides strong evidence for the importance of legacy and commitment in CSEE investment decisions, especially in firms that consider sustainability a long-term strategic imperative.

In summary, the hypotheses testing confirms that liquidity risk, market value, financial distress (as a moderator for both liquidity and market value), and lagged CSEE significantly influence corporate social and environmental expenditures. Meanwhile, expected return and its interaction with financial distress do not significantly impact CSEE behavior. These results highlight that CSEE strategies are more deeply rooted in structural

financial health and organizational continuity than in volatile financial metrics. Understanding these dynamics is essential for firms aiming to embed sustainability into core financial planning, particularly in emerging markets where financial stocks are more frequent.

4.7. Result Discussions

4.7.1. Liquidity Risk and Corporate Social and Environmental Expenditures

Liquidity risk denotes the firm's vulnerability to failing to meet short-term financial obligations due to insufficient liquid assets (McLaney & Atrill, 2016); Kaplan and Zingales (1997). One commonly employed proxy for evaluating a firm's capacity to fulfill its short-term financial obligations is the quick ratio. This liquidity metric is calculated by deducting inventories from current assets since inventories cannot be readily converted into cash within a short timeframe, they are excluded to reflect a firm's true short-term liquidity particularly within firms operating in the natural resource sector and dividing the result by current liabilities (Sinha, 2012). A downward trend in the quick ratio is generally indicative of deteriorating liquidity management and an elevated risk of short-term financial instability.

Meanwhile, Corporate Social and Environmental Expenditures (CSEE) refers to the total allocation of corporate funds directed toward social initiatives such as scholarships, community empowerment programs, charitable contributions, and infrastructure support as well as environmental sustainability efforts, including reforestation, waste management, and emission reduction programs.

In this study, the first proposed hypothesis (H_1) is rejected. The researcher hypothesized that liquidity risk has a significant negative relationship with the allocation of funds toward corporate social and environmental expenditures (CSEE). The results indicate a positive but statistically insignificant relationship between liquidity risk and corporate social and environmental expenditures (CSEE), with a coefficient of 0.6657 and a p-value of 0.129. This suggests that although firms with higher liquidity risk tend to spend more on CSR and environmental activities, this relationship is not strong enough to be considered statistically reliable within the sample of natural resource-based industries (mining, energy, forestry and plantations).

From a theoretical perspective, the stakeholder theory (Freeman, 1984) posits that companies operating in high-impact sectors face pressure to engage in CSR activities to maintain their legitimacy and social license to operate. Firms with better liquidity might have the capacity to allocate more funds towards social and environmental programs as a way to manage stakeholder expectations. However, the lack of statistical significance

implies that liquidity risk alone does not fully explain CSR spending decisions in these sectors. This might be due to the complex and multifaceted nature of CSR allocation, where other factors such as market conditions, regulatory environment, and firm strategy play critical roles. Legitimacy theory (Suchman, 1995) also provides context: while firms seek to maintain positive societal image, external pressures in resource-intensive industries might compel even firms with less favorable liquidity to invest in CSR as a defensive strategy, which can dilute the direct effect of liquidity risk on CSR expenditures. Empirical studies provide mixed evidence on this relationship. For example, (Lins, Servaes, & Tamayo, 2017) find that financial health often correlates positively with CSR investment, yet in volatile industries like mining and energy, firms may prioritize liquidity preservation over CSR spending when facing financial constraints (Wang & Sarkis, 2017).

In conclusion, while the positive coefficient aligns with theoretical expectations that firms with better liquidity might spend more on CSR, the insignificant result highlights the need to consider other moderating factors influencing CSR decisions. This points to a nuanced relationship where liquidity risk is only one piece of a larger strategic puzzle in CSR allocation within natural resource sectors.

4.7.2. Market Value and Corporate Social and Environmental Expenditures

According to Hartono (2017, p. 208), market value denotes the current stock price of a company as reflected on the stock exchange, which emerges from the aggregate behavior, expectations, and judgments of market participants at a given point in time. Accordingly, an increase in market value typically reflects a combination of a higher number of shares in circulation and an appreciation in share price (Susetyo & Niati: 2019).

Market value constitutes a critical indicator of corporate sustainability, serving not only as a reflection of investor trust but also as a strategic tool for capital acquisition. Elevated stock prices enhance a firm's capacity to raise additional equity capital through new share issuance, with minimal dilution of existing ownership and reduced investor resistance. In this sense, higher market valuation amplifies the firm’s financial leverage in equity markets.

Beyond market performance, Corporate Social and Environmental Expenditures (CSEE) have emerged as a vital determinant of long-term corporate sustainability particularly in an era characterized by the rapid and widespread dissemination of information. Investors nowadays increasingly incorporate non-financial indicators into their decision-making processes, including firms' commitments to environmental commitment and social responsibility. Public sentiment toward issues such as climate change, environmental degradation, waste management, and community engagement has

intensified. In response, the issuance of sustainability reports became mandatory in 2022, reflecting a broader regulatory and societal shift. From a stakeholder theory perspective, CSEE functions as a risk mitigation mechanism. This theoretical framework posits that firms engaging meaningfully in social and environmental initiatives accrue reputational benefits that strengthen stakeholder trust and, in turn, enhance market valuation. In parallel, legitimacy theory asserts that firms invest in CSEE not only to fullfil stakeholder expectations but also to preserve their social license to operate.

Legitimacy theory is a widely adopted framework in the field of sustainability accounting and corporate social responsibility (CSR) research. It posits that organizations operate within a broader social system, and their survival depends not only on economic performance but also on gaining and maintaining the approval or legitimacy of society. At its core, legitimacy theory suggests that a firm's actions must be perceived as desirable, proper, or appropriate within the socially constructed system of norms, values, and beliefs. When a company's activities align with societal expectations, it is considered legitimate; however, when discrepancies arise such as environmental damage or social injustice its legitimacy may be called into question.

To restore or preserve legitimacy, firms often engage in symbolic or substantive strategies, such as: increasing disclosure (e.g., sustainability reports), enhancing CSR programs, aligning with environmental standards, or even adjusting operational behavior to meet public expectations. As such, sustained or increased CSEE allocations are often employed to maintain public legitimacy, with reputational capital and societal trust ultimately translating into higher firm value through improved stock performance.

Empirical findings indicate a positive and significant relationship between market value and the level of Corporate Social and Environmental Expenditures (CSEE). The result is statistically robust, with a p-value < 0.003 and a coefficient estimate of 0.1019. This positive relationship aligns well with legitimacy theory, which suggests that organizations continually seek to ensure that they operate within the bounds and norms of their respective societies. By engaging in CSR activities, firms aim to legitimize their operations, gain societal approval, and maintain their license to operate.

Suchman (1995) defines legitimacy can be understood as the overall impression that a company's behavior aligns with what society considers right and acceptable, according to shared cultural and moral standards. In this context, CSR activities serve as a means for firms to align themselves with societal expectations, thereby enhancing their legitimacy. Moreover, legitimacy theory posits that firms with greater visibility and public exposure are more likely to engage in CSR to maintain their image and reputation. This is

particularly relevant for publicly traded companies, where investor perceptions can significantly influence market value.

Empirical studies have explored the relationship between CSR activities and market value. Cheung, Tan, Ahn, & Zhang (2010), for instance, found a positive relationship between corporate social responsibility and market valuation, indicating that CSR actions reflect into future firm value. Yadav & Sinha (2022) conducted a panel data analysis on Indian firms and found that CSR activities positively influence competitive performance, suggesting that CSR investments can lead to enhanced market value and financial performance. (Boubaker, Cellier, Manita, & Saeed, 2020) argue that socially responsible firms experience better growth in their sales in the product market, which resultantly heightens their financial benefits. These studies collectively support the notion that CSR activities can positively influence a firm's market value by enhancing its reputation, customer loyalty, and overall financial performance.

In the natural resources sector, particularly in industries like mining and energy, CSR activities are often crucial for maintaining a social license to operate. These industries frequently face scrutiny over environmental impacts and community relations. Therefore, proactive CSR initiatives can be instrumental in mitigating risks and enhancing company reputation. Moreover, as investors become more conscious of ESG factors, companies in the natural resources sector that demonstrate strong CSR commitments may attract a broader investor base, further boosting their market value.

In summary, under a normal financial conditions, the positive association between market value and corporate social and environmental expenditures can be understood through the lens of legitimacy theory. Companies engage in CSEE activities to align with societal norms and expectations, thereby enhancing their legitimacy and, consequently, their market valuation. Empirical evidence supports this relationship, indicating that CSR initiatives can lead to improved reputation, customer loyalty, and financial performance. This is particularly evident in sectors like natural resources, where CSR plays a vital role in securing operational stability and investor confidence. Therefore, the hypothesis that market value is positively related to CSEE holds merit, highlighting the strategic importance of CSR in contemporary business practices.

4.7.3. Expected Return and Corporate Social and Environmental Expenditures

The third hypothesis of this study is to investigate the relationship between expected return, as measured by the Capital Asset Pricing Model (CAPM), and corporate social and environmental expenditures (CSEE). The hypothesis assumed a significant negative relationship, meaning that firms with higher expected returns typically reflecting

higher levels of risk would allocate fewer resources to CSR activities. This assumption is grounded in classical shareholder theory, which views CSR as a non-essential cost, especially for firms that are under pressure to deliver high returns to investors. Shareholder theory perspective emphasizes profit maximization as the firm's primary objective, often treating CSR as a discretionary expense unless it produces direct financial value (Friedman, 1970).

From a financial perspective, CAPM estimates the return an investor demands based on the level of systematic risk (beta) associated with a company's stock. A higher expected return, under this model, implies greater risk and greater investor demands for profitability. If firms are seeking to meet these return expectations, especially in highly competitive or volatile sectors, they might deprioritize CSR spending, focusing instead on short-term financial performance (Sharpe, 1964); (Fama & French, 2004). This logic forms the basis for the hypothesis that a negative relationship should exist between expected return and CSR allocation.

However, the empirical results in this study did not support that assumption. The statistical analysis yielded a non-significant p-value at 0.281 and coefficient 0.006299, indicating no strong evidence of a relationship between expected return (CAPM) and corporate social and environmental expenditures. This finding challenges the traditional assumption that firms with higher financial risk (and thus higher required returns) are less likely to engage in CSR. In fact, it suggests that CSR budgeting decisions may be influenced by other factors beyond what CAPM can capture.

This unexpected outcome invites deeper exploration. One possibility is that the CAPM, while still widely used, may not fully account for how firms make strategic decisions regarding non-financial expenditures like CSR. Moreover, the evolving role of CSR in risk management, stakeholder engagement, and even investor relations may weaken the idea that it is merely a cost to be avoided under high-return pressures. This finding actually fits pretty well with stakeholder theory. Unlike shareholder theory, which focuses mainly on maximizing profits for owners, stakeholder theory suggests companies have to take care of a wider group of people who are affected by their actions like employees, local communities, customers, regulators, and even the environment (Freeman, 1984).

What this means is, firms don't just see CSR as a cost that needs to be cut when financial pressures rise. Instead, CSR is often viewed as a kind of investment to keep these different groups happy and maintain the company's social license to operate. So even if a company faces high expected returns or market risk, it might still spend on CSR to manage reputational risks and stakeholder expectations (Donaldson & Preston, 1995); (Freeman,

Harrison, & Wicks, 2007). This fits with the result where expected return doesn't significantly reduce CSR expenditure.

This idea is especially true in industries with big social or environmental impacts, like energy or natural resources, where ignoring stakeholder concerns can lead to conflicts or damage the company's legitimacy. So, the finding suggests companies recognize these responsibilities beyond just making money for shareholders. Also, with the rise of ESG investing, companies know that many investors now care about environmental and social factors, not just financial performance. This means firms are motivated to maintain or even increase CSR activities, no matter their expected returns, to appeal to these investors and signal good governance (Eccles, Ioannou, & Serafeim, 2014). This finding supports the idea that companies are balancing financial goals with social and environmental duties, which is exactly what stakeholder theory predicts.

4.7.4. Financial Distress as a Moderator in the Liquidity Risk on Corporate Social and Environmental Expenditures Relationship

Liquidity risk typically refers to a firm's difficulty in meeting short-term obligations due to a lack of liquid assets. When companies face such risk, CSR activities often seen as discretionary and long-term are logically among the first to be reduced or postponed (Prior, Surroca & Tribó, 2008). This is especially true under shareholder theory, which suggests that firms should focus on maximizing shareholder value, especially under financial pressure (Friedman, 1970). Financial distress, however, reflects a deeper, more structural financial problem than simple liquidity constraints. It indicates that a firm is under prolonged pressure possibly unable to cover its operational costs, service its debt, or secure new financing. Normally, we would expect financial distress to weaken a firm's CSR commitments further.

This fourth hypothesis explores whether financial distress acts as a moderator in the relationship between liquidity risk and corporate social and environmental expenditures (CSEE). The empirical findings for hypothesis 4 reveal a complex and nuanced relationship between liquidity risk, financial distress, and Corporate Social and Environmental Expenditure (CSEE). Initially, liquidity risk exhibits a positive and highly significant effect on CSEE (coefficient = 1.9352, p = 0.000), indicating that firms with higher liquidity risk are inclined to increase social and environmental expenditures. The positive association between liquidity risk and CSEE suggests that firms may engage in CSEE initiatives as a strategic response to financial pressure, particularly in high-risk industries such as mining, energy, and forestry. In line with Uyar, Abdelqader, & Kuzey (2023), who identified a bidirectional relationship between liquidity and CSR, this finding implies that social and

environmental expenditures can serve both as an outcome of financial flexibility and as a tool to restore legitimacy when facing liquidity constraints. In resource-intensive sectors, where public scrutiny and environmental expectations are high, CSR may function as a reputational buffer to offset the negative perception of financial vulnerability. These companies are highly dependent on stakeholder approval, from local communities, regulators, and environmental groups to continue their operations without disruption (Bebbington, Unerman, & O'Dwyer, 2014).

This result also aligns strongly with legitimacy theory, which posits that companies seek to maintain or restore their social license to operate by managing perceptions and expectations of their key stakeholders, particularly during periods of financial vulnerability (Suchman, 1995). This proactive behavior can be viewed as a form of reputational capital investment, helping firms to secure ongoing support and avoid costly conflicts or sanctions (Dowling & Pfeffer, 1975). In the context of natural-based industries, where environmental degradation or social discontent can quickly escalate into operational and legal challenges, such CSR efforts are critical to risk management.

However, when financial distress is introduced as a moderating variable, the coefficient between liquidity risk and CSEE turns negative and significant (-0.6909, $p = 0.000$). This shift indicates that firms facing severe financial distress may no longer prioritize CSR, as limited financial flexibility constrains their ability to invest in non-core activities. In such cases, survival may outweigh reputational considerations, weakening the positive effect of liquidity risk on CSR engagement. The presence of financial distress is found to weaken the positive relationship between liquidity risk and CSEE. While firms with higher liquidity risk may initially engage in CSR as a strategy to maintain legitimacy or signal stability, financial distress limits their capacity to do so. Under distress, firms often face severe cash flow constraints, making it difficult to allocate resources to non-essential expenditures such as CSR (Campbell, 2007). This is consistent with the slack resource theory, which posits that companies are more likely to invest in CSR when they have financial slack (Waddock & Graves, 1998). When financial slack is absent, as in distress conditions, CSR is likely deprioritized in favor of core operational survival. Therefore, financial distress acts as a negative moderator, reducing the firm's ability or willingness to respond to liquidity risk with CSR engagement. This suggests a threshold effect, where beyond a certain level of financial strain, firms prioritize liquidity preservation and operational survival over social and environmental investments. This finding aligns with stakeholder theory's acknowledgement that firms must balance the

interests of various stakeholder groups but are constrained by financial realities (Freeman, 1984).

In conclusion, this study enriches the understanding of CSR behavior by illustrating how financial distress moderates the liquidity risk–CSR relationship within natural-based industries. It reveals that while firms tend to increase CSR to uphold legitimacy under liquidity risk, severe financial distress can curtail these efforts, reflecting the complex interplay between reputational motives and financial constraints. These insights contribute to both legitimacy and stakeholder theories by demonstrating that CSR is not only a matter of stakeholder expectations but also of pragmatic financial management.

4.7.5. Financial Distress as a Moderator in the Market Value on Corporate Social and Environmental Expenditures Relationship

The fifth hypothesis in this study investigated whether financial distress moderates the relationship between market value and corporate social and environmental expenditures (CSEE). The initial assumption followed a legitimacy-based rationale: firms with high market value, which are typically more visible and under greater scrutiny, would be more inclined to allocate resources toward CSR and sustainability programs as a means of sustaining their positive image in the eyes of stakeholders. Empirical findings before moderation supported this expectation, with the direct relationship between market value and CSEE showing a significant positive association. The result is statistically robust, with p-value < 0.003 and a coefficient = 0.10189.

However, after introducing financial distress as a moderating variable, the nature of this relationship shifted in an unexpected direction. The previously positive correlation between market value and CSEE turned significantly negative. The result is statistically robust, with a p-value = 0.018 < 0.05 and a coefficient = -0.0214. This finding suggests that when a company is experiencing financial distress, even high market value does not lead to increased CSR expenditures. Instead, it appears that financial distress undermines or even reverses the typical legitimacy-driven behavior.

To understand this phenomenon, the researcher offers useful explanations by shareholder theory. Under financial distress, companies may prioritize immediate financial survival over long-term reputational benefits. This shift aligns with the shareholder theory, which emphasizes the primacy of shareholder interests and profit maximization (Friedman, 1970). From this perspective, CSR activities are considered discretionary expenses that can be curtailed during periods of financial hardship to preserve shareholder value. This opposite view challange the legitimacy theory. When a firm is not facing significant

financial challenges, it has the luxury to invest in CSR initiatives that may not immediately translate into financial gains but contribute to long-term sustainability and stakeholder goodwill. In such circumstances, CSR is perceived as an investment rather than a cost, reinforcing the firm's legitimacy and, by extension, its market value.

However, under financial pressure, firms must re-evaluate their spending priorities critically. The shareholder theory, famously articulated by Friedman (1970), argues that the primary responsibility of managers is to maximize shareholder wealth. In times of financial distress, discretionary expenses including corporate social and environmental expenditures are a cost for reduction or elimination, as companies focus on survival and safeguarding shareholder value. This pragmatic shift in behavior is understandable. CSEE activities, while beneficial in the long run, often do not yield immediate cash flows and can be perceived as non-essential during crises. For firms in distress, every dollar spent must be justified by its direct impact on financial recovery and operational viability. As a result, corporate and environmental expenditures may be viewed as burdensome costs that detract from resources needed for core business activities, such as production, innovation, or debt servicing.

Empirical studies support this theoretical transition. For instance, Farooq & Noor, (2021) found a significant positive impact of CSR on financial distress, suggesting that increased CSR activities may lead to higher financial distress in certain contexts. This finding supports the over-investment hypothesis, where management may over-invest in CSR for personal benefits, potentially leading the firm toward financial distress. Similarly, a study by Zhou, Simnett, & Green (2015) indicated that financially constrained firms prioritize core business operations over CSR initiatives, especially when such activities do not yield immediate financial returns.

Another dimension to consider is the resource-based view (RBV), which emphasizes that firms should allocate scarce resources in ways that enhance competitive advantage (Barney, 1991). When resources are limited due to financial distress, firms naturally direct them towards activities that sustain the business and preserve economic value. Corporate social and environmental expenditures, especially when its benefits are indirect or intangible, might be postponed or scaled back in favor of urgent financial obligations and operational necessities.

This theoretical transition does not imply that legitimacy theory is invalid; rather, it underscores the conditional nature of CSR engagement. CSR activities flourish in contexts where firms possess slack resources and stable financial footing, enabling them to maintain legitimacy without threatening financial performance. Conversely, shareholder

theory dominates when financial survival is at stake, driving firms to prioritize profitability and shareholder returns over social responsibility. In essence, the reversal of the market value–CSEE relationship under financial distress highlights a pragmatic managerial approach: balancing social legitimacy and economic necessity. It reflects the reality that CSR is not only a strategic choice but also a financial decision, sensitive to the firm's economic environment and constraints.

The company also does not have to wait for profit first to realize the CSEE. This is in line with the concept of Creating Shared Value (CSV) put forward by Porter and Kramer (2011), which emphasizes that companies can create economic value as well as social value at the same time. In this context, even startups that have not yet made a profit can run social or environmental programs as a strategy to build market trust, expand networks, and ultimately increase market value. However, financial distress can be a factor that interrupts these commitments because limited cash flow can force management to postpone non-operational expenses, including CSEE, in order to maintain short-term business continuity (Jensen & Meckling, 1976). Therefore, companies need to design an adaptive and sustainable CSEE strategy so that it can continue to be executed proportionately, even in the midst of financial pressures, to maintain a balance between internal needs and external legitimacy demands.

In this study, the researcher observed that the initially positive relationship between market value and CSEE becomes significantly negative once financial distress is introduced as a moderator. This shift in direction is not only statistically meaningful but also theoretically rich. It suggests that financial distress does not merely alter the strength of the relationship it reverses its nature entirely. Therefore, it can be said that financial distress weakens the original positive relationship between market value and CSEE to the point of inverting it.

4.7.6. Financial Distress as a Moderator in the Expected Return on Corporate Social and Environmental Expenditures Relationship

Under shareholder theory, the hypothesis anticipated that higher expected returns would correlate with reduced CSR expenditures (negatively significant), as firms focus on profit maximization. However, the lack of a significant relationship (p value = 0.281) suggests that other factors may be influencing this dynamic. It's possible that firms balance profit motives with CSR commitments, especially in contexts where CSR is integral to corporate strategy or stakeholder expectations. Furthermore, introducing financial distress as a moderating variable did not alter this insignificance (p value=0.801).

In practice, the relationship between these variables are more ambiguous. Agency theory (Jensen & Meckling, 1976) tells us that managers might pursue CSR for personal image-building or risk mitigation, especially under stress, even if it's not the most rational financial decision. Under distress, CSR might actually become a signaling tool to reassure investors, customers, or regulators (legitimacy theory). So, financial distress might not simply amplify the cost-cutting instinct it might complicate managerial decision-making about CSR.

Another explanation lies in the nonlinear nature of financial distress. When distress is mild or moderate, firms may still pursue CSR to sustain stakeholder trust and mitigate reputational risk. Only under severe distress might they drastically cut CSR. This threshold-based behavior is supported by empirical evidence. Rahman, Zhu, & Chen (2023), for example, found that CSR spending does not always decline with distress; instead, it may increase slightly in early stages of distress as a form of damage control, only tapering off when liquidity becomes critical.

Within the framework of the Capital Asset Pricing Model (CAPM), market risk is a key element that determines the expected return on an investment (Sharpe, 1964). Investors will demand higher expected returns if systematic (beta) risk increases, so company management often faces the dilemma of allocating resources to activities outside the core of the business, including social and environmental spending (CSEE). The logic of CAPM encourages managers to focus on maximizing financial returns by minimizing costs that do not directly contribute to market value in the short term. Therefore, in conditions of high market risk, companies may tend to hold back or reduce CSR spending for fear that it will affect profitability which in turn impacts the stock price.

In contrast, the Creating Shared Value (CSV) approach offers a different perspective that shifts those trade-offs. According to Porter and Kramer (2011), companies should not see social spending as a burden that reduces returns, but as a shared value creation strategy that ultimately also strengthens market competitiveness. In this context, CSV seeks to reconcile the logic of CAPM by positioning CSEE as a strategic investment to mitigate non-financial risks, such as reputational risk and regulatory pressures, which may in turn influence future market risks. Thus, CSV serves as a bridge to balance market interests (return-risk trade-off) with social commitment, so that companies can achieve sustainable market value even though operating in a high-risk market environment.

In conclusion, the rejection of this moderating hypothesis appears rooted in the disconnect between financial distress theory and actual firm behavior, as well as the limitations of the CAPM model in capturing CSR-related decision-making. Expected

return, as modeled by CAPM, may not serve as a precise driver of CSR variation, particularly under conditions of financial ambiguity. Similarly, financial distress, rather than acting as a strict cost-cutting trigger, can introduce strategic uncertainty, where managers respond variably based on industry context, governance, or risk posture. From a broader theoretical lens, this supports a multi-theory view, combining elements of stakeholder theory, agency theory, and RBV to explain CSR behavior under stress. CSR may not be an expense to cut, but a buffer to protect.

4.7.7. The Influence of Prior-Year CSEE Fund on Current-Year CSEE Fund Allocation

The seventh hypothesis is one of the most intriguing findings in this study lies in the statistically significant relationship between a firm's current social and environmental expenditures (CSEE) and its past CSEE fund (CSEE{t-1}). This outcome suggests the presence of endogeneity specifically, temporal dependence within corporate social behavior, implying that a firm's present CSEE allocation fund decisions are heavily influenced by its past actions. Far from being a mere statistical artifact, this finding reflects the embedded and sustained nature of CSR as a strategic, institutionalized behavior rather than a one-off managerial decision.

Theoretically, this phenomenon is best understood through the lenses of legitimacy theory and stakeholder theory, both of which highlight the importance of long-term reputational consistency in sustaining a firm's societal reputation. As such, this result provides empirical support to the argument that CSR is not only a response to immediate economic or reputational pressures, but part of a continuous engagement shaped by previous investments and stakeholder expectations built over time. The result is statistically robust, with a p-value = 0.000 < 0.05 and a coefficient = 0.81198.

The idea that firms tend to maintain consistency in their CSR engagement is not new. According to legitimacy theory (Suchman, 1995), organizations continuously strive to align their behavior with prevailing societal norms to sustain legitimacy. However, legitimacy is not won through a single event it is built through a pattern of consistent actions that demonstrate a company's commitment to social and environmental values over time.
In this study, lagged CSEE represents the firm's prior "signal" to stakeholders. If a company invested heavily in CSR activities in the previous year, pulling back significantly in the current year could risk confusing or alienating key stakeholders ranging from investors to regulators to consumers thereby eroding hard-earned legitimacy. As a result, firms are incentivized to maintain at least a baseline level of CSR engagement, even in the face of financial pressures or shifting internal priorities.

Empirical work by Kansal, Joshi, & Batra (2014) supports this perspective. In their study on CSR disclosures, they found that prior reporting practices and CSR investments exerted a strong influence on current CSR behavior, particularly in sensitive industries such as energy, manufacturing, and extractives. Similarly, Muttakin & Khan (2014) highlight that firms in emerging markets tend to maintain a "CSR reputation" once it has been established, suggesting a type of path dependency.

From a stakeholder theory perspective (Freeman, 1984), firms operate within a broad of relationships where stakeholders observe and evaluate consistency over time. When a firm demonstrates commitment through repeated CSR actions, it builds trust and credibility. However, if CSR investments are erratic, stakeholders may interpret this as opportunistic or performative rather than authentic. In this light, the positive relationship between CSEE{t-1} and CSEE{t} makes intuitive sense. Firms feel the weight of stakeholder memory. Investors may assume that a sudden drop in CSR implies a loss of profitability. Communities may see it as neglect. Even regulators might question a company's long-term commitment to compliance and ethical standards.

This creates what Branco & Rodrigues (2006) describe as CSR inertia a tendency to maintain CSR spending to meet stakeholder expectations and avoid reputational risks. Thus, CSR in one period becomes both a benchmark and a constraint for the next. Once institutionalized, CSR practices gain inertia, making them less responsive to annual fluctuations in profit or risk but more predictable across time. The energy and extractive sectors, in particular, provide a fertile ground for this type of lagged CSR behavior. Due to their high environmental impact, these industries are under constant surveillance by governments, NGOs, and the media. Firms operating in these spaces cannot afford to be inconsistent with CSR commitments. A single year of reduced spending can lead to disproportionate backlash.

Research by Michelon, Pilonato, & Ricceri (2015), for example, found that oil and gas companies often exhibit long-term CSR planning cycles, reflecting the importance of building stakeholder relationships over time rather than relying on episodic engagement. This behavior is also reinforced by global sustainability frameworks like GRI or TCFD, which require reporting on CSR and ESG progress over multiple periods. In conclusion, this finding that CSEE is significantly predicted by its own lag is not just statistically valid it is theoretically rich. It confirms that CSR is not a one-time act of goodwill or a reactionary move, but rather a strategic behavior anchored in history, shaped by both internal routines and external stakeholder expectations. The significant role of CSEE {t-1} implies that

CSEE allocation fund decisions are inertial and path-dependent, reinforcing the idea that legitimacy and stakeholder management are cumulative efforts.

Companies need to view social and environmental spending (CSEE) not just as a cost, but as a form of long-term investment that can support business sustainability, improve reputation, and strengthen relationships with stakeholders (Porter & Kramer, 2006). Therefore, firm size or company size only serves as a controlling factor in measuring financial capacity, but should not be a barrier to allocating funds to CSEE activities. Both large and small companies can design social spending at their own scale, because sustainability of reputation and social legitimacy demands a consistent commitment in the eyes of the public, regardless of the size of the assets or revenue.

Therefore, this result strengthens the argument that CSR, especially in regulated, high-impact industries is best understood as a long-term investment in legitimacy and trust, rather than a flexible tool to be deployed only when convenient. Firms that embrace this continuity are not only more credible but also more resilient to reputation-related risks.

CHAPTER V
CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

These results of this in-depth investigation reveal that both liquidity risk and expected return exhibit a positive, yet statistically insignificant, relationship with corporate social and environmental expenditure (CSEE) funding decisions. In contrast, market value demonstrates a significant and positive influence on CSEE, suggesting that firms with stronger market performance are more inclined to allocate funds toward social and environmental initiatives. However, when financial distress is introduced as a moderating variable, the nature of these relationships shifts notably. The associations between both liquidity risk and market value with CSEE become significantly negative, indicating that financial distress weakens the positive effects these variables initially had. This suggests that firms facing financial distress are less likely to uphold or expand their commitments to CSR and environmental spending, regardless of their liquidity position or market valuation.

As for expected return, the direction of the relationship also turns negative under the influence of financial distress, but the change does not reach a statistically significant threshold, highlighting that while financial pressure may influence the firm's perceived benefits from CSR, the evidence remains inconclusive.

The lagged CSEE variable, which reflects CSR and environmental spending from the previous year, proves to be a strong and consistent predictor of current-year expenditures. This suggests that companies often continue their CSR efforts over time, likely driven by reputation, stakeholder pressure, or internal policies.

5.2. Theoretical and Practical Contributions

Theoretically, this study contributes to the ongoing debate between stakeholder theory and shareholder theory in the context of sustainability investment. By integrating the concept of simultaneous causality and employing CAPM-based expected returns, this research offers a refined lens through which to understand ESG-related financial behavior.

Practically, the findings offer valuable insights for corporate decision-makers, indicating that sustainability investments are influenced not only by ethical considerations but also by fundamental financial constraints. Firms must therefore balance their sustainability objectives with financial resilience strategies to ensure long-term value creation.

5.3. Policy Recommendations

Considering the findings, several policy interventions are recommended to enhance corporate commitment to sustainability in the context of financial constraints:

a) It is recommended that companies, regardless of firm size or financial condition, including if they are facing financial distress, can still set a policy to carry out Corporate Social and Environmental Expenditure (CSEE) in a planned manner as part of a long-term strategy. These expenses should be positioned as a Creating Shared Value (CSV) instrument and a reputation lever that ultimately supports increased market value. This policy can be implemented with the principle of balancing, which is to maintain a balance between social commitment, liquidity capability, and the goal of expected return (expected return) according to market risk (CAPM).

b) Strategically, management needs to formulate CSEE allocations through a flexible proportional scheme, integrating cash flow planning, operational expense control, and periodic risk evaluation. In practice, companies can establish a liquidity buffer policy to ensure the continuity of the CSEE program even in the event of sudden financial distress. In addition, companies are encouraged to adopt non-financial performance indicators in continuous reporting, in order to monitor the effectiveness of CSEE in supporting CSV and market value. Collaboration strategies with external partners, such as governments or NGOs, can also be an option to keep costs down without reducing social impact. Thus, this balancing concept can ensure that financial and social goals are achieved synergisically, regardless of the size of the company or its financial condition.

c) Regulatory bodies such as the Otoritas Jasa Keuangan (OJK) should consider enforcing stricter guidelines on sustainability disclosure, particularly for companies operating in natural resource-based industries. While POJK No. 51 has mandated sustainability reporting, its impact can be strengthened by standardizing the metrics used to report environmental costs and Corporate Social and Environmental Expenditures (CSEE). Clearer definitions and measurement frameworks will ensure comparability and transparency, reducing the ambiguity around whether such expenditures are to be treated as assets or liabilities.

d) The government can introduce fiscal incentives such as tax credits, deductions, or subsidies for companies that invest in long-term environmental initiatives. These incentives can help offset short-term financial pressures, particularly for companies facing liquidity constraints or financial distress. By easing the cost burden of

sustainability investments, such policies can encourage firms to continue CSEE programs even in challenging financial periods.

e) Policymakers should promote the integration of ESG (Environmental, Social, and Governance) factors into financial risk assessment frameworks. By formally recognizing CSEE as a form of long-term risk mitigation, regulatory institutions and stock exchanges can elevate the importance of sustainability spending in corporate valuation models. This, in turn, can drive greater investor confidence and reduce the perceived trade-off between financial performance and social responsibility.
f) Banks and financial institutions should incorporate sustainability ratings into credit assessments. Firms with strong sustainability profiles should be rewarded with lower borrowing costs or preferential financing schemes, reinforcing the strategic value of CSEE.

These policy interventions, if implemented collectively, would help align financial incentives with long-term environmental and social goals.

5.4. Research Limitations

This study, while contributing to the body of knowledge on corporate sustainability and financial risk, is not without limitations. The scope of the research is restricted to companies within natural resource-based industries namely, mining, energy, forestry, and plantations listed on the Indonesia Stock Exchange between 2018 and 2024. As such, the findings may not be generalizable to other sectors, particularly those with lower environmental footprints, such as banking or telecommunications.

Furthermore, the use of secondary data from financial and sustainability reports may be subject to reporting bias or inconsistencies. Although sustainability reporting has become mandatory, companies may still exhibit variation in how they define and disclose environmental expenditures and CSR activities. This inconsistency could affect the accuracy of the CSEE measurement across firms.

In addition, this study relies primarily on quantitative methods and financial indicators such as quick ratio, market capitalization, expected return (CAPM), and Altman Z-score. These proxies, while useful, may not capture the full complexity of internal decision-making processes or the influence of non-financial factors, such as corporate culture, stakeholder activism, or managerial incentives. As a result, the analysis may overlook certain qualitative nuances that are essential in understanding corporate behavior toward sustainability.

Another limitation concerns the treatment of financial distress solely through the Altman Z-score. Although widely used, this model may not fully reflect sector-specific

risks or macroeconomic shocks, which could influence corporate spending on environmental and social initiatives. These limitations suggest that while the current findings are robust, caution should be exercised when applying them beyond the study's context.

5.5. Suggestions for Future Research

Future research could extend this study in several important directions to enrich our understanding of the interplay between financial conditions and sustainability spending:

a) Researchers should consider including companies from other sectors, such as manufacturing, finance, or consumer goods, to examine whether the relationship between financial risk and CSEE varies by industry. Cross-sectoral comparison would reveal whether the observed trends are unique to resource-intensive sectors or broadly applicable across the corporate landscape.

b) Future studies may benefit from incorporating additional moderating or mediating variables, such as corporate governance quality, board diversity, or institutional ownership. These factors may influence managerial decisions regarding sustainability investments, especially during periods of financial stress. Examining the role of these governance mechanisms could provide deeper insights into how companies navigate the trade-off between profitability and social responsibility.

c) This study has primarily incorporated market risk within the CAPM framework as part of the expected return calculation, which indirectly captures systematic risk exposure. For future research, it is recommended to examine market risk as an independent variable, isolated from the CAPM structure, to provide a clearer understanding of how systematic market fluctuations directly influence corporate social and environmental expenditure (CSEE). By treating market risk as a standalone construct potentially measured using beta coefficients, volatility indices, or market value at risk (VaR). Future studies could reveal more nuanced risk–CSR dynamics that are not fully captured within traditional asset pricing models.

d) It is suggested that subsequent research expand the financial dimensions of CSEE by integrating economic valuation indicators, such as economic value added (EVA) or sustainability-adjusted return measures. This would allow scholars to explore how value creation and distribution mechanisms affect and are affected by sustainability commitments. Researchers could also broaden the scope of sustainability measurement by adopting diverse metrics aligned with contemporary sustainability reports or global frameworks such as GRI Standards or Integrated Reporting. This multidimensional

approach could enrich the empirical evidence on how firms internalize and disclose sustainability-related expenditures under varying economic and market risk conditions.

e) Adopting a mixed-method approach that includes qualitative data such as interviews with CFOs, sustainability officers, or regulators could yield richer contextual understanding. Such approaches would help uncover the motivations, constraints, and perceptions underlying corporate decisions related to environmental costs and CSR activities, complementing the quantitative findings of this study.

f) Researchers are encouraged to explore different proxies for expected return beyond the CAPM model. Behavioral finance perspectives, for example, may offer alternative interpretations of investor behavior in ESG-sensitive markets. Moreover, the development of machine learning techniques could enable more dynamic modeling of financial distress and risk perception, especially in volatile markets.

g) Longitudinal studies with longer observation periods would help capture the long-term impact of CSEE on firm performance and risk mitigation. As the importance of ESG factors continues to rise globally, longitudinal designs will be crucial in understanding how sustainability strategies evolve over time and under varying economic conditions.

By addressing these areas, future research can further clarify the strategic and financial implications of corporate sustainability initiatives, ultimately contributing to more effective policy and business practices.

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SAMPLE LIST
40 COMPANIES 7 YEARS

NO	COMPANY NAME	CODE
1	PT ABM Investama Tbk	ABMM
2	PT Alamtri Resources Indonesia Tbk	ADRO
3	PT AKR Corporindo Tbk	AKRA
4	PT Aneka Tambang Tbk	ANTM
5	PT Ratu Prabu Energi Tbk	ARTI
6	PT Astrindo Nusantara Infrastruktur Tbk	BIPI
7	PT BISI International Tbk	BISI
8	PT Bumi Resources Minerals Tbk	BRMS
9	PT Baramulti Suksessarana Tbk	BSSR
10	PT Eagle High Plantations Tbk	BWPT
11	PT Central Omega Resources Tbk	DKFT
12	PT Dharma Satya Nusantara Tbk	DSNG
13	PT Dian Swastatika Sentosa Tbk	DSSA
14	PT Elnusa Tbk	ELSA
15	PT Alfa Energi Investama Tbk	FIRE
16	PT Gunawan Dianjaya Steel Tbk	GDST
17	PT Golden Energy Mines Tbk	GEMS
18	PT Garda Tujuh Buana Tbk	GTBO
19	PT Gozco Plantations Tbk	GZCO
20	PT Harum Energy Tbk	HRUM
21	PT Vale Indonesia Tbk	INCO
22	PT Steel Pipe Industry of Indonesia Tbk	ISSP
23	PT Mitra Energi Persada Tbk	KOPI
24	PT Medco Energi Internasional Tbk	MEDC
25	PT Perusahaan Gas Negara Tbk	PGAS
26	PT IMC Pelita Logistik Tbk	PSSI
27	PT Bukit Asam Tbk	PTBA
28	PT Petrosea Tbk	PTRO
29	PT Rukun Raharja Tbk	RAJA
30	PT Radiant Utama Interinsco Tbk	RUIS
31	PT Sampoerna Agro Tbk	SGRO
32	PT Sillo maritime Perdana Tbk	SHIP
33	PT Sinar Mas Agro Resources and Technology Tbk	SMAR
34	PT Golden Eagle Energy Tbk	SMMT
35	PT SMR Utama Tbk	SMRU
36	PT Sawit Sumbermas Sarana Tbk	SSMS
37	PT Tunas Baru Lampung Tbk	TBLA
38	PT Tembaga Mulia Semanan Tbk	TBMS
39	PT TBS Energi Utama Tbk	TOBA
40	PT Trans Power Marine Tbk	TPMA

APPENDIX II
DOCUMENTATION DATA

VARIABLES DOCUMENTATION FROM 2018-2024
40 COMPANIES 7 YEARS

NO	CODE	YEAR	CSEE	LR	MV	ER	FD	FS
1	ABMM	2018	21536.29	1.3225	6249684.55	4743.30	2.01	30.14
2	ABMM	2019	24556.51	1.0666	4212342.45	-28932.25	0.98	30.11
3	ABMM	2020	28824.98	1.0524	2092405.40	12406.73	0.37	30.09
4	ABMM	2021	100316.25	1.5199	3909494.30	41868.41	3.78	30.33
5	ABMM	2022	103898.42	1.0553	9030381.20	-31365.68	2.81	31.06
6	ABMM	2023	42625.73	0.9015	9360761.00	-295082.64	2.55	31.14
7	ABMM	2024	44138.16	0.9459	9746204.10	2118.44	2.32	31.15
8	ADRO	2018	55027.80	1.8229	38862943.83	10202.17	4.15	32.26
9	ADRO	2019	92170.00	1.6136	49738170.91	64245.18	3.74	32.24
10	ADRO	2020	103170.00	1.4206	45739925.66	23150.96	3.74	32.13
11	ADRO	2021	446284.37	1.9921	71968414.50	21105.67	5.29	32.32
12	ADRO	2022	641772.26	2.0920	123145953.70	-8209.33	7.50	32.76
13	ADRO	2023	772447.59	1.9347	76126589.56	-252943.94	6.05	32.72
14	ADRO	2024	691523.54	3.8705	74743558.14	-19185.99	8.62	32.31
15	AKRA	2018	6934.84	1.2293	17223041.21	9078.34	3.44	30.62
16	AKRA	2019	8958.86	1.0509	15858044.93	26415.63	2.82	30.69
17	AKRA	2020	16573.21	1.3730	12766729.85	8789.27	4.05	30.56
18	AKRA	2021	28527.96	1.0360	16500396.12	16292.56	3.18	30.79
19	AKRA	2022	28931.03	1.1338	28102864.44	-29023.28	3.94	30.93
20	AKRA	2023	28766.68	1.1958	29608375.04	-149354.29	3.95	31.04
21	AKRA	2024	18485.50	1.3033	22482291.55	18105.61	3.85	31.13
22	ANTM	2018	237899.00	0.9882	18383535.01	-7558.20	3.02	31.10
23	ANTM	2019	287550.00	1.1088	20185842.37	-10388.54	3.10	31.04
24	ANTM	2020	210160.00	0.8638	46499529.74	-68804.48	3.16	31.09
25	ANTM	2021	203713.54	1.3137	54069220.63	-30797.24	5.53	31.12
26	ANTM	2022	267396.40	1.4717	47701067.98	23675.92	6.96	31.15
27	ANTM	2023	326775.71	1.9349	40972453.86	-3011.17	7.49	31.39
28	ANTM	2024	320380.00	1.2233	36646916.21	466.04	5.75	31.43
29	ARTI	2018	266.14	3.5196	392000.00	-1551.64	3.14	28.63
30	ARTI	2019	258.42	0.6825	392000.00	-2574.50	-4.59	28.21
31	ARTI	2020	23.60	0.0108	392000.00	-2697.10	-21.76	27.47
32	ARTI	2021	269737.50	0.0054	392000.00	2195.94	-18.28	27.19
33	ARTI	2022	306657.90	0.0404	392000.00	2286.98	-18.76	27.15
34	ARTI	2023	308688.80	0.0426	39200.00	2428.02	-19.09	27.12
35	ARTI	2024	403600.00	0.0019	15680.00	-929.59	-20.96	27.03
36	BIPI	2018	212.51	0.5847	2007949.35	7485.42	-1.10	30.50
37	BIPI	2019	291.92	1.1670	2234653.31	31435.52	0.34	30.49
38	BIPI	2020	105.79	0.3802	2234653.31	1995.33	-1.42	30.57
39	BIPI	2021	474.74	0.4832	2234653.31	2195.94	-1.12	30.25
40	BIPI	2022	390.15	0.7175	9151101.02	-162378.52	-0.22	30.50
41	BIPI	2023	6127.24	0.9789	6689570.68	-580653.23	0.33	30.94
42	BIPI	2024	30835.04	0.9789	5542787.13	-6410.26	0.49	30.98
43	BISI	2018	1513.08	2.6718	5025000.00	2280.89	13.01	28.65
44	BISI	2019	1469.03	2.2057	3150000.00	-28271.33	12.92	28.71
45	BISI	2020	1063.28	3.4425	3090000.00	-18799.99	12.98	28.70

46	BISI	2021	2117.09	4.8551	2985000.00	1764.43	14.97	28.77
47	BISI	2022	1816.28	6.3466	4800000.00	-46656.99	17.29	28.86
48	BISI	2023	1543.01	5.2002	4800000.00	-139645.12	16.03	28.99
49	BISI	2024	1825.18	5.7216	3600000.00	15738.77	21.99	28.92
50	BRMS	2018	1118842.11	0.3561	3116122.85	6235.34	-2.98	31.67
51	BRMS	2019	1301705.90	0.3629	3240767.76	30111.78	-3.66	31.55
52	BRMS	2020	1261412.41	0.2850	5893644.07	-30666.99	-5.22	31.51
53	BRMS	2021	4572.10	2.8867	15595545.48	2375.52	8.40	30.28
54	BRMS	2022	6291.42	2.6316	22543662.41	19948.75	6.52	30.46
55	BRMS	2023	10165.51	1.6730	24103286.86	-68021.39	5.67	30.47
56	BRMS	2024	22094.50	1.0803	49057277.96	-49320.47	4.73	30.56
57	BSSR	2018	31960.00	1.0009	6122610.00	8937.86	5.71	28.90
58	BSSR	2019	8667.71	1.0141	4762030.00	-31268.79	4.98	28.88
59	BSSR	2020	28155.37	1.4523	4434967.50	-7022.03	6.14	28.94
60	BSSR	2021	27593.00	1.4824	10701485.00	45048.86	8.43	19.89
61	BSSR	2022	43621.00	1.0235	11355610.00	105345.04	8.22	19.82
62	BSSR	2023	40548.00	1.1351	10099690.00	-37696.32	7.43	19.83
63	BSSR	2024	119184.69	1.3561	11695755.00	-12006.94	8.34	19.76
64	BWPT	2018	13546.00	0.4455	5170147.72	-2111.70	-0.13	30.41
65	BWPT	2019	11951.00	0.5595	4949470.69	8166.50	-0.53	30.39
66	BWPT	2020	13658.00	0.8830	4539641.90	4351.99	-0.37	30.34
67	BWPT	2021	13058.00	0.4993	2332871.53	-9468.14	-1.53	30.12
68	BWPT	2022	10358.00	0.4123	2049143.92	-25499.41	-0.66	30.13
69	BWPT	2023	9147.00	0.3091	1702365.71	-8695.99	-1.22	29.95
70	BWPT	2024	17355.00	0.4005	1859992.17	-11642.65	-0.35	29.91
71	DKFT	2018	5949.04	0.4602	1725303.46	9449.03	-0.23	28.61
72	DKFT	2019	5328.83	0.5926	800631.02	-28897.63	0.26	28.61
73	DKFT	2020	8245.44	0.5272	1003607.89	-44369.60	-0.86	28.57
74	DKFT	2021	4944.25	0.7438	687866.09	-14235.20	-1.66	28.44
75	DKFT	2022	2547.71	0.8745	580739.40	-9824.09	-0.38	28.50
76	DKFT	2023	3254.42	0.8646	631483.62	59234.76	-0.31	28.57
77	DKFT	2024	9569.14	1.9434	1184031.79	-39771.74	3.22	28.56
78	DSNG	2018	9500.00	0.6581	4345935.38	-635.13	1.66	30.09
79	DSNG	2019	11900.00	0.5174	4875927.50	20111.02	1.23	30.08
80	DSNG	2020	14500.00	0.8472	6465903.86	-9992.97	2.08	30.28
81	DSNG	2021	20650.00	0.8343	5299921.20	-12450.59	2.74	30.25
82	DSNG	2022	30680.00	0.6415	6359905.44	-26706.89	3.05	30.36
83	DSNG	2023	37300.00	0.6240	5882912.53	-61827.90	2.88	30.41
84	DSNG	2024	42400.00	0.6608	10069850.28	-39722.93	3.37	30.49
85	DSSA	2018	42333.70	1.1031	10402456.32	30148.32	2.21	31.52
86	DSSA	2019	71426.58	1.1988	10691413.44	7712.03	2.08	31.58
87	DSSA	2020	32441.50	1.4290	12328837.12	-5367.47	2.93	31.34
88	DSSA	2021	96386.20	1.5831	37757063.68	57418.10	4.22	31.40
89	DSSA	2022	81151.20	1.1901	30667982.34	173833.87	2.24	32.24
90	DSSA	2023	189246.40	1.6035	61644185.60	282305.80	7.15	31.49
91	DSSA	2024	201800.00	2.1914	285104358.40	-137528.95	6.39	31.72
92	ELSA	2018	16400.00	1.4131	2510684.00	1354.47	4.35	29.36
93	ELSA	2019	40900.00	1.3916	2233341.00	-1387.35	3.96	29.55
94	ELSA	2020	11200.00	1.5325	2569072.00	-13320.62	3.89	29.65
95	ELSA	2021	13275.09	1.6102	2014386.00	-8395.93	4.27	29.61

96	ELSA	2022	21833.79	1.3753	2277132.00	-24116.01	3.69	29.81
97	ELSA	2023	35475.62	1.3352	2831818.00	28867.54	3.75	29.89
98	ELSA	2024	7094.45	1.2099	3152952.00	9328.62	3.66	29.99
99	FIRE	2018	6781.71	1.0903	11359824.30	2295.74	1.74	27.07
100	FIRE	2019	12548.30	2.0081	480968.32	-509553.67	3.80	27.02
101	FIRE	2020	13144.39	2.0263	1947479.40	-233333.21	4.09	26.95
102	FIRE	2021	1170.47	1.2989	675716.34	-104876.50	3.57	26.93
103	FIRE	2022	1436.50	0.2513	240484.20	1606.57	-3.11	26.62
104	FIRE	2023	1210.40	0.4473	166716.04	81254.60	-0.84	26.76
105	FIRE	2024	2808.99	0.7914	129831.96	-2210.63	1.67	26.57
106	GDST	2018	4300.00	0.4413	868795.00	-5635.43	0.82	27.93
107	GDST	2019	6400.00	0.2994	573035.00	-46170.48	0.56	28.20
108	GDST	2020	8200.00	0.2046	1016675.00	-63464.94	-0.45	28.09
109	GDST	2021	8583.00	0.2554	924250.00	-22824.07	-1.24	28.09
110	GDST	2022	4571.34	0.6026	1395617.50	-43522.61	1.92	28.38
111	GDST	2023	3251.89	0.7813	1220010.00	-146138.01	2.73	28.43
112	GDST	2024	15629.54	0.9332	887280.00	10222.73	1.92	28.64
113	GEMS	2018	41515.11	1.1746	15000000.15	-54303.64	3.20	29.95
114	GEMS	2019	68335.11	1.2418	15000000.15	-55235.24	3.09	30.02
115	GEMS	2020	45146.21	1.1751	15000000.15	-52435.09	2.98	30.07
116	GEMS	2021	59660.56	0.9503	46764706.35	94675.13	4.84	30.11
117	GEMS	2022	89405.69	1.4403	41470588.65	41558.11	8.79	30.50
118	GEMS	2023	161466.79	1.3026	34117647.40	-12548.85	6.79	30.64
119	GEMS	2024	137684.12	1.3093	62500000.63	-51625.77	6.77	30.63
120	GTBO	2018	51.49	0.2654	595000.00	-66511.07	6.05	27.46
121	GTBO	2019	1037.97	0.3442	387500.00	221616.21	3.54	27.36
122	GTBO	2020	100.00	0.3244	187500.00	251524.81	3.29	27.40
123	GTBO	2021	24251.37	0.4544	187500.00	-17332.11	3.01	27.43
124	GTBO	2022	65603.75	1.4935	467500.00	-18034.13	5.54	27.59
125	GTBO	2023	23607.85	1.2991	1045000.00	50595.99	5.18	27.66
126	GTBO	2024	24277.83	1.1417	545000.00	94046.25	5.56	27.53
127	GZCO	2018	612.46	0.2009	300000.00	2439.32	-2.28	28.70
128	GZCO	2019	958.75	1.3593	300000.00	21297.54	-2.82	28.30
129	GZCO	2020	1885.50	0.6832	300000.00	1995.33	-1.89	28.39
130	GZCO	2021	318.46	0.8519	414000.00	13186.43	-0.90	28.34
131	GZCO	2022	279.38	0.7304	486000.00	17997.90	-0.15	28.35
132	GZCO	2023	1003.43	1.5811	720000.00	74294.47	0.28	28.38
133	GZCO	2024	1458.95	0.5089	678000.00	31242.80	-0.73	28.47
134	HRUM	2018	25406.83	4.0424	3785068.00	7105.44	10.47	29.54
135	HRUM	2019	17859.69	8.7025	3568778.40	27881.00	14.40	29.46
136	HRUM	2020	26068.85	9.5920	8056787.60	-75216.60	16.33	29.58
137	HRUM	2021	547.08	2.8087	27914876.50	37110.55	6.48	30.16
138	HRUM	2022	621.62	2.1092	21899322.00	206614.46	9.04	30.62
139	HRUM	2023	293.95	1.3802	18046663.50	11674.30	5.86	30.86
140	HRUM	2024	643.54	1.4184	13991233.50	4974.08	4.30	31.36
141	INCO	2018	44746.29	2.8471	32392464.23	178.66	9.99	31.09
142	INCO	2019	49390.25	3.2248	36168272.94	966.18	11.10	31.06
143	INCO	2020	58944.80	3.4316	50675327.47	-14714.67	11.29	31.12
144	INCO	2021	347394.35	4.0049	46502065.21	-11786.22	11.77	21.63
145	INCO	2022	413928.28	4.7649	70548004.91	-43411.04	13.24	21.70

146	INCO	2023	1131010.96	4.0474	42825619.88	-210212.99	12.49	21.80
147	INCO	2024	522636.64	3.2498	38154020.01	-10737.92	10.42	21.88
148	ISSP	2018	216.85	0.3810	603623.33	-1279.35	2.33	29.50
149	ISSP	2019	218.79	0.4302	1322222.53	146898.77	2.69	29.49
150	ISSP	2020	249.74	0.4672	1149758.73	79571.75	3.04	29.44
151	ISSP	2021	6285.68	0.4269	2860024.83	48989.73	4.05	29.59
152	ISSP	2022	7173.53	0.5010	1767754.04	144800.30	4.04	29.63
153	ISSP	2023	5812.74	0.5598	2098309.67	135356.63	5.00	29.71
154	ISSP	2024	6906.02	1.0764	1925845.87	16764.45	6.08	29.75
155	KOPI	2018	116.78	0.5127	509004.67	3225.26	-4.26	25.72
156	KOPI	2019	367.31	0.7311	432305.33	-11500.16	-0.14	25.73
157	KOPI	2020	130.55	0.4898	352119.67	4039.48	-0.36	25.95
158	KOPI	2021	50.00	0.9045	449737.00	15578.85	0.25	25.66
159	KOPI	2022	157.00	0.9240	432305.33	26376.32	0.07	26.27
160	KOPI	2023	68.00	0.6531	245437.87	-89515.85	-0.24	26.57
161	KOPI	2024	49.70	0.6915	407901.00	-56172.01	-1.68	26.45
162	MEDC	2018	67885.70	1.6015	12212996.86	42942.42	1.98	31.96
163	MEDC	2019	54213.90	2.2655	15497410.86	51005.87	1.92	32.05
164	MEDC	2020	25389.00	1.4010	14830376.44	28838.87	1.15	32.05
165	MEDC	2021	30511.90	1.5909	11713483.76	1736.80	1.70	22.46
166	MEDC	2022	74004.10	1.1929	25513274.72	-103547.46	2.18	22.66
167	MEDC	2023	36762.91	0.9985	29032347.10	-240618.72	1.70	22.73
168	MEDC	2024	51573.33	1.1033	27649854.38	12290.36	1.90	22.79
169	PGAS	2018	99774.09	1.4927	51391997.38	-8246.98	3.06	32.38
170	PGAS	2019	89330.00	1.8995	52604072.79	-16525.72	3.24	32.26
171	PGAS	2020	55380.00	1.6371	40119696.06	17318.44	2.27	32.30
172	PGAS	2021	59742.64	2.4730	33332073.77	4166.70	3.57	22.74
173	PGAS	2022	85173.04	2.1689	42665054.43	-31955.73	3.86	22.70
174	PGAS	2023	75932.40	1.2455	27392904.26	-146635.06	3.59	22.61
175	PGAS	2024	84974.65	1.6792	38543998.03	-38563.56	4.40	22.58
176	PSSI	2018	5680.00	1.4424	774620.00	1738.78	4.20	28.10
177	PSSI	2019	6400.00	0.6088	1002156.68	-17602.71	2.51	28.32
178	PSSI	2020	5200.00	0.9940	942568.99	17309.48	3.21	28.36
179	PSSI	2021	7050.00	1.4553	2177659.39	41813.81	5.74	28.47
180	PSSI	2022	6718.43	2.0693	3223152.58	65580.37	9.23	28.66
181	PSSI	2023	6422.90	3.9078	2735616.89	-145094.50	10.74	28.78
182	PSSI	2024	7300.00	6.1821	2177659.39	5183.46	10.82	28.75
183	PTBA	2018	493547.00	2.0008	49538834.78	-11921.71	8.08	30.82
184	PTBA	2019	349243.53	2.1949	30644953.61	-109898.28	7.81	30.89
185	PTBA	2020	198066.20	1.9520	32373052.49	-23715.29	6.73	30.81
186	PTBA	2021	276281.78	2.2670	31220986.57	-464.19	8.01	31.22
187	PTBA	2022	420279.00	1.9244	42511232.63	-27993.77	8.12	31.45
188	PTBA	2023	529809.00	0.9680	28110408.57	-161220.97	5.21	31.29
189	PTBA	2024	613169.00	0.8655	31681812.94	-22555.17	4.29	31.36
190	PTRO	2018	287173.94	1.6308	1800359.93	24598.47	3.13	29.72
191	PTRO	2019	430331.94	1.4692	1618811.03	-15365.01	3.15	29.67
192	PTRO	2020	465392.59	1.6064	1946607.65	-15818.91	3.62	29.64
193	PTRO	2021	4791.03	1.3307	2188672.85	-63.60	3.76	29.67
194	PTRO	2022	6046.12	1.0776	4367259.65	-64115.47	3.51	29.86
195	PTRO	2023	6659.03	1.0901	5295176.25	-180507.78	1.99	30.06

196	PTRO	2024	16006.09	1.4759	27862713.13	-214270.32	2.28	30.27
197	RAJA	2018	1011.07	3.7413	1369574.73	10037.56	5.42	28.65
198	RAJA	2019	804.52	2.9600	798918.59	-47152.43	5.34	28.55
199	RAJA	2020	1619.32	2.8059	1065224.79	-42051.17	5.91	28.49
200	RAJA	2021	5181.89	3.2709	769329.02	-15478.44	4.30	19.32
201	RAJA	2022	1875.71	2.1436	4417301.21	-380372.97	4.12	19.38
202	RAJA	2023	6765.42	1.4167	5960186.33	-1023910.40	3.34	19.61
203	RAJA	2024	1493.06	1.5439	11497664.40	-28653.37	3.92	19.62
204	RUIS	2018	750.00	1.0943	200200.00	-451.95	2.35	27.62
205	RUIS	2019	750.00	1.0023	190960.00	-14442.86	1.78	27.86
206	RUIS	2020	800.00	1.0468	210980.00	-6872.05	1.84	27.93
207	RUIS	2021	589.00	1.1190	158620.00	-8013.74	2.15	27.89
208	RUIS	2022	769.89	1.2378	172480.00	-23293.23	2.66	27.87
209	RUIS	2023	1027.23	1.3504	149380.00	-49281.78	2.96	27.92
210	RUIS	2024	3653.57	1.4423	128590.00	2644.72	3.46	27.97
211	SGRO	2018	10783.13	0.6657	4479300.00	9822.20	1.86	29.83
212	SGRO	2019	7858.73	0.2808	4498200.00	10239.29	0.90	29.88
213	SGRO	2020	3847.35	0.5079	3052350.00	21120.54	1.23	29.91
214	SGRO	2021	6444.47	0.7354	3770550.00	18297.53	2.95	29.91
215	SGRO	2022	17254.43	0.8161	3819106.20	16212.00	3.55	29.96
216	SGRO	2023	12086.84	0.9132	3655430.22	-19883.22	3.29	29.94
217	SGRO	2024	16426.46	0.9188	3891851.08	-3388.40	3.81	30.00
218	SHIP	2018	1400.00	0.3491	2461409.95	10140.90	0.92	28.85
219	SHIP	2019	1250.00	0.8826	2080639.35	-27674.61	2.14	28.84
220	SHIP	2020	1246.11	0.9504	1631874.00	5577.53	2.14	29.06
221	SHIP	2021	6219.63	0.9284	2665394.20	26751.55	2.07	29.17
222	SHIP	2022	2202.36	0.9657	2393415.20	58347.82	2.13	29.41
223	SHIP	2023	1926.81	1.1420	2842180.55	70081.90	2.26	29.53
224	SHIP	2024	2184.75	1.1072	2746987.90	14186.81	2.20	29.69
225	SMAR	2018	94126.50	0.9125	11632383.13	-5220.19	2.91	31.01
226	SMAR	2019	88966.40	0.6294	11890880.54	-13961.32	2.13	30.96
227	SMAR	2020	73346.00	0.9817	11919602.47	3158.72	2.70	31.19
228	SMAR	2021	14500.00	0.9740	12522763.08	3589.82	3.27	31.33
229	SMAR	2022	15500.00	1.2436	14217357.16	-4171.39	4.99	31.38
230	SMAR	2023	24200.00	1.0144	11488773.46	-74033.94	3.97	31.31
231	SMAR	2024	18000.00	0.9601	10483505.79	-3222.17	3.88	31.45
232	SMMT	2018	2854.35	0.2930	504000.00	-3615.51	1.68	27.53
233	SMMT	2019	2762.15	0.5864	387450.00	-40963.01	2.01	27.49
234	SMMT	2020	2004.01	0.4858	365400.00	-8243.39	1.36	27.51
235	SMMT	2021	6889.53	2.0329	636300.00	25284.00	6.97	27.68
236	SMMT	2022	5502.67	0.9247	2047500.00	-110268.00	10.25	27.80
237	SMMT	2023	3762.64	0.7824	2929500.00	-415131.58	6.59	27.64
238	SMMT	2024	5760.15	0.7846	2299500.00	36913.75	3.01	27.88
239	SMRU	2018	614.40	2.2156	8124600.76	3334.17	0.81	28.28
240	SMRU	2019	621.00	1.0719	624969.29	-124006.86	-1.14	28.15
241	SMRU	2020	847.10	0.4178	624969.29	-52215.79	-4.79	27.88
242	SMRU	2021	1131.74	0.2001	624969.29	-57482.80	-8.92	27.66
243	SMRU	2022	1140.76	0.1639	624969.29	-59815.36	-8.23	27.56
244	SMRU	2023	1140.76	0.1122	624969.29	-63499.99	-10.60	27.44
245	SMRU	2024	1345.75	0.0756	624969.29	-61811.84	-13.27	27.28

246	SSMS	2018	23089.29	5.0580	11906250.00	6429.04	4.37	30.06
247	SSMS	2019	32945.27	2.3136	8048625.00	-13499.93	2.40	30.10
248	SSMS	2020	18721.09	2.1553	11906250.00	-45181.04	2.90	30.18
249	SSMS	2021	19539.09	2.1503	9191625.00	-18260.27	3.70	30.26
250	SSMS	2022	38707.00	0.8998	14001750.00	-54988.87	3.04	30.04
251	SSMS	2023	37462.00	0.8910	9953625.00	-187403.24	1.60	30.10
252	SSMS	2024	43219.00	0.9446	12382500.00	-26157.08	2.48	30.10
253	TBLA	2018	1900.00	1.1907	6517000.00	-43.51	2.67	30.42
254	TBLA	2019	2500.00	1.0845	5092000.00	35159.37	2.49	30.49
255	TBLA	2020	3800.00	1.0632	4406000.00	24719.48	2.39	30.60
256	TBLA	2021	4000.00	1.0130	4696000.00	31.79	2.83	30.68
257	TBLA	2022	3000.00	0.6406	4116000.00	-3349.98	2.30	30.80
258	TBLA	2023	3000.00	0.7422	3615000.00	9590.18	2.59	30.88
259	TBLA	2024	3600.00	0.7808	4158000.00	1980.51	2.43	30.95
260	TBMS	2018	876.65	0.8466	330606.00	4230.27	0.73	28.65
261	TBMS	2019	702.70	0.7893	304892.20	-5610.36	1.42	28.39
262	TBMS	2020	613.65	1.0250	345299.60	-10355.67	1.97	28.42
263	TBMS	2021	84.41	1.0012	635498.20	22669.91	2.82	18.81
264	TBMS	2022	751.34	1.1390	595090.80	71203.64	3.65	18.72
265	TBMS	2023	265.58	1.1682	977124.40	167288.39	3.86	18.77
266	TBMS	2024	274.45	1.3595	686925.80	52596.75	4.54	18.83
267	TOBA	2018	5998.15	0.7947	3260235.42	18185.33	3.06	29.61
268	TOBA	2019	35667.92	0.4478	2881887.11	12153.46	1.97	29.81
269	TOBA	2020	25992.60	0.4834	4185981.28	-31395.97	1.41	30.02
270	TOBA	2021	12196.90	1.6224	8854960.40	21367.47	2.84	20.57
271	TOBA	2022	10103.24	1.8032	4870228.22	121622.73	3.66	20.62
272	TOBA	2023	72166.91	1.4410	2447189.06	-8675.64	2.58	20.67
273	TOBA	2024	44284.24	1.6094	3250795.13	-40793.88	3.22	20.61
274	TPMA	2018	40.00	0.7197	653058.40	-15894.11	3.58	28.11
275	TPMA	2019	50.00	0.8240	668858.20	-45384.29	4.21	28.07
276	TPMA	2020	50.00	1.0594	921655.00	-18780.28	4.65	28.01
277	TPMA	2021	30.00	1.3213	1021720.40	-5595.02	5.76	27.99
278	TPMA	2022	50.00	1.7053	1216584.60	-3975.62	5.80	28.52
279	TPMA	2023	40.00	1.3932	1856476.50	80762.64	4.80	28.73
280	TPMA	2024	40.00	1.6224	2244748.82	30652.15	4.02	29.02

Source:
IDX Website
Yahoo Finance
Companies' Website
Bloomberg Finance for Education

APPENDIX III DO FILE INPUT

```
* SHORT-RUN DYNAMIC PANEL DATA
* GENERALIZED METHOD OF MOMENTS (GMM) TWO STEPS APPROCH
* CSEE(DEPENDEN)|LR,MV,ER(INDEPENDEN)|FD(MODERASI)|FS(KONTROL)
* PENULIS: YANA FIMANSYAH, UNIVERSITAS ISLAM INTERNASIONAL INDONESIA

* 1. PERSIAPAN DATA DAN GAMBARAN STATISTIK.
* A. MEMUAT DATA DAN GAMBARAN STATISTIK
use "D:\Bubu\Hipotesis\Final\DATA GMM 40N7T.dta", clear
xtset ID YEAR
* B. MEMBERIKAN GAMBARAN STATISTIK DATA AWAL
summarize
* C. MENTRANFORMASI DATA DAN STATISTIK DATA
gen CSEEt = log(1 + CSEE)
gen LRt   = log(1 + LR)
gen MVt   = log(1 + MV)
gen ERt   = sign(ER) * log(1 + abs(ER))
gen FDt   = sign(FD) * log(1 + abs(FD))
gen FSt   = log(1 + FS)
summarize

* 2. UJI ASUMSI KLASIK
* A. MELAKUKAN UJI MULTIKOLINEARITAS [VIF VALUE]
reg CSEEt LRt MVt ERt FDt FSt
vif
* B. MELAKUKAN UJI HETEROSKEDASTISITAS [RUBOST]
xtreg CSEEt LRt MVt ERt FDt FSt, fe vce(robust)
* C. MELAKUKAN UJI AUTOKORELASI [ARELLANO BOND]
xtabond2 CSEEt L.CSEEt L.LRt L.MVt L.ERt L.FDt L.FSt, ///
    gmm(L.CSEEt, lag(2 3) collapse) ///
    iv(L.LRt L.MVt L.ERt L.FDt L.FSt, equation(level)) ///
    twostep robust
* D. MELAKUKAN UJI NORMALITAS [OPTIONAL SKTEST]
xtreg CSEEt LRt MVt ERt FDt FSt, fe
predict resid_fe, resid
sktest resid_fe


* 3. UJI STASIONERITAS DATA PANEL
* A. MELAKUKAN UJI LEVIN-LIN-CHU (LLC)
xtunitroot llc CSEEt
xtunitroot llc LRt
xtunitroot llc MVt
xtunitroot llc ERt
xtunitroot llc FDt
xtunitroot llc FSt
* B. MELAKUKAN UJI IM PASERAN SHIN (IPS)
xtunitroot ips CSEEt
xtunitroot ips LRt
xtunitroot ips MVt
xtunitroot ips ERt
xtunitroot ips FDt
xtunitroot ips FSt


* 4. UJI HIPOTESIS DENGAN GMM TWO STEPS WITH MODERATING VARIABEL
* A. MELAKUKAN GENERALIZED METHOD OF MOMENTS (GMM) TWO STEPS
xtabond2 CSEEt L.CSEEt L.LRt L.MVt L.ERt L.FSt, ///
    gmm(L.CSEEt, lag(2 3) collapse) ///
    iv(L.LRt L.MVt L.ERt L.FSt, equation(level)) ///
    twostep robust
* B. MELAKUKAN GMM TWO STEPS DENGAN MODERATION REGRESSION ANALYSIS (MRA)
gen FDLRt = FDt * LRt
gen FDMVt = FDt * MVt
gen FDERt = FDt * ERt
summarize
xtabond2 CSEEt L.CSEEt L.LRt L.MVt L.ERt L.FDLRt L.FDMVt L.FDERt L.FSt, ///
    gmm(L.CSEEt, lag(2 3)) ///
    iv(L.LRt L.MVt L.ERt L.FDLRt L.FDMVt L.FDERt L.FSt, equation(level)) ///
```

```
69        twostep robust
```

APPENDIX IV
STATISTIC OUTPUT

```
[PANEL DATA] GMM TWO STEPS MODEL  Wednesday June 11 05:59:14 2025   Page 1

                                                                      ___  ____  ____  ____  ____(R)
                                                                     /__    /   ____/   /   ____/
                                                                    ___/   /   /___/   /   /___/
                                                                      Statistics/Data analysis

                                                                        User: Yana Fimansyah
                                                                     Project: Thesis Project

  ___  ____  ____  ____  ____ ©
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Notes:
      1. Unicode is supported; see help unicode_advice.
      2. More than 2 billion observations are allowed; see help obs_advice.
      3. Maximum number of variables is set to 5,000; see help set_maxvar.

 1 . do "D:\Bubu\Hipotesis\Final\[STATA] GMM TWO STEPS DYNAMIC 40N 7T Baru.do"

 2 . * SHORT-RUN DYNAMIC PANEL DATA
 3 . * GENERALIZED METHOD OF MOMENTS (GMM) TWO STEPS APPROCH
 4 . * CSEE(DEPENDEN)|LR,MV,ER(INDEPENDEN)|FD(MODERASI)|FS(KONTROL)
 5 . * PENULIS: YANA FIMANSYAH, UNIVERSITAS ISLAM INTERNASIONAL INDONESIA
 6 .
 7 . * 1. PERSIAPAN DATA DAN GAMBARAN STATISTIK.
 8 . * A. MEMUAT DATA DAN GAMBARAN STATISTIK
 9 . use "D:\Bubu\Hipotesis\Final\DATA GMM 40N7T.dta", clear

10 . xtset ID YEAR

Panel variable: ID (strongly balanced)
 Time variable: YEAR, 2018 to 2024
         Delta: 1 unit

11 . * B. MEMBERIKAN GAMBARAN STATISTIK DATA AWAL
12 . summarize

    Variable |        Obs        Mean    Std. dev.       Min        Max
-------------+---------------------------------------------------------
        YEAR |        280        2021    2.003581      2018       2024
        CSEE |        280    75525.67    185224.4      23.6    1301706
          LR |        280    1.386725    1.217763   .0019443    9.59198
          MV |        280    1.23e+07    2.38e+07      15680   2.85e+08
          ER |        280    -18266.1    106433.5   -1023910   282305.8
-------------+---------------------------------------------------------
          FD |        280    3.026673    5.111682  -21.76086   21.99258
          FS |        280    28.65942    3.031768   18.71998   32.75658
          ID |        280        20.5    11.56406          1         40

13 . * C. MENTRANFORMASI DATA DAN STATISTIK DATA
14 . gen CSEEt = log(1 + CSEE)

15 . gen LRt   = -log(1 + LR)

16 . gen MVt   = log(1 + MV)
```

```
17 . gen ERt   = sign(ER) * log(1 + abs(ER))

18 . gen FDt   = sign(FD) * log(1 + abs(FD))

19 . gen FSt   = log(1 + FS)

20 . summarize
```

Variable	Obs	Mean	Std. dev.	Min	Max
YEAR	280	2021	2.003581	2018	2024
CSEE	280	75525.67	185224.4	23.6	1301706
LR	280	1.386725	1.217763	.0019443	9.59198
MV	280	1.23e+07	2.38e+07	15680	2.85e+08
ER	280	-18266.1	106433.5	-1023910	282305.8
FD	280	3.026673	5.111682	-21.76086	21.99258
FS	280	28.65942	3.031768	18.71998	32.75658
ID	280	20.5	11.56406	1	40
CSEEt	280	9.086263	2.404803	3.202746	14.07919
LRt	280	.7835987	.388286	.0019424	2.360097
MVt	280	15.11023	1.701488	9.660205	19.46837
ERt	280	-1.071001	9.909563	-13.83914	12.55075
FDt	280	1.099073	1.182468	-3.125042	3.135172
FSt	280	3.383768	.1140308	2.981632	3.519176

```
21 .
22 . * 2. UJI ASUMSI KLASIK
23 . * A. MELAKUKAN UJI MULTIKOLINEARITAS [VIF VALUE]
24 . reg CSEEt LRt MVt ERt FDt FSt
```

Source	SS	df	MS		
Model	655.551434	5	131.110287	Number of obs	= 280
Residual	957.927493	274	3.49608574	F(5, 274)	= 37.50
Total	1613.47893	279	5.78307859	Prob > F	= 0.0000
				R-squared	= 0.4063
				Adj R-squared	= 0.3955
				Root MSE	= 1.8698

CSEEt	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
LRt	.0682168	.4056975	0.17	0.867	-.7304635	.866897
MVt	.9560628	.0800743	11.94	0.000	.7984238	1.113702
ERt	-.025397	.0113303	-2.24	0.026	-.0477025	-.0030915
FDt	-.310715	.1394396	-2.23	0.027	-.5852241	-.0362058
FSt	.6370266	1.02657	0.62	0.535	-1.38394	2.657993
_cons	-7.254776	3.367693	-2.15	0.032	-13.88462	-.6249347

```
25 . vif
```

Variable	VIF	1/VIF
FDt	2.17	0.460921
LRt	1.98	0.504975
MVt	1.48	0.675047
FSt	1.09	0.914443
ERt	1.01	0.993997
Mean VIF	1.55	

```
26 . * B. MELAKUKAN UJI HETEROSKEDASTISITAS [RUBOST]
27 . xtreg CSEEt LRt MVt ERt FDt FSt, fe vce(robust)

Fixed-effects (within) regression               Number of obs     =       280
Group variable: ID                              Number of groups  =        40

R-squared:                                      Obs per group:
     Within  = 0.0830                                         min =         7
     Between = 0.1095                                         avg =       7.0
     Overall = 0.0378                                         max =         7

                                                F(5,39)           =      1.68
corr(u_i, Xb) = -0.5051                         Prob > F          =    0.1613

                                    (Std. err. adjusted for 40 clusters in ID)
------------------------------------------------------------------------------
             |               Robust
       CSEEt |      Coef.   Std. err.      t    P>|t|     [95% conf. interval]
-------------+----------------------------------------------------------------
         LRt |    1.477701   .7635994     1.94   0.060    -.0668247    3.022226
         MVt |   -.0493136   .2378654    -0.21   0.837    -.5304417    .4318146
         ERt |   -.0112574   .0114205    -0.99   0.330    -.0343575    .0118426
         FDt |   -.7867648   .3924644    -2.00   0.052    -1.580599    .0070695
         FSt |   -1.539774   1.105572    -1.39   0.172    -3.776003    .6964558
       _cons |    14.73637   6.412364     2.30   0.027     1.76614     27.7066
-------------+----------------------------------------------------------------
     sigma_u |   2.4306814
     sigma_e |    1.222195
         rho |   .79819426   (fraction of variance due to u_i)
------------------------------------------------------------------------------

28 . * C. MELAKUKAN UJI AUTOKORELASI [ARELLANO BOND]
29 . xtabond2 CSEEt L.CSEEt L.LRt L.MVt L.ERt L.FDt L.FSt, ///
>     gmm(L.CSEEt, lag(2 3) collapse) ///
>     iv(L.LRt L.MVt L.ERt L.FDt L.FSt, equation(level)) ///
>     twostep robust
Favoring space over speed. To switch, type or click on mata: mata set matafavor speed, perm.

Dynamic panel-data estimation, two-step system GMM
------------------------------------------------------------------------------
Group variable: ID                              Number of obs      =       240
Time variable : YEAR                            Number of groups   =        40
Number of instruments = 9                       Obs per group: min =         6
Wald chi2(6)  =  61714.81                                      avg =      6.00
Prob > chi2   =     0.000                                      max =         6
------------------------------------------------------------------------------
             |              Corrected
       CSEEt |      Coef.   Std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
       CSEEt |
         L1. |    1.030847   .1655656     6.23   0.000     .7063444     1.35535
             |
         LRt |
         L1. |   -.4631666   .3059042    -1.51   0.130    -1.062728    .1363947
             |
         MVt |
         L1. |   -.0075375   .2023725    -0.04   0.970    -.4041803    .3891053
             |
         ERt |
         L1. |     .010691   .0069849     1.53   0.126    -.0029991    .0243811
             |
         FDt |
         L1. |    .0568713   .2026334     0.28   0.779    -.3402828    .4540253
             |
         FSt |
         L1. |   -.5412408   .3648913    -1.48   0.138    -1.256415    .1739331
             |
       _cons |    2.088647    2.15977     0.97   0.334    -2.144425     6.32172
------------------------------------------------------------------------------
Instruments for first differences equation
  GMM-type (missing=0, separate instruments for each period unless collapsed)
    L(2/3).L.CSEEt collapsed
```

```
Instruments for levels equation
  Standard
    L.LRt L.MVt L.ERt L.FDt L.FSt
    _cons
  GMM-type (missing=0, separate instruments for each period unless collapsed)
    DL.L.CSEEt collapsed
```

Arellano-Bond test for AR(1) in first differences: z = **-2.46** Pr > z = **0.014**
Arellano-Bond test for AR(2) in first differences: z = **1.64** Pr > z = **0.101**

Sargan test of overid. restrictions: chi2(**2**) = **1.11** Prob > chi2 = **0.573**
(Not robust, but not weakened by many instruments.)
Hansen test of overid. restrictions: chi2(**2**) = **5.49** Prob > chi2 = **0.064**
(Robust, but weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:
GMM instruments for levels
Hansen test excluding group: chi2(**1**) = **0.28** Prob > chi2 = **0.599**
Difference (null H = exogenous): chi2(**1**) = **5.21** Prob > chi2 = **0.022**

```
30 . * D. MELAKUKAN UJI NORMALITAS [OPTIONAL SKTEST]
31 . xtreg CSEEt LRt MVt ERt FDt FSt, fe
```

Fixed-effects (within) regression — Number of obs = **280**
Group variable: **ID** — Number of groups = **40**

R-squared:
Within = **0.0830**
Between = **0.1095**
Overall = **0.0378**

Obs per group:
min = **7**
avg = **7.0**
max = **7**

F(**5,235**) = **4.25**
corr(u_i, Xb) = **-0.5051** — Prob > F = **0.0010**

CSEEt	Coefficient	Std. err.	t	P>|t|	[95% conf.	interval]
LRt	**1.477701**	**.4468488**	**3.31**	**0.001**	**.5973595**	**2.358042**
MVt	**-.0493136**	**.1407783**	**-0.35**	**0.726**	**-.3266623**	**.2280352**
ERt	**-.0112574**	**.0086986**	**-1.29**	**0.197**	**-.0283945**	**.0058797**
FDt	**-.7867648**	**.211245**	**-3.72**	**0.000**	**-1.202941**	**-.3705888**
FSt	**-1.539774**	**.9899192**	**-1.56**	**0.121**	**-3.490023**	**.4104761**
_cons	**14.73637**	**4.179175**	**3.53**	**0.001**	**6.502935**	**22.96981**
sigma_u	**2.4306814**					
sigma_e	**1.222195**					
rho	**.79819426**	(fraction of variance due to u_i)				

F test that all u_i=0: F(**39, 235**) = **10.42** — Prob > F = **0.0000**

```
32 . predict resid_fe, resid

33 . sktest resid_fe
```

Skewness and kurtosis tests for normality

Variable	Obs	Pr(skewness)	Pr(kurtosis)	Joint test: Adj chi2(2)	Joint test: Prob>chi2
resid_fe	**280**	**0.0095**	**0.1483**	**8.19**	**0.0167**

```
34 .
35 .
36 . * 3. UJI STASIONERITAS DATA PANEL
37 . * A. MELAKUKAN UJI LEVIN-LIN-CHU (LLC)
38 . xtunitroot llc CSEEt

Levin-Lin-Chu unit-root test for CSEEt
---------------------------------------

H0: Panels contain unit roots               Number of panels  =     40
Ha: Panels are stationary                   Number of periods =      7

AR parameter: Common                        Asymptotics: N/T -> 0
Panel means:  Included
Time trend:   Not included

ADF regressions: 1 lag
LR variance:     Bartlett kernel, 6.00 lags average (chosen by LLC)
------------------------------------------------------------------------------
                     Statistic      p-value
------------------------------------------------------------------------------
 Unadjusted t       -10.2052
 Adjusted t*         -7.6987        0.0000
------------------------------------------------------------------------------

39 . xtunitroot llc LRt

Levin-Lin-Chu unit-root test for LRt
-------------------------------------

H0: Panels contain unit roots               Number of panels  =     40
Ha: Panels are stationary                   Number of periods =      7

AR parameter: Common                        Asymptotics: N/T -> 0
Panel means:  Included
Time trend:   Not included

ADF regressions: 1 lag
LR variance:     Bartlett kernel, 6.00 lags average (chosen by LLC)
------------------------------------------------------------------------------
                     Statistic      p-value
------------------------------------------------------------------------------
 Unadjusted t       -13.9384
 Adjusted t*        -11.1370        0.0000
------------------------------------------------------------------------------

40 . xtunitroot llc MVt

Levin-Lin-Chu unit-root test for MVt
-------------------------------------

H0: Panels contain unit roots               Number of panels  =     40
Ha: Panels are stationary                   Number of periods =      7

AR parameter: Common                        Asymptotics: N/T -> 0
Panel means:  Included
Time trend:   Not included

ADF regressions: 1 lag
LR variance:     Bartlett kernel, 6.00 lags average (chosen by LLC)
------------------------------------------------------------------------------
                     Statistic      p-value
------------------------------------------------------------------------------
 Unadjusted t       -26.0892
 Adjusted t*        -26.3794        0.0000
------------------------------------------------------------------------------
```

```
41 . xtunitroot llc ERt

   Levin-Lin-Chu unit-root test for ERt
   ------------------------------------

   H0: Panels contain unit roots               Number of panels  =     40
   Ha: Panels are stationary                   Number of periods =      7

   AR parameter: Common                        Asymptotics: N/T -> 0
   Panel means:  Included
   Time trend:   Not included

   ADF regressions: 1 lag
   LR variance:     Bartlett kernel, 6.00 lags average (chosen by LLC)
   ------------------------------------------------------------------------------
                        Statistic      p-value
   ------------------------------------------------------------------------------
    Unadjusted t       -50.6684
    Adjusted t*        -52.5998        0.0000
   ------------------------------------------------------------------------------

42 . xtunitroot llc FDt

   Levin-Lin-Chu unit-root test for FDt
   ------------------------------------

   H0: Panels contain unit roots               Number of panels  =     40
   Ha: Panels are stationary                   Number of periods =      7

   AR parameter: Common                        Asymptotics: N/T -> 0
   Panel means:  Included
   Time trend:   Not included

   ADF regressions: 1 lag
   LR variance:     Bartlett kernel, 6.00 lags average (chosen by LLC)
   ------------------------------------------------------------------------------
                        Statistic      p-value
   ------------------------------------------------------------------------------
    Unadjusted t       -16.2139
    Adjusted t*        -13.4591        0.0000
   ------------------------------------------------------------------------------

43 . xtunitroot llc FSt

   Levin-Lin-Chu unit-root test for FSt
   ------------------------------------

   H0: Panels contain unit roots               Number of panels  =     40
   Ha: Panels are stationary                   Number of periods =      7

   AR parameter: Common                        Asymptotics: N/T -> 0
   Panel means:  Included
   Time trend:   Not included

   ADF regressions: 1 lag
   LR variance:     Bartlett kernel, 6.00 lags average (chosen by LLC)
   ------------------------------------------------------------------------------
                        Statistic      p-value
   ------------------------------------------------------------------------------
    Unadjusted t       -10.3979
    Adjusted t*         -9.5901        0.0000
   ------------------------------------------------------------------------------
```

```
44 . * B. MELAKUKAN UJI IM PASERAN SHIN (IPS)
45 . xtunitroot ips CSEEt

   Im-Pesaran-Shin unit-root test for CSEEt
   ------------------------------------------

   H0: All panels contain unit roots           Number of panels  =     40
   Ha: Some panels are stationary              Number of periods =      7

   AR parameter: Panel-specific                Asymptotics: T,N -> Infinity
   Panel means:  Included                                   sequentially
   Time trend:   Not included

   ADF regressions: No lags included
   ------------------------------------------------------------------------
                                                 Fixed-N exact critical values
                        Statistic      p-value         1%      5%      10%
   ------------------------------------------------------------------------
    t-bar                -1.5194                    -1.850  -1.750  -1.700
    t-tilde-bar          -1.2336
    Z-t-tilde-bar        -0.4945        0.3105
   ------------------------------------------------------------------------

46 . xtunitroot ips LRt

   Im-Pesaran-Shin unit-root test for LRt
   ------------------------------------

   H0: All panels contain unit roots           Number of panels  =     40
   Ha: Some panels are stationary              Number of periods =      7

   AR parameter: Panel-specific                Asymptotics: T,N -> Infinity
   Panel means:  Included                                   sequentially
   Time trend:   Not included

   ADF regressions: No lags included
   ------------------------------------------------------------------------
                                                 Fixed-N exact critical values
                        Statistic      p-value         1%      5%      10%
   ------------------------------------------------------------------------
    t-bar                -1.8154                    -1.850  -1.750  -1.700
    t-tilde-bar          -1.0420
    Z-t-tilde-bar         1.2095        0.8868
   ------------------------------------------------------------------------

47 . xtunitroot ips MVt

   Im-Pesaran-Shin unit-root test for MVt
   ------------------------------------

   H0: All panels contain unit roots           Number of panels  =     40
   Ha: Some panels are stationary              Number of periods =      7

   AR parameter: Panel-specific                Asymptotics: T,N -> Infinity
   Panel means:  Included                                   sequentially
   Time trend:   Not included

   ADF regressions: No lags included
   ------------------------------------------------------------------------
                                                 Fixed-N exact critical values
                        Statistic      p-value         1%      5%      10%
   ------------------------------------------------------------------------
    t-bar                     .                   -1.850  -1.750  -1.700
    t-tilde-bar               .
    Z-t-tilde-bar             .          *
   ------------------------------------------------------------------------

   * Normality of Z-t-tilde-bar requires at least 6 observations
     per panel with balanced data and no time trend.
```

```
48 . xtunitroot ips ERt

   Im-Pesaran-Shin unit-root test for ERt
   ------------------------------------------

   H0: All panels contain unit roots           Number of panels  =     40
   Ha: Some panels are stationary              Number of periods =      7

   AR parameter: Panel-specific                Asymptotics: T,N -> Infinity
   Panel means:  Included                                   sequentially
   Time trend:   Not included

   ADF regressions: No lags included
   ------------------------------------------------------------------------------
                                                 Fixed-N exact critical values
                        Statistic      p-value         1%      5%      10%
   ------------------------------------------------------------------------------
    t-bar                -9.8419                    -1.850  -1.750  -1.700
    t-tilde-bar          -1.5358
    Z-t-tilde-bar        -3.1816         0.0007
   ------------------------------------------------------------------------------

49 . xtunitroot ips FDt

   Im-Pesaran-Shin unit-root test for FDt
   ------------------------------------------

   H0: All panels contain unit roots           Number of panels  =     40
   Ha: Some panels are stationary              Number of periods =      7

   AR parameter: Panel-specific                Asymptotics: T,N -> Infinity
   Panel means:  Included                                   sequentially
   Time trend:   Not included

   ADF regressions: No lags included
   ------------------------------------------------------------------------------
                                                 Fixed-N exact critical values
                        Statistic      p-value         1%      5%      10%
   ------------------------------------------------------------------------------
    t-bar                -2.2913                    -1.850  -1.750  -1.700
    t-tilde-bar          -1.1946
    Z-t-tilde-bar        -0.1480         0.4412
   ------------------------------------------------------------------------------

50 . xtunitroot ips FSt

   Im-Pesaran-Shin unit-root test for FSt
   ------------------------------------------

   H0: All panels contain unit roots           Number of panels  =     40
   Ha: Some panels are stationary              Number of periods =      7

   AR parameter: Panel-specific                Asymptotics: T,N -> Infinity
   Panel means:  Included                                   sequentially
   Time trend:   Not included

   ADF regressions: No lags included
   ------------------------------------------------------------------------------
                                                 Fixed-N exact critical values
                        Statistic      p-value         1%      5%      10%
   ------------------------------------------------------------------------------
    t-bar                -1.0356                    -1.850  -1.750  -1.700
    t-tilde-bar          -0.7641
    Z-t-tilde-bar         3.6801         0.9999
   ------------------------------------------------------------------------------
```

```
51 .
52 .
53 . * 4. UJI HIPOTESIS DENGAN GMM TWO STEPS WITH MODERATING VARIABEL
54 . * A. MELAKUKAN GENERALIZED METHOD OF MOMENTS (GMM) TWO STEPS
55 . xtabond2 CSEEt L.CSEEt L.LRt L.MVt L.ERt L.FSt, ///
   >     gmm(L.CSEEt, lag(2 3) collapse) ///
   >     iv(L.LRt L.MVt L.ERt L.FSt, equation(level)) ///
   >     twostep robust
   Favoring space over speed. To switch, type or click on mata: mata set matafavor speed, perm.

   Dynamic panel-data estimation, two-step system GMM
```

Group variable: **ID**				Number of obs	=	**240**
Time variable : **YEAR**				Number of groups	=	**40**
Number of instruments = **8**				Obs per group: min	=	**6**
Wald chi2(**5**)	=	**57008.08**		avg	=	**6.00**
Prob > chi2	=	**0.000**		max	=	**6**

CSEEt	Coefficient	Corrected std. err.	z	P>|z|	[95% conf.	interval]
CSEEt						
L1.	**.9820677**	**.1657427**	**5.93**	**0.000**	**.6572179**	**1.306917**
LRt						
L1.	**-.4233315**	**.3258881**	**-1.30**	**0.194**	**-1.06206**	**.2153974**
MVt						
L1.	**.058858**	**.1737929**	**0.34**	**0.735**	**-.2817698**	**.3994858**
ERt						
L1.	**.0087346**	**.0060607**	**1.44**	**0.150**	**-.0031442**	**.0206134**
FSt						
L1.	**-.5565036**	**.3624741**	**-1.54**	**0.125**	**-1.26694**	**.1539326**
_cons	**1.60546**	**2.047921**	**0.78**	**0.433**	**-2.408391**	**5.619312**

```
   Instruments for first differences equation
     GMM-type (missing=0, separate instruments for each period unless collapsed)
       L(2/3).L.CSEEt collapsed
   Instruments for levels equation
     Standard
       L.LRt L.MVt L.ERt L.FSt
       _cons
     GMM-type (missing=0, separate instruments for each period unless collapsed)
       DL.L.CSEEt collapsed
```

Arellano-Bond test for AR(1) in first differences: z =	**-2.37**	Pr > z =	**0.018**		
Arellano-Bond test for AR(2) in first differences: z =	**1.56**	Pr > z =	**0.119**		

Sargan test of overid. restrictions: chi2(**2**)	=	**1.18**	Prob > chi2 =	**0.555**	
(Not robust, but not weakened by many instruments.)					
Hansen test of overid. restrictions: chi2(**2**)	=	**5.57**	Prob > chi2 =	**0.062**	
(Robust, but weakened by many instruments.)					

Difference-in-Hansen tests of exogeneity of instrument subsets:					
GMM instruments for levels					
Hansen test excluding group: chi2(**1**)	=	**0.16**	Prob > chi2 =	**0.693**	
Difference (null H = exogenous): chi2(**1**)	=	**5.41**		**0.020**	

```
56 . * B. MELAKUKAN GMM TWO STEPS DENGAN MODERATION REGRESSION ANALYSIS (MRA)
57 . gen FDLRt = FDt * LRt

58 . gen FDMVt = FDt * MVt

59 . gen FDERt = FDt * ERt

60 . summarize
```

Variable	Obs	Mean	Std. dev.	Min	Max
YEAR	280	2021	2.003581	2018	2024
CSEE	280	75525.67	185224.4	23.6	1301706
LR	280	1.386725	1.217763	.0019443	9.59198
MV	280	1.23e+07	2.38e+07	15680	2.85e+08
ER	280	-18266.1	106433.5	-1023910	282305.8
FD	280	3.026673	5.111682	-21.76086	21.99258
FS	280	28.65942	3.031768	18.71998	32.75658
ID	280	20.5	11.56406	1	40
CSEEt	280	9.086263	2.404803	3.202746	14.07919
LRt	280	.7835987	.388286	.0019424	2.360097
MVt	280	15.11023	1.701488	9.660205	19.46837
ERt	280	-1.071001	9.909563	-13.83914	12.55075
FDt	280	1.099073	1.182468	-3.125042	3.135172
FSt	280	3.383768	.1140308	2.981632	3.519176
resid_fe	280	8.19e-09	2.653175	-8.305464	5.071862
FDLRt	280	1.178864	1.227323	-1.150144	6.731865
FDMVt	280	17.62517	17.60583	-40.24748	47.99865
FDERt	280	-1.444624	16.00823	-33.58791	30.29813

```
61 . xtabond2 CSEEt L.CSEEt L.LRt L.MVt L.ERt L.FDLRt L.FDMVt L.FDERt L.FSt, ///
>     gmm(L.CSEEt, lag(2 3)) ///
>     iv(L.LRt L.MVt L.ERt L.FDLRt L.FDMVt L.FDERt L.FSt, equation(level)) ///
>     twostep robust
Favoring space over speed. To switch, type or click on mata: mata set matafavor speed, perm.
Warning: Two-step estimated covariance matrix of moments is singular.
  Using a generalized inverse to calculate optimal weighting matrix for two-step estimation.
  Difference-in-Sargan/Hansen statistics may be negative.

Dynamic panel-data estimation, two-step system GMM
------------------------------------------------------------------------------
Group variable: ID                              Number of obs      =       240
Time variable : YEAR                            Number of groups   =        40
Number of instruments = 19                      Obs per group: min =         6
Wald chi2(8)  =  51765.20                                      avg =      6.00
Prob > chi2   =     0.000                                      max =         6
------------------------------------------------------------------------------
             |              Corrected
       CSEEt |  Coefficient  std. err.      z    P>|z|     [95% conf. interval]
-------------+----------------------------------------------------------------
       CSEEt |
         L1. |      .81198   .0589358    13.78   0.000     .6964679     .927492
             |
         LRt |
         L1. |    1.935243   .5061122     3.82   0.000     2.927204   -.9432812
             |
         MVt |
         L1. |    .2542055   .0722727     3.52   0.000     .1125536    .3958573
             |
         ERt |
         L1. |     .008736   .0128659     0.68   0.497    -.0164807    .0339526
             |
       FDLRt |
         L1. |   -.6908522    .192767    -3.58   0.000    -.3130359    1.068669
             |
       FDMVt |
         L1. |   -.0213598    .009037    -2.36   0.018    -.0390721   -.0036476
             |
       FDERt |
```

L1.	**-.0023389**	**.0092644**	**-0.25**	**0.801**	**-.0204968**	**.0158189**
FSt						
L1.	**-.6964946**	**.3613557**	**-1.93**	**0.054**	**-1.404739**	**.0117495**
_cons	**1.445139**	**1.429395**	**1.01**	**0.312**	**-1.356423**	**4.246701**

Instruments for first differences equation
  GMM-type (missing=0, separate instruments for each period unless collapsed)
    L(2/3).L.CSEEt
Instruments for levels equation
  Standard
    L.LRt L.MVt L.ERt L.FDLRt L.FDMVt L.FDERt L.FSt
    _cons
  GMM-type (missing=0, separate instruments for each period unless collapsed)
    DL.L.CSEEt

Arellano-Bond test for AR(1) in first differences: z = **-2.62** Pr > z = **0.009**
Arellano-Bond test for AR(2) in first differences: z = **1.77** Pr > z = **0.076**

Sargan test of overid. restrictions: chi2(**10**) = **6.52** Prob > chi2 = **0.769**
  (Not robust, but not weakened by many instruments.)
Hansen test of overid. restrictions: chi2(**10**) = **10.37** Prob > chi2 = **0.409**
  (Robust, but weakened by many instruments.)

Difference-in-Hansen tests of exogeneity of instrument subsets:
  GMM instruments for levels
    Hansen test excluding group: chi2(**6**) = **1.98** Prob > chi2 = **0.922**
    Difference (null H = exogenous): chi2(**4**) = **8.39** Prob > chi2 = **0.078**
  iv(L.LRt L.MVt L.ERt L.FDLRt L.FDMVt L.FDERt L.FSt, eq(level))
    Hansen test excluding group: chi2(**3**) = **1.00** Prob > chi2 = **0.801**
    Difference (null H = exogenous): chi2(**7**) = **9.37** Prob > chi2 = **0.227**

62 .
end of do-file

63 .