INSTITUTIONAL INVESTORS & ESG PREFERENCES: EVIDENCE FROM ASEAN MARKETS

BY

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ABSTRACT

This paper conducts a study on effect of ESG performance on ESG preference of Institutional Investors between 2014 and 2023.

This paper investigates the effect of firms' ESG performance on institutional investor preference. As sustainable investing becomes increasingly mainstream, institutional investors are a significant group in promoting ESG performance through their ownership and engagement strategies. From OLS regression data across multiple years and firms, this study examines whether higher ESG scores are positively associated with greater institutional investor presence and their ownership. The findings support to clientele effect and strong systematic stewardship among institutional investors in ASEAN's emerging market.

These results reveal that firms with stronger ESG performance will attract a larger number of institutional investors and exhibit higher average ownership. The result is shown that the governance score has a only components which negative impact on institutional ownership ratio. This contrast may rerflect fundamental differences between EM and DM. These findings highlight the evolving preferences of institutional investors and their potential to influence corporate sustainability efforts in ASEAN market.

Keywords: ESG performance, Institutional Investors, ASEAN, Financial performance, Emerging market

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I am hopeful that this research will be useful for future to make more complete fullness by anyone who would like to continue next to this research

Krittayod Athachit

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Symbols/Abbreviations	Terms
ESG	Environmental, Social ,and Governance
ASEAN	The 10 Countries in South East Asia
EM	Emerging market
DM	Developing market
SRI	Socially or sustainably responsible investing
CSR	Corporate social responsibility

CHAPTER 1
INTRODUCTION

In the last decade, The Climate change has impact on economic too much, It has a significant impact on portfolio investment portfolio of institutional investor. Some companies might be enforce to cost of capital from climate change such as Extreme weather events, rising sea levels, and increasing temperatures. These phenomena are affect on many countries restrain to rise crucial on global temperature,which would make various disasters more severe and greater impact. These various uncertain factors have caused the concept of sustainability to become an important factor that institutional investors increasingly use in investment analysis. Especially, The increaseing of research paper which consist of ESG wording has gained increasing attention from literature around the world. De Giuli et al. (2024), They found a sample of 589 documented between 1983 and 2022 have keyword related with ESG and Risk in the title.

While Institutional investors play a significant role in capital market because they hold the large amount of share outstanding and have influence over companies management approaches. Companies that are high ESG performance as a reflecting to efficiency to manage risks, transparency, and responsibility toward stakeholders. Not only take profit in short term but also take advantage long term growth., Cornell (2021); Zhou et al. (2022); Chen, and Xie (2022). The 26th UN Climate Change Conference of the Parties (COP26), held in Glasgow in November 2021, aimed to limit global warming to 1.5°C by nations to adopt more ambitious carbon reduction targets, phase out coal, and mobilize climate finance for developing countries. This trend is continue impacting the investment management clients, pension fund, and institutional investor Krueger et al. (2020**)**. While climate change is a new opportunity on institutional investment in green energy such as renewable energy investment for hedging in systematic risk. Matos (2020) show that the significant role of institutional investors in shaping ESG practices, particularly in corporate governance. According to OECD (2019), Organisation for Economic Corporation and Development offers institutional investors hold more than 40% of global public equity market capitalization, with especially high concentrations in the United States and the United Kingdom, where they account for approximately

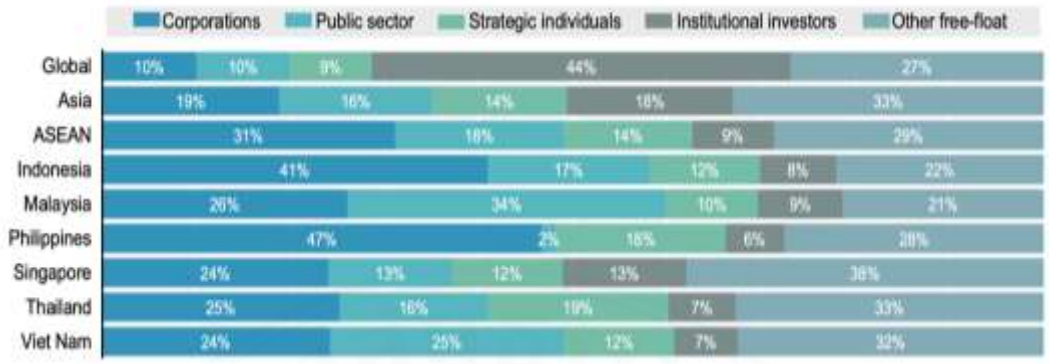
72% and 63% of outstanding shares, respectively. Moreover, He emphasizes that institutional investors have historically focused more on governance (G) factors than on environmental (E) or social (S) issues. While recent years have seen a growing awareness and engagement in environmental and social topics.

OECD (2022), show that Demand for ESG investing in the Asia-Pacific region has experienced significant growth, driven by increasing institutional demand and regulatory reforms. Leading markets such as Japan, Australia, and New Zealand account for the majority of sustainable investment assets, contributing nearly $4 trillion to the global ESG landscape. For example, Japan experiencing a 34% growth over the past two years followed by Australasia 25% growth. This growth reflects a broader trend of aligning investment strategies with sustainability goals and addressing long-term environmental and social risks. This result show that ASEAN is in trend to attract attention from global institutional investors on both foreign investor institutional investor, and state investor (Bilyay-Erdogan et al., 2023b) because most countries in this region are emerging market and show a rapidly growing area with diverse economic systems, levels of capital market development, and ESG standards.

OECD (2023) shown that Overall ASEAN average in 2021, Institutional investors held only about 9% of listed equity in ASEAN markets at the end of 2021, compared to 44% globally and 18% for Asia as a whole Figure 1.1. While OECD (2024) shown data in 2023, These ratio increase slightly into 10% of listed equity in ASEAN, Figure 1.2. So In ASEAN, Institutional investors are a minority shareholder group in most ASEAN markets, with their proportional ownership far below global and developed market levels and High ownership concentration by families, corporations, and the state continues to limit the growth of institutional investor shareholding in the region.

Figure 1.1

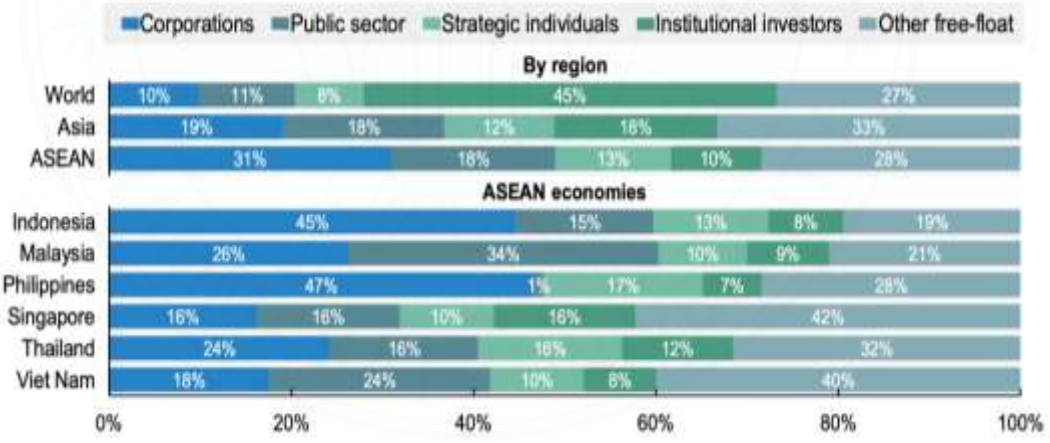
Investor's holding as of end 2021 from OECD 2023



Note. From "Corporate finance and corporate governance in ASEAN economies," by OECD, 2023, *OECD Business and Finance Policy Papers*, No. 56, OECD Publishing, Paris. https://doi.org/10.1787/55b30736-en.

Figure 1.2

Investor's holding as of end 2021 from OECD 2024



Note. From "Mobilising ASEAN Capital Markets for Sustainable Growth," by OECD, 2024, *OECD Publishing. Paris.* https://doi.org/10.1787/196b5bde-en.

This research is motivated by the question of the influence of ESG can drive demand from institutional shareholders hold more company stocks in the ASEAN region. This coming will adapt more environmentally friendly practices, demonstrate greater social responsibility, and improve their corporate governance.

The methodology analyze our hypotheses consists of 5 separate equations with different dependent variable to examine the effect of overall ESG score on number of institutional investor and their ownership. This approach allows for the identification of specific factors that influence institutional investors' ownership decisions. This study analyses the effect of ESG performance on institutional investor behavior by examining changes in their ownership using fixed-effect OLS regression.

The finding of this study reveal that overall ESG performance has a positive impact on number of institutional investors and is positively related to average institutional ownership. This suggest that companies with higher ESG performance tend to attract a greater number of institutional ownership and increase the proportional weight of institutional ownership. However, when we exam into ESG components, Effects of environmental and social scores are less clear. Meanwhile governance score has a negative impact on all institutional ownership ratio. These result differ from previous papers we have reviewed. These findings show that context in EM might be different from DM and may require further investigation.

This paper aims to fulfill two main contributions. First, To enhance knowledge and education about ownership and ESG to access to trends in institutional investor ownership of ESG stocks driven by shifts in ESG performance. Second, Enhance knowledge about emerging markets, focusing on countries in the ASEAN region. It will add knowledge to everyone who read this paper to understand how changes in ESG performance affect shifts in institutional investor ownership in ASEAN's emerging markets.

This paper consists of four Section. First section is Review of Literature by provide information on thesis which study about ESG, Institutional investor, and Effect on both factor in emerging market. To represent related theoretical framework and hypothesis. Second, Research methodology to explain how to set up data, definition on each variables, and construct formulas. Third, presents our results and discusses our findings. Fourth section concludes the paper.

CHAPTER 2
LITERATURE REVIEW AND HYPOTHESIS

2.1 Literature Review

This paper studies contribute how ESG performance has an influence on institutional investment decision. Recent studies show that relationship between institutional investor ownership and Firm performance are bidirectional relationship that good ESG performance attract Investing of institutional investor while Ownership of institutional investors also increase their power to rise a good corporate governance and firm performance. For Understanding this view, Starks (2023) show that institutional investor expect some advantage from firms which good ESG performance on both pecuniary and nonpecuniary aspects of ESG. On pecuniary, Investors who would like to take profit from investing in ESG such as Fund managers choose companies has a lot of projects about CSR then they buy these stocks into their portfolio for attracting more SRI and CSR investor brought their funds. While SRI and CSR investors also prefer sustainability and have responsible on social expect to risk-adjusted return and accept lower return. Institutional investors also have similar reason with SRI investor. On the other hand, institutional investors ownership are support corporate governance. In DM like US, McCahery et al. (2016) survey institutional investors to better understand their role in the corporate governance of firms. The research found that institutional investors decided governance-motivated exit, long-term investors and eliminate concerned about stock liquidity. Moreover, Role of institutional investor also rise long term firm performance and achieve sustainability goal. The objective of this literature review for enhance knowledge the interrelationship between ESG performance and institutional investors, specifically in the ASEAN region.

2.1.1 The Bidirectional relationship between institutional investor and ESG performance

2.1.1.1 Effect of institutional investors on firm performance

Benefits of Investing in good ESG Companies, Investing in companies with strong ESG performance offers substantial financial and strategic benefits for investors and firms. Key advantages include reduced cost of equity, decreased systematic risk, and reducing uncertainty in capital markets etc., all of which contribute to enhanced long-term performance and stability. Siew et al. (2016) educated institutional ownership associated with market asymmetry. Their results represent institutional ownership is negative effect on market asymmetry. Increasing of institutional ownership will reduce information market asymmetry which directly reduces the cost of equity for firms by fostering transparency and investor trust through good ESG disclosure. Firms which strong ESG performance helps firms mitigate systemic risks such as climate change. By addressing these macro-level risks, companies reduce their vulnerability to market-wide disruptions, enhancing portfolio stability for institutional investors. This long-term approach protects firms from regulatory penalties, resource shortages, and reputational damage. Krueger et al. (2020) and Gordon (2022), This paper addresses how ESG investments help reduce systemic risks by promoting sustainable business practices and reducing exposure to environmental and social uncertainties. Recent studies highlight the influential role of institutional investors in shaping corporate ESG performance. Yang et al. (2024) emphasize that institutional investor networks contribute significantly to ESG outcomes through mechanisms such as active monitoring and resource allocation. Their findings suggest that firms with strong network centrality—particularly those with political affiliations or operating in highly competitive industries—benefit the most from this institutional engagement in sustainability practices.

Similarly, Gibson et al. (2020); Sun and Zhao (2024) present evidence that investor preferences play a critical role in shaping market responses to ESG performance. Their study finds that Institutional investors are a key mechanism in promoting corporate ESG by exercising their shareholder rights to support or oppose proposals in various meetings and stocks with high sustainability especially in the environmental (E) dimension—tend to experience stronger price reactions. they also observe that institutional investors situated near recent natural disasters temporarily

increase their sustainability allocations, which contributes to price pressure and enhanced performance of ESG-focused assets. Gompers et al. (2001) is another study that represents the role of institutional investors in push up stock prices and investment returns in equities. The researcher examined equity return data from 1980 to 1996 and found that the proportion of institutional investors increased from 19% to 37%. These investors tended to invest in large-cap equities and high liquidity. The increase in stock prices rise market confidence, attracting more investors especially institutional investors, and reduces the cost of capital that is supporting greater corporate governance.

Finally, Wang et al. (2023) studied Institutional ownership heterogeneity and ESG performance in China also support bidirectional relationship between ESG and institutional investors. They found that long-term pressure-insensitive institutional investors, and short-term pressure-sensitive institutional investors, are positively associated with firms' ESG performance. However, while long-term pressure-insensitive investors tend to focus on creating long-term value for the firm, short-term pressure-sensitive investors may reflect green-washing behavior, which indicates speculative trading rather than a sustainability investment.

2.1.1.2 The Attractiveness of ESG performance to Institutional investors

Bai et al. (2022) highlights that companies with higher ESG scores experience fewer financing constraints, as institutional investors favor companies that support to sustainability and.risk management. Meanwhile Liang et al. (2024) and Lopez-de-Silanes et al. (2024), Prior research in China represents the role of ESG score improvement in attracting institutional investors impact to increase their institutional investor ownership similar U.S. studied. However, Prior research of U.S. found ESG score is negative relating with institutional investor ownership which raises concerns of greenwashing. Similar the view of Wang et al. (2023) and Parise and Rubin (2023).

These demonstrate the strategic importance of ESG investing, not only as an ethical consideration but as a value-enhancing financial strategy. Firms with good ESG performance are better positioned to attract institutional capital, reduce financing costs, and protect themselves from market-wide risks, reinforcing the growing demand for ESG integration in investment portfolios.

2.1.2 Education about ESG performance on emerging market

Sherwood and Pollard (2018), this study indicates that integrating ESG in emerging market equities into institutional portfolios could provide institutional investors the opportunity for higher returns and lower downside risk than non-ESG equity investments. And in the view of ESG effect on institutional ownership, Bilyay-Erdogan et al. (2023b) studied effect of institutional ownership on ESG and firm performance (ROA, Tobin Q) in emerging market company. Institutional ownership is positive impact on firm performance while Narula et al. (2024) studied in India but found that all components of ESG are not significantly related to firm performance. These findings indicate that broad-based studies and country-specific analyses may show different results. Therefore, it is essential to further expand the body of knowledge in this area.

Following this we are found that the researcher who make researches from United state are received different result with China and other countries in Asia pacific. So from our researcher will fulfill the gap of researcher specific in ASEAN 4 countries's emerging market as Thailand, Philippine, Indonesia, and Malaysia

2.2 Theoretical Framework

This study observes the effect of ESG performance on institutional investor preference through the number of institutional investor and institutional investor ownership in companies ASEAN 4 Countries's emerging market consist of Thailand, Malaysia, Indonesia, and Philippines.

This study based on two theories. Clientele effect explain the effect of owner who try to act for achieve demand of client to attract some benefit of coming on more clients. Stark (2023) separates group of clientele into 2 major group. First, Pecuniary motives is traditional investing who gives important on only risk and return. Second, Nonpecuniary motives is SRI who invests on projects which can show environmental and social outcome and accept lower return

Second, based on Gordon (2022), Systematic stewardship theory explain the difference weight of investing in small capital from institutional investors. An evidence present small mean ownership and HHI value. While smaller institutional investor holds majority of company sharing. Singhania and Saini (2023) emphasize in the role

of companies and board director who act as stewards by aligning their behavior with the aim to maximize beneficial of shareholder. These is pro-organizational aim to achieve the company performance while considering shareholder's interests. They seek to achieve maximum utility than what would be possible with their individualistic behavior. Accordingly, stewards align their goals with the objectives of the organization they related.

From clientele effect belief institutional investor will construct their weighting portfolio to achieve on lower systematic risk by holding stock which holding more company shareholders which more sustainability and responsible on Environmental and Social. Systematic stewardship theory is institutional investor has through maximizing the utility functions of their principals play a key role of protecting and maximizing the wealth of shareholders and improving overall portfolio outcomes without sacrificing returns.we proposes the following hypotheses.

2.3 Hypotheses

To explore the relationship among firm's ESG performance and the behavior of institutional investors preference. The core assumption is that companies with higher ESG scores reflect as lower-risk adjusted return and good sustainability, which in turn makes them attractive to institutional investors.

Institutional investors are increasingly integrating ESG factors into their investment decisions. This trend is driven by both financial motives (seeking long-term return value and risk mitigation) and non-financial considerations (aligning investments with societal values and sustainability goals).

According to Liang et al. (2024) studied ESG data from 2012 to 2022 in China and found that firms which good ESG performance increased institutional investor ownership and Lopez-de-Silanes et al. (2024) studied ESG data from US found that firms which good ESG performance will attract institutional investor to hold that stock into the portfolio. It also represent a majority of shares held by few investors.

This hypothesis suggests that companies with superior ESG strengths will attract the attention of institutional investors since They would like to reduce

systematic risk (ex. Climate risk) or enhanced return. While I belief that institutional investor will protect market systemic through diversify their portfolio in varies industries stock so their portfolio will distribution on ownership.

Hypothesis 1 (H_1): Overall ESG score has positive effect on number of Institutional investors.

Institutional investors who adopt the concept of systematic stewardship theory proposed by Gordon (2022). They focus on systematic risk as well as expected returns. Institutional investors manage systematic risk by diversify their porfolios and avoid allocating a large portion of their fund in a single firm for minimizing idiosyncratic risk. ESG performance reflects risk of environment, social, and governance of firm. Firms with strong ESG performance can represent that firms has low systematic risk. Institutional investors who would like to reduce systematic risk such as climate change or social instability through widespread ESG engagement without necessarily increasing ownership concentration in any single firm. In this view, we believe lower average ownership does not mean their disengagement with systematic steward but they also focus on idiosyncratic risk.

The evidence form developed market showed that most of institutional investor tend to diverse their porfolio to reduce systematic risk. Lopez-de-Silanes et al. (2024) represent regression result that most of institutional investors diverse portfolio weighting but it is not similar with top 5 institutional investor. They tended to hold more shares this reflect large institutional investor will have strong stewardship than others.

Hypothesis 2 (H_2): Overall ESG score has negatively associated with mean ownership.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 Data collection

To measure many variables we must work on clearify type of institutional investor which groups are institutional investor in this paper as we collect 3 dataset from Refinitiv Eikon.

First , we collect institution investor ownership data that consists of Investor type, percentage of sharing that investor holding and then choose only grouping all investor except individual investor.

Second, we collect financial data such as market capitalization, firm age, dividend payout ratio, market to book ratio, profitability, and leverage.

Third, We obtain Overall ESG score on Refinitiv Eikon and their component for each dimension; Environmental (Env), Social (Soc), and governance (Gov) between 2014 to 2023. Refinitiv Eikon clearly discloses its ESG scoring methodology then choose group of institutional investor such as Pension fund, Investment Advisor, Corporation, Bank and Trust, and Insurance company etc. after that removing any incomplete ownership and financial data and finally, do winsorizing 1% for reduce impact from data outlier. After these processes, we are remaining 2,439 firm-observations data following Table 3.1.

Table 3.1

Data selection criteria

This panel show number of incomplete data which is eliminated out of the dataset and then doing 1% winsorize and finally, use remaining data to run regression

Sample selection	Number of firms	firm-year observation	mean log market cap	median log market cap	mean market to book ratio	median market to book ratio
4-countries firm represent ESG score in period 2014-2023 with Refinitiv Eikon	695	3087	6.9732	7.2069	3.0484	1.7180
Remove observations with incomplete or missing ownership data	628	2896	6.9861	7.2377	3.1341	1.7525
Remove observations with incomplete financial data	545	2439	7.2914	7.5615	2.9111	1.7238
After doing 1% winsorize	545	2439	7.2922	7.5615	2.8539	1.7238

3.2 Variables

On construction variable, we are separate component into four parts consist of 3.2.1 dependent variables, 3.2.2 independent variable, 3.2.3 control variable, 3.2.4 fixed effect.

Table 3.2

All Variables and Symbols

Variable type	Description	Symbol
Dependent variable	Logarithm scale of number of institutional investors	num_ii
	The percentage shares held by institutional investors.	io
	Average percentage share that holding by institutional investors per institutional investors	meanown
	Ownership concentration	hhi
Independent variable	Overall ESG score	ESG
	Environment score	Env
	Social score	Soc
	Governance score	Gov

Table 3.2

All Variables and Symbols (Cont.)

Variable type	Description	Symbol
Control variable	Logarithm scale of market capitalization	capmkt
	Logarithm scale of Firm age	age
	Dividend yield	div
	Market to book ratio	mtb
	Profitability	profit
	Leverage	lev

3.2.1 Dependent variables

Table 3.3 Dependent variable in this paper consists of logarithm scale of number of institutional investors (num_ii), Institutional ownership (io) is the total percentage outstanding shares held by institutional investors dividend by total outstanding shares. Mean ownership (meanown) is average institutional ownership held by institutional investors, Ownership Concentration (hhi) is summation of the square of the percentage outstanding share held by each institutional investor, Brezina et al. (2016).

In the existing literature, Ownership Concentration is frequently included as a control variable and has been found to be positively associated with institutional investment, This may reflect a long-term investment intentions, Ciftci et al. (2019); McConnell and Servaes (1990).

Table 3.3

Dependent variables

Variable name	Description
num_ii	Logarithm of the number of institutional investors in each firm based on company data from the stock market.
io	Total ownership is the percentage shares held by institutional investors. $$io_{i,t} = \frac{Shares\ hold\ by\ institutional\ investor\ i}{Total\ outstanding\ shares}$$
meanown	Mean ownership is the average percentage outstanding shares held by institutional investors. $$meanown_{i,t} = \frac{\sum_{i=1}^{N} io_{i,t}}{num\_ii}$$
hhi	Ownership concentration, To measure ownership concentration, we use the HHI calculation. This is summation of the squares of percentage outstanding shares held by each institutional investor. If HHI is high, It will represent a high number of shares held by a small number of investors. $$hhi_{i,t} = \sum_{i=1}^{N} io_{i,t}^2$$ Where N = number of institutional investor

3.2.2 Independent variables

Table 3.4 Independent variable in this paper consist of overall ESG, Environmental, Social, and Governance score of companies in ASEAN 4 countries between 2014 to 2023. ESG score ranges between 0 to 100, 0 is the minimum value and 100 is the maximum value. The ESG data has 2,439 firm-year observations and the maximum data show in Refinitiv continuous 10 years following Appendix B.

Table 3.4

Independent variable

Variable	Description
ESG	ESG score is a proxy for a firm's overall sustainability performance such as environmental , social, and governance which compute in weigthing of Refinitiv ESG score. ESG has range between 0 and 100.
Env	The environmental pillar is one factor in ESG which focuses on sustainability, climate change, and resource management. Env has range between 0 and 100.
Soc	The social pillar is one factor in ESG which focuses on evaluating a company's behavior and the impact it has on society and its stakeholders. Soc has range between 0 and 100.
Gov	The governance pillar is one factor in ESG which measures how a company operates, ensuring ethical practices and building trust. It encompasses the company's framework, policies, procedures, and decision-making processes that guide corporate behavior. Gov has range between 0 and 100.

3.2.3 Control variables

Table 3.5 Control variables in this paper consist of Financial information which take a data from Refinitiv. We choose data refer to many papers have studied about ESG information Bai et al. (2022); Bilyay-Erdogan et al. (2023b); Yang et al. (2024); Wang et al. (2023); Narula et al. (2024); Lopez-de-Silanes et al. (2024).

3.2.3.1 Market Capitalization (capmkt)

In general, larger firms tend to have a greater capacity to disclose ESG information compared to smaller firms, Akgun et al. (2021). We believe that companies with high market capitalization are more likely to access favorable financial opportunities,

such as lower interest rate bonds or broader access to funding sources. This characteristics may influence the investment decisions of institutional investors.

3.2.3.2 Firm age (age)

We believe that the elder firms have longer tracking business data. This information help institutional investors have enough information for decision and build greater credibility and reputation than newer companies. This characteristics enhance investor trust and better access to investment oppportunities.

3.2.3.3 Dividend yield (div)

Some companies especially firms with good ESG performance tend to illustrate financial stability and pay high dividends, Bilyay-Erdogan et al. (2023a). These factors may also attract institutional investors to hold these stocks in greater proportions.

3.2.3.4 Market to book (mtb)

Market to book value reflect the growth opportunities which attract an interesting from institutional investors.

3.2.3.5 Profitability (profit)

Firms which high profitability might attract pecuniary motive institutional investor to hold higher propotions, Aydoğmuş et al. (2022). Suppot the stakeholder theory. They find a strong relation between the level of ESG reporting and firm value, indicating that stakeholder trust and accountability have a positive influence on firm value.

3.2.3.6 Leverage (lev)

Financial leverage has negatively significant with ESG score impact on its financing needs because Firms with high leverage are limited operation efficiency and may effect to ESG performance, Doshi et al. (2024).

Table 3.5

Control variables

Variable	Description
capmkt	We use a market capitalization for control for firm size effect. we consider to use logarithm scale from smooth of firm value. capmkt = ln(market capitalization)
age	We calculated logarithm of firm age by find the difference between The reporting date of ESG score and The firm was established date. $\text{age} = \ln(\frac{\text{ESG reporting date} - \text{Established date}}{365})$
div	Dividend yield can be calculated through dividends paid in cash flow statement divided by market capitalization. $\text{div} = \frac{\text{Dividends paid}}{\text{market capitalization}}$
mtb	Market to book ratio is calculated as the firm's market value to total asset. The market value is calculated as the market capitalization minus value of common equity plus total asset. $\text{mtb} = \frac{\text{capmkt} - \text{common equity} + \text{total asset}}{\text{Total assets}}$
profit	The ratio of EBIT on total asset. $\text{profit} = \frac{\text{EBIT}}{\text{Total asset}}$
lev	Total debt consist of non-current liabilities and current liabilities divided by total asset. $\text{lev} = \frac{\text{Total debt}}{\text{Total asset}}$

3.2.4 Fixed effect

Since our dataset used data from many industries in 4 countries from 2014 to 2023. So we must limitation the unobservable effect of time, factor of each industries and effect of difference political policy on each countries by set year, and industry fixed effect, and country fixed effect following Lopez-de-Silanes et al. (2020); Bilyay-Erdogan et al. (2023b).

3.2.4.1 Year Fixed effect

Year fixed effect using to control effect from time-specific shocks in each period such as economics crises or the COVID 2019 pandemic which have systematic effects on firm behavior that need to.be accounted as bias in the estimation.

3.2.4.2 Industry Fixed effect

Industry fixed effect using to control specific industry-specific effect from some industries such as energy sector are pressure on ESG performance than other group which drive institutional investors might holders this sector than others.

3.2.4.3 Country Fixed effect

Country fixed effect using control the cross-country differences effect among government policies and legal systems in each countries.

3.3 Methodology

From all variables on above, we construct Model 1 to test two key aspects in hypotheses, First, To find positive effect on institutional investor. We computed (i) Logarithm of the number of institutional investors on Equation 1-5

Second, To find effect of stewardship theory on negatively associated with mean ownership. We computed effect of ESG on institutional ownership ratio on Equation 6-20

The study employs the ordinary least square regression (OLS) analysis to understand the relationship between ESG scores and institutional ownership. The analysis includes dependent variables such as the number of institutional investors, the percentage shares held by institutional investors, and portfolio weightings. It also decomposes ESG into its individual components environmental, social, and governance to evaluate their respective impacts.

$$\text{Ownership}_{i,t} = a + \beta_1 \text{ESG variable}_{i,t} + \beta_2 \text{capmkt}_{i,t} + \beta_3 \text{age}_{i,t} + \beta_4 \text{div}_{i,t} + \beta_5 \text{mtb}_{i,t} + \beta_6 \text{profit}_{i,t} + \beta_7 \text{lev}_{i,t} + \text{Year fixed effect} + \text{Country fixed effect} + \text{Industry fixed effect} + \varepsilon_{i,t}$$

Model 1

where $\text{Ownership}_{i,t}$ is dependent variables is component of number of institutional investor, institutional ownership, mean ownership, and Ownership Concentration.$ESG\ variable_{i,t}$is set of independent variables is component of overall ESG, Env, Soc, Gov, and summation on Env, Soc, and Gov.

To measure the effect of ESG performance on institutional ownership, we estimate several regression models, using each dependent variable. The first model uses the overall ESG score. The second set is separate regression model of ESG component including environmental, social, and governance component. The final model is combined model including Env, Soc, Gov component score at the same time.

For control variables, we chose a set of control variables have an effect on institutional investor following Lopez-de-Silanes et al. (2024)

Equation 1-5: let dependent variable is logarithm of number of institutional investors, and independent variable is ESG variables.

Equation 6-10: let dependent variable is institutional ownership, and independent variable is ESG variables.

Equation 11-15: let dependent variable is mean ownership, and independent variable is ESG variables.

Equation 16-20: let dependent variable is hhi, and independent variable is ESG variables.

CHAPTER 4
RESULT

4.1 Descriptive statistic

Table 4.1 reports the descriptive statistics of key variables used in the analysis, covering firm-year observations from 2014 to 2023 of companies in ASEAN four countries. The average ESG score is approximately 49.07, with a standard deviation of 18.37, suggesting substantial variation in ESG performance across firms. Among the three ESG components, the social score has the highest mean is 53.72, followed by governance (50.69), and environmental (42.31). The environmental score exhibits the widest dispersion, with values ranging from 0 to 90.93, indicating that some firms report no environmental activity while others are highly active.

Institutional investor activity also varies significantly. Logarithm of number of institutional investors has a mean of 3.94, and the total institutional ownership averages around 49, with a median of 58.78%, implying that a small number of firms are highly concentrated while many are widely held. Mean ownership and HHI suggest heterogeneity in ownership structure; notably, the mean ownership is quite low of 0.021 or 2.1%, while the HHI (mean = 0.167) indicates varying levels of ownership concentration across firms.

Among the control variables, firms have logarithm of market capitalization of 7.29 and Logarithm of firm age of 3.37. The average dividend yield is 3.58%, and the profitability averages 7.98%. Leverage shows a moderate mean of 0.25. The market-to-book ratio has a mean of 1.97 but ranges widely up to 14.44, suggesting potential valuation differences across firms although already do winsorize 1%.

Table 4.1

Summary Statistics

Summary statistics. This table presents summary statistics of value at 1% and 99%, mean, standard deviation, Q1 (bottom 25%), median, and Q3 (top 25%). *ESG* is the environment, social, and governance combined score. *Env* is the environment pillar score. *Soc* is the social pillar score. *Gov* is the governance pillar score.this summary statistics represent data after doing 1%winsorize.

Variable	1%	Q1	Mean	Median	Q3	99%	Min.	Max.	Std. Dev.
ESG	9.9340	35.2413	49.0740	49.8841	62.7955	86.6814	9.9197	86.7700	18.3689
Soc	6.4334	36.4996	53.7225	54.9567	71.2847	93.8396	6.4076	93.8515	21.8328
Gov	7.8661	32.6268	50.6861	51.3117	68.6618	90.5927	7.8607	90.6490	21.5865
Env	0.0000	22.8877	42.3108	41.3940	61.7696	90.8728	0.0000	90.9105	24.4727
num_ii	0.6931	3.0910	3.9373	4.1589	5.0039	5.8704	0.6931	5.8710	1.2475
io	0.0086	0.1626	0.4907	0.5878	0.7532	0.9620	0.0056	0.9620	0.3061
meanown	0.0001	0.0027	0.0208	0.0061	0.0201	0.2695	0.0001	0.2695	0.0404
hhi	0.0000	0.0050	0.1670	0.1164	0.2719	0.7225	0.0000	0.7225	0.1726
capmkt	3.5797	6.1360	7.2922	7.5615	8.5808	10.3678	3.4925	10.3693	1.6904
age	1.4196	3.0534	3.3724	3.4127	3.8179	4.6174	1.4098	4.6180	0.6216
div	0.0000	0.0053	0.0358	0.0177	0.0421	0.3239	0.0000	0.3249	0.0544
profit	-0.0622	0.0251	0.0798	0.0612	0.1073	0.5020	-0.0624	0.5020	0.0866
lev	0.0000	0.0829	0.2530	0.2385	0.3858	0.7079	0.0000	0.7090	0.1855
mtb	1.0242	1.2541	2.8539	1.7238	2.8970	16.2234	1.0237	16.2246	2.9240

4.2 Correlation matrix

Table 4.2 provides the correlation matrix provides an overview of the pairwise relationships between the key variables used in this study. ESG score and its components are positively correlated with each other, indicating that firms performing well in one ESG dimension tend to perform well in others. Among them, the correlation between ESG score and Social score is the highest, which suggests that social is the most factors that influence the composite ESG.

Institutional ownership variables, such as Logarithm of number of institutional investors and total institutional ownership, show positive correlations with ESG scores. This implies that companies with higher ESG performance tend to attract number of institutional investor better. However, Mean ownership, which reflects the concentration of ownership, is negatively correlated with the number of institutional investors and Total institutional ownership, confirming that when more investors are, overview of ownership tends to be more dispersed.

Control variables also show meaningful relationships. The natural logarithm of institutional investor, the natural of firrm age, dividend yield, and market to book are positively correlated with ESG suggesting that larger firms are more likely to engage in sustainable practices and attract institutional capital and supporting with higher market to book ratio.

Table 4.2

Correlation matrix

This table shows correlation coefficients matrix between dependent variable as institutional ownership, independent variable as ESG performance, and other control variables in our regressions. Statistical significance is denoted at the *10 percent, **5 percent, and ***1 percent levels.

	ESG	Soc	Gov	Env	num_ii	io	meanown	hhi	capmkt	age	div	profit	lev	mtb
ESG	1.000													
Soc	0.900***	1.000												
Gov	0.652***	0.370***	1.000											
Env	0.846***	0.745***	0.319***	1.000										
num_ii	0.288***	0.257***	0.142***	0.267***	1.000									
io	0.050**	0.035*	0.051**	0.043**	0.113***	1.000								
meanown	-0.183***	-0.173***	-0.106***	-0.139***	-0.678***	0.193***	1.000							
hhi	0.042**	0.035*	0.007	0.062***	0.016	0.802***	0.262***	1.000						
capmkt	0.396***	0.373***	0.156***	0.404***	0.847***	0.058***	-0.530***	0.072***	1.000					
age	0.127***	0.106***	0.069***	0.169***	0.094***	0.002	-0.003	0.056***	0.118***	1.000				
div	0.061***	0.062***	0.047**	-0.016	0.082***	-0.021	-0.064***	0.010	0.074***	-0.035*	1.000			
profit	-0.019	-0.024	0.000	-0.079***	0.138***	-0.028	-0.100***	-0.002	0.099***	-0.088***	0.750***	1.000		
lev	-0.013	-0.016	-0.059***	0.000	0.035**	-0.055***	-0.122***	-0.056***	0.070***	-0.158***	-0.194***	-0.163***	1.000	
mtb	0.026	0.024	0.012	-0.027	0.124***	-0.043**	-0.105***	-0.004	0.201***	-0.068***	0.568***	0.562***	-0.091***	1.000

4.3 Baseline result

Table 4.3 shows the regression result indicates a positive and statistically significant relationship between Logarithm of number of institutional investor and Overall ESG score at the 1% level. The coefficient for overall ESG is 0.002. This suggests that firms with higher ESG performance tend to attract more institutional investors. A one unit increase in ESG score is associated with 0.2 unit increase in number of institutional investors. The tenor is similar research from Liang et al (2024) in China and Lopez-de-Silanes et al. (2024) in United Stated. While in view of ESG component, Soc and Gov are positive effect on number of institutional investors.

Table 4.4 show the regression result indicates a positive but not significant relationship between total institutional ownership and overall ESG score. The coefficient for overall ESG is 0.00045. This suggests that In ASEAN's emerging market. There is no clear evidence of relationship between these two factor. While in view of ESG component, Soc is positive effect but Gov negative effect on institutional ownership.

Table 4.5 show the regression result indicates a fewer positive and statistically significant relationship between mean ownership and Overall ESG score at the 10% level. The coefficient for overall ESG is 0.0000848. The increase in both mean ownership and the number of institutional investors suggests that institutional investor has strong confidence and potentially greater mitigate influence on ESG issue.

In view of ESG component, Env and Soc are positive effect but Gov negative effect on mean ownership. Among the three ESG components, the social score has the most significant factor is 0.000138.

Table 4.6 show the regression result indicates a fewer positive but not significant relationship between Ownership Concentration (HHI) and overall ESG score. The coefficient for overall ESG is 0.000247. This suggests that In EM on ASEAN. There is no clear evidence of relationship between these two factor. While in view of ESG component, Env and Soc are positive effect but Gov negative effect on HHI. This suggests that higher HHI represents more number of shares held by a small number of institutional investors**.**

Table 4.3

OLS regression between ESG performance and number of institutional investors

This table shows coefficient from regression result where the dependent variable is logarithm of the number of institutional investors. All variables are winsorize at the 1% and 99% levels. Standard errors are shown below coefficients within the bracket.

	1	2	3	4	5
ESG	0.00201***				
	(0.0007)				
Env		0.0005			(0.0006)
		(0.0006)			(0.0007)
Soc			0.00127**		0.0012
			(0.0006)		(0.0008)
Gov				0.00169***	0.00155***
				(0.0005)	(0.0006)
capmkt	0.599***	0.607***	0.602***	0.605***	0.602***
	(0.0102)	(0.0101)	(0.0101)	(0.0092)	(0.0103)
age	-0.0527***	-0.0521***	-0.0521***	-0.0504***	-0.0503***
	(0.0189)	(0.0190)	(0.0190)	(0.0189)	(0.0190)
div	0.691**	0.761**	0.713**	0.722**	0.686**
	(0.3320)	(0.3320)	(0.3320)	(0.3310)	(0.3320)
mtb	-0.0620***	-0.0630***	-0.0624***	-0.0624***	-0.0620***
	(0.0069)	(0.0069)	(0.0069)	(0.0069)	(0.0069)

Table 4.3

OLS regression between ESG performance and number of institutional investors (Cont.)

	1	2	3	4	5
profit	0.522***	0.501**	0.516**	0.502**	0.513**
	(0.2010)	(0.2020)	(0.2020)	(0.2010)	(0.2010)
lev	0.223***	0.231***	0.233***	0.222***	0.226***
	(0.0791)	(0.0792)	(0.0790)	(0.0790)	(0.0791)
Year fixed-effect	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes
Country fixed effect	Yes	Yes	Yes	Yes	Yes
N	2,439	2,439	2,439	2,439	2,439
R2	0.862	0.862	0.862	0.862	0.863

Standard errors in parentheses

*** p<0.10, ** p<0.05, *** p<0.01**

Table 4.4

OLS regression between ESG performance and institutional ownership

This table shows coefficient from regression result where the dependent variable is the institutional ownership. All variables are winsorize at the 1% and 99% levels. Standard errors are shown below coefficients within the bracket.

	6	7	8	9	10
ESG	0.00045				
	(0.0003)				
Env		0.000425			0.00009
		(0.000272)			-0.000355
Soc			0.000745**		0.000915**
			(0.000293)		-0.000385
Gov				-0.000454*	-0.000705***
				(0.000254)	(0.0003)
capmkt	0.0312***	0.0307***	0.0287***	0.0360***	0.0294***
	(0.00495)	(0.0049)	(0.0049)	(0.0045)	(0.0050)
age	-0.0364***	-0.0369***	-0.0367***	-0.0361***	-0.0373***
	(0.00921)	(0.0092)	(0.0092)	(0.0092)	(0.0092)
div	0.353**	0.358**	0.333**	0.388**	0.346**
	(0.161)	(0.1610)	(0.1610)	(0.1610)	(0.1610)
mtb	-0.00871***	-0.00872***	-0.00845**	-0.00925***	-0.00865***
	(0.00334)	(0.0033)	(0.0033)	(0.0033)	(0.0033)

Table 4.4

OLS regression between ESG performance and institutional ownership (Cont.)

	6	7	8	9	10
profit	-0.275***	-0.274***	-0.267***	-0.285***	-0.267***
	(0.0979)	(0.0979)	(0.0978)	(0.0977)	(0.0977)
lev	-0.0477	(0.0481)	(0.0459)	(0.0419)	(0.0414)
	(0.0385)	(0.0384)	(0.0384)	(0.0384)	(0.0384)
Year fixed-effect	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes
Country fixed effect	Yes	Yes	Yes	Yes	Yes
N	2439	2439	2439	2439	2439
R2	0.459	0.459	0.460	0.459	0.461

Standard errors in parentheses

*** p<0.10, ** p<0.05, *** p<0.01**

Table 4.5

OLS regression between ESG performance and mean ownership

This table shows coefficient from regression result where the dependent variable is mean ownership. All variables are winsorize at the 1% and 99% levels. Standard errors are shown below coefficients within the bracket.

	11	12	13	14	15
ESG	0.000085*				
	(0.00005)				
Env		0.00014***			0.000172***
		(0.00004)			(0.00005)
Soc			0.00008**		-2.37E-06
			(0.00004)		(0.00005)
Gov				-0.000066*	-0.000109***
				(0.00003)	(0.00004)
capmkt	-0.0132***	-0.0138***	-0.0133***	-0.0124***	-0.0136***
	(0.00066)	(0.00065)	(0.00065)	(0.00060)	(0.00067)
age	0.0017	0.00147	0.00169	0.00175	0.00137
	(0.00123)	(0.00123)	(0.00123)	(0.00123)	(0.00122)
div	-0.00545	-0.00657	-0.00593	0.00051	-0.00388
	(0.02150)	(0.02140)	(0.02150)	(0.02150)	(0.02140)
mtb	0.000856*	0.000891**	0.000860*	0.000765*	0.000852*
	(0.00045)	(0.00044)	(0.00045)	(0.00045)	(0.00044)

Table 4.5

OLS regression between ESG performance and mean ownership (Cont.)

	11	12	13	14	15
profit	-0.0293**	-0.0281**	-0.0290**	-0.0310**	-0.0282**
	(0.01310)	(0.01300)	(0.01310)	(0.01300)	(0.01300)
lev	-0.0255***	-0.0260***	-0.0251***	-0.0246***	-0.0254***
	(0.00513)	(0.00511)	(0.00512)	(0.00513)	(0.00511)
Year fixed-effect	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes
Country fixed effect	Yes	Yes	Yes	Yes	Yes
N	2,439	2,439	2,439	2,439	2,439
R2	0.448	0.451	0.449	0.448	0.453

Standard errors in parentheses

*** p<0.10, ** p<0.05, *** p<0.01**

Table 4.6

OLS regression between ESG performance and Ownership Concentration

This table shows coefficient from regression result where the dependent variable is Ownership Concentration. All variables are winsorize at the 1% and 99% levels. Standard errors are shown below coefficients within the bracket.

	16	17	18	19	20
ESG	0.000247				
	(0.00022)				
Env		0.000452***			0.000411*
		(0.00017)			(0.00022)
Soc			0.000468***		0.000413*
			(0.00018)		(0.00024)
Gov				-0.000484***	-0.000693***
				(0.00016)	(0.00016)
capmkt	0.00421	0.00212	0.00236	0.00774***	0.00209
	(0.00305)	(0.00302)	(0.00301)	(0.00276)	(0.00307)
age	-0.00731	-0.00807	-0.00754	-0.00724	-0.00859
	(0.00567)	(0.00567)	(0.00567)	(0.00566)	(0.00566)
div	0.197**	0.192*	0.184*	0.225**	0.196**
	(0.09940)	(0.09900)	(0.09930)	(0.09900)	(0.09900)
mtb	-0.00274	-0.00260	-0.00256	-0.00316	-0.00271
	(0.00206)	(0.00205)	(0.00205)	(0.00205)	(0.00205)

Table 4.6

OLS regression between ESG performance and Ownership Concentration (Cont.)

	16	17	18	19	20
profit	-0.212***	-0.208***	-0.207***	-0.219***	-0.205***
	(0.06030)	(0.06020)	(0.06030)	(0.06010)	(0.06000)
lev	-0.0521**	-0.0537**	-0.0512**	-0.0471**	-0.0487**
	(0.02370)	(0.02370)	(0.02360)	(0.02360)	(0.02360)
Year fixed-effect	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	Yes	Yes	Yes
Country fixed effect	Yes	Yes	Yes	Yes	Yes
N	2,439	2,439	2,439	2,439	2,439
R2	0.355	0.356	0.356	0.357	0.362

Standard errors in parentheses

*** p<0.10, ** p<0.05, *** p<0.01**

CHAPTER 5
CONCLUSION

This paper would like to examine ESG preference of institutional investors who invest in ASEAN. Using ESG, Ownership and financial data from Refinitiv Eikon between 2014 and 2023. We find new evidence about institutional investor preference on firm's ESG performance.

This study finds that the relationship between institutional investors and ESG preference in companies of ASEAN countries. Prior to clientele effect and stewardship theory which support pecuniary and non-pecuniary investor and has responsible on take care long-term value investment and reduce systematic risk. From two hypothesis. Higher ESG performance will attract number of institutional investors come more and Higher ESG performance will support on changing of ownership structure. Mean ownership will decrease from the increasing of number of institutional investors.

However, the findings do not align with the hypothesis. ESG performance has significantly positive impact on mean ownership a little. This effect is pronounced that a small number of shares still held by a large number of investors and supported institutional investors are not only choose to invest in the firms which good ESG performance but they will engage on these firms. Institutional investors did not exit on the underperforming companies but use their voice instead. This result eliminates concern about green washing. However, why does this result differ from research which observe in DM?. Accroding to OECD (2024) shows that institutional investors are minor stakeholders in the ASEAN region, whereas institutional investors play the dominat role in DM. They are major stakeholders in DM. This indicates that institutional ownership in DM might be satured. In contrast, EM that institutional investors hold a smaller stakes and are gradually increasing their their ownership over time.

This pattern is explained by the clientele effect, where institutional investors in DM have already aligned their portfolios in ESG preference. On the other hand, institutional investors in EM are still initial construction their portfolio, which may lead to stronger ownership.

Over the last decade, Institutional investors have chosen to invest more in companies with good ESG performance. These factors are driving institutional ownership in ASEAN and might have driven stock prices over the past ten years. While they might expect to capitalize on overvalued in the market in emerging market. While the governance score is only dimension with negative effect on institutional ownership. This reveal that institutional investors in ASEAN have concentrated on Environmental and Social topic than Governance issues this contrast with many researches in DM.

Our finding offer important ESG performance impact on institutional investor decision that has different context with United states and support to impact of systematic stewardship in ASEAN look stronger in the last decade. The institutional investors also are interested to invest in ASEAN. This paper contributes to understanding context of ESG on institutional ownership and enhance context of ESG in emaerging market especially ASEAN countries. And help stakeholders such as regulators implicate the standardize policies to support institutional investors and promote the development of sustainability investment throught ESG adoption. Institutional investors understand the effect of ESG information disclosure on institutional investor behavior and align portfolios with ESG preference. Corporate companies understand relationship factor which attract institutional investor to receive long-term beneficial through improve ESG performance.

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APPENDICES

APPENDIX A

VARIABLE DEFINITION

Table A.1

Variable Definition (We use all information from Thomson Reuters Eikon (Eikon))

Variable	Definition	Formula support
Dependent variable		
num_ii	Logarithm of the number of institutional investors in each firm based on company data from the stock market.	$\text{num\_ii}_{i,t} = \ln(\text{summation on the number of institutional investor})$
io	Total ownership is the percentage shares held by institutional investors.	$\text{io}_{i,t} = \frac{\text{Shares hold by institutional investor i}}{\text{Total outstanding shares}}$
meanown	Mean ownership is the average percentage outstanding shares held by institutional investors.	$\text{meanown}_{i,t} = \frac{\sum_{i=1}^{N} \text{io}_{i,t}}{\text{num\_ii}}$

Table A.1

Variable Definition (We use all information from Thomson Reuters Eikon (Eikon)) (Cont.)

Variable	Definition	Formula support
Dependent variable		
hhi	Ownership concentration, To measure ownership concentration, we use the HHI calculation. This is summation of the squares of percentage outstanding shares held by each institutional investor. If HHI is high, It will represent a high number of shares held by a small number of investors.	$\mathrm{hhi}_{i,t} = \sum_{i=1}^{N} \mathrm{io}_{i,t}^{2}$ Where N = number of institutional investor
Independent variable		
ESG	ESG score is a proxy for a firm's overall sustainability performance such as environmental , social, and governance which compute in weigthing of Refinitiv ESG score.	
Env	The environmental pillar is one factor in ESG which focuses on sustainability, climate change, and resource management.	

Table A.1

Variable Definition (We use all information from Thomson Reuters Eikon (Eikon)) (Cont.)

Variable	Definition	Formula support
Independent variable		
Soc	The social pillar is one factor in ESG which focus on sustainable business practices. It focuses on evaluating a company's behavior and the impact it has on society and its stakeholders.	
Gov	The governance pillar is one factor in ESG which measures how a company operates, ensuring ethical practices and building trust. It encompasses the company's framework, policies, procedures, and decision-making processes that guide corporate behavior.	
Control variable		
capmkt	We use a market capitalization for control for firm size effect. we consider to use logarithm scale from smooth of firm value.	capmkt = ln(market capitalization)

Table A.1

Variable Definition (We use all information from Thomson Reuters Eikon (Eikon)) (Cont.)

Variable	Definition	Formula support
Control variable		
age	We calculated logarithm of firm age by find the difference between the reporting date of ESG score and the established date of firm.	$\text{age} = \ln(\frac{\text{ESG reporting date} - \text{Established date}}{365})$
div	Dividend yield can be calculated through dividends paid in cash flow statement divided by market capitalization.	$\text{div} = \frac{\text{Dividends paid}}{\text{market capitalization}}$
mtb	Market to book ratio is calculated as the firm's market value to total asset. The market value is calculated as the market capitalization minus value of common equity plus total asset.	$\text{mtb} = \frac{\text{capmkt} - \text{common equity} + \text{total asset}}{\text{Total assets}}$
profit	Profitability is the ratio of EBIT on total asset	$\text{profit} = \frac{\text{EBIT}}{\text{Total asset}}$
lev	Leverage is the ratio of total debt which includes non-current liabilities and current liabilities divided by total asset	$\text{lev} = \frac{\text{Total debt}}{\text{Total asset}}$

APPENDIX B

DATASET SUMMARY

This panel show how many firms have how many years of observations in our dataset and the total number of firm-level observation.

Years of observations	Number of firms	Total firm-year observations
1	59	59
2	99	198
3	153	459
4	33	132
5	53	265
6	14	84
7	12	84
8	11	88
9	40	360
10	71	710
Total	**545**	**2,439**

APPENDIX C

THE NUMBER OF FIRM-LEVEL OBSERVATION IN EACH YEAR ON EACH COUNTRY

This table illustrate the number of firm-level observation in each year on each country in period 2014 to 2023.

Country	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Thailand	28	30	33	35	38	88	110	137	134	148
Indonesia	31	34	33	37	36	42	43	62	64	29
Malaysia	42	44	46	49	48	52	62	218	241	185
Philippines	23	24	23	23	25	25	29	35	36	17
Total	124	132	135	144	147	207	244	452	475	379

BIOGRAPHY

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