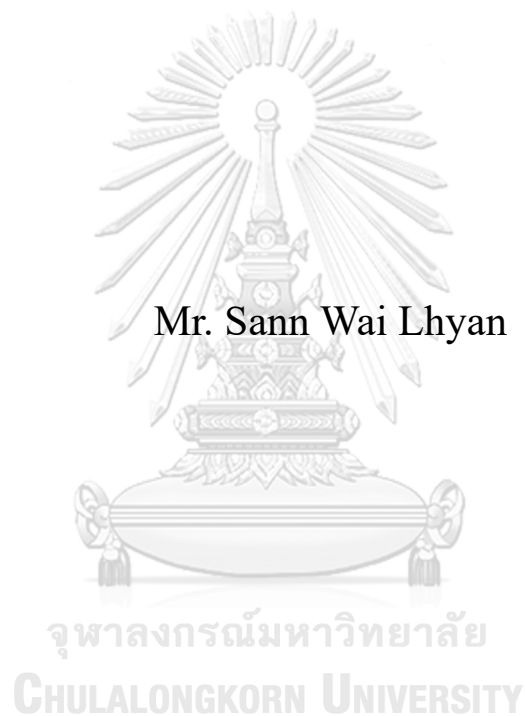


# Does ESG Matter In Corporate Takeover?



An Independent Study Submitted in Partial Fulfillment of the  
Requirements  
for the Degree of Master of Science in Finance  
Department of Banking and Finance  
Faculty Of Commerce And Accountancy  
Chulalongkorn University  
Academic Year 2023

ESG มีความสำคัญต่อการครอบครององค์กรหรือไม่?



สารนิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปริญญาวิทยาศาสตรมหาบัณฑิต

สาขาวิชาการเงิน ภาควิชาการธนาคารและการเงิน

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ปีการศึกษา 2566

Independent Study Title Does ESG Matter In Corporate Takeover?  
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Field of Study Finance  
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Accepted by the FACULTY OF COMMERCE AND ACCOUNTANCY,  
Chulalongkorn University in Partial Fulfillment of the Requirement for the Master of  
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ชาน วาย เลียน : ESG มีความสำคัญต่อการครอบครององค์กรหรือไม่?. ( Does ESG Matter In Corporate Takeover?) อ.ที่ปรึกษาหลัก : รศ. ดร.บุญเลิศ จิตรมณีโรจน์

เนื่องจากคะแนนด้านสิ่งแวดล้อม สังคม และธรรมาภิบาล (ESG) เริ่มมีการตระหนักมากขึ้นต่อสาธารณะมากขึ้น จึงจำเป็นที่จะต้องเข้าใจผลกระทบของ ESG ที่มีต่อค่านิยมของบริษัท โดยเฉพาะอย่างยิ่งในภูมิภาคเอเชียแปซิฟิก เนื่องจากเป็นที่ตั้งของความหลากหลายและการเติบโตอย่างรวดเร็ว เศรษฐกิจรวมถึงตลาดเกิดใหม่ ดังนั้น วัตถุประสงค์ของการศึกษานี้คือเพื่อตรวจสอบความสัมพันธ์ระหว่าง ESG และมูลค่าบริษัท โดยใช้ตลาดการเทคโอเวอร์เป็นสภาพแวดล้อมเชิงประจักษ์

จุดสนใจหลักของการศึกษาเกี่ยวข้องกับ การตรวจสอบอิทธิพลของ ESG ต่อการเกิดการเข้าครอบครองผ่านการถดถอยลอจิสติกแบบไบนารี ต่อมา การศึกษาจะสำรวจความสัมพันธ์ระหว่าง ESG และความมั่งคั่งของผู้ถือหุ้นบริษัทเป้าหมาย (วัดโดยผลตอบแทนสะสมที่ผิดปกติ - CAR) โดยใช้แบบจำลองการถดถอยเชิงเส้น การค้นพบนี้ชี้ให้เห็นถึงความสัมพันธ์เชิงบวกระหว่าง ESG และความน่าจะเป็นที่บริษัทเป้าหมายจะถูกเทคโอเวอร์ ซึ่งสอดคล้องกับแนวคิดเรื่องการควมรวมกิจการแบบเสริมฤทธิ์กัน อย่างไรก็ตาม ยังพบว่าการจัดสรรทรัพยากร ESG ที่มากเกินไปไม่เพียงแต่จะลดโอกาสในการเทคโอเวอร์เท่านั้น แต่ยังช่วยลดการเพิ่มความมั่งคั่ง (CAR) สำหรับผู้ถือหุ้นเป้าหมายในระหว่างการประกาศเทคโอเวอร์อีกด้วย

โดยสรุป มีความสัมพันธ์เชิงบวกและมีนัยสำคัญระหว่าง ESG และความน่าจะเป็นของการเทคโอเวอร์ นอกจากนี้ ยังพบความสัมพันธ์เชิงบวกและสำคัญที่โดดเด่นระหว่าง ESG และการเพิ่มความมั่งคั่งของผู้ถือหุ้น สิ่งสำคัญคือพบว่า ESG สแควร์เทอมมีความสัมพันธ์เชิงลบและมีนัยสำคัญต่อ ESG และ CAR กล่าวคือ ความสัมพันธ์แบบไม่เชิงเส้น ซึ่งแสดงให้เห็นว่า ESG มีผลกระทบต่อ CAR ลดลง ดังนั้น รายงานฉบับนี้จึงเน้นย้ำถึงความจำเป็นของบริษัทต่างๆ ที่จะต้องรักษามาตรฐาน ESG ในอุดมคติ เพื่อเพิ่มประสิทธิภาพความมั่งคั่งของผู้ถือหุ้นเป้าหมายในแง่ของมุมมองการเข้าครอบงำกิจการ

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KEYWORD Cumulative Abnormal Return, CAR, shareholder wealth gain,  
D: probability of takeover, ESG

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As Environmental, Social, and Governance scores (ESG) are increasingly becoming aware to the public, it is imperative to understand the impact of ESG on firm values, especially in the Asia-Pacific region, as it is home to a diverse and rapidly growing economy, including emerging markets. Therefore, the purpose of this study is to investigate the relationship between ESG and firm value using the takeover market as an empirical setting.

The primary focus of the study involves examining the influence of ESG on the occurrence of takeovers through binary logistic regression. Subsequently, the study explores the association between ESG and target firm shareholder wealth gain (measured by cumulative abnormal return - CAR) using a linear regression model. The findings suggest a positive relationship between ESG and the probability of a target firm being taken over, aligning with the concept of synergistic takeovers. However, it is also found that an excessive allocation of resources on ESG can not only diminishes the likelihood of a takeover but also reduces the wealth gain (CAR) for target shareholders during the takeover announcements.

In conclusion, a positive and significant relation is observed between ESG and the probability of takeover. Furthermore, a notable positive and significant association is found between ESG and shareholder wealth gain. Crucially, it is found that ESG square term has a negative and significant relation on ESG and CAR, i.e. - a non-linear relationship, showing that ESG has a diminishing effect on CAR. Therefore, the paper highlights the need for companies to maintain an ideal ESG standard to optimize target shareholder wealth gain in terms of corporate takeovers perspective.

CHULALONGKORN UNIVERSITY

Field of Study: Finance

Student's Signature

Academic Year: 2023

Advisor's Signature

Year:

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## ACKNOWLEDGEMENTS

First and foremost, I would like to extend sincere gratitude to my advisor, Assoc. Prof. Boonlert Jitmaneeroj, for his unwavering support, guidance, and mentorship throughout the entirety of my research. His invaluable insights, constructive feedback, and patience have played a pivotal role in shaping my thesis and ensuring its successful completion. His invaluable insights, constructive feedback, and patience have played a pivotal role in shaping my thesis and ensuring its successful completion.

Furthermore, I wish to convey my appreciations to my thesis committee members, Asst. Prof. Tanakorn Likitapiwat and Asst. Prof. Roongkiat Ratanabanchuen, for their invaluable suggestions, critical evaluations, and constant encouragement. Their expertise and profound knowledge have significantly contributed to the refinement of my paper.

Moreover, I would like to say thank you to my friends and family, particularly my parents, for their enduring love, encouragement, and faith in my abilities. Their sacrifices and unwavering support have served as a source of strength and motivation throughout my tenure in the Master of Science in Finance program at Chulalongkorn University.

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## **1. Chapter (1) Introduction**

### **1.1 Background and significance**

Takeovers, mergers, and acquisitions are one of the most commonly observed corporate investment decisions. In today's dynamic business landscape, M&A plays a crucial part in shaping the strategic direction of organizations across industries. These transactions offer opportunities for companies to expand their market presence, achieve economies of scale, enhance competitiveness, and unlock new synergies (Liu et al., 2022). In addition, takeover activities have been identified as a highly efficient mechanism for the industry structure to adapt and react to the transformative effects caused by economic shocks (Bena & Li, 2014). Furthermore, it has been observed that these takeover activities often exhibit temporal clustering, indicating a tendency for multiple transactions to occur within a concentrated timeframe (Mitchell & Mulherin, 1995).

Takeover activities have been recognized for their potential to not only increase shareholder wealth (Goergen & Renneboog, 2004), but also serve as an external source of discipline when internal control mechanisms exhibit relative weakness or inefficiencies (Kini et al., 2004). In takeover activities, shareholders create firms' value by replacing poor management and utilizing efficient allocation of resources (Jensen, 1986). By exercising the shareholder right by facilitating the removal of poor management and the introduction of more competent and motivated managers. This replacement of management can foster a culture of accountability and responsible decision-making within the organization.

Although takeover activities can serve as a potent and objective mechanism for facilitating significant restructuring endeavors and can protect firms from continually improving technology and consumer preference (Jensen, 1984). These activities can also be motivated by maximization of management utility reasons, rather than on behalf of shareholders (Firth, 1980) which goes against the traditional finance view "managers are the agents of the shareholders." Studies show that takeover activities can benefit the shareholders, reduce the shareholder wealth in the long run (Ekkayokkaya, 2010; Limmack, 1991) and have mix impact (Jensen, 1988).



The existing literature has broadly specified that a takeover activity can take two forms. First, synergistic takeover in which the acquirer benefits from integrating with the target firm and second, in the context of corrective takeovers, acquirers undertake strategic actions to modify inefficient policies of the target to achieve optimal operational efficiency, subsequently enhancing overall performance post-transaction (Morck et al., 1988). Regardless of whether synergistic or corrective takeover, both of the deals are beneficial to the target firms in takeover transactions as they tend to receive a price premium that exceeds the stock price before the takeover, as indicated by prior researches (Betton et al., 2008).

Apart from financial gains and market positioning, it is becoming increasingly apparent that M&A activities also have profound implications for environmental, social, and governance (ESG) factors. As investors are shifting their focus toward not only on a business that yields return but also integrating their personal value into investment decisions (Camilleri, 2021). Moreover, it is found evidence that investors who invest in a way that is socially and environmentally responsible investing can do so, without giving up the return on their investment (Schueth, 2003).

To complement the results, the studies have shown that investors display a willingness to pay a takeover premium for acquiring high ESG firms. Furthermore, research has highlighted the significance of maintaining positive relationships with stakeholders in influencing both the acquisition process and post-merger performance (Bettinazzi & Zollo, 2017; Salvi et al., 2018). Moreover, (Aktas et al., 2011) gave emphasis the notion that the presence of ESG risk management practices within target firms contributes to higher synergies compared to firms with inferior performance. This evidence further substantiates the positive impact of ESG considerations on merger and acquisition outcomes.

Contrary to prior researches, (Tampakoudis et al., 2021) has revealed a significant negative association between the level of ESG factors and shareholder wealth creation within the context of mergers and acquisitions. This finding adds to the existing body of literature, which has produced mixed results on this topic. While previous studies have investigated the link between ESG factors and the likelihood of

a firm undergoing a takeover, there remains a considerable need for further investigation, particularly within the Asia-Pacific region.

The objective of this specialized project is to contribute to the extant literature by addressing two central inquiries: firstly, does the incorporation of ESG influence the likelihood of a firm undergoing a takeover, and secondly, how does it relate to the creation of shareholder value for the target company. By exploring these questions, this research aims to advance the understanding of the complex relationship between ESG considerations, takeover dynamics, and shareholder outcomes.

Furthermore, as stakeholder interest in sustainable finance and ESG grows, it is important to consider the implications of ESG in takeover for the investors and corporate finance moving forward. As assets owners are adapting to the ESG framework (Kalb, 2020), therefore understanding its implication in a takeover setting in the Asia-Pacific region, which is home to diverse and rapidly growing economies, including emerging markets, can provide valuable insights. This paper will try to find the implication of ESG by examining ESG combined score and the effect of separate pillars in a takeover setting in Asia Pacific Region. As the region is home to diverse and rapidly growing economies, many of which fall into the category of emerging markets. Therefore, the paper aims to study how ESG patterns for corporate takeover fall into those dynamic markets.

## 1.2 Objectives

This research seeks to analyze the relation of (ESG) factors to the occurrence of takeovers. Primary objectives of this research: firstly, to investigate the influence of varying levels of ESG scores on the likelihood of a takeover, and secondly, to examine the association between cumulative abnormal returns resulting from takeover announcements and ESG scores. By conducting this empirical analysis, the present study aims to make a valuable contribution to the current scholarly discourse by providing empirical findings regarding the impact of (ESG) considerations on takeover events, thereby enhancing the comprehension of the interplay between ESG factors and M&A transactions.

## 2. Chapter (2) Literature Review

### 2.1 Takeover, mergers, and acquisitions clustering

The study conducted by (Mitchell & Mulherin, 1995) examined the industry shocks on takeover and restructuring activity. They found out that the maximum cluster percentage in the 2 years is the greatest fraction of takeovers and restructurings occurring in an industry in an adjacent two-year period. While the choice of a two-year window may seem arbitrary, alternative grouping a three-year period yields similar conclusions. (Maksimovic et al., 2013) explored the phenomenon of merger waves in corporate finance and discussed how corporate financing events, including mergers, tend to cluster in waves rather than being evenly distributed over time. It is also important to note that periodic stock market mis-valuation can serve as an alternative catalyst for merger waves in public firms.

According to (Shleifer & Vishny, 2003) it is found that higher equity market valuations increase the attractiveness of equity-financed acquisitions. Their research suggests that when stock prices are high, acquiring firms can issue their shares at a favorable exchange rate, allowing them to finance acquisitions using their overvalued stock. This alignment of high valuations and equity financing creates a favorable environment for acquisition activity.

In a similar vein, (Rhodes-Kropf & Viswanathan, 2004) supported the notion that higher valuations in the equity market make equity-financed acquisitions more appealing. They find that when stock prices are elevated, acquirers are more likely to use stock as a method of payment, taking advantage of the favorable exchange ratio between their shares and the target company's shares. This finding suggests that the availability of undervalued targets during periods of high market valuations leads to increased equity-financed acquisitions. (Klasa & Stegemoller, 2007) suggested that the takeover events are not random, the sequence of takeover is influenced by the evolving nature of investment opportunities available to acquiring firms over time. Firms actively consider the time-varying changes in their growth opportunity set when determining the sequence of their takeover activities.

In addition to mergers being clustered in time, the research conducted by (Andrade et al., 2001) explored two key phenomena in the context of mergers. First,

they establish the existence of merger waves, which are periods characterized by an increased frequency of merger activity. Their findings support the notion that mergers do not occur randomly over time but rather exhibit clustering patterns within distinct waves. This observation implies that merger activity is influenced by external factors or industry-specific dynamics that lead to periods of heightened merger activity followed by relative quiescence. Furthermore, the researchers highlighted that within a merger wave, mergers tend to strongly cluster by industry. This clustering phenomenon suggests that industries experience waves of consolidation or restructuring simultaneously, likely driven by common industry-specific factors.

In support of the prior studies related to merger waves, (Harford, 2003) found that during the merger waves, there is a fundamental change or disruption in the industry's external environment. This could be due to technological advancements, changes in market dynamics, regulatory shifts, or other factors that significantly impact the industry's structure and competitive landscape. In addition, other evidence from (Geiger & Schiereck, 2014) supported the prevailing view that merger waves are predominantly propelled by industry shocks. This supports the notion that merger waves are not random occurrences but rather reflect a collective response to external factors that impact the industry's structure, competitive dynamics, and overall business environment.

Finally, a study by (Harford, 2005) looked at the factors that influence merger waves and discovers that, even in the absence of outside industry shocks, a macro-level liquidity component is critical to the timing of industry merger waves. That is, mergers usually happen in waves, even if the industry-specific shock do not occur.

## **2.2 ESG, Merger, and Acquisition (M&A)**

To justify paying a premium for companies with favorable ESG scores, there must be value-added benefits for the merged entity. Research indicates that maintaining positive relationships with stakeholders, those activities can influence the process of acquisitions and post-merger performance (Bettinazzi & Zollo, 2017; Salvi et al., 2018). This could be attributed to the higher synergies associated with targets that have effective ESG risk management practices compared to those with poor performance. In comparison, firms with higher ESG scores are more inclined to attract takeover offers

as acquirers seek to signal their interest to stakeholders and leverage potential long-term synergy gains.

(Hong et al., 2022) highlighted the relationship between cross-border M&A and ESG investment motivations, emphasizing the connection with sustainable development and corporate governance factors. Using a machine learning model, they suggested that M&A activities are driven by stakeholder value maximization, and high ESG firms tend to have a higher success rate in M&A endeavors. In addition, the association between business ESG performance and M&A results was explored by (Zheng et al., 2023) and found to be both favorable and significant. This suggested that firms with better ESG performance are more likely to complete M&A deals.

According to (Teti et al., 2022) companies with higher ESG scores may experience lower performance in the context of M&A transactions. (Hussaini et al., 2023) suggests that ESG scores can act as a signaling mechanism, influencing the payment method in a takeover. Higher ESG coverage reduces information asymmetry for acquiring firms, leading to a preference for cash payments. Conversely, acquirers targeting firms with lower ESG performance tend to opt for cash payments, potentially indicating a strategy to limit association with entities lacking strong ESG credentials.

In terms of ESG, firm value, and ESG performance, (Zhao et al., 2018) found that higher ESG performance can have a positive impact on boosting the financial performance of these companies. As stated in the previous literature, the acquirer firms are willing to pay premiums for the high ESG firms. On the other hand, (Duque-Grisales & Aguilera-Caracuel, 2019) examined the connection between 104 global companies' financial performance between 2011 and 2015 and their ESG ranking. Their research showed a negative correlation between these organizations' financial performance and ESG ranking. This finding challenges the commonly held belief that strong ESG performance leads to improved financial performance. If the ESG is having a negative correlation with firm performance, it gives the chance for the acquirer to take corrective action, and take over for that particular firm.

(Garcia & Orsato, 2020) compared the emerging and developed countries through 2165 firms from 2007 to 2014. They demonstrated that in emerging markets,

the correlation between ESG scores and financial performance is negative. Since studies have found both positive and negative relations, it prompts further study of the ESG relations with the firm. This paper, therefore, tries to find the relation between ESG and M&A since, from a merger and acquisition perspective, for a firm to be involved in a takeover, it has to create value. Even though it has a negative relationship, the firm can take corrective action to fix the policy inefficiency and increase firm performance (Morck et al., 1988).

### **2.3 Hypothesis Development**

#### **ESG, CSR, and stakeholder theory**

The historical significance of companies' impact on their surroundings can be traced back to Moskowitz's influential work in 1972 on socially responsible investing. This work laid the foundation for two major theoretical perspectives in organizational management: the shareholder framework and the stakeholder framework. The shareholder framework, advocated by economist Milton Friedman, argues that a company's social responsibility is to solely focused on maximizing the profits. In contrast, the stakeholder framework emphasizes business ethics and expects companies to cultivate mutually beneficial relationships with various stakeholders to maintain their legitimacy. From the stakeholder perspective, ESG considerations align with the recognition of interconnected interests and concerns of multiple stakeholders.

(Fairhurst & Greene, 2022) conducted a study and found that companies with low levels of Corporate Social Responsibility (CSR) are more likely to be targeted for takeovers. This suggests that firms with weak CSR performance may be seen as undervalued or facing governance issues, making them attractive to potential acquirers. Conversely, the study also revealed that companies with high CSR levels are more likely to be targeted for takeovers. This finding suggests that acquirers may be drawn to firms with strong CSR performance due to their positive reputation and potential for synergies based on shared values or market positioning.

The previous literature has suggested that investors are inclined to pay a takeover premium for companies with high ESG scores during acquisitions. This is attributed to the smoother acquisition process and better post-merger performance

associated with companies that maintain strong stakeholder relationships (Bettinazzi & Zollo, 2017; Salvi et al., 2018). In additions, companies with poor ESG performance may face challenges and experience lower synergies during mergers (Aktas et al., 2011). A lack of consensus among the prior research casts doubts on whether ESG scores are positively or negatively associated with the probability of takeover. Therefore, the following hypothesis is proposed for the current study.

Hypothesis 1A: ESG scores of target firms affect the probability of takeover.

An alternative viewpoint on the connection between ESG spending and business value is offered by the managerial opportunism theory. This argument suggests that participating in ESG activities can be viewed as a sort of managerial opportunism, where managers use these costs to further their own interests rather than maximizing value for shareholders (Gilson, 1989; Ross, 1977). In align with the view point, (Barnea & Rubin, 2010) found in theirs research that ESG expenses are perceived as a waste of money and thus lower the company's market capitalization.

In terms of corporate takeover, in addition to synergy gains, during the acquisition process, managers tend to follow personal interests. For example, Firm size contributes the biggest influence to manager remuneration (Kostiuk, 1990; Veliyath et al., 1994), so the managers have the incentive to increase the firm size beyond the optimal point, as it gives protection against market discipline. Furthermore, (Tanthanongsakkun et al., 2023) suggested that stronger takeover vulnerability motivates the manger to make greater efforts to reduce carbon emissions.

To conclude, when the investment in ESG passes a certain threshold, it no longer benefits the shareholder and gives a spark to external control mechanisms, such as corrective takeover. These predictions are in alignment with (Jensen & Ruback, 1983) view of the takeover market as one “in which alternative managerial teams compete for the rights to manage corporate resources.” (Friedman, 2007) suggests that bidders can “takeover when a manager’s actions in the name of social responsibility have reduced the corporation’s profits and the price of its stock”. Therefore, it should have an optimal level of ESG for the firms in terms of takeover probability, which concluded with hypothesis 1B.

Hypothesis 1B: ESG scores of target firms affect the probability of takeover but at a diminishing rate such that there is an optimal level of ESG scores.

Higher ESG (Environmental, Social, Governance) scores have been associated with a reduction in the cost of capital, as noted by (Chen et al., 2023), This implies that companies with strong ESG practices are perceived more favorably by investors, leading to lower financing costs. However, it is crucial to acknowledge that, according to findings (Lööf et al., 2023) there is a trade-off involved. While elevated ESG scores contribute to lowering the cost of capital, they may simultaneously impose constraints on the upside return potential for the firm.

Moreover, research by (Shakil, 2021) suggests that very high ESG scores might increase total financial risk for a company. This implies that, despite the positive aspects of ESG in terms of cost of capital, an excessively high commitment to ESG practices may introduce additional financial risks that need careful management. Therefore, it is important for firms to maintain an optimal level of ESG that enhances firm performance without incurring excessive agency costs.



Hypothesis 2A: The relationship between ESG score and target shareholder wealth will be positive,

According to the study conducted by (Fairhurst & Greene, 2022), there exists a non-linear association between the acquired firms' CSR and the wealth gain experienced by their shareholders during takeover activities. The target shareholders' wealth gains are assessed by calculating CAR, which involves comparing actual returns of the target firm with the returns predicted by the market index during a specific period before the announcement of the merger (Mulherin & Aziz Simsir, 2015; Schwert, 2000).

Based on the existing literature, it is expected that higher ESG scores will positively influence target shareholder returns. Companies with better ESG performance are often perceived as more responsible and sustainable, which can enhance their long-term prospects and generate positive market reactions during takeover announcements (Fatemi et al., 2018). These companies may enjoy a better reputation, stronger stakeholder relationships, and improved operational efficiency, leading to increased shareholder value.

Additionally, investors are increasingly considering ESG factors when making investment decisions, as literature has found that firms with high ESG scores can deliver comparable or even superior financial performance (Camilleri, 2020; Schueth, 2003). Consequently, a higher ESG score of the target firm can attract greater investor interest and give rise to positive CAR for target shareholders. It is imperative to acknowledge that the relationship between ESG score and target shareholder wealth may exhibit a non-linear pattern as mentioned in the hypothesis 1A and 1B which lead to hypothesis 2B.

Hypothesis 2B: The relationship between ESG score and target shareholder wealth has non-linear relationship

Building upon this literature, this paper emphasizes the implication of ESG factors in merger decisions. This paper aims to find whether ESG considerations are indeed a significant factor or not a factor in shaping the likelihood of takeovers in the Asia-Pacific region and emerging markets. In addition, the paper tries to find the

association between ESG and target shareholder wealth gain during takeover announcement. By examining the effect of ESG on takeover likelihood, this research extends the understanding of the complex dynamics in merger and acquisition decision-making.



### **3. Chapter (3) Research Design and Methodology**

#### **3.1 Sample and Data**

The study analyzed takeover activities over 12-year period from 2011 to 2022. The data for mergers and acquisitions were collected from the Securities Data Company Platinum database (SDC), with a specific focus on deals that had a minimum value of 1 million to ensure their economic significance, and bidder aimed to have substantial control over the target company after the deal. The sample was restricted to acquisitions carried out by publicly listed companies, both as acquirers and target firms.

For the ESG analysis, data were collected from Refinitiv over 12-year period from 2011 to 2022. Refinitiv's database offers comprehensive historical data from 175 countries, allowing for a robust assessment of ESG factors. Finally, the daily stock prices and country specific market index are collected from Bloomberg Database to calculate CAR. The definition of takeover activity encompassed mergers, tender offers, and leverage buyouts, as the study aimed to examine the relationship between ESG and corporate takeovers, mergers, and acquisitions in the Asia-Pacific region and emerging markets.

The study focused on the countries in the Asia-Pacific region that have a nominal GDP exceeding 200 billion US dollars according to the IMF. Within these countries, the industries are categorized using the Global Industry Classification System (GICS) – Refinitiv or the Standard Industrial Classification (SIC) code - SDC, providing a detailed classification up to the 4-digit level. By considering specific countries and industries, the research aims to provide a comprehensive analysis of the interplay between ESG factors, uncertainty, and corporate takeover activities in the Asia-Pacific region.

Furthermore, the study incorporated the uncertainty index for merger and acquisition deals by leveraging data from the World Uncertainty Index or World Economic Uncertainty Index. This inclusion was motivated by the understanding that the occurrence of merger and acquisition deals and business transactions is influenced by the level of uncertainty prevailing in a country.

Table 1 below summarized the distribution of firms across countries in both the developed and emerging markets.

**Table 1- Distribution of Sample across Asia-Pacific Market**

No	Country List	Observations	Percentages
1	Australia	100	13.79%
2	China	86	11.86%
3	Hongkong	82	11.31%
4	India	44	6.07%
5	Indonesia	16	2.21%
6	Japan	190	26.21%
7	Korea	59	8.14%
8	Malaysia	23	3.17%
9	New Zealand	21	2.90%
10	Philippine	9	1.24%
11	Singapore	18	2.48%
12	Taiwan	53	7.31%
13	Thailand	23	3.17%
14	Vietnam	1	0.14%
Total		725	100.00%

The samples firms in the study are not only controlled for time, but also for their specific industry category based on the Global Industry Classification Standard (GICS). Table 2 provides distribution of firms across the industry classification based on the (GICS).

**Table 2 - Firm Distribution of Sample across Industry**

No	Industry Sector	Observations	Percentages
1	Automobiles & Components	36	4.97%
2	Banks	55	7.59%
3	Capital Goods	74	10.21%
4	Commercial & Professional Services	7	0.97%
5	Consumer Discretionary Distribution & Retail	23	3.17%
6	Consumer Durables & Apparel	19	2.62%
7	Consumer Services	17	2.34%
8	Consumer Staples Distribution & Retail	8	1.10%
9	Energy	20	2.76%
10	Equity Real Estate Investment Trusts (REITs)	23	3.17%
11	Financial Services	36	4.97%
12	Food, Beverage & Tobacco	37	5.10%
13	Health Care Equipment & Services	18	2.48%
14	Household & Personal Products	6	0.83%
15	Insurance	13	1.79%
16	Materials	65	8.97%
17	Media & Entertainment	25	3.45%
18	Pharmaceuticals, Biotechnology & Life Sciences	35	4.83%
19	Real Estate Management & Development	34	4.69%
20	Semiconductors & Semiconductor Equipment	12	1.66%
21	Software & Services	17	2.34%
22	Technology Hardware & Equipment	46	6.34%
23	Telecommunication Services	22	3.03%
24	Transportation	40	5.52%
25	Utilities	39	5.38%
	Total	725	100.00%

Table 3 provide the descriptive statistics for the main variables involved in the study.

**Table 3 - Descriptive Statistics**

Statistic	Mean	Median	SD	Min	Max
ESG	37.76	37.22	22.61	0.97	89.42
Size	21.29	22.64	5.77	2.00	28.93
NITA	0.38	0.36	0.31	-0.97	1.00
Leverage	0.66	0.55	2.18	0.11	46.69
CCETA	0.06	0.00	1.42	0.00	37.60
MTB	2.35	1.49	2.83	0.16	28.75
Sale Growth	0.28	0.01	3.54	-0.96	64.61
Stock Return (YTD)	0.17	0.17	0.57	-1.00	4.13
WUI	31.34	34.00	15.39	3.00	56.25
Ln (MVE)	12.60	13.34	2.58	4.27	16.69
CAR [-63, +1]	0.01	0.04	0.15	-0.65	0.38
CAR [-20, +1]	0.01	0.01	0.12	-0.70	0.27

Where,

ESG = Environmental, Social, Governance Combined Score

Size = Ln (Total Asset)

NITA = Net Income Divide by Total Asset

Leverage = Total Asset divided by Total Liabilities

CCETA = cash and cash equivalent divided by total asset

MTB = Market to Book ratio

WUI = World Uncertainty Index

Ln (MVE) = Ln (Market Value of Equity)

CAR [-63, +1]=Cumulative Abnormal Return, even window of (-63, +1)

CAR [-20, +1]= Cumulative Abnormal Return, even window of (-20, +1)

In terms of the primary independent variable, ESG, the mean combined score across all firms is 37.76 out of a maximum score of 100, suggesting a lower bound on overall ESG performance based on the sample data for the Asia-Pacific region. Regarding cumulative abnormal returns, the average CAR exhibits a positive value, signifying that, on average, takeover announcements have a positive impact on target shareholder wealth.

### 3.2 Methodology

#### Part 1: Pseudo targets and empirical specification for likelihood tests

To examine the probability of a firm being a takeover target, in this paper, the model adopts an established approach from prior literature (Bena & Li, 2014; Fairhurst & Greene, 2022) and employs a binary logistic regression model to estimate takeover likelihood. In constructing a control sample, we implement a two-step process. Firstly, for each target firm involved in a deal announcement at time  $t$ , we match it with up to five control firms from time  $t-3$  (three years before the deal). This approach allows us to account for the temporal clustering of mergers and acquisitions (Maksimovic et al., 2013; Mitchell & Mulherin, 1995).

Secondly, recognizing the fact that the M&A activities are influenced by specific industry shocks, each target firm is matched with pseudo firms controlling for industry, size and book to market ratio. These additional steps, captures not only time clustering but also by industry (Andrade et al., 2001; Harford, 2005). Furthermore, in the process of matching control firms, the model employed propensity scores estimated using size and book-to-market (B/M) ratios. Incorporating the B/M ratio is important as prior research suggests it captures growth opportunities, overvaluation, and asset complementarity, all of which are significant drivers of M&As (Andrade et al., 2001; Rhodes-Kropf & Robinson, 2008; Rhodes-Kropf & Viswanathan, 2004; Shleifer & Vishny, 2003).

In the analysis, to take into account for the potential influence of country uncertainty on M&A activities, both in cross-border and in-bound acquisitions. The world uncertainty index is included in the model. The underlying assumption is that higher uncertainty indexes in a country dampen M&A activities, whereas lower uncertainty indexes facilitate merger and acquisition transactions (Paudyal et al., 2021).

The specification of the takeover likelihood model is as follows:

$$\text{Probability (takeover of Actual Target } i,j) = \beta_0 + \beta_1 * \text{ESG Score } i,j + \beta_2 * \text{ESG Score}^2 i,j + \beta_3 * \text{Size } i,j + \beta_4 * \text{ROA } i,j + \beta_5 * \text{Leverage } i,j + \beta_6 * \text{cash asset ratio } i,j + \beta_7 * \text{Market to book ratio } i,j + \text{WUI}_{i,j} + \varepsilon_{i,j}$$

The study utilizes two dependent variables: "actual target" and "pseudo-target." The former is a binary variable indicating the occurrence of a takeover event (assigned value of one), while the latter is assigned value of zero. The independent variables include size (represented by the natural logarithm of book assets), return on assets (ROA), leverage ratio, cash, and cash equivalents scaled by total assets, market-to-book assets ratio, sales growth, and stock return. The coefficient estimate for  $\beta_1$  examines the linear relationship between ESG Score and the likelihood of a takeover, and the inclusion of  $\beta_2$  (square term) allows for the exploration of potential nonlinearity in this relationship.

## **Part 2: Measuring target shareholder wealth**

To examine relationships between ESG and target shareholder wealth gain during the takeover activity. The estimation of abnormal returns for target shareholders is done by applying an event study methodology (Brown & Warner, 1985; Fama et al., 1969). An event study is a statistical procedure that estimates the stock market reaction to new information related to a firm such as M&As, earnings or dividend announcements, debt or equity issues, investment decisions, and stock splits (Corrado, 2011; MacKinlay, 1997).

Firstly, I calculated the log return of individual stock prices and index prices, and then calculate cumulative abnormal return associated with deal announcement using event window of (-20, +1) following the past literature (Gaspar et al., 2005). I also measured the wider period by setting the event window to be (-63, +1). The longer estimation events ensure the effect of the original date announcement of the takeover event: the date when the target company is first publicly disclosed as a possible takeover candidate is included in the actual announcement date. Even though using (+5, -5), windows yield similar results (Mulherin & Aziz Simsir, 2015; Schwert, 2000).

The target shareholder wealth gains regression model is specified as follows:

$$\text{CAR}_{k,n,t} = \gamma_0 + \gamma_1 * \text{ESG Score}_{k,n,t} + \gamma_2 * \text{ESG score}^2_{k,n,t} + \gamma_3 \text{ market value of equity} +$$



$$\gamma_4 \text{leverage}_{k,n,t} + \gamma_5^* \text{market to book ratio}_{k,n,t} + \lambda_{n,t} + \varepsilon_{k,n,t}$$

Where the dependent variable is the cumulative abnormal return to target shareholder  $k$ . The vector  $X$  includes indicator variables capturing if the deal is a horizontal merger, and friendly merger. The model also controls for the bidder's public status and three key target characteristics: market value of equity, leverage, and market-to-book ratio. GICS industry code by country fixed effects ( $\lambda_{n,t}$ ) was included in the model to hold constant any country factors that might affect stock returns.

### 3.3 Control variables

#### Size

Different measures are used as proxies for firm size, of which the most common ones are total assets, sales, and market value of equity (Dang et al., 2018). They used different measure of proxy for firm size and found that larger firms (total assets) are more likely to be targeted in mergers and acquisitions in their model. The sign and significance change for sales growth and leverage when they use the log of sales and the R-square.

On the other hand, in a previous study conducted by (Comment & Schwert, 1995) used the log of total assets as the measure of firm and found that larger firms are more likely to adopt anti-takeover measures due to their visibility and attractiveness as potential targets. (Ramaswamy & Waeglein, 2003) also discovered a negative association between post-merger performance and relative target size, while provided a list of firm size proxies and coefficients used in takeover likelihood models. Small firms are found to be less vulnerable to overpriced stock offers, with stock acquirers of small targets experiencing less negative announcement returns.

The choice of proxy can have different implications for various aspects of corporate finance, such as firm performance, board structure, dividend policy, financial policy, compensation policy, investment policy, corporate control, and mergers and acquisitions (Hashmi et al., 2020). The selection of firm size measurement can impact the results and conclusions drawn in studies. The impact of firm size on takeovers and shareholder wealth remains mixed. Considering the literature, this study will utilize the natural logarithm of total assets as a control variable in the regression model.

**Leverage, Return on asset (ROA), sale growth**

Firms with high levels of financial leverage, which serve as a proxy for expected costs of financial distress, are less likely to be targeted for takeovers (Opler & Titman, 1994). This is because acquiring a highly leveraged company can negatively affect the acquirer's optimal capital structure and potentially decrease its market value. In addition, (Khatami et al., 2015) found that higher financial constraints of the target firm increase the shareholder wealth gain of the target firms. The inclusion of variables such as Return on Assets (ROA) total income divided by total assets and sales growth in the study is important as they provide insights into a firm's profitability and operational efficiency (Sethibe & Steyn, 2016). ROA can also be used as a measure to assess the synergy gains resulting from an acquisition (Liu et al., 2010).

**Cash asset ratio, market-to-book ratio, and stock return**

To account for the liquidity component of the target firm, I included the cash assets ratio as a control variable, which can potentially impact corporate takeovers (Harford, 2005). The increase in cash-based acquisitions suggests that there is an economic motivation driving merger activity. (Erel et al., 2015) findings indicate a significant decrease in the cash holdings of target firms and a significant increase in investment following the acquisition. Additionally, the market-to-book ratio and stock return were included as control variables in the model. A high market-to-book ratio indicates an overvaluation of the current stock price, which attracts equity-financed acquisitions. When stock prices are high, firms are more likely to issue shares at favorable rates, creating a favorable environment for acquisition activity (Rhodes-Kropf & Viswanathan, 2004).

## 4. Chapter (4) Baseline Empirical Result

### 4.1 ESG and Takeover Likelihood

The empirical examination of whether Environmental, Social, and Governance (ESG) scores influence the likelihood of corporate takeovers is an essential facet of corporate finance and governance research. The binary logistic regression model was utilized to evaluate the relationship. In table 4, columns (1) and (2), I regressed the indicator variable target firms, with and without the inclusions of control variables. The results revealed a statistically significant and positive linear relationship between ESG scores and the likelihood of a firm being subject to a takeover, indicating that as the level of ESG score increases the probability of a takeover increase. The view is in support of the synergistic takeover action. This positive connection persisted even after controlling for the impact of control variables. These findings strongly align with Hypothesis 1A, which predicted that an increase in ESG scores can increase the probability of takeover.

In the subsequent column (3) of the analysis, I introduced an ESG square term to capture a nonlinear relationship between ESG scores and the probability of takeovers. In addition, I extended the analysis in column (4) by incorporating additional control variables. Notably, the coefficient associated with the ESG square term remained positive in column (3) but took a negative direction in column (4). However, it's essential to emphasize that in both scenarios, the coefficients failed to attain statistical significance.

This pattern of results suggests the potential presence of a nonlinear relationship within the dataset. Although such a nonlinearity was evident, it was not statistically significant. This outcome is consistent with the implications of Hypothesis 1B, which posits the likelihood of a nonlinear relationship between ESG scores and takeover probability. Despite the observed trend, the statistical insignificance of the ESG squared term underscores the need for further examination to clarify the precise nature of this relationship.

The results, while not confirming the presence of a nonlinear ESG-takeover relationship, still point to the importance of conducting more nuanced investigations to capture any underlying intricacies. These findings highlight the complexity of the

interplay between ESG factors and corporate takeover dynamics and invite future research to explore this intriguing avenue with more comprehensive datasets and refined methodologies.

In models (2) and (4), a noteworthy observation emerges the importance of the variable representing "World Uncertainty" consistently exhibits a significant and negative relationship with the likelihood of corporate takeovers. The result implied that if the uncertainty of a country decreases, it allows the probability of a takeover to increase. World uncertainty is often influenced by global economic conditions and a country's political risk. In times of global economic stability, businesses may be more willing to invest in mergers and acquisitions. Conversely, during periods of high uncertainty (e.g., global financial crises), takeover activity may decrease. In addition, a decrease in uncertainty can increase investor confidence which aids the takeover process.

**Table 4 - ESG and probability of takeover**

VARIABLES	(1) takeover	(2) takeover	(3) takeover	(4) takeover
ESG	0.0144*** (0.00491)	0.0164*** (0.00551)	0.000780 (0.0181)	0.0178 (0.0208)
ESG square term			0.000162 (0.000208)	-0.0000169 (0.000234)
Size		-0.0137 (0.0253)		-0.0137 (0.0253)
NITA		-0.595 (0.384)		-0.595 (0.384)
Leverage		0.175 (0.191)		0.174 (0.191)
CCETA		0.191 (0.241)		0.191 (0.241)
MTB		-0.0630 (0.0564)		-0.0631 (0.0565)
Sale Growth		-0.0292 (0.110)		-0.0292 (0.110)
Stock Return (YTD)		0.191 (0.227)		0.191 (0.227)
WUI		-0.0138* (0.00757)		-0.0138* (0.00757)
Constant	-2.476*** (0.239)	-1.706** (0.665)	-2.273*** (0.346)	-1.729** (0.734)
Observations	725	650	725	650

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1



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To visually illustrate the relationship between the likelihood of corporate takeovers and ESG scores, I segmented the sample data into ten decile groups, by creating a dummy variable based on their respective ESG scores. Within each decile, I predicted the probability of takeovers. The observed trend reveals an overall positive association between the likelihood of takeovers and ESG scores. However, the predicted probabilities of takeover for the target firm decline in (the 9th and 10th deciles). In this segment, the positive relationship appears to diminish.

Figure 1 shows how ESG level are grouped into respective ESG decile and Figure 2 provide a comprehensive view for the predicted probability of takeover by each ESG decile.

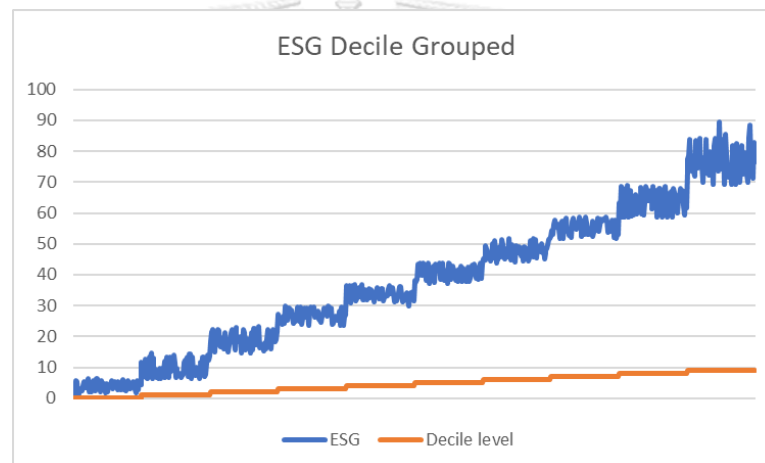


Figure 1 - ESG distribution level according to each decile

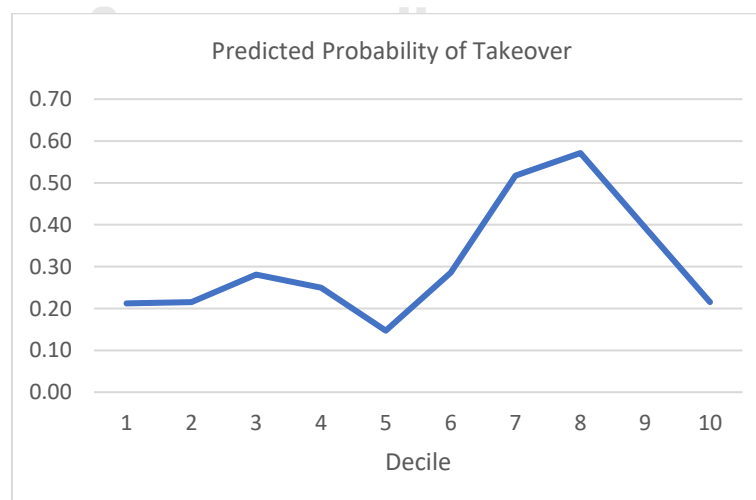


Figure 2 - Mean predicted probability of target firm takeover by ESG Score decile

Breaking down the predicted probability for each ESG level, the highest predicted probability is the 8th decile 57% and the lowest is the 10th decile 22%. In addition, it is found that lower deciles, from 1<sup>st</sup> decile to 5<sup>th</sup> generally exhibit relatively small effects on takeover likelihood. When moving from decile 5<sup>th</sup> to 6<sup>th</sup>, ESG can increase the probability of takeover by 14%. The ESG score still has a positive association with takeover likelihood until the 8<sup>th</sup> decile where ESG increases the predicted probability of takeover up to 57% which has the highest probability of takeover chance. Moving from the 8<sup>th</sup> decile to the 9<sup>th</sup> decile the probability of a takeover is reduced by 18% and at the 10th decile the predicted probability of a takeover is declined to 22%. This implies that ESG has a positive effect on the probability of takeover but also has a diminishing effect, meaning that excessive use of resources for ESG is associated with inefficient utilization of resources on behalf of shareholders.

This analysis underscores the intricate dynamics between ESG scores and the likelihood of corporate takeovers, revealing a potential threshold effect in the upper echelons of ESG performance.

#### **4.2 ESG and Target Shareholder Wealth Gain**

Subsequently, I explored the relation between the ESG scores of target firms and the wealth gains experienced by their shareholders. To investigate this relationship, I initially calculated the Cumulative Abnormal Returns (CAR) within the [-20, +1] event window. This measure was determined by using the ln return of both the market index and individual stock prices.

In assessing the relationship between ESG scores and CAR, first I considered the possibility of a linear association. An inverse correlation would imply that target shareholders face repercussions for allocating resources to ESG initiatives, representing a penalizing effect. Conversely, a positive correlation would suggest that target firms receive a premium, signifying a mutually beneficial synergy between ESG efforts and shareholder wealth.

I presented the findings related to target returns in Table 5. In Column (1), I conducted a regression analysis of the Cumulative Abnormal Returns (CAR) within the [-20, +1] event window against the ESG scores. The results indicated a positive yet

statistically insignificant relationship. This suggested that the connection between ESG and wealth gain for target shareholders was not linear. In column (2), I expanded the regression model by introducing control variables while maintaining the positive yet insignificant relationship between ESG and target returns. This supported the idea that the relationship between the target shareholder wealth and the ESG scores of the firm was not linear.

To capture the possibility of non-linearity, I introduced the ESG squared term to the model. This revealed a positive and statistically significant association between ESG and target with and without control variables. Table 5, column (4) showed that a 1% unit increase in ESG score gives a 0.738% increase in CAR on average. This finding is in align with the previous studies which indicate that Higher ESG scores are expected to positively influence target shareholder returns by enhancing long-term prospects and generating positive market reactions. Moreover, it implies that shareholder can be socially responsible in their investment strategy without giving up on their investment return (Schueth, 2003).

In addition, the ESG square term exhibited a negative relationship with CAR, implying a quadratic relation between ESG scores and target shareholder wealth gain. I integrated the control variables into the model in column (4), and continued to observe the non-linear relationship between CAR and ESG, and found negative and significant results in the model, reinforcing the notion that ESG has a diminishing effect on the price premium for takeover. This result implied that excessive allocation of resources in the context of ESG will lower the merger and acquisition price premium for the target shareholder which is in alignment with hypothesis 2B.

In summary, the analysis indicates that higher ESG scores are linked to higher Cumulative Abnormal Returns (CAR) among target firms. However, it's important to note that this relationship is not strictly linear. As ESG scores increase further, the strength of this relationship diminishes, as evidenced by a significant negative quadratic component. This suggests that very high ESG scores may not yield the same positive impact on CAR as moderately high scores. In essence, the market seems to penalize the excessive resource allocation toward ESG efforts



**Table 5 - ESG and the division of Wealth Gain**

Event Window [-20, +1] VARIABLES	(1) CAR	(2) CAR	(3) CAR	(4) CAR
ESG	0.0000664 (0.000611)	0.000188 (0.000721)	0.00571** (0.00225)	0.00738*** (0.00252)
ESG square term			-0.00066105** (0.000252)	-0.0000865*** (0.0000292)
Ln (MVE)		-0.00165 (0.00916)		0.00704 (0.00919)
Horizontal		0.0180 (0.0333)		0.00237 (0.0320)
Friendly		0.0672 (0.0577)		0.0805 (0.0550)
Leverage		-0.000278 (0.00245)		-0.00110 (0.00235)
MTB		-0.00222 (0.00710)		-0.00291 (0.00675)
Constant	0.0395 (0.0588)	0.0246 (0.0927)	-0.0406 (0.0644)	-0.133 (0.103)
Country FE	Yes	Yes	Yes	Yes
Observations	93	90	93	90
Adj R-squared	0.175	0.205	0.241	0.292

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Consequently, the findings also imply that firms should aim to maintain an optimal ESG score. This approach is essential for maximizing the potential benefits in terms of takeover outcomes. In other words, there appears to be a point of diminishing returns regarding ESG efforts, and finding the right balance is critical for corporate success from a takeover perspective.

In Table 6, I examined the target wealth gain within the [-63, +1] window surrounding the initial announcement of the deal. Notably, did not observe a linear relationship between the ESG score and target wealth gain, regardless of whether control variables were introduced or not, as evidenced in columns (1) and (2). However, a consistent finding emerged when examining the negative and statistically significant coefficient associated with the ESG squared term. This trend held both without and with control variables, as shown in columns (3) and (4).

**Table 6 - ESG and the division of Wealth Gain**

Event Window [-63, +1] VARIABLES	(1) CAR	(2) CAR	(3) CAR	(4) CAR
ESG	-0.000550 (0.000716)	-0.000225 (0.000840)	0.00399 (0.00270)	0.00642** (0.00300)
ESG square term			-0.0000526* (0.00003)	-0.00008** (0.0000348)
Ln (MVE)		-0.00131 (0.0107)		0.00673 (0.0109)
Horizontal		-0.00781 (0.0388)		-0.0223 (0.0382)
Friendly		0.0589 (0.0672)		0.0712 (0.0655)
Leverage		0.000851 (0.00286)		0.0000913 (0.00280)
MTB		-0.00624 (0.00828)		-0.00687 (0.00805)
Constant	0.0871 (0.0689)	0.0853 (0.108)	0.0234 (0.0773)	-0.0606 (0.123)
Country FE	Yes	Yes	Yes	Yes
Observations	93	90	93	90
Adj R-squared	0.195	0.224	0.224	0.278

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The variance in the coefficients of ESG and its squared term between Table 5, representing the event window of [-20, +1], and Table 6, depicting the event window of [-63, +1], can be attributed to the temporal dynamics of these variables concerning corporate takeovers. The coefficients of ESG and ESG square term show substantially larger magnitudes and are statistically more significant in a relatively shorter event period. This result may indicate that ESG had a greater impact on CAR during the takeover announcement.

## 5. Chapter – (5) Discussion

### 5.1 Interpretation of the result

In conclusion, the paper dives into the relationship between Environmental, Social, and Governance (ESG) scores and the likelihood of corporate takeovers, as well as their impact on target shareholder wealth. The initial investigation in Table 4, found compelling evidence suggesting a positive linear relationship between ESG scores and the probability of a corporate takeover. This positive association remained robust even after considering various control variables. These findings closely align with Hypothesis 1A, suggesting that higher ESG scores are associated with an increased likelihood of a takeover.

However, I further explored the possibility of nonlinearity by introducing an ESG square term. Surprisingly, in both models (with and without control variables), and observed an insignificant quadratic relationship. This intriguing result aligns with the predictions of Hypothesis 1B, hinting at the presence of a potential nonlinear ESG-takeover relationship within our dataset. While this nonlinearity was evident, its statistical insignificance underscores the need for further investigation to elucidate the precise nature of this complex relationship.

In a consistent pattern across all four models, a standout observation emerged— "World Uncertainty" exhibited a significant negative relationship with the likelihood of corporate takeovers. A decrease in WUI can increase the probability of a takeover. This insight highlights the role of external factors and investor confidence in takeover dynamics.

Furthermore, I visually represented the relationship between takeover likelihood and ESG scores by segmenting the sample data into deciles based on ESG scores. This analysis revealed an overall positive association between takeover likelihood and ESG scores, indicating the attractiveness of ESG for potential acquirers, positive and statistically significant at 7<sup>th</sup> and 8<sup>th</sup> decile. Nonetheless, the predicted probability of target firm takeover declined in 9<sup>th</sup> and 10<sup>th</sup> decile. This pattern implies the presence of an optimal ESG level that maximizes takeover attractiveness, and deviations from this level may lead to diminishing returns.

Moving on to the analysis of target shareholder wealth gain (Table 5), I explored the Cumulative Abnormal Returns (CAR) within the [-20, +1] event window. The results showed no linear relationship between ESG scores and CAR, regardless of control variables. However, the introduction of the ESG squared term revealed a significant quadratic relationship between ESG scores and target shareholder wealth gain. The finding is aligned with (Fatemi et al., 2018; Zhao et al., 2018) which provides evidence that investing in ESG can increase shareholder wealth gain. In simpler terms, while higher ESG scores are associated with increased CAR, this relationship is not strictly linear and ESG has a diminishing effect on price premium on takeover bid. This indicates that extremely high ESG scores may not provide the same boost to CAR as moderately high scores, reflecting a potential market penalty for excessive resource allocation to ESG efforts.

Consequently, the study highlighted the importance of maintaining an optimal ESG score to maximize potential benefits in terms of takeover outcomes. In other words, there appears to be a point of diminishing returns regarding ESG efforts, and striking the right balance is crucial for corporate success from a takeover perspective. The findings not only contribute to the understanding of the complex dynamics between ESG and corporate takeovers but also invite further research with more comprehensive datasets and refined methodologies to unravel the nuances of this relationship.

## 5.2 Robustness Check

In logistic regression analysis, I initially incorporated a one-year lag effect for the dependent variable, "target firms," to account for potential temporal dependencies in the takeover transactions. However, in a robustness check, I conducted another logistic regression without any lagged effect on "target firms" and found that the results remained similar, as provided in Table 7. This intriguing consistency across both model specifications suggests that the logistic regression model captures stationary effects within the takeover transactions.

The persistence of similar results regardless of the inclusion or exclusion of the lagged effect underscores the reliability and robustness of the findings. It implies that the underlying dynamics driving takeover transactions exhibit stability over time, reinforcing the validity of the analytical approach. This observation lends credibility to

the conclusion that the relationship between ESG scores and takeover likelihood, as well as their impact on target shareholder wealth, is a reliable and consistent aspect of corporate finance dynamics.

**Table 7 - ESG and Likelihood of Takeover**

VARIABLES	(1) takeover	(2) takeover	(3) takeover	(4) takeover
ESG	0.0171*** (0.00475)	0.0182*** (0.00511)	-0.00628 (0.0172)	-0.00263 (0.0181)
ESG square term			0.000276 (0.000196)	0.000246 (0.000206)
Size		-0.0195 (0.0202)		-0.0213 (0.0202)
NITA		0.407 (0.347)		0.398 (0.350)
Leverage		-0.166 (0.509)		-0.151 (0.510)
CCETA		-5.090 (4.737)		-5.027 (4.753)
MTB		-0.0500 (0.0505)		-0.0499 (0.0507)
Sale Growth		-0.748 (0.551)		-0.713 (0.552)
Stock Return (YTD)		-0.0537 (0.225)		-0.0514 (0.226)
WUI		0.00637 (0.00786)		0.00648 (0.00790)
Constant	-2.546*** (0.233)	-2.279*** (0.577)	-2.188*** (0.333)	-1.930*** (0.642)
Observations	812	739	812	739

Standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

This robustness check enhances the overall strength of the study by demonstrating the resilience of our results to variations in modeling, and it contributes to the confidence in the conclusions drawn from the paper.

### 5.3 Conclusion

This research delved deeply into the interplay between a firm's ESG (Environmental, Social, and Governance) performance and the likelihood of corporate takeovers. Through rigorous modeling and empirical analysis, the study reveals a significant, positive relationship between a firm's ESG standing and its susceptibility to takeover. However, it does not stop there; the research uncovers the intriguing

possibility of a non-linear connection between a firm's ESG score and takeover likelihood, as indicated by the in-depth decile analysis.

Furthermore, this study highlights the relationship between a firm's ESG performance and the wealth of its target shareholders. According to the research, synergistic takeovers make sense because better ESG performance translates into positive cumulative abnormal returns for target shareholders. However, by identifying a clear, negative, and significant non-linear association (ESG squared term) with CAR, the research highlights a crucial warning, ESG investing has a diminishing effect on wealth gain. Essentially, it emphasizes that a company's over-investment in ESG standards may reduce the price that target shareholders receive during corporate takeovers. In other words, the market views excessive investing in ESG and inefficient asset allocation by managers on behalf of shareholders.

These insights bear substantial implications for a wide array of stakeholders. For the investor the paper aid in making an informed decision before investing in a high ESG firm by providing the market view in term of price premium from takeover, emphasizing that the market reacts positively to moderate ESG performance. For company shareholders, a crucial message emerges – maintaining an optimal ESG level is vital for maximizing the potential gains in a corporate takeover, both in terms of price premiums and overall success.

In summary, this research offers a nuanced understanding of the intricate relationship between ESG and corporate takeovers. It not only invites further exploration with comprehensive datasets and refined methodologies but also underscores the paramount importance of a balanced ESG strategy for sustainable corporate growth and value creation.

## REFERENCES



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