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**Impact of ESG Performance on M&A Returns: Evidence
from Emerging Markets in Asia**

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The views stated in this thesis are those of the author and not necessarily those of the supervisor, second assessor, Erasmus School of Economics or Erasmus University Rotterdam.

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Abstract

Using a sample from emerging markets in Asia, this paper provides evidence on the effects of corporate sustainability performance on mergers and acquisitions (M&A) over the years 2010 to 2022. This was measured using the acquirers' overall ESG scores, the individual environmental (E), social (S) and governance (G) pillar scores and its sectoral aspects. By performing an event study, the findings show a positive relationship between the overall ESG score and the cumulative abnormal returns of acquirers in ASEAN countries. Moreover, the social pillar score is found to have a positive relationship with the cumulative abnormal returns in India, ASEAN and South Korea. Furthermore, the results in China and South Korea suggests that acquirers with better environmental performance tends to destroy shareholder value, but positively generates shareholder value in environmentally sensitive sectors. Overall, the results imply that the market tends to view the effects of corporate sustainability performance on M&As differently across different countries, and therefore highlights the importance of taking the differences in the corporate sustainability principles and behavior of its stakeholders into account when completing M&A deals.

1 Introduction

Over recent years, there has been an increase in global attention towards integrating responsible and sustainable principles into business strategies. As a result, this has incentivized governments, small and large firms, banks, insurance companies, and investment funds to reevaluate their way of operating in order to align themselves according to these principles. One of the main challenges firms are currently facing is implementing these qualitative principles to the quantitative business models and key performance indicator of firms. The efforts made by analysts in assessing the key performance indicator of firms through the framework of environmental (E), social (S) and governance (G) factors has helped advanced the capability of firms to implement the responsibility and sustainability principles in their strategies. Throughout the years, several frameworks, agreements, and treaties have been made to establish policies in order to mitigate the impacts of climate change¹.

This paper focuses specifically on the context of M&As for the following reasons. The first reason is that M&As are seen as one of the most important decisions a firm can make and can have a significant effect on shareholders' wealth. The second reason is that events such as M&As are unexpected and therefore can be seen as an opportunity to study the market reactions towards strategic factors involved under these transactions.

Investors and regulators have recognized that M&As can have a significant impact on a firm's sustainability performance and its commitment to responsible business practices over the years. Many papers have found that firms with a strong CSR performance and sustainability credentials are seen as more attractive to investors, tend to enjoy a more enhanced reputation, and may reduce risk profiles. Therefore, the increasing interest in ESG considerations during M&A transactions raises questions on whether firms' CSR and sustainability practices influence the M&A performances during periods surrounding M&A announcements. Many existing papers that have explored this relationship provided results that differ across different regions, as discussed in Section 2.2..

Despite having many existing papers discussing this topic, there has not been any research that focuses its attention on markets that are relatively new in integrating ESG performance into firm valuations. One of the markets that is interesting to investigate on is the emerging markets in Asia.

¹ Some examples of important policies include the United Nations Framework Convention on Climate Change (1992), the Kyoto Protocol (1997) and the Paris Agreement (2015).

There are several reasons on why focusing on emerging markets in Asia would be appropriate for this research: (1) The market is still relatively new when it comes to adopting Corporate Social Responsibility and Sustainability principles into their business strategies, and (2) performing this research can give a general picture on whether investors in an emerging market tend to include such principles into their investment allocation decisions.

Therefore, the following research question can be derived:

To what extent does the ESG performance have an effect on acquirer abnormal returns of firms from emerging markets in Asia surrounding M&A announcements?

Emerging markets in Asia have experienced rapid economic growth and industrial development². However, this has raised concerns about its environmental impact, social inequalities and governance practices. As environmental, social, and governance consciousness rises globally, many stakeholders are increasingly demanding that firms adopt sustainable business practices.

It is important to keep in mind that most of the countries that are considered an emerging market have a diverse range of issues (political, economical and socioeconomical) which may have given the tendency to ignore issues relating to climate change, human rights violations, and many other issues that are reflected in the ESG score. Therefore, focusing this research on these countries can shed light on how firms take into account the ESG pressures, regulatory environments, and societal expectations in the deal-making process. This research aims to give implications of these issues by employing an event study methodology to analyze the relationship between ESG performance and the value creation surrounding these M&A announcements.

By focusing this research on emerging markets in Asia, who are new adopters relative to their developed counterparts in integrating Corporate Social Responsibility (CSR) and sustainability principles, this paper provides two possible contributions: (1) if improving ESG performance leads to a better M&A performance, then firms are incentivized to improve their CSR and sustainability performance. Otherwise, (2) if improving ESG performance does not lead to a more profitable outcome, then policymakers can interfere in order to incentivize firms to disclose information on their CSR and sustainability performance and to take efforts in maximizing these two performances.

² In terms of GDP growth in emerging markets in Asia, countries such as China, India, Indonesia, the Philippines, Thailand and Vietnam have been outperforming other emerging markets over the past two decades (Beattie, 2022).

By performing an event study methodology, the results in this paper tend to be inconsistent across different countries, implying that these countries have differences in the corporate sustainability principles and in the behavior of stakeholders participating in these markets. The performance of the M&As is calculated by estimating its abnormal returns surrounding their announcement dates. The findings show a positive relationship between the overall ESG score and the cumulative abnormal returns in ASEAN countries. Moreover, the social pillar score is found to have a positive relationship with the cumulative abnormal returns in India, ASEAN and South Korea. Furthermore, the results from M&As in China and South Korea also suggests that the market punishes them for a better environmental performance and only rewards them if the acquirers operate in an environmentally sensitive sector.

The findings of this research aims to give implications on firms, investors, policymakers and regulators, by which will provide valuable insights into the role of responsible business practices in shaping deal outcomes and long-term business sustainability. Furthermore, the results also aim to give further economic implications on how firms in emerging markets in Asia can readjust their principles in order to realign with their goals.

The remainder of this paper is organized in the following sections. Section 2 summarizes the theoretical framework and related academic literature. Moreover, a detailed explanation of the methodology, variable construction, sample and data collection are discussed in Section 3. In Section 4, the results are discussed and interpreted relative to the hypothesis. Lastly, Section 5 offers the main conclusions of this research, limitations of this study and provides recommendations for future research.

2 Literature Review

2.1. Origins and Development of ESG

Since this research focuses on the relationship between ESG performance and M&A returns of emerging markets in Asia, understanding the origins and development of ESG would be essential on why this research would be worth investigating on.

The concept of environmental (E), social (S), and governance (G) factors in investment decision making roots from the concept of Corporate Social Responsibility (CSR). The term CSR was first introduced by Bowen & Johnson (1953), in which he defined it as the obligations of corporations to pursue policies, make decisions, and take actions that align with and contribute to the welfare and interests of society at large. In the 1960s and 1970s, the concept of Socially Responsible Investing (SRI) started to gain attention, as investors began excluding companies involved in controversial industries like tobacco or weapons, and they focused on investing in companies that aligned with their values. As a result, SRI set a groundwork for incorporating social and ethical considerations when making investment decisions (Townsend, 2020).

The late 1990s and early 2000s was a period where many notable corporate scandals and failures occurred³. These scandals and failures resulted to a surge of corporate governance reforms. These reforms were aimed to enhance transparency, accountability, and the rights of shareholders (Thompson, 2004). As a result, governance considerations became a fundamental aspect of ESG, which highlights the importance of strong leadership, board composition, and responsible decision-making. Within this same period was also the rise of sustainability reporting, which saw the emergence of sustainability reporting frameworks, such as the Global Reporting Initiative (GRI) and the Carbon Disclosure Project (CDP). These frameworks aim to provide guidelines for companies to disclose their environmental and social performance, promoting transparency and encouraging the integration of sustainability into business practices (Kinderman, 2015).

As more institutional investors started to recognize the materiality of ESG factors to long-term financial performance, the consideration of the environmental, social and governance issues was officially introduced in 2006 by the United Nations Principles for Responsible Investment (UN PRI), to further enhance the integration of ESG factors among institutional investors (Gond & Piani, 2012). These three individual pillars, environmental (E),

³ Some notable corporate scandals and failures include Enron's scandal in 2001, WorldCom's scandal in 2002, the Tyco International scandal in 2002, and the Parmalat scandal in 2003.

social (S), and governance (G), represent the three main areas that firms are expected to report in (UN PRI, 2021). Firstly, the environmental pillar (E) takes into account the metrics such as climate change, resource depletion, waste, pollution, and deforestation. Secondly, the social pillar (S) assesses how firms manage human rights, modern slavery, child labor, working conditions, and employee relations. Thirdly, the governance pillar (G) measures on firms' performance on issues regarding bribery and corruption, executive pay, board diversity and structure, political lobbying and donations, and tax strategy

2.2. ESG Performance and Financial / M&A Performance

As there is growing recognition amongst investors in the sustainability performance of firms, there has been many papers focusing on the relationship between ESG performance and M&A returns from the early adopters of ESG. To the best of the author's knowledge, there are few papers that focuses specifically on emerging markets. However, the papers that are to be discussed in this section give a general picture on what to expect from the relationship between ESG performance and Financial/M&A performance.

Teti et al. (2022) detangle the single effects of the ESG pillar scores, found that a superior social commitment and a higher environmental score are not relevant for M&A value creation, whereas better corporate governance standards affect positively the takeover performance.

By collecting data on M&A transactions provided by Standard & Poor's Capital IQ, Swiatkowski & Frey (2021) measured the the effects of CSR reputation on acquirer returns. They found that acquirers with higher CSR reputation tend to have greater acquirer returns on average and lower acquirer returns for targets with higher CSR reputation. Therefore, their findings imply that CSR reputation holds no explanatory power on expected synergies nor on acquirer returns.

Deng et al. (2013) examines two competing views (i.e., the stakeholder value maximization view and the shareholder expense view) about the effect of a firm's social activities on its merger performance using data on US mergers and found that acquirers with higher CSR performance realize higher merger announcement returns, higher announcement returns on the value-weighted portfolio of the acquirer and the target, and larger increases in post-merger long-term operating performance. These results imply that the acquirers' social performance is an important indicator of merger performance and the probability of its completion, and they support the stakeholder value maximization view of stakeholder theory.

Aktas et al. (2011) conducted a study on whether financial markets care about Socially Responsible Investments (SRIs) in the context of M&As. By collecting data on the Intangible Value Assessment (IVA) ratings for 1108 different firms during the period 2000–2007, they found that acquirers that make socially and environmentally responsible investments tend to be rewarded by the stock market. This paper also found that the environmental and social performance of the acquirer increases following the acquisition of a SRI aware target.

One existing study was found that focuses specifically on an emerging market, which uses a sample of Chinese companies' domestic M&As. They found that the acquirer's ESG rating is positively correlated to the post-M&A performance and deal completion likelihood, and that these results are in line with the instrumental stakeholders' view that high ESG performance could earn support from stakeholders for post M&A synergy creation (Zheng et al., 2022).

Cherkasova & Nenuzhenko (2022) investigates whether investing in ESG projects boosts corporate financial performance by examining separately for seven regions: North America, Latin America, Western Europe, Eastern Europe, Middle East and Africa, emerging Asia, and Developed Asia. They found that the most successful companies in ESG development are international companies and those headquartered in developing Asia, developed Asia or North America. As a result, the authors recommended investors who desire to invest in firms that are actively participating in ESG activities consider international companies headquartered in these mentioned regions.

A paper by Tampakoudis et al. (2021) uses a sample of 889 completed M&As announced by US firms to investigate the relationship between ESG performance and shareholder wealth in the context of M&As before and during the COVID-19 pandemic. They found a negative effect of ESG performance for the shareholders of acquiring firms during the entire sample period. This effect appears to be stronger during the onset of the COVID-19 crisis. These results imply that the costs of sustainability activities outweigh any possible gains during the Covid-19 economic turmoil, hence providing evidence in favor of the overinvestment theory.

A full list of relevant papers exploring the relationship between ESG performance and financial / M&A performance can be found in Table 1.

Table 1: Overview of empirical literature regarding ESG performance and financial / M&A performance

Author(s)	Region & Period	Method	Estimation Period	Market Return Proxy	Event Window	Results
Teti et al. (2022)	Asia, Europe & Americas, 2014-2020	Event Study, Market Model	[-256, -8]	Most important benchmark based on headquarter of firm	[-5, +5], [-2, +2], [-1, +1]	Environmental and Social score not relevant, Governance score positive effect
Swiatkowski & Frey (2021)	S&P Capital IQ, 2010-2019	Event Study, Market Model	[-21, -7]	S&P500, STOXX600	[-5, +5], [-3, +3], [-1, +1]	CSR holds no explanatory power
Deng et al. (2013)	US Mergers, 1992-2007	Event Study, 2SLS Regression	[-210, -11]	CRSP value-weighted return	[-5, +5], [-2, +2], [-1, +1]	CSR performance positive effect on announcement stock returns for acquirers
Aktas et al. (2011)	Global, 1997-2007	Event Study, Heckman 2-Stage Model	[-250, -10]	Most important benchmark based on headquarter of firm	[-1, +1]	Socially and environmentally responsible investments of acquirer is awarded by stock market
Zheng et al. (2022)	China, 2011-2019	Univariate and Multivariate analysis, BHAR	-	Sino-Securities Index (SSI)	[0, +365]	ESG rating positive effect on Buy-and-Hold Abnormal Returns (BHARs)
Cherkasova & Nenuzhenko (2022)	Global, 2011-2019	Random or fixed effects model, multi-year ordered response logit model	-	-	-	Most successful companies in ESG development located in Asia, developed Asia or North America, and international companies
Tampakoudis et al. (2021)	USA, 2018-2020	Event Study, univariate and multivariate cross-sectional regressions, Market Model	[-250, -21]	S&P500, Nasdaq Composite, NYSE Composite	[-3, +3], [-2, +2], [-2, +1], [-1, +2], [-1, +1], [-3, 0], [-1, 0], [0, +3], [0, +1]	Significant negative value effect of ESG performance for shareholders of acquiring firms

2.3. Regulatory frameworks and trends of ESG in emerging markets in Asia

Over the years, countries from emerging markets in Asia have taken ESG initiatives through various regulatory frameworks and changes in investor and firm behavior. Table 2 shows a list of countries from emerging markets in Asia and their initiatives in launching ESG-focused indices in their respective stock exchanges. These countries include China, Hong Kong, India, Indonesia, Japan, Malaysia, Singapore, South Korea, Taiwan and Thailand, with the intention of promoting sustainable and responsible investing. These initiatives are essential for investors and firms to navigate the evolving landscape of ESG investing in these regions.

Table 2: Overview of countries from emerging markets in Asia and their ESG-focused indices

Country	ESG-Focused Indices	Year Launched	Exchange	Source
China	SSE 180 Carbon Efficient Index	2015	Shanghai Stock Exchange	S&P Global, 2015
	CSI 300 Index	2005	Shanghai Stock Exchange	Mackenzie Investments, 2021
Hong Kong	Hang Seng Corporate Sustainability Index	2010	Hong Kong Stock Exchange	Hang Seng Indexes, 2023
India	Nifty100 ESG Index	2018	National Exchange of India	Nifty Indices Limited, 2023
	S&P BSE 100 ESG Index	2017	Bombay Exchange	S&P Dow Jones Indices, 2023
Indonesia	SRI-KEHATI Index	2009	Indonesia Stock Exchange	Indonesia Stock Exchange, 2023
Japan	JPX-Nikkei 400 Index	2014	Japan Exchange Group	Japan Exchange Group, 2015
Malaysia	FTSE4Good Bursa Malaysia Index	2014	Bursa Malaysia	Bursa Malaysia Berhad, 2018
Philippines	n.a.	n.a.	n.a.	n.a.
Singapore	FTSE4Good ASEAN 5 Index	2016	Singapore Exchange	FTSE Russel, 2023
South Korea	S&P/KRX Carbon Efficient Capped Index	2020	Korea Exchange	S&P Dow Jones Indices, 2023
Taiwan	Taiwan ESG Index	2017	Taiwan Futures Exchange	FTSE Russel, 2020
Thailand	FTSE4Good ASEAN 5 Index	2016	The Exchange of Thailand	FTSE Russel, 2023

2.4. Overviews of M&A Deals, ESG Disclosure and Investor Behavior in Emerging Markets in Asia

In order to paint a general picture on how firms and investors behave in emerging markets in Asia, it would be appropriate to first understand the concept of stakeholder theory. In his book “Strategic Management: A Stakeholder Approach,” published in 1984, R. Edward Freeman defined stakeholder theory as a framework for understanding how organizations should make decisions, and that an organization should not only be accountable to its shareholders, but has a moral and ethical obligation to consider the interests of all stakeholders. Furthermore, Freeman emphasized how stakeholder theory is also a framework for strategic management, in which actively engaging and managing relationships with stakeholders can create value for firms and achieve long term success.

By applying the stakeholder theory, it is safe to say that firms and investors view the value of CSR differently. Nielsen & Noergaard (2012) emphasizes that on one hand, firms strive to obtain a competitive advantage and long-term value by working strategically with CSR, while on the other hand investors see “major barriers of integrating environmental, social and governance (ESG) factors into financial valuation models”. The authors also pointed out that investors’ methods of applying ESG data in a financial valuation are categorized as either a ‘single decision model’ where only financial data are valued, or a ‘dual decision model’ where both financial data and ESG factors are taken into account.

In order to get a general picture on whether investors include ESG information into their investment allocation decisions on emerging markets, Khemir et al. (2019) conducted a research in an emerging market, Tunisia, among 245 novices and experienced financial stakeholders, and found that ESG information did indeed influence the investment allocation decisions. Furthermore, the results also indicate that the governance and social information had more influence than the environmental information.

Singhania & Saini (2021) used a set of 13 samples of developed and developing countries and found that each country’s social and governance disclosure is driven by either voluntary or by mandatory codes, and that it could not be a standalone factor for uplifting the country’s overall ESG level. The authors also highlighted the importance of such disclosures to solve the issue of information asymmetry.

Research from the CFA Institute suggests that Asia sets a strong example of how emerging markets are leaning towards the development of a “mature ESG disclosure mentality” (Zembrowski et al., 2019). One example in this case is Thailand, by which the actions from

Stock Exchange of Thailand (SET) played a large role in this process. According to Corporate Knights ranking of stock exchanges worldwide based on ESG disclosure of issuers, the SET was placed in ninth, earning the highest ranking in Asia (Corporate Knights, 2019).

2.5. Hypothesis Development

In order to answer the research question ‘*To what extent does the ESG performance have an effect on acquirer abnormal returns of firms from emerging markets in Asia surrounding M&A announcements?*’, we formulated several hypotheses. Previous papers, as seen in Section 2.3., have discussed about the relationship between overall ESG performance with the acquirer abnormal returns and found contrasting results across different regions. However, majority of the evidence tends to favor a positive relationship between the two. From here, the first hypothesis can be derived:

Hypothesis 1. The acquiring firm’s overall ESG score positively influences the acquirer abnormal returns.

Furthermore, despite its contrasting results, empirical evidence for the individual pillar scores (environmental, social and governance) on acquirer abnormal returns also tends to favor a positive relationship, as seen in Section 2.3.. Therefore, the second hypothesis can be derived based on these individual pillar scores.

Hypothesis 2a. The acquiring firm’s environmental pillar score positively influences the acquirer abnormal returns.

Hypothesis 2b. The acquiring firm’s social pillar score positively influences the acquirer abnormal returns.

Hypothesis 2c. The acquiring firm’s governance pillar score positively influences the acquirer abnormal returns.

Garcia et al. (2017) defines sensitive industries as those subject to systematic social taboos, moral debates, and political pressures and those that are more likely to cause social and environmental damage. Furthermore, the authors also found that firms in sensitive industries

tend to have superior environmental performance. Giese et al. (2021) found that the environmental and social pillar scores are more pronounced in sectors that require risk management, in which tangible events (e.g. strikes or accidents) can lead to a short term impact on the firm profitability or stock price. Naeem et al. (2022) found that the ESG performance of environmentally sensitive corporations on the financial performance are stronger in developed countries than emerging countries. Iazzolino et al. (2023) tried to test whether ESG factors impact on financial efficiency of a sample of firms belonging to different European sectors. The authors found that the energy, materials, consumer, and technology sectors are the most sensitive. Specifically, the energy and materials sector is very sensitive to the environmental pillar, the consumer sector is very sensitive to the social pillar, and the technology sector is very sensitive to the governance pillar. By looking at the results of the papers and using the definition from Garcia et al. (2017) on sensitive sectors, there is plenty of evidence suggesting that the environmental and social performance of firms are expected to have a positive relationship with acquirer abnormal returns. However, there is not enough empirical evidence suggesting the effects of governance performance to be more pronounced in sensitive sectors. Therefore, Hypothesis 3a and 3b can be derived:

Hypothesis 3a. The acquiring firm's environmental pillar score positively influences the acquirer abnormal returns relatively more in environmentally sensitive sectors

Hypothesis 3b. The acquiring firm's social pillar score positively influences the acquirer abnormal returns relatively more in socially sensitive sectors

3 Methods

3.1. Variable Construction

3.1.1. Cumulative Abnormal Return (Using the Event Study Methodology)

To test the hypotheses mentioned in Section 2.5., the event study method is used. Fama et al. (1969) laid the foundation of event studies in their paper “The Adjustment of Stock Prices to New Information”, and was then adopted in many empirical studies ever since. The event study methodology aims to measure the effect of an event on the value of firms. For the purpose of this research, this methodology will measure the effect of the M&A announcements on the abnormal returns on the days surrounding the announcement. To measure this effect, this methodology tests whether the actual returns of the announcement is significantly different than the normal returns. The normal return is defined as the expected return without the conditioning on the announcement taking place. This paper uses the event study methodology based on the paper of MacKinlay (1997).

In order to capture the stock market reactions on M&A announcements, the abnormal return (AR) and cumulative abnormal return (CAR) are used. In calculating the AR and CAR, the initial task is to determine the event window. The event window refers to the time period surrounding the event of interest (date of M&A announcement) and consists of two main components: pre-announcement period and post-announcement period. In this case, this paper decides to use a 5-day event window of $[-2, +2]$, which captures data of two trading days before and after the M&A announcement.

The next step is to estimate the abnormal returns surrounding the date of M&A announcement by determining the estimation period. The most common choice in setting the estimation period is usually the period prior to the event window, as described by MacKinlay (1997). For instance, many existing literatures that explores the relationship between ESG performance and M&A abnormal returns uses an estimation period of approximately 200 days prior to the M&A announcement, as seen in Table 1. Following Deng et al. (2013), it would be most appropriate to use 200 trading days of stock return data ending 11 days before the M&A announcement, therefore the estimation period of $[-210, -11]$.

In order to estimate the normal returns for all firms, the market model is used. The market model is arguably the most frequently used model when performing event studies due to its simplicity and transparency. This can also be evident in the fact that this model is used almost all of the literatures discussed in Table 1. Equation 1 and 2 shows how the normal returns and the abnormal returns for the market model is calculated, respectively.

$$R_{i,t} = \alpha_i + \beta_i * R_{m,t} + \varepsilon_{i,t} \quad (1)$$

$$AR_{i,t} = R_{i,t} - (\alpha_i + \beta_i * R_{m,t}) \quad (2)$$

Where $R_{i,t}$ represents the return of the stock of observation i on day t , α_i depicts the intercept, β_i denotes the sensitivity of the returns to the overall market returns, $R_{m,t}$ represents the return of the overall market at time t , and $\varepsilon_{i,t}$ depicts the error term of observation i on day t which includes all other factors influencing the stock return that are not accounted for by the market return.

As mentioned previously, this paper will compute the 5-day cumulative abnormal returns in the event window of $[-2, +2]$, wherein the event day is the acquisition announcement date. Equation 3 shows how the cumulative abnormal returns is calculated.

$$CAR_{i,(t_1,t_2)} = \sum_{t=t_1}^{t_2} AR_{i,t} \quad (3)$$

Where $CAR_{i,(t_1,t_2)}$ represents the cumulative abnormal return of observation i from event window of t_1 and t_2 . t_1 denotes the start of the event window and t_2 depicts the end of the event window. Throughout this research, the CAR will be treated as the dependent variable.

3.1.2. Overall ESG Score and the Environmental, Social and Governance Pillar Scores

Our independent variables are the overall ESG scores and the environmental, social and governance pillar scores of acquiring firms, which are obtained from Refinitiv (Eikon). The ESG scores from Refinitiv (Eikon) covers 10 main categories, which includes emissions, environmental product innovation, human rights, shareholders, and so on. The ESG pillar score is a relative sum of the category weights. The overall ESG scores and its individual pillar scores are normalized to percentages ranging from 0 (worst) to 100 (best) (Refinitiv, 2022). Table 3 shows the 10 main categories and the individual pillar that these categories belong in.

Table 3: Composition of the individual pillar scores

Individual Pillar	Environmental	Social	Governance
Category	<ul style="list-style-type: none"> • Resource Use • Emissions • Innovation 	<ul style="list-style-type: none"> • Workforce • Human Rights • Community • Product Responsibility 	<ul style="list-style-type: none"> • Management • Shareholders • CSR Strategy

3.1.3. Bidder Characteristics & Deal Characteristics

Many existing literatures have consistently used a similar list of bidder characteristics to take into account when computing for M&A related cumulative abnormal returns. Motivated by Masulis et al. (2007), the bidder characteristics that this paper will control are the firm size, market value of equity, Tobin's q, leverage and free cash flow (FCF). All data on the bidder characteristics were obtained from Compustat Global, which provides fundamental annual company information of all regions outside of the US and Canada. Table 4 shows a list of the bidder characteristics and its definitions.

Table 4: List of bidder characteristics and its definitions

Bidder Characteristics	Definition
Firm Size	Log book value of total assets (\$ million)
Market Value of Equity	Number of shares outstanding multiplied by stock price prior to announcement (\$ million)
Tobin's q	Market Value of Assets over Book Value of Assets
Free Cash Flow	Operating income before depreciation - interest expenses - income taxes - capital expenditures, scaled by book value of total assets (\$ million)
Leverage	Book value of debts over market value of total assets

Furthermore, many existing literatures relating to have a consistent list of deal characteristics to take into account when computing for M&A related cumulative abnormal returns. Also motivated by Masulis et al. (2007), the M&A-related deal characteristics that this paper will control are all-cash deal, diversifying acquisition and relative deal size. All data pertaining to these M&A-related deal characteristics are obtained from Zephyr, which contains information on 2.2 million deals from 200 countries on corporate M&As, IPOs and venture capital data worldwide.

In addition to the M&A related cumulative abnormal returns, this paper will also take into account the ESG-related deal characteristics such as whether the acquirer operates in an environmentally and socially sensitive sector, in which its motivations are discussed in Section 2.5.. In order to investigate the effects of sensitive sectors, this paper uses the sectoral risks derived from S&P Global Corporate Sustainability Assessment (CSA), which rates the level of environmental and social risk, ranging from 1 (lowest) to 6 (highest) across different sectors (Devevey et al., 2020). The S&P Global CSA is one of the most widely used reference tool for stakeholders, financial analysts and the public at large to evaluate the sustainability of firms. Appendix 1 shows the the list of sectors and its environmental and social risk. A sector would be considered environmentally (socially) sensitive if the environmental (social) risk is larger than 4. Table 5 shows a list of deal characteristics and its definitions.

Table 5: List of deal characteristics and its definitions

Deal Characteristics	Definition
All-Cash Deal	Dummy Variable: 1 for purely cash-financed deals, 0 otherwise
Diversifying Acquisition	Dummy Variable: 1 if bidder and target do not share a Primary US SIC 2007 industry, 0 otherwise.
Relative Deal Size	Deal value (from Zephyr) over bidder market value of equity defined above.
Acquirer E Sensitive Sector	Dummy Variable: 1 if acquirer operates in an environmentally sensitive sector, 0 otherwise
Acquirer S Sensitive Sector	Dummy Variable: 1 if acquirer operates in an socially sensitive sector, 0 otherwise

Although using such control variables mentioned in this section helps to reduce omitted variable bias, the results from the regressions, to be discussed in Section 4, can still suffer from endogeneity bias that are caused by unobserved omitted variables.

3.2. Performing the Event Study Methodology

This paper uses the Event Study tool provided by Wharton Research Data Services (WRDS). This tool relies on the security returns collected directly from Compustat Global and the index returns computed by WRDS using the underlying Compustat Global data. In performing this methodology, a file containing firm identifiers (GVKEY, ISIN or SEDOL) and corresponding event dates, both obtained from the Zephyr database, is uploaded into the Event Study tool. The countries that are to be used for this research are China, Hong Kong, India,

Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Taiwan, Thailand. Furthermore, this tool uses the market-adjusted model, which is based on the market model seen in Equation 1 and 2, but with the assumption that α_i and β_i are equal to 1. Unfortunately, this tool does not have the option to set the estimation period and therefore uses the assumption that the overall market returns during that time period is the normal returns.

3.3. Robustness Check

To test the robustness of the methodology mentioned previously, the normal returns in the event study are estimated using the Fama-French 3-Factor instead of the market model. This is also done in order to address the issue regarding the inability to set the estimation period. Despite the fact that the market model is the most commonly used model in estimating the normal returns, the Fama-French 3-Factor model is also used in some academic literatures and would often be seen as an improvement of the market model. This model takes into account a variable for size (small to big market capitalization companies) and value (high to low book-to-market ratio) in order to mitigate the importance of the performance and risk of small companies compared to big companies (Boldeanu et al., 2022). Equation 4 and 5 shows how the normal returns and abnormal returns for the Fama-French 3-Factor model is calculated, respectively.

$$E(R_i) = R_f + \beta_{i,m}(R_m - R_f) + \beta_{i,SMB}SMB + \beta_{i,HML}HML \quad (4)$$

$$AR_{i,t} = R_{i,t} - (R_f + \beta_{i,m}(R_m - R_f) + \beta_{i,SMB}SMB + \beta_{i,HML}HML) \quad (5)$$

Where $E(R_i)$ represents the expected stock return of observation i , R_f denotes the risk-free rate, R_m depicts the return of the market portfolio, SMB represents the size factor, HML denotes the value factor, and $\beta_{i,m}$, $\beta_{i,SMB}$ and $\beta_{i,HML}$ depicts the factor sensitivities of observation i .

The size and value factors are obtained from Kenneth French's database from his official website (2023). Using the data available from this database, this paper uses the benchmark from the Asia Pacific index for all the countries mentioned above (excluding Japan) and the country's own index for Japan when calculating the size and value factor. Similar to that of the market model, the abnormal returns for Fama-French 3-Factor model uses the assumption that the beta for all the 3 factors (market, size and value) are equal to 1.

3.4. Sample Description

The acquisition sample was collected from Zephyr that follows the following criteria.

- The acquisition is completed and occurs in the Asian region from a country that is classified as an “emerging market”
- The acquisition occurred within the time frame of 1 January 2010 to 31 December 2022
- The acquirer controls less than 50% of the target’s shares prior to the announcement and owns at least 50% of the target’s shares after the transaction.
- The acquirer has annual financial statement information available from Compustat and stock return data (2 trading days prior to and after acquisition announcements) from the Event Study tool by WRDS.

The author is aware not to include the criteria in which “the acquirer has stock return data (210 days prior to acquisition announcements)”, due to the inability to set the estimation period in the Event Study tool by WRDS.

3.5. Regression

To test the first hypothesis that the acquiring firm’s overall ESG score positively influences the acquirer abnormal returns, the acquirer’s overall ESG score is regressed over the announcement return of the event window. Equation 6 measures the acquirer cumulative abnormal returns that applies for both the market model and the Fama-French 3-Factor model. The country, year and industry fixed effects are taken into account when performing the regressions for the whole sample, while only the year and industry effects are taken into account when performing the regressions for each country.

$$CAR_{i,(t_1,t_2)} = \hat{\alpha}_0 + \hat{\beta}_1 ESG_Score_{i,t} + \hat{\beta}_{2-6} Bidder_Characteristics_{i,t} + \hat{\beta}_{7-9} Deal_Characteristics_{i,t} + Fixed_Effects + \varepsilon_{i,t} \quad (6)$$

Where $CAR_{i,(t_1,t_2)}$ represents the cumulative abnormal return over the event window for deal i at day t , which applies to both the market model and Fama-French 3-Factor model. $\hat{\alpha}_0$ depicts the intercept, $ESG_Score_{i,t}$ denotes the overall ESG score, $Bidder_Characteristics_{i,t}$ renders the acquirer’s firm size, market value of equity, Tobin’s q , leverage and free cash flow (FCF). $Deal_Characteristics_{i,t}$ controls for all-cash deal, diversifying acquisition, relative deal size, and whether the acquirer operates in an

environmentally and socially sensitive sector. *Fixed_Effects* represents the fixed effects. Finally, $\varepsilon_{i,t}$ depicts the error term.

To test the second hypothesis that the acquiring firm's individual pillar scores positively influences the acquirer abnormal returns, the acquirer's individual pillar scores is regressed over the announcement return of the event window. Equation 7 measures the acquirer cumulative abnormal returns that applies for both the market model and the Fama-French 3-Factor model. The country, year and industry fixed effects are taken into account when performing the regressions for the whole sample, while only the year and industry effects are taken into account when performing the regressions for each country.

$$\begin{aligned} CAR_{i,(t_1,t_2)} = & \hat{\alpha}_0 + \hat{\beta}_1 Environmental_Score_{i,t} + \hat{\beta}_2 Social_Score_{i,t} \\ & + \hat{\beta}_3 Governance_Score_{i,t} + \hat{\beta}_{4-8} Bidder_Characteristics_{i,t} \\ & + \hat{\beta}_{9-11} Deal_Characteristics_{i,t} + Fixed_Effects + \varepsilon_{i,t} \end{aligned} \quad (7)$$

Where *Environmental_Score_{i,t}*, *Social_Score_{i,t}* and *Governance_Score_{i,t}* denotes its respective individual pillar scores.

To take into account the sectoral differences in the effects of the environmental and social pillar scores, these final set of models test the third hypothesis by categorizing the sample by sector sensitivity. Therefore, dummy variables are applied to acquirers who operate in an environmentally or socially sensitive sectors, with the reference group consisting of relatively insensitive acquirers. These dummy variables are denoted as (*E_Sensitive*) and (*S_Sensitive*), respectively. Furthermore, interaction terms are created by combining the firm's environmental and social pillar score with the dummy for sensitive sectors.

$$\begin{aligned} CAR_{i,(t_1,t_2)} = & \hat{\alpha}_0 + \hat{\beta}_1 Environmental_Score_{i,t} + \hat{\beta}_2 Social_Score_{i,t} \\ & + \hat{\beta}_3 Governance_Score_{i,t} + \hat{\beta}_4 Environmental_Score_{i,t} \\ & * E_Sensitive_{i,t} + \hat{\beta}_5 Social_Score_{i,t} * S_Sensitive_{i,t} \\ & + \hat{\beta}_{6-10} Bidder_Characteristics_{i,t} \\ & + \hat{\beta}_{11-13} Deal_Characteristics_{i,t} + Fixed_Effects + \varepsilon_{i,t} \end{aligned} \quad (8)$$

Where $Environmental_Score_{i,t} * E_Sensitive_{i,t}$ and $Social_Score_{i,t} * S_Sensitive_{i,t}$ denotes the acquiring firm's environmental and social scores when operating in an environmentally or socially sensitive sector for deal *i* at time *t*.

3.6. Data Collection Summary

Below is a summary on how the data relating to the mentioned variables will be obtained.

Table 6: Summary of data collection and its sources

Variable(s)	Source
ESG Rating	Refinitiv Eikon
Cumulative Abnormal Returns (CAR)	Event Study tool by WRDS
Announcement Dates	Zephyr
Bidder Characteristics	Compustat
Deal Characteristics	Refinitiv Eikon

Given the data availability during the data collection process, the countries to be included in this research are China, Hong Kong, India, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Taiwan and Thailand.

3.7. Descriptive Statistics

Table 7 shows that the mean cumulative abnormal return (CAR) is slightly positive for the 5-day event window on both the market model and Fama-French 3-Factor model, with values of 0.6% and 4.8%, respectively. The standard deviation increases when using the Fama-French 3-Factor model. The CAR for the market model is non-normally distributed, which is seen in how the skewness and kurtosis have different values of 0.8 and 5.5, respectively. The high positive skewness and a very high kurtosis imply that the CAR distribution has a substantial number of negative returns and very heavy tails. The CAR for the Fama-French 3-Factor model have lower skewness and kurtosis of 0 and 3, respectively. This implies that while also showing heavy tails and a slightly positive skew, the Fama-French 3-Factor model has a distribution that is less extreme, and therefore investors might expect fewer and less severe extreme events under this model.

In regards to the ESG performance, the overall ESG score and its individual pillar scores, on average, exhibit a moderate performance both values to 50, with the distribution being slightly left skewed and possessing moderately heavy tails. About 48.8% of acquirers operate in environmentally sensitive sectors and 11.6% in socially sensitive sectors. The highly positive skewness of 2.404 indicate that very few acquirers operate in socially sensitive sectors and a very high kurtosis of 6.78 heavy-tailed distribution with significant outliers on the right side.

As for the bidder characteristics, the firms included in this study have a moderate size on average, with a mean of 13.509. The firms range from relatively small market value of equity (\$494.063 million) to very large ones (\$77542.531 million), which is also seen in how

the market value of equity is highly right-skewed and a kurtosis of 9.311 indicates a distribution with extremely heavy tails. Furthermore, the Tobin's q and free cash flow has a very high skewness and kurtosis, which implies that a few firms have a very high Tobin's q and free cash flow relative to the sample.

Looking at the deal characteristics, 39.7% of the M&A transactions in this study are purely cash-financed deals and about 69.9% of the M&As in this study involve the acquiring and target firms from different industries. The average deal size of 0.066 is relatively small compared to the bidder's market value equity.

Table 7: Descriptive statistics

	N	Mean	Std. Dev.	min	Median	max	skewness	kurtosis
CAR [-2, +2] (Market Model)	813	.006	0.048	-.114	.004	.184	.755	5.498
CAR [-2, +2] (FF3 Model)	812	.025	1.373	-3.481	.061	3.489	-.001	3.018
Overall ESG Score	813	51.27	21.044	1.12	52.95	92.89	-.217	2.214
Environmental Pillar Score	813	49.276	26.522	0	52.79	94.18	-.311	2.027
Social Pillar Score	813	48.486	25.373	1.14	50.61	96.6	-.084	1.874
Governance Pillar Score	813	56.456	22.797	.85	59.13	96.87	-.312	2.171
Environmentally Sensitive Sector	813	.48	0.500	0	0	1	.081	1.007
Socially Sensitive Sector	813	.116	0.320	0	0	1	2.404	6.78
Firm Size	813	13.509	2.764	5.816	13.631	21.072	-.136	2.789
Market Value of Equity (\$ million)	803	13044.831	14730.628	494.063	7492.371	77542.531	2.353	9.311
Tobin's q	675	1.325	1.076	.174	1.044	6.842	3.509	16.769
Free Cash Flow	681	129613.41	472351.848	-575723	12335	2729860	4.102	21.446
Leverage	796	.241	0.166	0	.221	.893	.527	2.895
All-Cash Transaction	813	.397	0.490	0	0	1	.42	1.176
Diversifying Acquisition	813	.699	0.459	0	1	1	-.866	1.75
Relative Deal Size	803	.066	0.118	0	.016	.633	2.867	11.738

This table reports the descriptive statistics (observations, mean, standard deviation, minimum, median, maximum, skewness and kurtosis) of the variables that are used in this study. Variables such as the cumulative abnormal returns (market model and Fama-French 3-Factor model) and the relative deal size are winsorized at the bottom and top 1% level in order to minimize the influence of extreme outliers. Furthermore, although winsorizing at the bottom and top 1% level was not enough to minimize the influence of extreme outliers, variables such as the Tobin's q, market value of equity and free cash flow are winsorized at the bottom and top 1.5% level.

Table 8 shows the Pearson correlation coefficients of all the variables that are used in this study. The coefficients indicate the strength of the linear relationship between the two

variables, ranging from -1 to +1. Furthermore, caution needs to be taken if the correlation exceeds -0.7 or +0.7 as it can lead to multicollinearity and therefore reduce the robustness of the findings (Brooks, 2019). Unsurprisingly, the overall ESG score possess significantly high positive correlations with the environmental, social and governance pillar scores. Each of the individual pillar scores have a positive and significant correlation with one another at 1% significance level, but are not taken into caution as the coefficients do not exceed -0.7 or +0.7. Looking at the results of the Pearson correlation coefficients, it is important to separate the overall ESG score from the individual pillar scores in order to avoid multicollinearity.

Table 8: Pearson correlation matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) CAR [-2, +2] (Market Model)	1.000							
(2) CAR [-2, +2] (FF3 Model)	-0.003	1.000						
(3) Overall ESG Score	-0.055	0.021	1.000					
(4) Environmental Pillar Score	-0.049	0.025	0.832***	1.000				
(5) Social Pillar Score	-0.024	0.002	0.907***	0.688***	1.000			
(6) Governance Pillar Score	-0.067*	0.029	0.717***	0.426***	0.471***	1.000		
(7) Environmentally Sensitive Sector	0.002	-0.019	0.069*	0.181***	0.007	0.011	1.000	
(8) Socially Sensitive Sector	0.009	-0.003	0.059*	-0.077**	0.075**	0.055	-0.270**	1.000
(9) Firm Size	-0.028	-0.008	0.351***	0.362***	0.289***	0.230***	-0.105**	-0.123**
(10) Market Value of Equity (\$ million)	0.000	0.009	0.374***	0.276***	0.322***	0.339***	-0.059*	0.119***
(11) Tobin's q	0.038	-0.073*	-0.170**	-0.199**	-0.146**	-0.098**	0.025	0.130***
(12) Free Cash Flow	0.030	-0.025	0.170***	0.125***	0.156***	0.150***	0.028	-0.078**
(13) Leverage	0.047	-0.015	-0.043	0.012	0.010	-0.122**	-0.133**	-0.281**
(14) All-Cash Transaction	-0.061*	-0.004	-0.037	-0.039	-0.041	-0.003	0.010	0.044
(15) Diversifying Acquisition	-0.048	0.013	0.088**	0.078**	0.052	0.112***	-0.062*	0.070**
(16) Relative Deal Size	-0.016	0.040	-0.076**	0.008	-0.071**	-0.108**	0.029	-0.108**

Variables	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(9) Firm Size	1.000							
(10) Market Value of Equity (\$ million)	0.375***	1.000						
(11) Tobin's q	-0.234**	-0.014	1.000					
(12) Free Cash Flow	0.404***	0.370***	-0.098**	1.000				
(13) Leverage	0.157***	-0.109**	-0.024	-0.028	1.000			
(14) All-Cash Transaction	-0.117**	-0.003	-0.007	-0.018	-0.056	1.000		
(15) Diversifying Acquisition	0.047	0.004	-0.031	0.000	0.021	-0.020	1.000	
(16) Relative Deal Size	0.037	-0.130**	0.015	-0.003	0.116***	0.005	-0.146**	1.000

This table reports the correlations between all the variables used in this study. The Pearson coefficients are tested for significance and the values in bold indicate caution. The 10%, 5% and 1% significance level are denoted by *, ** and ***, respectively.

4 Results and Discussion

This section presents the empirical results of the of our analyses. The findings following the OLS regressions are discussed and related to the hypotheses. This chapter is then concluded with robustness tests using the Fama-French 3-Factor model.

4.1. Market Reaction to the M&A Announcements

4.1.1. Results for Hypothesis 1 (Overall ESG Score)

Table 9 shows the results on the the overall ESG scores being regressed into the market model cumulative abnormal returns over the event window of $[-2, +2]$, while controlling for bidder characteristics and deal characteristics. This regression is being done on samples of all countries (column 1), China (column 2), India (column 3), ASEAN (column 4), Japan (column 5), South Korea (column 6) and Taiwan (column 7). Hong Kong was excluded from the analysis due to the number of observations being way too small for the regression to be performed. Due to the small sample size, countries such as Indonesia, Malaysia, Philippines, Singapore and Thailand are merged and therefore treated as ASEAN region. The year and industry fixed effects are included in the model. The country fixed effects are only included in the model that uses a sample of all countries.

Looking at column 1 that focuses on the all countries in the sample, overall ESG score has a coefficient of -0.000379 and is statistically significant at 10% level, implying that an increase in the overall ESG score by 1 point leads to a lower cumulative abnormal return by 0.04%. This therefore implies a slightly reduced market response following M&A announcements, which can be explained by the market expectation of higher costs associated with responsible business practices. Similar to column 1, the model that focuses on China (column 2) also has a coefficient that is significantly negative at 10% level for the overall ESG score, implying that an increase in the overall ESG score by 1 point leads to a lower cumulative abnormal return by 0.17%. This might explain how investors in China tend to perceive responsible actions as costly and lead to a negative impact on short term market reactions. In India, the overall ESG score does not play a significant role in the cumulative abnormal returns surrounding M&A announcements, but interestingly has a high negative coefficient for relative deal size that is significant at 1% level. This suggests that large deals relative to the acquiring firm size might be seen as risky or value-destructive by the market. The overall ESG score, bidder characteristics and deal characteristics are not significant towards the cumulative abnormal abnormal returns for M&As in the ASEAN region. Furthermore, having a high negative adjusted R-squared of -0.467 also implies that there are other factors other than the

overall ESG scores, bidder characteristics and deal characteristics that might have a significant influence on market reactions on ASEAN countries, making predictions challenging. For Japan, the overall ESG score and bidder characteristics do not have a significant influence on the cumulative abnormal returns, but its relative deal size have a negative and significant influence at 5% significance level. Despite being statistically significant, its economic impact might be relatively small. In the case of South Korea and Taiwan, the overall ESG score, bidder characteristics and deal characteristics do not have a significant influence on the cumulative abnormal return.

Overall, the findings in Table 9 show a nuanced relationship between overall ESG performance and market reactions. Furthermore, these negative coefficients seen in the overall sample and China can be due to the perceived high costs or risks associated in performing responsible practices. However, the different impact across countries might be due to the differences in the market dynamics and investor perceptions in each country. In summary, it can be said that the small and negative coefficients associated with the overall ESG score in some countries imply that, on average, the overall ESG performance has a limited impact on market reactions during M&A announcements and that investors in emerging Asian markets tend to be influenced by other factors more significantly.

Table 9: Baseline model overall ESG scores (market model)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All Countries	China	India	ASEAN	Japan	South Korea	Taiwan
ESG Score	-0.000379* (0.000201)	-0.00170* (0.000897)	0.00144 (0.000979)	-0.000712 (0.000777)	-0.000547 (0.000511)	0.000909 (0.000933)	0.0114 (0.0162)
<i>Bidder Characteristics</i>							
Firm Size	0.000821 (0.00420)	0.0141 (0.0148)	-0.0142 (0.0194)	-0.0000256 (0.00436)	-0.00960 (0.0141)	-0.00809 (0.0191)	-0.445 (0.460)
Market Value of Equity	0.000000234 (0.000000353)	-0.000000799 (0.00000337)	-0.000000564 (0.000000802)	0.00000111 (0.00000147)	0.000000383 (0.000000860)	-0.000000277 (0.00000146)	0.0000329 (0.0000326)
Tobin's q	-0.00205 (0.00335)	0.00310 (0.00649)	-0.0114 (0.0121)	-0.000151 (0.00979)	-0.000786 (0.0117)	-0.0229 (0.0403)	-0.169 (0.192)
Free Cash Flow	-2.61e-09 (6.09e-09)	0.00000376 (0.00000302)	-0.000000207 (0.000000126)	3.03e-08 (1.93e-08)	-1.98e-08 (1.96e-08)	-8.38e-09 (1.90e-08)	-0.000000111 (0.000000699)
Leverage	0.0253 (0.0246)	0.0403 (0.125)	-0.0808 (0.0645)	-0.0624 (0.0585)	0.0119 (0.0654)	0.0124 (0.0927)	2.618 (1.630)
<i>Deal Characteristics</i>							
Cash	-0.00783 (0.00555)	-0.0678* (0.0343)	0.0116 (0.0231)	0.0307 (0.0604)	0.00171 (0.00835)	-0.0180 (0.0241)	0.460 (0.458)
Diversifying Acquisition	-0.00621 (0.00620)	0.0325 (0.0336)	-0.00873 (0.0233)	0.0141 (0.0244)	-0.00823 (0.0106)	-0.0220 (0.0247)	-0.0764 (0.104)
Relative Deal Size	-0.0240 (0.0288)	-0.0455 (0.0791)	-0.771*** (0.259)	-0.0157 (0.109)	-0.141** (0.0556)	-0.0807 (0.0742)	-1.063 (1.404)
Constant	0.0167 (0.0532)	-0.0905 (0.135)	0.160 (0.271)	0.0256 (0.0497)	0.179 (0.208)	0.149 (0.275)	4.259 (4.403)
Country	Yes	No	No	No	No	No	No
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj. R ²	-0.010	-0.120	0.166	-0.467	-0.049	0.374	0.688
Observations	512	54	58	54	184	56	27

This table reports the OLS regression output using the market model. The dependent variable of this OLS regression is the CAR [-2, +2], which denotes the acquiring firm's cumulative abnormal return over a 5-day event window. Columns 1 to 7 explores the effect of the overall ESG score from samples of all countries, China, India, ASEAN region, Japan, South Korea and Taiwan, respectively. The bidder characteristics include firm size, market value of equity, Tobin's q, free cash flow and leverage. The deal characteristics include a cash dummy, diversifying acquisition and relative deal size. The year and industry fixed effects are included in the model. The country fixed effects are only included in the model that uses the sample of all countries. The coefficients and corresponding standard errors (in parenthesis) are reported for each variable, wherein the standard errors are clustered at firm level. The 10%, 5% and 1% significance level are denoted by *, ** and ***, respectively.

4.1.2. Results for Hypothesis 2 (Individual Pillar Score)

Table 10 shows the result on the individual pillar scores (environmental, social and governance) being regressed into the market model cumulative abnormal returns over the event window of [-2, +2], while controlling for bidder characteristics and deal characteristics. This regression is being done on samples of all countries (column 1), China (column 2), India (column 3), ASEAN (column 4), Japan (column 5) and South Korea (column 6). Hong Kong was excluded from the analysis due to the number of observations is being way too small to perform the regression. Taiwan was also excluded from the analysis due to the the sample size not being large enough to show the standard errors of the variables. The year and industry fixed effects are included in the model. The country fixed effects are only included in the model that uses a sample of all countries.

Looking at the model that focuses on all countries in the sample, the environmental pillar score has a coefficient of -0.000332 and has a significance level of 10%, implying that an increase in environmental pillar score by 1 point leads to a 0.03% decrease in the cumulative abnormal return. However, the adjusted R-squared of -0.011 implies that this market model has a very weak explanatory power on the cumulative abnormal returns, suggesting that there are some omitted factors influencing returns that are not included in the model. In the case of China, none of the individual pillar scores have a significant influence on the cumulative abnormal returns, but all-cash transactions have a negative correlation towards cumulative abnormal returns, with a coefficient of -0.0677 and is significant at 10% level. However, the adjusted R-squared of -0.210 implies that this market model also has a very weak explanatory power on the cumulative abnormal returns. Interestingly, the environmental pillar score has a coefficient of 0.00133 in India and is statistically significant at 1% level, which implies that investors in India may reward firms with better environmental performance. In the ASEAN market, the governance pillar score has a coefficient of -0.00232 and is statistically significant at 10% level, which means that an increase in the governance pillar score by 1 point leads to a decrease in cumulative abnormal return by 0.232%. This implies that stricter governance measures might negatively impact M&A performance in the ASEAN region. However, an adjusted R-squared of -0.370 implies that this market model holds a very weak explanatory power in the ASEAN region. The relative deal size in Japan has a coefficient of -0.143 and is statistically significant at 1% level, but the adjusted R-squared of -0.057 suggests that the model has a low explanatory power. In the South Korean market, the environmental pillar score has a coefficient of -0.00214 and is statistically significant at 10% level. Furthermore, the social

pillar score has a coefficient of 0.00253 that is statistically significant at 5% significance level. Therefore, the coefficients for the environmental and social pillar score implies that investors in South Korea appear to value social performance but penalize poor environmental performance during M&A events. Unlike the other regions, the adjusted R-squared of 0.427 shows that this model explains a large portion of the cumulative abnormal returns in South Korea.

Overall, the market model shows that the inconsistency of results across different regions highlights the importance of considering the differences in investor behavior and preferences. Many other factors such as the cultural norms, regulatory environments and investor expectations may influence how the environmental, social and governance performance impacts the market reaction towards M&A announcements.

Table 10: Baseline model individual pillar scores (market model)

	(1)	(2)	(3)	(4)	(5)	(6)
	All Countries	China	India	ASEAN	Japan	South Korea
Environmental Pillar Score	-0.000332* (0.000173)	0.000554 (0.000963)	0.00133*** (0.000464)	0.000639 (0.000664)	-0.000314 (0.000441)	-0.00214* (0.00115)
Social Pillar Score	0.00000102 (0.000195)	-0.00205 (0.00131)	0.000336 (0.00361)	-0.000812 (0.000701)	0.00000399 (0.000319)	0.00253** (0.000959)
Governance Pillar Score	-0.0000128 (0.000161)	-0.000394 (0.000771)	0.0000874 (0.000468)	-0.00232* (0.00118)	-0.000424 (0.000333)	-0.000695 (0.00111)
<i>Bidder Characteristics</i>						
Firm Size	0.000564 (0.00418)	0.0190 (0.0183)	-0.00595 (0.0219)	0.00420 (0.00576)	-0.00543 (0.0148)	-0.00274 (0.0185)
Market Value of Equity	0.000000244 (0.000000353)	0.000000428 (0.00000381)	-0.000000832 (0.000000847)	0.00000249 (0.00000165)	0.000000263 (0.000000867)	6.48e-08 (0.00000129)
Tobin's q	-0.00231 (0.00336)	0.00342 (0.00707)	-0.00760 (0.0227)	-0.00427 (0.01000)	0.000220 (0.0116)	-0.0788 (0.0469)
Free Cash Flow	-2.45e-09 (6.04e-09)	0.00000322 (0.00000311)	-0.000000272 (0.000000351)	3.72e-08 (2.37e-08)	-2.05e-08 (2.00e-08)	-5.70e-09 (1.62e-08)
Leverage	0.0293 (0.0248)	0.0154 (0.122)	-0.147 (0.115)	-0.155* (0.0749)	0.00844 (0.0685)	0.000883 (0.103)
<i>Deal Characteristics</i>						
Cash	-0.00762 (0.00551)	-0.0677* (0.0368)	0.00814 (0.0250)	0.0455 (0.0620)	0.00362 (0.00826)	-0.00859 (0.0284)
Diversifying Acquisition	-0.00592 (0.00621)	0.0291 (0.0396)	-0.00260 (0.0319)	0.0108 (0.0242)	-0.00867 (0.0105)	0.0000258 (0.0252)
Relative Deal Size	-0.0230 (0.0288)	-0.0394 (0.0964)	-0.769 (0.478)	0.0608 (0.114)	-0.143*** (0.0539)	-0.0739 (0.0729)
Constant	0.0168 (0.0531)	-0.142 (0.161)	0.0566 (0.314)	0.108** (0.0509)	0.132 (0.210)	0.161 (0.256)
Country	Yes	No	No	No	No	No
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
adj. R ²	-0.011	-0.210	0.156	-0.370	-0.057	0.427
Observations	512	54	58	54	184	56

This table reports the OLS regression output using the market model. The dependent variable of this OLS regression is the CAR [-2, +2], which denotes the acquiring firm's cumulative abnormal return over a 5-day event window. Columns 1 to 6 explore the effect of the individual pillar scores (environmental, social and governance) from samples of all countries, China, India, ASEAN region, Japan and South Korea, respectively. The bidder characteristics include firm size, market value of equity, Tobin's q, free cash flow and leverage. The deal characteristics include a cash dummy, diversifying acquisition and relative deal size. The year and industry fixed effects are included in the model. The country fixed effects are only included in the model that uses the sample of all countries. The coefficients and corresponding standard errors (in parenthesis) are reported for each variable, wherein the standard errors are clustered at firm level. The 10%, 5% and 1% significance level are denoted by *, ** and ***, respectively

4.1.3. Results for Hypothesis 3 (Sensitive Sectors)

Table 11 shows the result on the individual pillar scores (environmental, social and governance) being regressed into the market model cumulative abnormal returns over the event window of [-2, +2], while controlling for bidder characteristics and deal characteristics. The interaction terms that involve the environmental (social) pillar score and the dummy variable for environmentally (socially) sensitive sectors are also added into the regression. This regression is being done on samples of all countries (column 1), China (column 2), India (column 3), ASEAN (column 4), Japan (column 5) and South Korea (column 6). Hong Kong was excluded from the analysis due to the number of observations is being way too small to perform the regression. Taiwan was also excluded from the analysis due to the the sample size not being large enough to show the standard errors of the variables. The year and industry fixed effects are included in the model. The country fixed effects are only included in the model that uses a sample of all countries.

Looking at column 1, the interaction terms involving environmentally sensitive sectors has a coefficient of -0.000655 and is statistically significant at 5% significance level. This implies that if a firm operates in an environmentally sensitive sector, the effect of the environmental pillar score on the cumulative abnormal returns decreases by 0.065% for the overall sample. In the case of China, the environmental pillar score has a coefficient of 0.00302 and is significant at 10% significance level. However, the interaction terms involving environmentally sensitive sectors has a coefficient of -0.00394 and is significant at 5% significance level. This indicates that an increase in the environmental pillar score by 1 point leads to a 0.30% increase in the cumulative abnormal returns, but this effect decreases by 0.394% if the acquirer operates in an environmentally sensitive sector. In India, the environmental pillar score has a coefficient of 0.00110 and is significant at 5% significance level. However, none of the interaction terms are statistically significant, implying that given the increase in the environmental pillar score by 1 point, operating in an environmentally sensitive sector gives no further significant effect on the cumulative abnormal return. In ASEAN markets, the governance pillar score has a negative but weak effect on the cumulative abnormal return, with a coefficient of -0.00257 and is significant at 10% significance level. For Japan, none of the individual pillar scores or interaction terms involving sensitive sectors have a statistically significant effect on the cumulative abnormal returns. However, the relative deal size has a negative effect on the cumulative abnormal returns and is significant at 5% significance level. In the South Korean market, the environmental pillar score has a coefficient

of -0.00901 at 1% significance level, but its interaction term has a coefficient of 0.00616 at 1% significance level. One way to interpret this could be that investors in South Korea tend to anticipate higher costs associated in environmentally responsible practices, but tend to value these responsible activities more if the acquirer operates in an environmentally sensitive sector. Furthermore, the firm size and Tobin's q have a negative effect on the cumulative abnormal returns.

Similar to Section 4.1.1 and 4.1.2., the market model shows inconsistencies of results across different regions. Furthermore, the market model also shows weak explanatory power across all the different samples except South Korea, implying that the market model may have omitted a lot of factors that may have contributed to the cumulative abnormal returns.

Table 11: Baseline model individual pillar scores in sensitive sectors (market model)

	(1)	(2)	(3)	(4)	(5)	(6)
	All Countries	China	India	ASEAN	Japan	South Korea
Environmental Pillar Score	0.0000329 (0.000226)	0.00302* (0.00143)	0.00110** (0.000482)	0.000911 (0.000690)	-0.000390 (0.000792)	-0.00901*** (0.00235)
Social Pillar Score	0.0000511 (0.000198)	-0.000638 (0.00139)	-0.000320 (0.00425)	-0.000848 (0.000708)	0.0000322 (0.000334)	0.00492*** (0.00137)
Governance Pillar Score	-0.0000192 (0.000161)	-0.000277 (0.000685)	0.0000222 (0.000529)	-0.00257* (0.00123)	-0.000416 (0.000314)	-0.000598 (0.00133)
Environmental Pillar Score * E_Sensitive	-0.000655** (0.000260)	-0.00394** (0.00166)	0.00134 (0.00230)	-0.000644 (0.000993)	0.000131 (0.000888)	0.00616*** (0.00151)
Social Pillar Score * S_Sensitive	0.0000803 (0.000506)	-0.0198 (0.0127)	0.00318 (0.00298)		-0.000571 (0.00112)	0.000121 (0.00276)
<i>Bidder Characteristics</i>						
Firm Size	0.000951 (0.00418)	0.0119 (0.0204)	-0.00518 (0.0205)	0.00559 (0.00605)	-0.00372 (0.0156)	-0.0525** (0.0176)
Market Value of Equity	0.000000197 (0.000000351)	0.00000316 (0.00000374)	-0.00000104 (0.000000913)	0.00000293 (0.00000182)	0.000000167 (0.000000923)	0.000000783 (0.00000123)
Tobin's q	-0.00223 (0.00333)	0.000606 (0.00724)	-0.0000642 (0.0288)	-0.00572 (0.0106)	0.000792 (0.0123)	-0.101* (0.0561)
Free Cash Flow	-2.63e-09 (6.06e-09)	0.000000996 (0.00000253)	-0.000000183 (0.000000435)	3.22e-08 (2.56e-08)	-1.99e-08 (1.97e-08)	1.87e-08 (1.25e-08)
Leverage	0.0273 (0.0247)	-0.114 (0.122)	-0.179 (0.145)	-0.153* (0.0784)	0.00368 (0.0733)	0.136 (0.1000)
<i>Deal Characteristics</i>						
Cash	-0.00947* (0.00560)	-0.0667 (0.0382)	0.00673 (0.0263)	0.0451 (0.0634)	0.00345 (0.00824)	-0.00448 (0.0337)
Diversifying Acquisition	-0.00495 (0.00607)	0.0427 (0.0411)	0.00140 (0.0354)	0.0102 (0.0249)	-0.00852 (0.00972)	0.00393 (0.0200)
Relative Deal Size	-0.0171 (0.0286)	0.0162 (0.112)	-0.909* (0.456)	0.0560 (0.114)	-0.142** (0.0552)	-0.0798 (0.0749)
Constant	0.0128 (0.0531)	-0.0151 (0.180)	-0.0553 (0.307)	0.111** (0.0489)	0.107 (0.219)	0.933*** (0.270)
Country	Yes	No	No	No	No	No
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
adj. R ²	0.002	-0.228	0.119	-0.428	-0.073	0.579
Observations	512	54	58	54	184	56

This table reports the OLS regression output using the market model. The dependent variable of this OLS regression is the CAR [-2, +2], which denotes the acquiring firm's cumulative abnormal return over a 5-day event window. Columns 1 to 6 explores the effect of the individual pillar scores (environmental, social and governance) from samples

of all countries, China, India, ASEAN region, Japan and South Korea, respectively. The interaction terms involving E_Sensitive (S_Sensitive) represents a binary variable that indicates whether the acquiring firm operates in an environmentally (socially) sensitive sector. The bidder characteristics include firm size, market value of equity, Tobin's q, free cash flow and leverage. The deal characteristics include a cash dummy, diversifying acquisition and relative deal size. A full list of definitions for the bidder and deal characteristics can be found in Tables 4 and 5, respectively. The year and industry fixed effects are included in the model. The country fixed effects are only included in the model that uses the sample of all countries. The coefficients and corresponding standard errors (in parenthesis) are reported for each variable, wherein the standard errors are clustered at firm level. The 10%, 5% and 1% significance level are denoted by *, ** and ***, respectively.

4.2. Robustness Checks

To determine whether the findings in this applied methodology are robust, this study is replicated by using the Fama-French 3-Factor model. A full description on this replicated methodology can be found in Section 3.3..

4.2.1. Results for Hypothesis 1 (Overall ESG Score)

Table 12 shows the results on the the overall ESG scores being regressed into the Fama-French 3-Factor model cumulative abnormal returns over the event window of $[-2, +2]$, while controlling for bidder characteristics and deal characteristics. This regression is being done on samples of all countries (column 1), China (column 2), India (column 3), ASEAN (column 4), Japan (column 5), South Korea (column 6) and Taiwan (column 7). Hong Kong was excluded from the analysis due to the number of observations being way too small for the regression to be performed. The year and industry fixed effects are included in the model. The country fixed effects are only included in the model that uses a sample of all countries.

Looking the model that focuses on all countries in the sample, the overall ESG score does not have a significant effect on the cumulative abnormal returns. However, the relative deal size has a positive and significant effect on cumulative abnormal returns on 5% significance level, which implies that investors respond positively on larger deals that might be due to their perceptions of these deals as signs of growth or strategic expansion. In the case of China, neither of the overall ESG score, bidder characteristics or deal characteristics have a significant effect on the cumulative abnormal return, which implies that investors in the Chinese market might prioritize other factors over ESG performance during M&A announcements, according to the Fama-French 3-Factor model. In the Indian market, the overall ESG score also does not have a significant effect on the cumulative abnormal return, but have a firm size coefficient of -1.73 and is significant at 1% level, which imply that investors may prefer smaller, potentially more agile firms in M&A transactions due to the perceived risks involved in larger firms. An interesting result can be seen in the ASEAN market, where the coefficient of the overall ESG score is 0.0442 and is significant at 5% level, implying that an increase in overall ESG score by 1 point leads to a 4.42% increase in cumulative abnormal returns. This reveals the investors' preference for sustainable and ethical business practices in the ASEAN region, according to the Fama-French 3-Factor model.

Overall, the positive relationship between the overall ESG score and the cumulative abnormal return in ASEAN countries highlights the importance of sustainable business practices, as investors within this region might prefer socially responsible firms, leading to

positive market responses. Across different countries, the size of M&A deals relative to the acquirer market value, as seen in the relative deal size, have a significant influence on cumulative abnormal returns. This implies that larger deals tend to result in more favorable market reactions, which might potentially indicate investor optimism about strategic expansion and growth. The impact of leverage on cumulative abnormal returns vary for different countries. For instance, high leverage is viewed negatively in Japan potentially due to perceived financial risk, while investors in South Korea might interpret high leverage as a sign of growth or strategic investment. In summary, it is crucial to have an understanding on the market-specific perceptions and preferences of investors when analyzing the impact of overall ESG performance and other factors on the cumulative abnormal returns on M&A transactions.

Table 12: Baseline model overall ESG scores (Fama-French 3-Factor model)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	All Countries	China	India	ASEAN	Japan	South Korea	Taiwan
ESG Score	0.00537 (0.00481)	-0.0144 (0.0379)	-0.00518 (0.0109)	0.0442** (0.0185)	0.0105 (0.0123)	-0.0567 (0.0368)	-0.192 (0.0517)
<i>Bidder Characteristics</i>							
Firm Size	-0.115 (0.113)	-0.0815 (0.624)	-1.733*** (0.252)	-0.185** (0.0843)	-0.163 (0.281)	-0.808 (0.916)	11.41* (1.464)
Market Value of Equity	0.00000661 (0.00000961)	0.000101 (0.0000914)	0.0000497*** (0.0000111)	-0.000128*** (0.0000439)	0.0000136 (0.0000202)	0.0000740 (0.0000661)	-0.000546 (0.000104)
Tobin's q	-0.111 (0.0850)	-0.0719 (0.215)	-0.928*** (0.133)	0.0517 (0.284)	-0.0154 (0.264)	1.931 (1.487)	4.003* (0.611)
Free Cash Flow	8.81e-08 (0.000000189)	-0.0000946 (0.0000676)	-0.00000522*** (0.00000164)	-0.000000442 (0.000000440)	0.000000537 (0.000000674)	-0.000000996* (0.000000567)	-0.0000830** (0.00000223)
Leverage	-0.483 (0.668)	-0.941 (3.667)	-1.592 (1.028)	2.658 (2.101)	-2.860** (1.277)	10.25*** (3.285)	-83.34** (5.185)
<i>Deal Characteristics</i>							
Cash	-0.0897 (0.153)	0.543 (1.039)	-0.564* (0.327)	-2.162 (1.703)	-0.412* (0.248)	0.338 (0.765)	-7.855 (1.456)
Diversifying Acquisition	-0.0661 (0.171)	1.065 (1.057)	-1.182*** (0.232)	-0.130 (0.997)	-0.138 (0.319)	0.822 (0.900)	1.305 (0.332)
Relative Deal Size	1.350** (0.610)	-1.223 (2.251)	-16.98*** (2.868)	2.256 (2.580)	2.529** (1.263)	-1.733 (4.428)	39.73* (4.468)
Constant	1.431 (1.393)	0.292 (6.028)	25.01*** (3.271)	0.689 (1.727)	2.168 (3.681)	10.91 (13.83)	-111.9* (14.01)
Country	Yes	No	No	No	No	No	No
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes
adj. R ²	0.032	0.034	0.650	0.202	0.091	0.132	0.995
Observations	512	54	58	54	184	56	27

This table reports the OLS regression output using the Fama-French 3-Factor model. The dependent variable of this OLS regression is the CAR [-2, +2], which denotes the acquiring firm's cumulative abnormal return over a 5-day event window. Columns 1 to 7 explore the effect of the overall ESG score from samples of all countries, China, India, ASEAN region, Japan, South Korea and Taiwan, respectively. The bidder characteristics include firm size, market value of equity, Tobin's q, free cash flow and leverage. The deal characteristics include a cash dummy, diversifying acquisition and relative deal size. The year and industry fixed effects are included in the model. The country fixed effects are only included in the model that uses the sample of all countries. The coefficients and corresponding standard errors (in parenthesis) are reported for each variable, wherein the standard errors are clustered at firm level. The 10%, 5% and 1% significance level are denoted by *, ** and ***, respectively.

4.2.2. Results for Hypothesis 2 (Individual Pillar Score)

Table 13 shows the result on the individual pillar scores (environmental, social and governance) being regressed into the Fama-French 3-Factor model cumulative abnormal returns over the event window of $[-2, +2]$, while controlling for bidder characteristics and deal characteristics. This regression is being done on samples of all countries (column 1), China (column 2), India (column 3), ASEAN (column 4), Japan (column 5) and South Korea (column 6). Hong Kong was excluded from the analysis due to the number of observations is being way too small to perform the regression. Taiwan was also excluded from the analysis due to the the sample size not being large enough to show the standard errors of the variables. The year and industry fixed effects are included in the model. The country fixed effects are only included in the model that uses a sample of all countries.

Looking at the model that focuses on all countries in the sample, the relative deal size has a coefficient of 1.340 and is significant at 5% level, implying that larger deals are perceived more positively by investors in the aggregate level, which is most likely due to the perception of greater strategic value or synergies. For the Chinese market, none of the variables are statistically significant, which means that the none of the individual pillar scores, bidder characteristics and the deal characteristics have a significant impact on the cumulative abnormal returns. In the Indian market, the social pillar score has a coefficient of 0.0757 and is significant at 5% level, implying that an increase in the social pillar score by 1 point increases the cumulative abnormal return by 7.57%. One way to interpret this could be that socially responsible behaviors enhances investor sentiment during M&A events in India. The firm size, market value of equity, Tobin's q and free cash flow all have negative coefficients and are significant at 1% level, which suggests that larger firms are more likely to face higher expectations, making it more challenging to exceed market expectations in M&A transactions in India. Furthermore, all-cash transactions and diversifying acquisitions both have negative coefficients and are significant at 10% and 1% significance level, respectively. This could imply that investors in India might prefer mixed payment methods and strategic, non-diversifying acquisitions, as they are viewed as less risky. In the case of ASEAN, the social pillar score has a coefficient of 0.0633 and is significant at 1% significance level, indicating that a 1-point increase in the social pillar score leads to a 6.33% increase in cumulative abnormal returns. Firm size and market value of equity have also shown to have a negative relationship with the cumulative abnormal returns, implying that larger firms tend to face higher expectations. In the Japanese market, the leverage and relative deal size have a

coefficient -2.788 and 2.482, respectively, and are both significant at 5% level. This indicates that highly leveraged deals may be viewed as risky, while larger deals are viewed as strategic and value-enhancing. In South Korea, the leverage has a coefficient of 9.097 and is statistically significant at 5% level, implying that investors in South Korea view high leverage as a sign of growth or strategic investment.

Table 13: Baseline model individual pillar scores (Fama-French 3-Factor model)

	(1)	(2)	(3)	(4)	(5)	(6)
	All Countries	China	India	ASEAN	Japan	South Korea
Environmental Pillar Score	0.00546 (0.00468)	-0.0400 (0.0274)	-0.00416 (0.00878)	-0.0179 (0.0220)	0.0100 (0.0100)	-0.0435 (0.0510)
Social Pillar Score	0.00328 (0.00546)	0.0164 (0.0428)	0.0795** (0.0322)	0.0633*** (0.0221)	-0.00235 (0.0103)	0.0146 (0.0368)
Governance Pillar Score	-0.00509 (0.00476)	0.0227 (0.0175)	-0.00570 (0.00686)	-0.0146 (0.0331)	0.00454 (0.00886)	-0.0690 (0.0418)
<i>Bidder Characteristics</i>						
Firm Size	-0.109 (0.113)	-0.237 (0.641)	-1.881*** (0.273)	-0.246* (0.139)	-0.244 (0.288)	-0.700 (0.935)
Market Value of Equity	0.00000626 (0.00000959)	0.0000837 (0.0000897)	0.0000406*** (0.0000120)	-0.000131** (0.0000550)	0.0000170 (0.0000192)	0.0000845 (0.0000648)
Tobin's q	-0.103 (0.0849)	-0.142 (0.184)	-1.280*** (0.166)	0.176 (0.257)	-0.0348 (0.261)	0.744 (1.762)
Free Cash Flow	8.82e-08 (0.000000188)	-0.000114 (0.0000689)	-0.0000113*** (0.00000234)	-8.36e-08 (0.000000558)	0.000000511 (0.000000682)	-0.000000889 (0.000000549)
Leverage	-0.605 (0.669)	-0.302 (3.176)	0.307 (1.554)	3.830 (2.453)	-2.788** (1.303)	9.097** (3.990)
<i>Deal Characteristics</i>						
Cash	-0.0716 (0.156)	0.463 (1.064)	-0.606* (0.311)	-1.726 (1.794)	-0.425 (0.262)	0.478 (0.772)
Diversifying Acquisition	-0.0737 (0.172)	1.420 (0.899)	-1.421*** (0.325)	0.385 (1.025)	-0.165 (0.318)	1.203 (0.939)
Relative Deal Size	1.340** (0.611)	-0.270 (2.641)	-23.78*** (3.571)	1.856 (2.735)	2.482** (1.229)	-1.205 (5.038)
Constant	1.490 (1.389)	1.146 (6.026)	22.15*** (3.897)	0.550 (1.594)	3.177 (3.723)	12.40 (14.12)
Country	Yes	No	No	No	No	No
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
adj. R ²	0.034	0.083	0.677	0.280	0.078	0.129
Observations	512	54	58	54	184	56

This table reports the OLS regression output using the Fama-French 3-Factor model. The dependent variable of this OLS regression is the CAR [-2, +2], which denotes the acquiring firm's cumulative abnormal return over a 5-day event window. Columns 1 to 6 explores the effect of the individual pillar scores (environmental, social and governance) from samples of all countries, China, India, ASEAN region, Japan and South Korea, respectively. The bidder characteristics include firm size, market value of equity, Tobin's q, free cash flow and leverage. The deal characteristics include a cash dummy, diversifying acquisition and relative deal size. The year and industry fixed effects are included in the model. The country fixed effects are only included in the model that uses the sample of all countries. The coefficients and corresponding standard errors (in parenthesis) are reported for each variable, wherein the standard errors are clustered at firm level. 10%, 5% and 1% significance levels are denoted by *, ** and ***, respectively.

4.2.3. Results for Hypothesis 3 (Sensitive Sectors)

Table 14 shows the result on the individual pillar scores (environmental, social and governance) being regressed into the Fama-French 3-Factor model cumulative abnormal returns over the event window of $[-2, +2]$, while controlling for bidder characteristics and deal characteristics. The interaction terms that involve the environmental (social) pillar score and the dummy variable for environmentally (socially) sensitive sectors are also added into the regression. This regression is being done on samples of all countries (column 1), China (column 2), India (column 3), ASEAN (column 4), Japan (column 5), South Korea (column 6) and Taiwan (column 7). Hong Kong was excluded from the analysis due to the number of observations is being way too small to perform the regression. Taiwan was also excluded from the analysis due to the the sample size not being large enough to show the standard errors of the variables. The year and industry fixed effects are included in the model. The country fixed effects are only included in the model that uses a sample of all countries.

Looking at the all countries sample, none of the individual pillar scores and interaction terms involving sensitive sectors have a statistically significant effect on the cumulative abnormal returns. However, the positive and significant effect of the relative deal size indicates that investors respond positively on larger deals, which might be due to their perceptions of these deals as signs of growth or strategic expansion. In the case of China, the environmental pillar score has a coefficient of -0.112 and is statistically significant at 1% significance level, but tends to have a more positive effect on the cumulative abnormal returns if the acquirer operates in an environmentally sensitive sector, as seen in the coefficient 0.0713 that is significant at 10% significance level. It could be that investors in China tend to anticipate higher costs associated in environmentally responsible practices, but tend to value these responsible activities more if the acquirer operates in an environmentally sensitive sector. Furthermore, the governance pillar score shows to be have a positive and significant effect at 5% significance level, with the coefficient of 0.0367 . In India, the social pillar score shows to have a positive and significant effect at 5% significance level, with the coefficient of 0.0757 . Furthermore, firm size, Tobin's q , free cash flow, diversifying acquisition and relative deal size shows to negatively influence the cumulative abnormal returns, all with the significance level of 1%. The market value of equity tends to have a positive effect at 1% significance level, but does not show economic significance as the coefficient is close to 0. For ASEAN markets, the social pillar score has a positive and significant influence on the cumulative abnormal returns, with coefficient of 0.0626 that is significant at 5% significance level. However, this effect does

not significantly change regardless if the acquirer operates in a socially sensitive sector or not. In the case of Japan, none of the individual pillar scores or the interaction terms involving sensitive sectors have a significant effect on the cumulative abnormal returns. However, the leverage and relative deal size have coefficients of -2.947 and 2.513, respectively, with both significance levels of 5%. One way to interpret this could be that highly leveraged deals may be viewed as risky, while larger deals are viewed as strategic and value-enhancing. In the South Korean market, the environmental pillar score has a coefficient of -0.267 at 5% significance level, but the interaction term has an opposite sign with a coefficient of 0.203 at 5% significance level. Similar to that of the market model, one way to interpret this could be that investors in South Korea tend to anticipate higher costs associated in environmentally responsible practices, but tend to value these responsible activities positively if the acquirer operates in an environmentally sensitive sector.

Table 14: Baseline model individual pillar scores in sensitive sectors (Fama-French 3-Factor model)

	(1)	(2)	(3)	(4)	(5)	(6)
	All Countries	China	India	ASEAN	Japan	South Korea
Environmental Pillar Score	0.000124 (0.00567)	-0.112*** (0.0254)	-0.00519 (0.00762)	-0.0123 (0.0259)	0.00440 (0.0127)	-0.267** (0.0919)
Social Pillar Score	0.00335 (0.00550)	0.0118 (0.0438)	0.0757** (0.0361)	0.0626** (0.0227)	-0.00266 (0.0105)	0.0932* (0.0474)
Governance Pillar Score	-0.00454 (0.00472)	0.0367** (0.0161)	-0.00851 (0.00770)	-0.0198 (0.0343)	0.00523 (0.00878)	-0.0581 (0.0484)
Environmental Pillar Score * E_Sensitive	0.00990 (0.00665)	0.0713* (0.0339)	0.0472 (0.0433)	-0.0133 (0.0235)	0.0106 (0.0169)	0.203*** (0.0713)
Social Pillar Score * S_Sensitive	-0.0174 (0.0129)	-0.475 (0.330)	0.0200 (0.0391)		0.00513 (0.0265)	-0.0561 (0.111)
<i>Bidder Characteristics</i>						
Firm Size	-0.127 (0.114)	0.0499 (0.600)	-1.863*** (0.273)	-0.217 (0.156)	-0.219 (0.305)	-2.405** (0.973)
Market Value of Equity	0.00000809 (0.00000967)	0.000108 (0.0000958)	0.0000367*** (0.0000131)	-0.000122** (0.0000568)	0.0000158 (0.0000197)	0.000121* (0.0000640)
Tobin's q	-0.117 (0.0873)	-0.0771 (0.175)	-1.245*** (0.216)	0.146 (0.274)	-0.0396 (0.263)	0.541 (2.536)
Free Cash Flow	8.22e-08 (0.000000187)	-0.000110 (0.0000652)	-0.0000107*** (0.00000290)	-0.000000186 (0.000000632)	0.000000481 (0.000000710)	-5.08e-08 (0.000000616)
Leverage	-0.588 (0.671)	-1.965 (3.462)	0.743 (2.225)	3.871 (2.504)	-2.947** (1.317)	13.66*** (3.903)
<i>Deal Characteristics</i>						
Cash	-0.0466 (0.157)	0.482 (1.104)	-0.585 (0.344)	-1.734 (1.842)	-0.402 (0.275)	0.499 (0.803)
Diversifying Acquisition	-0.0867 (0.170)	1.377 (0.837)	-1.327*** (0.339)	0.374 (1.077)	-0.138 (0.331)	1.254 (0.998)
Relative Deal Size	1.276** (0.611)	1.039 (2.962)	-26.19*** (3.875)	1.756 (2.679)	2.513** (1.226)	-1.680 (5.284)
Constant	1.751 (1.420)	0.295 (5.490)	20.72*** (4.144)	0.614 (1.671)	2.676 (4.091)	37.79** (13.05)
Country	Yes	No	No	No	No	No
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes
adj. R ²	0.039	0.130	0.660	0.246	0.065	0.266
Observations	512	54	58	54	184	56

This table reports the OLS regression output using the Fama-French 3-Factor model. The dependent variable of this OLS regression is the CAR [-2, +2], which denotes the acquiring firm's cumulative abnormal return over a 5-day event window. Columns 1 to 6 explores the effect of the individual pillar scores (environmental, social and

governance) from samples of all countries, China, Hong Kong, India, ASEAN region, Japan, South Korea and Taiwan, respectively. The interaction terms involving E_Sensitive (S_Sensitive) represents a binary variable that indicates whether the acquiring firm operates in an environmentally (socially) sensitive sector. The bidder characteristics include firm size, market value of equity, Tobin's q, free cash flow and leverage. The deal characteristics include a cash dummy, diversifying acquisition and relative deal size. The year and industry fixed effects are included in the model. The country fixed effects are only included in the model that uses the sample of all countries. The coefficients and corresponding standard errors (in parenthesis) are reported for each variable, wherein the standard errors are clustered at firm level. The 10%, 5% and 1% significance level are denoted by *, ** and ***, respectively.

4.3. Comparing the Market Model and the Fama-French 3-Factor Model

Comparing the results of the market model and the Fama-French 3-Factor model can provide insights into the impact of additional factors (market risk, size and value) on the relationship between the overall ESG score and the cumulative abnormal returns in the context of M&A events in emerging Asian markets. In the market model suggests that the overall ESG score, even in cases where statistically significant, had a limited impact on the cumulative abnormal returns. Furthermore, the market model only captures primarily on the market sentiment regarding overall ESG performance without considering other firm specific factors (size and value factor) that might influence investor reactions. The addition of the size and value factor in the Fama-French 3-Factor model provided a more nuanced view. However, the effects of the overall ESG score often lost its significance, implying that firm size, market value and relative deal size tend to play more substantial roles in explaining the cumulative abnormal returns. Furthermore, the adjusted R-squared were low and some were negative, implying that the market risk and the overall ESG performance alone does not completely capture the complexities of investor behavior during M&A events. Even though the Fama-French 3-Factor model's adjusted R-squared values were generally higher than those of the market model, they still varied widely across regions. This implies that while adding the size and value factor in the model improves its explanatory power, these factors were still not able to perfectly capture the nuances of investor reactions.

When comparing the results of the market model and the Fama-French 3-Factor model on the relationship between the individual pillar scores (environmental, social and governance) and the cumulative abnormal returns, the Fama-French 3-Factor model adds more explanatory power on the variables' effects on the cumulative abnormal returns (except South Korea). This implies that the additional factors such as the size factor and value factor play a role in reducing the noise on the cumulative abnormal returns. The market model as a whole shows a weak relationship between the individual pillar scores and the cumulative abnormal returns. However, the market model tends to be more suitable than the Fama-French 3-Factor model in the South Korean market, as seen in the higher adjusted R-squared and the statistically significant coefficient in the social pillar score in the market model. Furthermore, the significant positive effect in the social pillar scores for the Fama-French 3-French model for India and ASEAN shows how the size and value factors contribute to the market's perception on social performances during M&A announcements in these respective regions.

When comparing the market model and the Fama-French 3-Factor model on the addition of interaction terms involving sensitive sectors, the Fama-French 3-Factor model adds more explanatory power on the variables' effects on the cumulative abnormal returns (except South Korea). This comparison was also evident in the previous regressions that involve the overall ESG scores and the individual pillar scores. This indicates that throughout the different regressions, the additional factors such as the size factor and value factor contribute in reducing the noise of the cumulative abnormal returns in majority of the sample. However, adding such factors tend to create more noise in the model and diminishes the explanatory power in South Korean markets.

5 Conclusion and Recommendations

5.1. Summary and Conclusion

This paper researches on the impact of ESG performance on the stock market reaction in emerging Asian markets during periods surrounding M&A announcements. This paper contributes to the existing literatures by shedding light more on this relationship in regions of growing economies specifically in Asia, and, to the best of the author's knowledge, is the first paper to make direct comparisons across these regions. To determine the market reaction, the event study methodology is performed and that the cumulative abnormal returns is estimated by using the market model and the Fama-French 3-Factor model. The research question that this paper aims to construct an answer to is the following: *“To what extent does the ESG performance have an effect on acquirer abnormal returns of firms from emerging markets in Asia surrounding M&A announcements?”*.

This research question is addressed by analyzing several hypotheses. The first hypothesis states that the acquiring firm's overall ESG score positively influences the acquirer abnormal returns. The results of the event study show inconsistent relationships across different countries. Furthermore, when comparing the market model and the Fama-French 3-Factor model, the Fama-French 3-Factor model provides more explanatory power in the estimation of the cumulative abnormal returns for all of the regions except South Korea. In the market model, the overall ESG score shows a weak negative correlation on the cumulative abnormal returns for the overall sample and China, and a statistically insignificant relationship for the rest of the regions. For the Fama-French 3-Factor model, the overall ESG score shows a statistically significant relationship only in the ASEAN region, which had a positive correlation with the cumulative abnormal return. Given that the Fama-French 3-Factor model provides more explanatory power bar South Korea, this paper will utilize the coefficients in this model to answer the first hypothesis. In this case, the results provide evidence to prove Hypothesis 1 to be true only in the ASEAN region.

The second hypothesis examines the influence of the individual pillar scores on the acquirer abnormal returns. This hypothesis is split into three parts, where each of the parts represent the influence of the environmental (Hypothesis 2a), social (Hypothesis 2b) and governance (Hypothesis 2c) pillar scores, respectively. Similar to the first hypothesis, the results of the event study also give inconsistent relationships across different countries. Furthermore, the Fama-French 3-Factor model also provides more explanatory power than the market model for all regions bar South Korea. In the market model, the environmental pillar

score provides a negative but weak effect on the cumulative abnormal return for the overall sample and South Korea, but a positive effect in India. The social pillar score only has a statistically significant effect in South Korea, wherein this effect is positive. The governance pillar score does not have a statistically significant influence on the cumulative abnormal returns apart from ASEAN, and even so, has a negative and weak relationship. Moving on to the Fama-French 3-Factor model, the environmental and governance pillar score does not provide a statistically significant influence on the cumulative abnormal returns. However, the social pillar score provides a positive influence in India and ASEAN. Therefore, the empirical results provide evidence in favor of Hypothesis 2b in India and ASEAN according to the Fama-French 3-Factor model, and in South Korea according to the market model.

The third hypothesis examines whether the influence of the acquirer's environmental (social) performance are more pronounced in environmentally (socially) sensitive sectors. The results suggest that adding interaction terms involving sensitive sectors still provides consistent relationships in the individual pillar scores when compared with the models in the second hypothesis. For the market model, operating in an environmentally sensitive sector tends to be punished by the market for the overall sample and China, but is being rewarded in South Korea. In the Fama-French 3-Factor model, operating in an environmentally sensitive sector tends to have a positive but weak relationship in China and a strong positive relationship in South Korea. Given that China and South Korea has shown consistent relationships in the environmental pillar score and its interaction term involving environmentally sensitive sectors across the two models, these results tend to partially be in favor with Hypothesis 3a for these two regions, in which the market punishes them for a better environmental performance but rewards them if the acquirers operate in an environmentally sensitive sector.

5.2. Limitations and Recommendations

This paper suffers from several limitations that restrain from answering the hypotheses to its full potential. One of the main limitations of this paper is the limited data available that may have affected the methodologies involved in this research. The event study methodology performed in this paper does not use the estimation period when estimating the normal returns. The author is aware of the consequences this has on the reliability of this research. One of them is the fact that it would be difficult to tell if the observed price movements are truly abnormal or just part of the market fluctuations. This limitation was addressed by performing a robustness check through replicating the event study methodology using the Fama-French 3-

Factor model, which helps strengthen the credibility of this research despite not having an estimation period.

Moreover, the issue regarding voluntary disclosures of ESG data in Asia has largely affected the sample size of this research. With the goal of making direct comparisons of the results across different countries, the sample size was too small that it has led to the results from countries such as Hong Kong and Taiwan to be unrepresentable. Furthermore, this has also led to the decision in merging all the ASEAN countries when performing the regressions.

Another limitation is that in some cases the ESG ratings and the financial data may not always be representative at the time of the M&A announcement. Due to the fact that the ESG ratings and financial data are obtained at the end of the most recent fiscal year, any substantial changes in the firm characteristics (Tobin's q , market value of equity, free cash flow, leverage, etc.) or alterations affecting ESG dimensions during this time interval are not captured, and therefore may not fully reflect the performances at the time of the M&A announcement.

Furthermore, the complexity of investor and firm behavior in emerging Asian markets may have led to some unobserved factors being omitted in the regressions. Despite being partially addressed by replicating the methodology with the Fama-French 3-Factor model, this may have explained the relatively low adjusted R-squares and may have questioned the reliability of the models in some cases.

As a result of the aforementioned limitations, this paper provides recommendations for further research that can potentially address the root causes involved in the limitations of this paper. Given the issue on information asymmetry and ESG disclosure levels in emerging Asian markets, further research may try to investigate specifically on the role that ESG reporting and disclosure activities have on the M&A performance. Furthermore, it would also be interesting to complement the event study short-term effects with the long-term effect of the M&A.

By acknowledging the limitations of the paper and executing the recommendations of further research, the author hopes that analysts, academicians, investors and also potential acquirers of M&As can have a clearer insight of how emerging markets in Asia tend to behave pertaining to the integration of ESG principles and M&As within this region.

6 References

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7 Appendix

Appendix 1: Environmental and Social Risk by Sector

Sector	Environmental Risk (1-6)	Social Risk (1-6)
Agribusiness and commodity foods	5	3
Asset Managers	2	3
Autos and auto parts	4	4
Banks	3	3
Capital Goods	3	3
Chemicals	5	4
Health Care	2	3
Insurance	3	3
Leisure	3	4
Media	1	5
Metals and Mining	6	5
Oil and Gas Infrastructure (Midstream)	4	4
Oil and Gas	6	5
Power and Generation (Coal) / Power	5	4
Real Estate Operators / Real Estate/Public Housing	3	3
Retail	3	3
Telecom	3	3
Transportation	4	4
Transportation infrastructure	3	3
Materials	4	3
Services/Education	1	2
Technology	3	4
Utility Networks	3	4